

# DATACOM

## **DmSwitch Command Reference**

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## Conventions

This guide uses these conventions to convey instructions and information:

Command descriptions use these conventions:

- Commands and keywords are in boldface text.
- Arguments for which you supply values are in italic.
- Square brackets ([ ]) mean optional elements.
- Braces ({ }) group required choices, and vertical bars (|) separate the alternative elements.
- Braces and vertical bars within square brackets ([{ | }]) mean a required choice within an optional element.

Interactive examples use these conventions:

- Terminal sessions and system displays are in screen font.
- Information you enter is in **boldface screen** font.
- Nonprinting characters, such as passwords or tabs, are in angle brackets (< >).

# Table of Contents

<b>1. Introduction.....</b>	<b>1</b>
The Command Line Interface .....	1
<b>2. Root Commands.....</b>	<b>2</b>
clear counter .....	2
clear cpu arp-table .....	4
clear ip .....	6
clear logging .....	8
clear mac-address-table .....	10
clear meter .....	12
clear spanning-tree counters.....	13
clear spanning-tree detected-protocols.....	15
clear statistics .....	17
clock set.....	19
configure.....	21
copy .....	22
debug .....	25
diff .....	27
erase .....	29
exit.....	31
help.....	32
light unit .....	34
ping.....	35
reboot .....	37
select.....	38
show authentication.....	40
show batch.....	42
show bridge-ext .....	44
show cable-diagnostics.....	45
show clock.....	47
show counter .....	48
show cpu.....	50
show cpu-dos-protect .....	53
show debugging.....	54
show dot1x .....	55
show eaps .....	57
show filter.....	59
show firmware .....	61
show flash-config .....	63
show flash.....	65
show garp .....	67
show gvrp .....	69
show hardware-status .....	71
show history .....	73
show interfaces counters .....	75
show interfaces status.....	77

show interfaces switchport .....	79
show interfaces table configuration .....	81
show interfaces table counter .....	83
show interfaces table queue ethernet .....	85
show interfaces table utilization .....	87
show ip .....	89
show ip default-gateway .....	91
show ip dhcp .....	92
show ip dns-servers .....	94
show ip hardware host-table .....	95
show ip hardware lpm-table .....	97
show ip http .....	99
show ip igmp snooping .....	101
show ip igmp snooping mroute .....	103
show ip interface .....	105
show ip ospf .....	106
show ip rip .....	108
show ip route .....	110
show ip routing .....	112
show ip snmp-server .....	113
show ip snmp-server traps .....	115
show ip ssh .....	117
show ip telnet .....	119
show l2protocol-tunnel .....	120
show lacp counters .....	122
show lacp <i>group</i> .....	124
show lacp internal .....	126
show lacp neighbors .....	128
show lacp sysid .....	130
show link-flap .....	132
show lldp .....	134
show lldp neighbor .....	137
show log .....	139
show logging .....	141
show loopback-detection .....	143
show mac-address-table .....	145
show mac-address-table aging-time .....	147
show mac-address-table multicast .....	148
show management .....	150
show managers .....	152
show meter .....	154
show monitor .....	156
show oam .....	158
show privilege .....	160
show profile-config .....	161
show public-key .....	163
show queue config .....	165
show queue cos-map .....	167

show radius-server.....	169
show rmon alarm.....	171
show rmon event .....	173
show rmon history.....	175
show rmon statistics .....	177
show running-config.....	179
show snmp.....	181
show spanning-tree.....	183
show stacking .....	186
show startup-config .....	188
show system .....	190
show tacacs-server.....	192
show tech-support .....	194
show uptime .....	195
show users .....	196
show vlan .....	198
show vlan-group.....	200
show vrrp.....	202
telnet.....	204
terminal paging .....	206
terminal timeout .....	208
traceroute.....	210
unit .....	211
<b>3. Configure Commands.....</b>	<b>212</b>
accounting .....	212
arp aging-time .....	214
authentication login.....	216
authorization.....	218
banner login.....	220
batch <i>index</i> date.....	222
batch <i>index</i> disable .....	224
batch <i>index</i> enable .....	226
batch <i>index</i> remark .....	228
batch <i>index</i> start-session.....	230
batch new .....	232
batch term-session.....	234
bridge-ext gvrp .....	236
clock timezone .....	238
counter.....	240
cpu-dos-protect.....	242
dot1x.....	244
eaps <i>domain</i> .....	246
eaps <i>domain</i> control-vlan .....	248
eaps <i>domain</i> failtime .....	250
eaps <i>domain</i> hellotime .....	252
eaps <i>domain</i> mode.....	254
eaps <i>domain</i> name .....	256

eaps <i>domain</i> port .....	258
eaps <i>domain</i> protected-vlans .....	260
external-alarm .....	262
fetch tftp .....	264
filter .....	266
hostname .....	270
interface ethernet.....	272
interface port-channel.....	274
interface vlan.....	275
ip default-gateway .....	277
ip dhcp relay .....	279
ip dhcp relay information option.....	281
ip dhcp relay information trusted .....	283
ip dhcp relay vlan.....	285
ip dns server .....	287
ip helper-address .....	289
ip http .....	291
ip igmp .....	293
ip igmp snooping vlan.....	296
ip route .....	298
ip routing .....	300
ip snmp-server.....	302
ip snmp-server traps .....	305
ip ssh .....	308
ip telnet.....	310
key chain .....	312
l2protocol-tunnel.....	314
lldp .....	316
lldp notification-interval.....	318
lldp reinitialize-delay .....	320
lldp transmit-delay .....	322
lldp transmit-hold.....	324
lldp transmit-interval.....	326
logging debug.....	328
logging facility .....	330
logging history .....	332
logging host.....	334
logging on .....	336
logging sendmail .....	338
logging trap .....	340
mac-address-table aging-time .....	342
mac-address-table static .....	344
management .....	346
meter.....	348
monitor .....	350
queue cos-map.....	352
radius-server acct-port.....	354
radius-server auth-port .....	356

radius-server host .....	358
radius-server key .....	360
radius-server retries .....	362
radius-server timeout.....	364
rmon .....	366
rmon alarm .....	368
rmon event.....	370
router bgp .....	372
router ospf .....	374
router rip.....	376
sntp .....	378
spanning-tree .....	380
spanning-tree bpduguard.....	382
spanning-tree <i>instance</i> .....	384
spanning-tree <i>instance</i> forward-delay .....	387
spanning-tree <i>instance</i> hello-time .....	389
spanning-tree <i>instance</i> max-age.....	391
spanning-tree <i>instance</i> max-hops.....	393
spanning-tree <i>instance</i> priority.....	395
spanning-tree <i>instance</i> root .....	397
spanning-tree <i>instance</i> vlan-group .....	399
spanning-tree mode .....	401
spanning-tree mst .....	403
stacking .....	405
tacacs-server host .....	407
tacacs-server key .....	409
tacacs-server port .....	411
username .....	413
vlan-group .....	415
vlan qinq.....	417
wred.....	419
<b>4. Interface Ethernet/Port-channel Commands.....</b>	<b>421</b>
capabilities .....	421
description.....	423
dot1x guest-vlan.....	425
dot1x max-req .....	427
dot1x port-control .....	429
dot1x re-authentication .....	431
dot1x restricted-vlan .....	433
dot1x timeout .....	435
flowcontrol .....	437
garp timer .....	439
l2protocol-tunnel.....	441
lacp .....	443
link-flap .....	445
lldp admin-status .....	447
lldp notification .....	449



lldp tlvs-tx-enable .....	451
loopback-detection .....	453
mdix .....	455
monitor source.....	457
negotiation.....	459
oam.....	461
queue max-bw .....	462
queue sched-mode sp .....	464
queue sched-mode wfq.....	466
queue sched-mode wrr .....	468
rate-limit.....	470
rmon collection history .....	472
rmon collection stats .....	474
shutdown .....	476
slow-protocols .....	478
spanning-tree .....	480
spanning-tree edge-port.....	482
spanning-tree <i>instance</i> .....	484
spanning-tree link-type .....	486
spanning-tree restricted-role .....	488
spanning-tree restricted-tcn.....	490
speed-duplex .....	492
switchport acceptable-frame-types .....	494
switchport block multicast ethernet .....	496
switchport block broadcast ethernet.....	498
switchport block unicast ethernet.....	500
switchport egress-block ethernet.....	502
switchport gvrp .....	504
switchport ingress-filtering .....	506
switchport multicast-flood.....	508
switchport mtu.....	510
switchport native vlan .....	512
switchport port-security .....	514
switchport priority default.....	516
switchport protocol .....	518
switchport qinq.....	520
switchport storm-control .....	522
switchport tpid.....	524
wred averaging-time.....	526
wred cng-drop-start-point .....	528
wred cng-slope .....	530
wred drop-start-point.....	532
wred slope .....	534
<b>5. Interface Port-channel Commands .....</b>	<b>536</b>
load-balance .....	536
set-member ethernet.....	538

<b>6. Interface VLAN Commands</b>	<b>540</b>
ip address	540
ip ospf authentication	542
ip ospf authentication-key	544
ip ospf cost	546
ip ospf dead-interval	548
ip ospf hello-interval	550
ip ospf message-digest-key	552
ip ospf network	554
ip ospf priority	556
ip ospf retransmit-interval	558
ip ospf transmit-delay	560
ip proxy-arp	562
ip rip authentication key-chain	564
ip rip authentication mode	566
ip rip receive version	568
ip rip send version	570
ip rip split-horizon	572
mac-address-table aging-time	574
mac-address-table learn-copy	576
mac-address-table port-maximum	578
management-mtu	580
name	582
set-member forbidden	584
set-member tagged	586
set-member untagged	588
shutdown	590
vrrp group authentication	592
vrrp group ip	594
vrrp group priority	596
vrrp group shutdown	598
<b>7. Keychain Commands</b>	<b>600</b>
key id	600
<b>8. Key Commands</b>	<b>602</b>
key-string	602
<b>9. Router OSPF Commands</b>	<b>604</b>
abr-type	604
area id/ip-address_id authentication	606
area id/ip-address_id default-cost	608
area id/ip-address_id nssa	610
area id/ip-address_id range	612
area id/ip-address_id shortcut	614
area id/ip-address_id stub	616
area id/ip-address_id virtual-link ip-address	618
area id/ip-address_id virtual-link ip-address authentication	620
area id/ip-address_id virtual-link ip-address authentication-key	622

area <i>id/ip-address_id</i> virtual-link <i>ip-address</i> dead-interval .....	624
area <i>id/ip-address_id</i> virtual-link <i>ip-address</i> hello-interval .....	626
area <i>id/ip-address_id</i> virtual-link <i>ip-address</i> message-digest-key .....	628
area <i>id/ip-address_id</i> virtual-link <i>ip-address</i> retransmit-interval .....	630
area <i>id/ip-address_id</i> virtual-link <i>ip-address</i> transmit-delay .....	632
auto-cost reference-bandwidth .....	634
compatible rfc1583 .....	636
default-information originate .....	638
default-metric .....	640
distance.....	642
neighbor .....	644
network.....	646
passive-interface .....	648
redistribute.....	650
refresh timer .....	652
router-id .....	654
timers spf.....	656
<b>10. Router RIP Commands.....</b>	<b>658</b>
default-metric .....	658
distance.....	660
neighbor .....	662
network.....	664
passive-interface .....	666
redistribute.....	668
timers_basic .....	670
version .....	672
<b>11. Obsolete Commands.....</b>	<b>674</b>
Root Commands.....	674
Configure Commands .....	691

# Chapter 1. Introduction

## The Command Line Interface

The DmSwitch Command Reference Guide was built to help network managers in their daily tasks. This guide shows the commands that can be entered in the input prompt of the command line interface.

The commands are described with all the available parameters. Moreover, the guide also have command usage examples, related commands, usage guidelines, default values and other descriptions that will help you understand how to operate the DmSwitch.

# Chapter 2. Root Commands

## clear counter

**clear counter** [*filter-counter-id* ]

### Description

Clears filter counters.

### Syntax

Parameter	Description
<i>filter-counter-id</i>	(Optional) Clears only the counter with the specified ID. (Range: 1-32)

### Default

No default is defined.

### Command Modes

Privileged EXEC.

### Command History

Release	Modification
5.0	This command was introduced. It replaces the command <b>clear ffpcounters</b> .

### Usage Guidelines

Not available.

### Example

This example shows how to clear all filter counters.

```
DmSwitch#clear counter
DmSwitch#
```

You can verify that the information was deleted by entering the **show counter** privileged EXEC command.

## Related Commands

No related command.

# clear cpu arp-table

**clear cpu arp-table** [ *ip-address* ]

## Description

Deletes entries from the CPU ARP table.

## Syntax

Parameter	Description
<i>ip-address</i>	(Optional) Clears only the entry that contains the specified IP address.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
4.1	This command was introduced. Before this was called <b>clear cpu-arp-table</b> .

## Usage Guidelines

Not available.

## Example

This example shows how to delete the entry that contains the specified IP address.

```
DmSwitch#clear cpu arp-table 192.168.0.1
DmSwitch#
```

You can verify that the information was deleted by entering the **show cpu arp-table** privileged EXEC command.

## Related Commands

Command	Description
<b>show cpu</b>	Shows CPU information.





# clear ip

```
clear ip { arp [ interface { ethernet [ unit-number/ ] port-number | port-channel  
channel-group-number | vlan vlan-number } ] | bgp { all | ip-address } }
```

## Description

Deletes IP entries.

## Syntax

Parameter	Description
<b>arp</b>	Clears IP ARP cache table.
<b>interface</b>	(Optional) Clears the entire ARP cache on the interface.
<b>ethernet</b> [ <i>unit-number/</i> ] <i>port-number</i>	Clears the entries from the specified unit and port.
<b>port-channel</b> <i>channel-group-number</i>	Clears the entries from the specified port channel. The port channel must be specified in accordance with the port channel configured in the switch. (Range: 1-32)
<b>vlan</b> <i>vlan-number</i>	Clears the entries from the specified VLAN. The VLAN must be specified in accordance with the VLAN configured in the switch. (Range: 1-4094)
<b>bgp</b>	Clears BGP connections.
<b>all</b>	Resets all BGP connections.
<i>ip-address</i>	Specifies a connection to be reset.

## Default

No default is defined.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

If no **interface** parameter is specified, when using the **arp** command, the entire ARP cache will be cleared.

## Example

This example shows how to clear the entire ARP cache on the specified VLAN interface.

```
DmSwitch#clear ip arp interface vlan 1
DmSwitch#
```

## Related Commands

No related commands.

# clear logging

```
clear logging { flash | ram }
```

## Description

Deletes log messages from flash or RAM memory.

## Syntax

Parameter	Description
<b>flash</b>	Deletes log messages from flash memory.
<b>ram</b>	Deletes log messages from RAM memory.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example show how to delete log messages from flash.

```
DmSwitch#clear logging flash
DmSwitch#
```

You can verify that the information was deleted by entering the **show logging** privileged EXEC command.

## Related Commands

Command	Description
<b>logging facility</b>	Sets the facility type for remote logging.

Command	Description
<code>logging history</code>	Configures the level of events to be stored in memory.
<code>logging host</code>	Configures a remote syslog server.
<code>logging on</code>	Enables the logging of events.
<code>logging sendmail</code>	Enables and configures the sending of logs via e-mail.
<code>logging trap</code>	Configures the level of events that will be sent to remote server.
<code>show logging</code>	Shows logging configuration.

# clear mac-address-table

```
clear mac-address-table [ { ethernet [ unit-number/ ] port-number | port-channel  
channel-group-number | vlan vlan-number { mrouter | multicast | unicast } } ]
```

## Description

Deletes dynamically learned L2 entries from MAC address table.

## Syntax

Parameter	Description
<b>ethernet</b> [ <i>unit-number/</i> ] <i>port-number</i>	(Optional) Clears the entries from the specified unit and port.
<b>port-channel</b> <i>channel-group-number</i>	(Optional) Clears the entries from the specified port channel. The port channel must be specified in accordance with the port channel configured in the switch. (Range: 1-32)
<b>vlan</b> <i>vlan-number</i>	(Optional) Clears the entries from the specified VLAN. The VLAN must be specified in accordance with the VLAN configured in the switch. (Range: 1-4094)
<b>mrouter</b>	Deletes multicast routers entries.
<b>multicast</b>	Deletes multicast entries.
<b>unicast</b>	Deletes unicast entries.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to clear specific port multicast entries from MAC address table.

```
DmSwitch#clear mac-address-table ethernet 20 multicast
DmSwitch#
```

You can verify that the information was deleted by entering the **show mac-address-table multicast** privileged EXEC command.

## Related Commands

Command	Description
<b>show mac-address-table</b>	Shows the MAC address table.
<b>show mac-address-table multicast</b>	Shows known multicast addresses.

# clear meter

**clear meter** [ *meter-number* ]

## Description

Clears the packet counters of the meter.

## Syntax

Parameter	Description
<i>meter-number</i>	(Optional) Clears the packet counters of a specified meter. (Range: 1-63)

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
---------	--------------

4.0	This command was introduced. Before this was called <b>clear meters</b> .
-----	---

## Usage Guidelines

Not available.

## Example

This example shows how to clear the counters of meter 3.

```
DmSwitch#clear meter 3
DmSwitch#
```

## Related Commands

No related command.

# clear spanning-tree counters

```
clear spanning-tree counters [ ethernet { all | [ unit-number / ] port-number | range {  
[ first-unit-number / ] first-port-number [ last-unit-number / ] last-port-number } } | instance instance-  
index | port-channel channel-group-number ]
```

## Description

Clears the spanning-tree counters for a specific instance, for specific interfaces or for all instances and interfaces.

## Syntax

Parameter	Description
<b>ethernet</b>	(Optional) Clears Ethernet port(s).
<b>all</b>	Clears the per-interface counters for all Ethernet ports on all instances.
[ <i>unit-number</i> / ] <i>port-number</i>	Clears the per-interface counters for a specific unit and port on all instances.
<b>range</b> { [ <i>first-unit-number</i> / ] <i>first-port-number</i> [ <i>last-unit-number</i> / ] <i>last-port-number</i>	Clears the per-interface counters for a range of specific units and ports on all instances.
<b>instance</b> <i>instance-index</i>	(Optional) Clears the instance global counters and the instance per-interface counters on all interfaces for a specific instance . (Range: 0-15)
<b>port-channel</b> <i>channel-group-number</i>	(Optional) Clears the per-interface counters for a specific port channel on all instances. The port channel must be specified in accordance with the port channel configured in the switch. (Range: 1-32)

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

The spanning-tree counters exist on a per instance basis (such as the topology changes counter) or on a per instance and interface basis (such as the transmitted and received BPDUs counters). Instance counters are cleared



when a specific instance or all instances are specified. Interface counters are cleared when a specific interface, a specific instance or all instances are specified.

## Example

This example shows how to clear the spanning-tree counters for instance 1.

```
DmSwitch#clear spanning-tree counters instance 1
DmSwitch#
```

You can verify that the counters were cleared by entering the **show spanning-tree instance** privileged EXEC command.

## Related Commands

Command	Description
<b>spanning-tree instance</b>	Configures an Ethernet interface in a Spanning-Tree instance.
<b>show spanning-tree</b>	Shows spanning-tree configuration and status.

# clear spanning-tree detected-protocols

```
clear spanning-tree detected-protocols [ ethernet { all | [ unit-number/ ] port-number | range { [ first-unit-number/ ] first-port-number [ last-unit-number/ ] last-port-number } } | port-channel channel-group-number ]
```

## Description

Restarts the spanning-tree protocol migration mechanism for specific interfaces or for all interfaces.

## Syntax

Parameter	Description
<b>ethernet</b>	(Optional) Resets Ethernet port(s).
<b>all</b>	Restarts for all Ethernet ports.
[ <i>unit-number/</i> ] <i>port-number</i>	Restarts for a specific unit and port.
<b>range</b> { [ <i>first-unit-number/</i> ] <i>first-port-number</i> [ <i>last-unit-number/</i> ] <i>last-port-number</i> }	Restarts for a range of specific units and ports.
<b>port-channel</b> <i>channel-group-number</i>	(Optional) Restarts for a specific port-channel. The port channel must be specified in accordance with the port channel configured in the switch. (Range: 1-32)

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

When using the RSTP or MSTP modes for spanning-tree the equipment can enter a compatibility mode in order to interoperate with bridges using the original Spanning-Tree Protocol (802.1D). This is a per-interface process that occurs based on the type of received BPDUs.

However, those newer protocols do not implement a mechanism to automatically exit the compatibility mode. You must use this command when that is needed, which will occur when a connected bridge changes its spanning-tree mode from STP to a newer protocol version.

## Example

This example shows how to reset the detected protocol version for interface ethernet 1/1.

```
DmSwitch#clear spanning-tree detected-protocols ethernet 1/1
DmSwitch#
```

You can verify that the detected version was reset by entering the **show spanning-tree instance interface** privileged EXEC command.

## Related Commands

Command	Description
<b>spanning-tree mode</b>	Configures the spanning-tree mode.
<b>show spanning-tree</b>	Shows spanning-tree configuration and status.

# clear statistics

**clear statistics** [ **ethernet** [ *unit-number/* ] *port-number* | **port-channel** *channel-group-number* ]

## Description

Deletes transmit and receive statistics from all ports, or from an specific port or port-channel.

## Syntax

Parameter	Description
<b>ethernet</b> [ <i>unit-number/</i> ] <i>port-number</i>	(Optional) Clears the entries from the specified unit and port.
<b>port-channel</b> <i>channel-group-number</i>	(Optional) Clears the entries from the specified port channel. The port channel must be specified in accordance with the port channel configured in the switch. (Range: 1-32)

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
5.0	This command was introduced. It replaces the command <b>clear counters</b> .

## Usage Guidelines

Not available.

## Example

This example shows how to delete transmit and receive statistics from a specific port.

```
DmSwitch#clear statistics ethernet 1
DmSwitch#
```

You can verify that the information was deleted by entering the **show interface counters** privileged EXEC command.

## Related Commands

Command	Description
<code>show interfaces counters</code>	Shows the interface counters information.

# clock set

**clock set** { *time day month year* }

## Description

Configures the system date and time.

## Syntax

Parameter	Description
<i>time</i>	Specifies the time in hh:mm:ss format. (Range: 0-23/0-59/0-59)
<i>day</i>	Specifies the day of month. (Range: 1-31)
<i>month</i>	Specifies the month of year. (Range: 1-12)
<i>year</i>	Specifies the year. (Range: 1970-2037)

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to set the system time and date.

```
DmSwitch#clock set 10:00:00 10 12 2030
DmSwitch#
```

This configuration can be verified by entering the **show clock** user EXEC command.

## Related Commands

Command	Description
<code>clock timezone</code>	Specifies the timezone.
<code>show clock</code>	Shows the system clock and timezone.
<code>show uptime</code>	Shows the system clock, system uptime and load average.

# configure

## configure

### Description

Enables the global configuration mode.

### Syntax

No parameter accepted.

### Default

No default is defined.

### Command Modes

Privileged EXEC.

### Command History

Release	Modification
3.1	This command was introduced.

### Usage Guidelines

Not available.

### Example

This example shows how to enable the global configuration mode.

```
DmSwitch#configure
DmSwitch(config)#
```

### Related Commands

No related command.



# copy

```
copy default-config { flash-config index [ name ] | running-config |  
startup-config [ index [ name ] ] }
```

```
copy flash-config index { flash-config index [ name ] | running-config | tftp ip-  
address [ filename ] }
```

```
copy profile-config metro { flash-config index [ name ] | running-config |  
startup-config [ index [ name ] ] }
```

```
copy running-config { flash-config index [ name ] | startup-config [ index [ name ] ] |  
tftp ip-address [ filename ] }
```

```
copy startup-config { flash-config index [ name ] | running-config | tftp ip-address  
[ filename ] }
```

```
copy tftp ip-address filename { firmware [ unit { unit-number | range first-unit-number last-  
unit-number } ] | flash-config index | running-config | startup-config [ index ] }
```

## Description

Copies an equipment configuration or firmware from an origin to a destination.

## Syntax

Parameter	Description
<b>default-config</b>	Default configuration of DmSwitch.
<b>flash-config</b> <i>index</i>	Specifies a flash configuration memory position. (Range: 1-4)
<b>profile-config</b> <b>metro</b>	Specifies predefined DmSwitch profile configuration.
<b>running-config</b>	Current configuration running in DmSwitch.
<b>startup-config</b>	Configuration in the flash memory that is set as startup.
<b>tftp</b> <i>ip-address filename</i>	Specifies the server where the configuration or firmware will be captured/sent and its filename.
<b>tftp</b> <i>ip-address</i>	Specifies the server where the configuration will be captured. Since the filename is not specified, when sending a flash-config/startup-config the filename is the name of the configuration, or <Hostname>_<FlashIndex>" if the configuration has no name. The filename is "running" when sending running-config.
<b>firmware</b>	Indicates that the transferred file must be saved as a firmware. This new firmware will be saved in a position other than the one that has the running firmware.

Parameter	Description
<i>name</i>	(Optional) When you save a configuration to a flash position, you can specify a name for the configuration.
<i>filename</i>	(Optional) When you save a configuration to a file using tftp , you can specify a filename.
<i>unit-number</i>	(Optional) Specifies the unit where the transferred file must be saved as a firmware.
<b>range</b> <i>first-unit-number last-unit-number</i>	(Optional) Specifies a range of units where the transferred file must be saved as a firmware.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

It is not possible copy a configuration to a **profile-config** or to the **default-config**.

If you specify **startup-config** as the destination of the copy command and you do not specify a flash configuration memory position, the configuration will be saved in the flash configuration memory position that is marked as startup, keeping the same name. When you execute the same command and specify a memory position, it will be copied and marked as startup, and you will be able to optionally set a name.

If you copy a configuration from TFTP server to DmSwitch, the name of the configuration can not be specified. It will use the same name of the file that is being copied.

When you copy a firmware from TFTP server to DmSwitch, you will only have to specified the name of the file to be transferred. Then, looking at the installed firmware, you will only be able to see their versions.

Before using a TFTP Server, it is necessary to configure the switch IP parameters.

DmSwitch has two firmware positions in memory. When you copy a new firmware from TFTP Server, it will be copied to the position that is not the running one. If there is a firmware in that position, it will be overwritten.

The currently available predefined profile is: **metro** (configurations to be used with Metropolitan Area Networks).

## Examples

This first example shows how to copy the running-config to configuration 4 in flash memory, setting it as startup configuration.

```
DmSwitch#copy running-config startup-config 4 example_name
Saving configuration in flash 4...
Done.
Setting startup-config to 4.
DmSwitch#
```

You can verify the configurations of flash and firmware by entering the **show flash** privileged EXEC command.

This second example shows how to copy the new firmware from TFTP Server to DmSwitch.

```
DmSwitch#copy tftp 10.10.10.20 DmSwitch.im firmware
Fetching image...
Image size is 7510432 bytes.
Checking image...
Image is ok.
Erasing firmware 1...
Writing image to firmware 1...
Progress: 7510432 bytes (100%) written...
Done.
Use the "reboot" command to run the new firmware.
DmSwitch#
```

You can verify the configurations of firmware by entering the **show firmware** privileged EXEC command.

## Related Commands

Command	Description
<b>diff</b>	Compares and shows the differences between two configurations.
<b>erase</b>	Erases spare firmware or configuration position.
<b>select</b>	Selects the startup firmware and flash for the next reboot.
<b>show firmware</b>	Shows firmware information.
<b>show flash</b>	Shows flash information.
<b>show flash-config</b>	Shows the configuration stored in a specific flash position.
<b>show running-config</b>	Shows the current operating configuration.
<b>show startup-config</b>	Shows the startup flash configuration.

# debug

```
debug { all | arp | bgp | eaps | gvrp | icmp | lacp | link | ospf | rip | stp | vrrp }
```

```
no debug { all | arp | bgp | eaps | gvrp | icmp | lacp | link | ospf | rip | stp | vrrp }
```

## Description

Enables the printing of debug messages related to the selected option.

Inserting **no** as a prefix for this command, it will disable debugging for the specified feature inserted as a parameter.

## Syntax

Parameter	Description
<b>all</b>	Enables debug messages for all possible options of this command.
<b>arp</b>	Enables debug messages for ARP.
<b>bgp</b>	Enables debug messages for BGP.
<b>eaps</b>	Enables debug messages for EAPS.
<b>gvrp</b>	Enables debug messages for GVRP.
<b>icmp</b>	Enables debug messages for ICMP.
<b>lacp</b>	Enables debug messages for LACP.
<b>link</b>	Enables debug messages for link state changes on interfaces.
<b>ospf</b>	Enables debug messages for OSPF.
<b>rip</b>	Enables debug messages for RIP.
<b>stp</b>	Enables debug messages for STP.
<b>vrrp</b>	Enables debug messages for VRRP.

## Default

No default is defined.

## Command Availability

RIP and OSPF debugs are only on models with Layer 3 functionality.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.
4.0	Debugging messages were added for: ARP, GVRP, ICMP, OSPF and RIP.
5.0	Debugging messages were added for: VRRP.

## Usage Guidelines

This command enables the printing of debug messages in the current session of the command-line interface. Messages are generated for relevant events from each feature that has debugging enabled.

This is a per-session option, not shared nor stored across sessions.

## Example

This example shows how to enable the printing of debug messages for STP.

```
DmSwitch#debug stp
DmSwitch#
```

You can verify that the option is enabled by entering the **show debugging** user EXEC command.

## Related Commands

Command	Description
<b>show debugging</b>	Shows the current debugging status.

# diff

```
diff { default-config } { default-config | flash-config index | running-config |  
startup-config | profile-config metro }
```

```
diff { flash-config index } { default-config | flash-config index | running-config  
| startup-config | profile-config metro }
```

```
diff { running-config } { default-config | flash-config index | running-config |  
startup-config | profile-config metro }
```

```
diff { startup-config } { default-config | flash-config index | running-config |  
startup-config | profile-config metro }
```

```
diff { profile-config metro } { default-config | flash-config index |  
running-config | startup-config | profile-config metro }
```

## Description

Compares and shows the differences between two configurations saved in flash memory.

## Syntax

Parameter	Description
<b>default-config</b>	Default configuration of DmSwitch.
<b>flash-config <i>index</i></b>	Specifies a flash configuration memory position. (Range: 1-4)
<b>profile-config metro</b>	Specifies predefined DmSwitch profile configuration.
<b>running-config</b>	Currently configuration running in DmSwitch.
<b>startup-config</b>	Configuration in the flash memory that is set as startup.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

The difference output shows three lines of unified context.

## Example

This example illustrates how to compare a supposed running-config with default-config.

```
DmSwitch#diff running-config default-config
@@ -15,7 +15,7 @@
!
interface vlan 1
    name DefaultVlan
- ip address 10.10.10.10/24
+ ip address 192.168.0.25/24
    set-member untagged ethernet all
!
spanning-tree 1
DmSwitch#
```

## Related Commands

Command	Description
<b>copy</b>	Copies configuration and firmware.
<b>erase</b>	Erases spare firmware or configuration position.
<b>select</b>	Selects the startup firmware and flash for the next reboot.
<b>show flash</b>	Shows flash information.
<b>show flash-config</b>	Shows the configuration stored in a specific flash position.
<b>show running-config</b>	Shows the current operating configuration.
<b>show startup-config</b>	Shows the startup flash configuration.

# erase

**erase** { **firmware** *index* | **flash-config** *index* }

## Description

Erases spare firmware or configuration position.

## Syntax

Parameter	Description
<b>firmware</b> <i>index</i>	Erases the specified firmware. (Range: 1-2)
<b>flash-config</b> <i>index</i>	Erases the specified configuration. (Range: 1-4)

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to erase a configuration and the spare firmware.

```
DmSwitch#erase flash-config 1
DmSwitch#erase firmware 1
DmSwitch#
```

You can verify that both memory positions were cleared by entering the **show flash** privileged EXEC command.

## Related Commands

Command	Description
---------	-------------



Command	Description
<b>copy</b>	Copies configuration and firmware.
<b>diff</b>	Compares and shows the differences between two configurations.
<b>select</b>	Selects the startup firmware and flash for the next reboot.
<b>show firmware</b>	Shows firmware information.
<b>show flash</b>	Shows flash information.
<b>show flash-config</b>	Shows the configuration stored in a specific flash position.
<b>show startup-config</b>	Shows the startup flash configuration.

# exit

**exit**

## Description

Exits the current command-line interface session. This command is also used to return to higher levels in the configuration tree.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

All modes.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

You can also return to higher levels in the configuration tree issuing **Ctrl+d**, or go directly to the command-line interface root with **Ctrl+z**.

## Example

This example shows how to use the exit in the two cases where it can be applied: go to higher levels in the configuration tree and logout the command-line interface.

```
DmSwitch#configure
DmSwitch(config)#interface vlan 1
DmSwitch(config-if-vlan-1)#exit
DmSwitch(config)#exit
DmSwitch#exit

DmSwitch login:
```

## Related Commands

No related command.

# help

## help

### Description

Returns a description of the interactive help system.

### Syntax

No parameter accepted.

### Default

No default is defined.

### Command Modes

All modes.

### Command History

Release	Modification
3.1	This command was introduced.

### Usage Guidelines

Not available.

### Example

This example shows how to access help.

```
DmSwitch#help
Help may be requested at any point in a command by entering
a question mark '?'. If nothing matches, the help list will
be empty and you must backup until entering a '?' shows the
available options.
Two styles of help are provided:
1. Full help is available when you are ready to enter a
   command argument (e.g. 'show ?') and describes each possible
   argument.
2. Partial help is provided when an abbreviated argument is entered
   and you want to know what arguments match the input
   (e.g. 'show pr?'.)

DmSwitch#
```

## **Related Commands**

No related command.

# light unit

**light unit** [ *unit-number* ]

## Description

Displays the unit number of the DmSwitch in a stack.

## Syntax

Parameter	Description
<i>unit-number</i>	(Optional) Displays on frontal lights which DmSwitch in a stack is the specified unit.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Specifying no unit, it will light all units number in stack.

## Example

This example shows how to display on frontal lights which DmSwitch is the unit 1 of a stack.

```
DmSwitch#show light unit 1
DmSwitch#
```

## Related Commands

No related command.

# ping

**ping** { *destination-host* [ **count** *count-value* ] [ **size** *size-value* ] }

## Description

Sends ICMP echo messages.

## Syntax

Parameter	Description
<i>destination-host</i>	Specifies the IP address or hostname of the destination host.
<b>count</b> <i>count-value</i>	(Optional) Replies attempts. (Range: 1-1000000).
<b>size</b> <i>size-value</i>	(Optional) ICMP datagram size (in bytes). (Range: 0-65468).

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

The **ping** command is used to test for connectivity to a specific host.

If a **ping** request fails, the switch continues to send **ping** messages until interrupted. Press **Ctrl+c** to interrupt a **ping** request.

You must configure DNS in order to use a hostname in the *destination-host* field.

## Example

This example shows how to send ICMP echo messages to a remote IP device.

```
DmSwitch#ping 192.168.0.1
PING 192.168.0.1 (192.168.0.1): 56 data bytes
64 bytes from 192.168.0.1: icmp_seq=0 ttl=64 time=2.1 ms
64 bytes from 192.168.0.1: icmp_seq=1 ttl=64 time=2.1 ms
64 bytes from 192.168.0.1: icmp_seq=2 ttl=64 time=2.0 ms
64 bytes from 192.168.0.1: icmp_seq=3 ttl=64 time=2.0 ms

--- 192.168.0.1 ping statistics ---
4 packets transmitted, 4 packets received, 0% packet loss
round-trip min/avg/max = 2.0/2.0/2.1 ms
DmSwitch#
```

## Related Commands

No related command.

# reboot

**reboot** [ **ports-up** | **in minutes** | **cancel** ]

## Description

Reboots the switch.

## Syntax

Parameter	Description
<b>ports-up</b>	(Optional) Reboot with protocols down and ports up.
<b>in minutes</b>	(Optional) Reboot after a time interval in minutes. (Range: 1-60)
<b>cancel</b>	(Optional) Cancel a scheduled reboot.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Using **reboot** without any parameters will make the switch reboot with protocols and ports down.

## Example

This example shows how to reboot the switch.

```
DmSwitch#reboot
System will be restarted. Continue? <y/N> y
```

## Related Commands

No related command.



# select

```
select { firmware firmware-index [ unit unit-number ] | startup-config { index | default } }
```

## Description

Selects the startup firmware and flash for the next reboot.

## Syntax

Parameter	Description
<b>firmware</b> <i>firmware-index</i>	Indicates the firmware to be marked as startup for the next reboot of DmSwitch. (Range: 1-2)
<b>unit</b> <i>unit-number</i>	(Optional) Indicates the unit where the firmware is to be marked as startup.
<b>startup-config</b>	Configuration in the flash memory that will be set as startup.
<i>index</i>	Specifies the position of configuration in flash memory that will be marked as startup. (Range: 1-4)
<b>default</b>	Specifies that the default configuration will be the startup configuration.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to mark configuration 1 in flash memory as startup.

```
DmSwitch#select startup-config 1
DmSwitch#
```

You can verify that the specified configuration was set as startup by entering the **show flash** privileged EXEC command.

## Related Commands

Command	Description
<b>copy</b>	Copies configuration and firmware.
<b>diff</b>	Compares and shows the differences between two configurations.
<b>erase</b>	Erases spare firmware or configuration position.
<b>show firmware</b>	Shows firmware information.
<b>show flash</b>	Shows flash information.
<b>show flash-config</b>	Shows the configuration stored in a specific flash position.
<b>show startup-config</b>	Shows the startup flash configuration.

# show authentication

`show authentication [ | { begin | exclude | include } expression ]`

## Description

Shows information about login authentication method and its precedence.

## Syntax

Parameter	Description
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
5.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show information about login authentication method and its precedence.

```
DmSwitch#show authentication
Login authentication method by precedence:
    (1) Local database
    (2) RADIUS server
    (3) TACACS server

DmSwitch#
```

## Related Commands

Command	Description
<code>authentication login</code>	Defines the login authentication method and its precedence.
<code>tacacs-server host</code>	Configures the TACACS server IP address.
<code>tacacs-server key</code>	Configures the TACACS server key string.
<code>tacacs-server port</code>	Configures the TACACS server port.
<code>radius-server acct-port</code>	Configures the default RADIUS server accounting port.
<code>radius-server auth-port</code>	Configures the default RADIUS server authentication port.
<code>radius-server host</code>	Configures a specific RADIUS server.
<code>radius-server key</code>	Configures the default RADIUS server key string.
<code>radius-server retries</code>	Configures the RADIUS server retries.
<code>radius-server timeout</code>	Configures the RADIUS server timeout.
<code>show radius-server</code>	Shows RADIUS server information.
<code>show running-config</code>	Shows the current operating configuration.
<code>show tacacs-server</code>	Shows TACACS server information.

# show batch

**show batch** [ | { **begin** | **exclude** | **include** } *expression* ]

## Description

Shows the existing batch files and their contents.

## Syntax

Parameter	Description
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

With this command show, you can also see the batch file execution schedule.

## Example

This example illustrates how to show the batch file.

```
DmSwitch#show batch
Batch 1: enable
Date      : min 0 hour 7 day-of-month all month all day-of-week 6
Commands List:
            configure
            interface vlan 2
            ip address 10.11.13.13/24
            exit
```

DmSwitch#

## Related Commands

Command	Description
<b>batch index date</b>	Schedules the execution of batch file.
<b>batch index disable</b>	Disables the batch file execution.
<b>batch index enable</b>	Enables the batch file execution in accordance with its schedules.
<b>batch index remark</b>	Specifies a remark for a batch file.
<b>batch index start-session</b>	Starts a batch file session where all sequence of 'executed' commands are saved.
<b>batch new</b>	Creates a new batch file.
<b>batch term-session</b>	Finishes a batch file session that was previously started to save all sequence of 'executed' commands.

# show bridge-ext

**show bridge-ext**

## Description

Shows bridge extension information.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the bridge extension information.

```
DmSwitch#show bridge-ext
Global GVRP status:          Disabled
DmSwitch#
```

## Related Commands

No related command.

# show cable-diagnostics

```
show cable-diagnostics [[ ethernet [ unit-number/ ] port-number ] | [ { begin | exclude  
| include } expression ] ]
```

## Description

Performs a cable diagnostics.

## Syntax

Parameter	Description
<b>ethernet</b> [ <i>unit-number/</i> ] <i>port-number</i>	(Optional) Shows the diagnostics filtering by a specific unit and port.
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show cable diagnostics for all units and ports.

```
DmSwitch#show cable-diagnostics  
DmSwitch#
```



## **Related Commands**

No related command.

# show clock

**show clock**

## Description

Shows the system clock and timezone.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the system clock and timezone.

```
DmSwitch#show clock
Wed Aug  9 12:42:27 2006
Timezone is BRA -0300
DmSwitch#
```

## Related Commands

Command	Description
<b>clock set</b>	Configures the system date and time.
<b>clock timezone</b>	Specifies the timezone.
<b>show uptime</b>	Shows the system clock, system uptime and load average.

# show counter

```
show counter [ id { id } | filter { filter-id } | sort remark [ | { begin | exclude | include } expression ] ]
```

## Description

Shows counters values and configurations.

## Syntax

Parameter	Description
<b>id</b> <i>id</i>	(Optional) Specifies the counter by ID.
<b>filter</b> <i>filter-id</i>	(Optional) Specifies the counter by filter ID.
<b>sort</b>	(Optional) Sorting method.
<b>remark</b>	Sort by remark.
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the counters values and configuration

```
DmSwitch(config)#show counter
```

```
=====
COUNTER                                FILTER      COUNTER VALUE
=====
    1 (icmp_packets)                   1          271057
DmSwitch#
```

## Related Commands

Command	Description
<b>counter</b>	Configures a counter to be used by a filter
<b>clear counter</b>	Clears filter counters.
<b>filter</b>	Creates or configures a traffic filter

# show cpu

```
show cpu { arp-table [ | { begin | exclude | include } expression ] | memory | packets  
[ | { begin | exclude | include } expression ] | usage [ | { begin | exclude | include }  
expression ] }
```

## Description

Shows CPU information related to processing, memory and networking.

## Syntax

Parameter	Description
<b>arp-table</b>	Shows the ARP table from CPU.
<b>memory</b>	Shows CPU RAM information.
<b>packets</b>	Shows CPU network traffic information.
<b>usage</b>	Shows CPU processing and tasks information.
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
4.0	This command was introduced. It includes two removed commands: <b>show cpu-usage</b> and <b>show memory</b> .
4.1	It was appended the removed command <b>show arp-table</b> .

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the ARP table.

```
DmSwitch#show cpu arp-table
IP Address      MAC address      VLAN
-----
10.11.12.13     00:15:F2:59:B1:07  1
DmSwitch#
```

This example illustrates how to show CPU memory information.

```
DmSwitch#show cpu memory
Processor Memory Information:

Total: 62848 kB
Free : 27524 kB

DmSwitch#
```

This example illustrates how to show CPU network traffic information.

```
DmSwitch#show cpu packets
CPU Received Packets:
-----
802.1X:          1
ARP:             489
EAPS:            0
GVRP:            0
IGMP:            0
IPv4:            610
L2 Protocol Tunnelling: 0
L2 Unknown Source: 0
LACP:            0
Loopback Detection: 6112
OAM:             0
PVST:            0
Slow Protocols:  0
STP:             3046
VTP:             0
DmSwitch#
```

This example illustrates how to show the CPU utilization.

```
DmSwitch#show cpu usage

(STATUS: S=sleeping R=running W=waiting)

                                %CPU
                                5Sec  1Min  5Min
CPU TOTAL USAGE:                12.52  11.02  10.86

PID   PROCESS      STATUS    5Sec  1Min  5Min
75    traps          S         3.13  0.54  0.53
90    12_shadow       S         2.94  4.13  4.19
91    counter        S         2.35  1.97  1.98
109   cpu_monitor    R         1.96  2.07  2.04
101   dot1xd         S         0.98  0.99  1.01
102   rmon           S         0.98  0.73  0.74
99    xstp           S         0.20  0.10  0.07
```

```
98      RX      S      0.00    0.21    0.14
88      interrupt S      0.00    0.11    0.06
111     rx_pkt   S      0.00    0.05    0.03
97      TX      S      0.00    0.02    0.02

...

DmSwitch#
```

**Related Commands**

Command	Description
<code>cpu-dos-protect</code>	Limits the packet rate that is processed by CPU.
<code>show uptime</code>	Shows the system clock, system uptime and load average.

# show cpu-dos-protect

`show cpu-dos-protect`

## Description

Shows the CPU denial of service protection information.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
5.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the CPU denial of service protection information.

```
DmSwitch#show cpu-dos-protect
CPU dos protect rate limit: 1000 Packets per second

DmSwitch#
```

## Related Commands

Command	Description
<code>cpu-dos-protect</code>	Limits the packet rate that is processed by CPU.



# show debugging

**show debugging**

## Description

Shows the current debugging status.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the process debugging status.

```
DmSwitch#show debugging
STP debugging status: disabled
LACP debugging status: disabled
Link debugging status: disabled
EAPS debugging status: disabled

DmSwitch#
```

## Related Commands

Command	Description
debug	Enables the printing of debug messages.

# show dot1x

**show dot1x** [ | { **begin** | **exclude** | **include** } *expression* ]

## Description

Shows 802.1X information.

## Syntax

Parameter	Description
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

This command shows the 802.1X global status, the port access mode for clients, the supplicant MAC address, uptime, timeout and the authorization status for the port.

## Example

This example illustrates how to show the 802.1X information.

```
DmSwitch#show dot1x
Global 802.1X status: enabled.
```

Port	Mode	Authorized	Supplicant	Uptime	Timeout
1/1	force-auth	n/a	none	n/a	n/a
1/2	auto	no	00:04:DF:00:02:6E	n/a	n/a
1/3	force-auth	n/a	none	n/a	n/a

```
1/4    force-auth    n/a      none      n/a      n/a
1/5    force-auth    n/a      none      n/a      n/a

(...)
DmSwitch#
```

## Related Commands

Command	Description
<b>dot1x</b>	Configures global options for 802.1X.
<b>dot1x max-req</b>	Sets the maximum EAP request/identity packet retransmissions.
<b>dot1x port-control</b>	Sets the dot1x mode on a port interface.
<b>dot1x re-authentication</b>	Enables or disables periodic re-authentication.
<b>dot1x timeout</b>	Defines dot1x timeout values.

# show eaps

**show eaps** [ **detail** | **id domain** ] [ | { **begin** | **exclude** | **include** } *expression* ]

## Description

Shows EAPS settings.

## Syntax

Parameter	Description
<b>detail</b>	(Optional) Shows more details of EAPS settings.
<b>id domain</b>	(Optional) Shows only the EAPS settings from the specified domain.
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.
5.0	A specific domain is no longer referenced by name, but by id.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the EAPS settings from the domain 1.

```
DmSwitch#show eaps id 1
Domain ID:                1
```

```

Domain Name:          test
State:                Links-Up
Mode:                 Transit
Hello Timer interval: 1 sec
Fail Timer interval:  3 sec
Pre-forwarding Timer: 6 sec (learned)      Remaining:  0 sec
Last update from:     (none)
Primary port:          Eth1/25              Port status: Up
Secondary port:        Eth1/26              Port status: Blocked
Control VLAN ID:       101
Protected VLAN group IDs: 1

DmSwitch#

```

## Related Commands

Command	Description
<b>eaps domain</b>	Creates a new EAPS domain.
<b>eaps domain control-vlan</b>	Configures the control VLAN for the EAPS domain.
<b>eaps domain failtime</b>	Defines the interval time that the secondary port of DmSwitch master in a EAPS ring waits without receiving the two hello packets before changing the status of EAPS ring to fail.
<b>eaps domain hellotime</b>	Defines the interval between the sending of two hello packets.
<b>eaps domain mode</b>	Configures the mode of DmSwitch in EAPS domain.
<b>eaps domain name</b>	Renames the domain.
<b>eaps domain port</b>	Defines both primary and secondary ports of DmSwitch in EAPS ring.
<b>eaps domain protected-vlans</b>	Defines the VLAN groups that will be protected by EAPS ring.
<b>show running-config</b>	Shows the current operating configuration.

# show filter

```
show filter [ action-type { counter | monitor | qos | security | vlan } | id { filter-id } | { ingress ethernet [ unit-number/ ] port-number } | meter { meter-id } | sort remark | state { disabled | enabled } ] [ | { begin | exclude | include } expression ]
```

## Description

Shows filters information.

## Syntax

Parameter	Description
<b>action-type</b>	(Optional) Filters by an action type.
<b>counter</b>	(Optional) Shows filters with counter actions.
<b>monitor</b>	(Optional) Shows filters with monitoring actions.
<b>qos</b>	(Optional) Shows filters with QoS actions.
<b>security</b>	(Optional) Shows filters with security actions.
<b>vlan</b>	(Optional) Shows filters with VLAN actions.
<b>id</b> <i>filter-id</i>	(Optional) Specifies the filter ID.
<b>ingress ethernet</b> [ <i>unit-number/</i> ] <i>port-number</i>	(Optional) Filters by an ingress port.
<b>meter</b> <i>meter-id</i>	(Optional) Filters by an meter ID.
<b>state</b>	(Optional) Filters by state.
<b>disabled</b>	Shows disabled filters.
<b>enabled</b>	Shows enabled filters.
<b>sort remark</b>	(Optional) Sorts by filter remark.
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the filters configuration.

```
DmSwitch#show filter
Filter 1: enabled, priority 8
  Actions:    permit
  Matches:    All packets
  Ingress:    Eth1/20

Filter 2: enabled, priority 10
  Actions:    deny
  Matches:    destination-ip host 10.10.10.80
  Ingress:

Filter 3: enabled, priority
  Actions:    monitor
  Matches:    vlan 2
  Ingress:

DmSwitch#
```

## Related Commands

Command	Description
<b>meter</b>	Configures a meter to be used by a filter
<b>filter</b>	Creates or configures a traffic filter

# show firmware

**show firmware** [ **unit** *unit-number* ]

## Description

Shows firmware information.

## Syntax

No parameter accepted.

Parameter	Description
<b>unit</b> <i>unit-number</i>	(Optional) Indicates the unit for which the firmware information will be shown.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

This command shows the firmware(s) image(s) information stored in the DmSwitch.

## Example

This example illustrates how to show the firmware information.

```
DmSwitch#show firmware
Running firmware:
  Firmware version: 3.1
  Stack version:    1
  Compile date:     Wed Jun  7 14:29:23 UTC 2006

Flash firmware:
  ID  Version          Date              Flag  Size
  1   3.1              07/06/2006 14:29:30  RS   7510368
```



```
2    3.0                                08/05/2006 20:47:21    7420088

Flags:
  R - Running firmware.
  S - To be used upon next startup.
  E - Empty/Error

DmSwitch#
```

## Related Commands

Command	Description
<b>copy</b>	Copies configuration and firmware.
<b>erase</b>	Erases spare firmware or configuration position.
<b>select</b>	Selects the startup firmware and flash for the next reboot.
<b>show flash</b>	Shows flash information.

# show flash-config

```
show flash-config { index } [ | { begin | exclude | include } expression ]
```

## Description

Shows the configuration stored in a specific flash position.

## Syntax

Parameter	Description
<i>index</i>	Specifies a flash configuration memory position. (Range: 1-4)
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

This command shows the stored configuration in a specific flash memory position. It also shows the configuration in the same structure that the information presented in the **show running-config** command.

## Example

This example illustrates how to show the flash configuration from the flash 4.

```
DmSwitch#show flash-config 4
Building configuration...
!
hostname DmSwitchTest
```

```

!
username admin access-level 15
username admin password 7 d033e22ae348aeb5660fc2140aec35850c4da997
username guest access-level 0
username guest password 7 35675e68f4b5af7b995d9205ad0fc43842f16450
!
ip telnet server
ip http server
ip http secure-server
no ip ssh server
!
ip snmp-server community public ro
!
interface vlan 1
 name VLAN_Test
 ip address 192.168.110.1/24
 set-member untagged ethernet all
!
spanning-tree 1
spanning-tree 1 vlan all
!
DmSwitch#

```

## Related Commands

Command	Description
<b>copy</b>	Copies configuration and firmware.
<b>diff</b>	Compares and shows the differences between two configurations.
<b>erase</b>	Erases spare firmware or configuration position.
<b>select</b>	Selects the startup firmware and flash for the next reboot.
<b>show flash</b>	Shows flash information.
<b>show running-config</b>	Shows the current operating configuration.
<b>show startup-config</b>	Shows the startup flash configuration.

# show flash

```
show flash [ | { begin | exclude | include } expression ]
```

## Description

Shows flash information.

## Syntax

Parameter	Description
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

This command shows the firmware(s) image(s) and the flash positions information stored in the DmSwitch.

## Example

This example illustrates how to show the flash information.

```
DmSwitch#show flash
```

```
BootLoader version: 1.1.2-1
```

```
Flash firmware:
```

ID	Version	Date	Flags	Size
1	3.1	07/06/2006 14:29:30	RS	7510368
2	3.0	08/05/2006 20:47:21		7420088

```

Flash config:
  ID  Name                Date                Flags  Size
  1   EAPS                07/05/2006 19:20:35          443
  2   METRO               15/08/2006 00:17:43        3044
  3   TEST                01/03/2006 08:24:15          443
  4   DEFAULT             19/04/2006 11:03:48  S      452

Flags:
  R - Running firmware.
  S - To be used upon next startup.
  E - Empty/Error

DmSwitch#

```

## Related Commands

Command	Description
<b>copy</b>	Copies configuration and firmware.
<b>diff</b>	Compares and shows the differences between two configurations.
<b>erase</b>	Erases spare firmware or configuration position.
<b>select</b>	Selects the startup firmware and flash for the next reboot.
<b>show firmware</b>	Shows firmware information.
<b>show flash-config</b>	Shows the configuration stored in a specific flash position.
<b>show startup-config</b>	Shows the startup flash configuration.

# show garp

```
show garp { timer [ ethernet [ unit-number/ ] port-number | port-channel channel-group-number ] }
```

## Description

Shows GARP properties.

## Syntax

Parameter	Description
<b>timer</b>	Specifies the GARP timer parameters.
<b>ethernet</b> [ <i>unit-number/</i> ] <i>port-number</i>	(Optional) Shows parameters of a specific unit and port.
<b>port-channel</b> <i>channel-group-number</i>	(Optional) Shows parameters of a specific port channel. The port channel must be specified in accordance with the port channel configured in the switch. (Range: 1-32)

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the GARP time properties of a specific Ethernet port.

```
DmSwitch#show garp timer ethernet 1
Eth 1/1 GARP timer status:
  Join timer:      20
  Leave timer:     60
  Leaveall timer: 1000
DmSwitch#
```

## Related Commands

Command	Description
<code>bridge-ext gvrp</code>	Enables GVRP globally for the switch.
<code>garp timer</code>	Set values for GARP timers.
<code>show gvrp</code>	Shows GVRP configuration.
<code>show running-config</code>	Shows the current operating configuration.
<code>switchport gvrp</code>	Enables GVRP for a specific port.

# show gvrp

```
show gvrp { configuration [ ethernet [ unit-number/ ] port-number | port-channel  
channel-group-number ] [ | { begin | exclude | include } expression ] }
```

## Description

Shows GVRP configuration.

## Syntax

Parameter	Description
<b>configuration</b>	Specifies the GVRP configuration.
<b>ethernet</b> [ <i>unit-number/</i> ] <i>port-number</i>	(Optional) Shows parameters of a specific unit and port.
<b>port-channel</b> <i>channel-group-number</i>	(Optional) Shows parameters of a specific port channel. The port channel must be specified in accordance with the port channel configured in the switch. (Range: 1-32)
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the GVRP configuration of a specific Ethernet port.



```
DmSwitch#show gvrp configuration ethernet 5
Eth 1/5:
  GVRP configuration: Disabled
DmSwitch#
```

## Related Commands

Command	Description
<b>bridge-ext gvrp</b>	Enables GVRP globally for the switch.
<b>garp timer</b>	Set values for GARP timers.
<b>show garp timer</b>	Shows GARP properties.
<b>show running-config</b>	Shows the current operating configuration.
<b>switchport gvrp</b>	Enables GVRP for a specific port.

# show hardware-status

**show hardware-status**

## Description

Shows the hardware status.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

This command shows the power supply and fans status, if the alarm input and output are turned on or turned off, and if the DmSwitch has optical modules connected.

In order to alarm out some fail in the PSU, fans or any alarm input, it is necessary to enable external alarm output.

## Example

This example illustrates how to show the hardware status.

```
DmSwitch#show hardware-status
```

Unit	Power		Fans			Alarms In			Alarm Out	SFP Presence			
	1	2	1	2	3	1	2	3		25	26	27	28
1	Ok		Ok	Ok		Off	Off	Off	Off	No	Yes	No	No

```
DmSwitch#
```

## Related Commands

Command	Description
<code>external-alarm</code>	Enables the external alarm through the DB9 interface.

# show history

**show history** [ | { **begin** | **exclude** | **include** } *expression* ]

## Description

Lists the last several commands entered.

## Syntax

Parameter	Description
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
5.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to list the last commands entered:

```
DmSwitch#show history
1: configure
2: hostname SWA
3: exit
4: show history
SWA#
```

## Related Commands

No related command.

# show interfaces counters

```
show interfaces counters [ ethernet [ unit-number/ ] port-number [ detail | summary ] ]
```

```
show interfaces counters [ port-channel channel-group-number [ detail | summary ] ]
```

```
show interfaces counters [ detail ] [ | { begin | exclude | include } expression ]
```

```
show interfaces counters [ summary ] [ | { begin | exclude | include } expression ]
```

```
show interfaces counters [ | { begin | exclude | include } expression ]
```

## Description

Shows the interface counters information.

## Syntax

Parameter	Description
<b>ethernet</b> [ <i>unit-number/</i> ] <i>port-number</i>	(Optional) Shows counters of a specific unit and port.
<b>port-channel</b> <i>channel-group-number</i>	(Optional) Shows counters of a specific port channel. The port channel must be specified in accordance with the port channel configured in the switch. (Range: 1-32)
<b>detail</b>	(Optional) Shows all counters of all interfaces.
<b>summary</b>	(Optional) Shows only the iftable counters of all interfaces.
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

Summary.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the counters of a specific Ethernet port.

```
DmSwitch#show interfaces counters ethernet 1
Eth 1/1
  Octets input           : 140553
  Octets output          : 344253
  Unicast input          : 1061
  Unicast output         : 1052
  Discard input          : 0
  Discard output         : 0
  Error input            : 0
  Error output           : 0
  Unknown protos input   : 0
  QLen                   : 0
DmSwitch#
```

## Related Commands

Command	Description
<b>clear statistics</b>	Deletes transmit and receive statistics related from specific ports or port-channels.

# show interfaces status

```
show interfaces status [ ethernet [ unit-number/ ] port-number [ | { begin | exclude | include } expression ] | port-channel channel-group-number ]
```

## Description

Shows interface configuration status.

## Syntax

Parameter	Description
<b>ethernet</b> [ <i>unit-number/</i> ] <i>port-number</i>	(Optional) Shows configuration status of a specific unit and port.
<b>port-channel</b> <i>channel-group-number</i>	(Optional) Shows configuration status of a specific port channel. The port channel must be specified in accordance with the port channel configured in the switch. (Range: 1-32)
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the status configuration of a specific port.



```

DmSwitch#show interfaces status ethernet 5
Information of Eth 1/5
Basic information:
  Port type:          100TX
  MAC address:        00:04:DF:00:0C:6F
Configuration:
  Name:
  Port admin:         Up
  Speed-duplex:        Auto
  Capabilities:        10M half, 10M full, 100M half, 100M full
  Flow-control:        Disabled
  MDIX:               Auto
  LACP:               Disabled
Current status:
  Link status:         Down
DmSwitch#

```

## Related Commands

Command	Description
<b>capabilities</b>	Configures interface port capabilities for autonegotiation.
<b>flowcontrol</b>	Configures Flow Control for Ethernet interfaces.
<b>negotiation</b>	Controls autonegotiation status for an Ethernet interface.
<b>rate-limit</b>	Configures rate-limits for Ethernet interfaces.
<b>show interfaces table configuration</b>	Shows interface's configuration table.
<b>shutdown (Interface configuration)</b>	Disables an Ethernet interface.
<b>speed-duplex</b>	Configures speed and duplex operation.

# show interfaces switchport

```
show interfaces switchport [ ethernet [ unit-number/ ] port-number | port-channel  
channel-group-number ] [ | { begin | exclude | include } expression ]
```

## Description

Shows switchport information.

## Syntax

Parameter	Description
<b>ethernet</b> [ <i>unit-number/</i> ] <i>port-number</i>	(Optional) Shows switchport information of a specific unit and port.
<b>port-channel</b> <i>channel-group-number</i>	(Optional) Shows switchport information of a specific port channel. The port channel must be specified in accordance with the port channel configured in the switch. (Range: 1-32)
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the switchport information of a specific port.

```

DmSwitch#show interfaces switchport ethernet 1
Information of Eth 1/1
Broadcast threshold:      Enabled, 500 packets/second
Multicast threshold:      Enabled, 500 packets/second
Unknown-unicast threshold: Enabled, 500 packets/second
MTU:                      9198 bytes
Ingress rate limit:       Disabled
Egress rate limit:        Disabled
Ingress Rule:             Disabled
Acceptable frame type:    All frames
Native VLAN:              1
Priority for untagged traffic: 0
GVRP status:             Disabled
Protocol VLAN:
Allowed VLAN:             1(s,u)
Forbidden VLAN:
QinQ mode:               External
TPID:                    0x8100
MAC addresses maximum:    Disabled
DmSwitch#

```

## Related Commands

Command	Description
<b>mac-address-table port-maximum</b>	Sets the VLAN MAC address table maximum number of entries per port.
<b>switchport acceptable frame types</b>	Configures the type of frames accepted by the switch.
<b>switchport egress block ethernet</b>	Configures the switch to block traffic from a specified Ethernet interface to another.
<b>switchport ingress-filtering</b>	Enables ingress filtering
<b>switchport mtu</b>	Configures maximum transmission unit.
<b>switchport qinq</b>	Configures Double Tagging mode.
<b>switchport storm-control</b>	Configures packet storm control.
<b>switchport tpid</b>	Configures Tag Protocol ID for an interface.

# show interfaces table configuration

**show interfaces table configuration**

## Description

Shows interface configuration table.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

With this show command, you can see the status of ports, links, ports speed, flow control and ports default VLAN.

## Example

This example illustrates how to show the interface configuration table.

```
DmSwitch#show interfaces table configuration
Port      Port      Link      Auto      Speed      Duplex      Flow      Pvid
          State      Status    Neg      Cfg  Actual  Cfg  Actual  Ctrl
=====
1/1        ENABLE    UP        ON        100   100    AUTO  FULL    NONE    1
1/2        ENABLE    DOWN      ON        100           AUTO  HALF    NONE    1
1/3        ENABLE    DOWN      ON        100           AUTO  HALF    NONE    1
1/4        ENABLE    DOWN      ON        100           AUTO  HALF    NONE    1
1/5        ENABLE    DOWN      ON        100           AUTO  HALF    NONE    1
1/6        ENABLE    DOWN      ON        100           AUTO  HALF    NONE    1
1/7        ENABLE    DOWN      ON        100           AUTO  HALF    NONE    1
1/8        ENABLE    DOWN      ON        100           AUTO  HALF    NONE    1
1/9        ENABLE    DOWN      ON        100           AUTO  HALF    NONE    1
1/10       ENABLE    DOWN      ON        100           AUTO  HALF    NONE    1
1/11       ENABLE    DOWN      ON        100           AUTO  HALF    NONE    1
1/12       ENABLE    UP        ON        100   100    AUTO  FULL    NONE    1
1/13       ENABLE    DOWN      ON        100           AUTO  HALF    NONE    1
```

```

1/14          ENABLE  DOWN  ON    100          AUTO  HALF  NONE  1
1/15          ENABLE  DOWN  ON    100          AUTO  HALF  NONE  1
1/16          ENABLE  DOWN  ON    100          AUTO  HALF  NONE  1
1/17          ENABLE  DOWN  ON    100          AUTO  HALF  NONE  1
1/18          ENABLE  DOWN  ON    100          AUTO  HALF  NONE  1
1/19          ENABLE  DOWN  ON    100          AUTO  HALF  NONE  1
1/20          ENABLE  DOWN  ON    100          AUTO  HALF  NONE  1
1/21          ENABLE  DOWN  ON    100          AUTO  HALF  NONE  1
1/22          ENABLE  DOWN  ON    100          AUTO  HALF  NONE  1
1/23          ENABLE  DOWN  ON    100          AUTO  HALF  NONE  1
1/24          ENABLE  DOWN  ON    100          AUTO  HALF  NONE  1
1/25          ENABLE  DOWN  ON    100          AUTO  FULL  NONE  1
1/26          ENABLE  DOWN  ON    100          AUTO  FULL  NONE  1
1/27          ENABLE  DOWN  ON    100          AUTO  FULL  NONE  1
1/28          ENABLE  DOWN  ON    100          AUTO  FULL  NONE  1
=====
                                spacebar->toggle screen  ESC->exit
DmSwitch#

```

## Related Commands

Command	Description
<b>capabilities</b>	Configures interface port capabilities for autonegotiation.
<b>flowcontrol</b>	Configures Flow Control for Ethernet interfaces.
<b>negotiation</b>	Controls autonegotiation status for an Ethernet interface.
<b>rate-limit</b>	Configures rate-limits for Ethernet interfaces.
<b>show interfaces status</b>	Shows interface configuration status.
<b>shutdown (Interface configuration)</b>	Disables an Ethernet interface.
<b>speed-duplex</b>	Configures speed and duplex operation.

# show interfaces table counter

```
show interfaces table counter { total | type | error }
```

## Description

Shows interface counters table.

## Syntax

Parameter	Description
<b>total</b>	Shows the interface counter table for total packets.
<b>type</b>	Shows the interface counter table by packets types.
<b>error</b>	Shows the interface counter table for error packets.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

With this show command, you can see the transmitted and received packets and bytes, the transmitted and received discarded packets, the unicast, multicast and broadcast transmitted and received packets, the undersized and oversized packets, collisions and other counters.

## Example

This example illustrates how to show the interface counter table for all packets.

```
DmSwitch#show interfaces table counter total
Port          Tx Pkt    Tx Byte   Rx Pkt    Rx Byte   Tx      Rx
              Count     Count     Count     Count     Discards Discards
=====
1/1            38942     24308680  28163     4256626   0        3
1/2             6         432       0          0         0        0
1/3             6         432       0          0         0        0
1/4             6         432       0          0         0        0
```

```
1/5          6          432          0          0          0          0
1/6          6          432          0          0          0          0
1/7          6          432          0          0          0          0
1/8          6          432          0          0          0          0
1/9          6          432          0          0          0          0
1/10         6          432          0          0          0          0
1/11         6          432          0          0          0          0
1/12         6          432          0          0          0          0
1/12         30818       4753855    176036    34294571    0          107
1/13         6          432          0          0          0          0
1/14         6          432          0          0          0          0
1/15         6          432          0          0          0          0
1/16         6          432          0          0          0          0
1/17         6          432          0          0          0          0
1/18         6          432          0          0          0          0
1/19         6          432          0          0          0          0
1/20         6          432          0          0          0          0
1/21         6          432          0          0          0          0
1/22         6          432          0          0          0          0
1/23         6          432          0          0          0          0
1/24         6          432          0          0          0          0
1/25         6          432          0          0          0          0
1/26         6          432          0          0          0          0
1/27         6          432          0          0          0          0
1/28         6          432          0          0          0          0
1/28         3606       925654    2316    299384    0          0
=====
spacebar->toggle screen  ESC->exit
DmSwitch#
```

Related Commands

Command	Description
<code>clear statistics</code>	Deletes transmit and receive statistics related from specific ports or port-channels.

# show interfaces table queue ethernet

**show interfaces table queue ethernet** [*unit-number/* ] *port-number*

## Description

Shows counters of all queues for a specific port.

## Syntax

Parameter	Description
<b>ethernet</b> [ <i>unit-number/</i> ] <i>port-number</i>	Shows counters of all queues for a specific port.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
5.0	This command was introduced.

## Usage Guidelines

With this command, you can see the total dropped packets and the output buffer utilization percentual of all queues for a specific port. When in a stack configuration, this command is only available for the master unit.

## Example

This example illustrates how to show the queue counters of a specific port.

```
DmSwitch3000#show interfaces table queue ethernet 2
Port 2 Queue      Total Dropped Packets      Tx Buffer Utilization %
=====
1                2348472                    0.00
2                6710166                    68.09
3                 0                      0.00
4                 0                      0.00
5                 0                      0.00
6                 0                      0.00
7                 0                      0.00
8                 0                      0.00
=====
P->previous port  N->Next port  ESC->exit
```



DmSwitch3000#

## Related Commands

Command	Description
<code>show queue config</code>	Shows queue configuration per port

# show interfaces table utilization

```
show interfaces table utilization { packets | octets | bandwidth }
```

## Description

Shows the interface average utilization table.

## Syntax

Parameter	Description
<b>packets</b>	Shows the interface utilization average table by packets per second.
<b>octets</b>	Shows the interface utilization average table by octets per second.
<b>bandwidth</b>	Shows the interface utilization average table by percentual of bandwidth.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

With this show command, you can see the link status, the average and peak of transmitted and received packets per second, the average and peak of transmitted and received bytes per second, the average and peak of bandwidth utilization percentual in the data transmission and reception and the link speed.

## Example

This example illustrates how to show the interface utilization average table by bytes per second.

```
DmSwitch#show interfaces table utilization bytes
Port      Link      Receive      Peak Rx      Transmit      Peak Tx
          Status  bytes/sec    bytes/sec    bytes/sec     bytes/sec
=====
1/1       UP        0            0            0             0
```

```

1/2          DOWN          0          0          0          0
1/3          DOWN          0          0          0          0
1/4          DOWN          0          0          0          0
1/5          DOWN          0          0          0          0
1/6          DOWN          0          0          0          0
1/7          DOWN          0          0          0          0
1/8          DOWN          0          0          0          0
1/9          DOWN          0          0          0          0
1/10         DOWN          0          0          0          0
1/11         DOWN          0          0          0          0
1/12         UP           73         145        960        2823
1/13         DOWN          0          0          0          0
1/14         DOWN          0          0          0          0
1/15         DOWN          0          0          0          0
1/16         DOWN          0          0          0          0
1/17         DOWN          0          0          0          0
1/18         DOWN          0          0          0          0
1/19         DOWN          0          0          0          0
1/20         DOWN          0          0          0          0
1/21         DOWN          0          0          0          0
1/22         DOWN          0          0          0          0
1/23         DOWN          0          0          0          0
1/24         DOWN          0          0          0          0
1/25         DOWN          0          0          0          0
1/26         DOWN          0          0          0          0
1/27         DOWN          0          0          0          0
1/28         DOWN          0          0          0          0
=====
                                spacebar->toggle screen  ESC->exit
DmSwitch#

```

## Related Commands

Command	Description
<b>clear statistics</b>	Deletes transmit and receive statistics related from specific ports or port-channels.

# show ip

**show ip**

## Description

Shows the IP configuration.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

This command shows the routing status, VLANs IP, default gateway, DNS server and SSH, HTTP, Telnet and SNMP configurations.

## Example

This example illustrates how to show the IP configurations.

```
DmSwitch#show ip
IP routing is disabled

VLAN 1  10.11.12.21/24
VLAN 2  10.11.13.21/24

Default gateway: 10.11.12.13

DNS servers: 10.11.12.14 10.11.12.15

SSH Enabled
Timeout:                120
Server key size:        768
Fingerprints:
  RSA: 48:1b:d6:7c:c9:9d:41:75:1f:f7:f3:35:d8:bd:28:7d
  DSA: cf:4b:dd:ee:00:f7:9f:6e:82:e6:58:40:de:c3:04:c4
SSH connections limit: 8
```

```

HTTP:
  HTTP status:  Enable
  HTTP port:    80

secure HTTP:
  HTTPS status: Enable
  HTTPS port:   443

HTTP/HTTPS connections limit: 8

Telnet status:          Enable
Telnet connections limit: 8

SNMP status: Enable

SNMP Community:
  public(Read-Only)

Trap Manager:
  IP          COMMUNITY      VERSION
  10.1.1.10   management     2c

DmSwitch#

```

## Related Commands

Command	Description
<b>ip address</b>	Sets an IP address for the selected VLAN.
<b>ip default-gateway</b>	Configures the default gateway for DmSwitch.
<b>ip dns-server</b>	Configures the DNS servers used by DmSwitch
<b>ip http</b>	Configures the internal HTTP server for external access.
<b>ip routing</b>	Enables the IP routing.
<b>ip snmp-server</b>	Configures the internal SNMP server.
<b>ip ssh</b>	Configures the internal SSH server for external access.
<b>ip telnet</b>	Configures the internal Telnet server for external access.

# show ip default-gateway

**show ip default-gateway**

## Description

Shows the configured default gateway.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the configured default gateway.

```
DmSwitch#show ip default-gateway
Default gateway: 10.11.12.13
DmSwitch#
```

## Related Commands

Command	Description
<b>ip address</b>	Sets an IP address for the selected VLAN.
<b>ip default-gateway</b>	Configures the default gateway for DmSwitch.

# show ip dhcp

**show ip dhcp**

## Description

Shows the DHCP settings.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the DHCP settings.

```
DmSwitch3000#show ip dhcp

Global DHCP settings:
  DHCP relay:           Enabled
  DHCP option 82:       Enabled

DHCP server address:    192.168.0.254

DHCP relay enabled:     Vlan2 to Vlan5

Trusted interfaces:     Vlan2
                        Vlan4 to Vlan5

DmSwitch3000#
```

## Related Commands

Command	Description
<code>ip dhcp relay</code>	Enables DHCP relay globally.
<code>ip dhcp relay information option</code>	Enables DHCP Agent Information Option (option 82).
<code>ip dhcp relay information trusted</code>	Mark a Vlan as a trusted interface.
<code>ip dhcp relay vlan</code>	Enables DHCP relay on the selected Vlan.
<code>ip helper-address</code>	Add an address to the list of DHCP servers.



# show ip dns-servers

**show ip dns-servers**

## Description

Shows the configured DNS servers.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the configured DNS servers.

```
DmSwitch#show ip dns-servers
DNS servers: 10.11.12.14
DmSwitch#
```

## Related Commands

Command	Description
<b>ip address</b>	Sets an IP address for the selected VLAN.
<b>ip dns-server</b>	Configures the DNS servers used by DmSwitch
<b>show ip</b>	Shows the IP configuration.

# show ip hardware host-table

**show ip hardware host-table**

## Description

Shows the hardware host table.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

The hardware host table is used by DmSwitch to maps directly connected hosts IP addresses to MAC/VLAN/Port, since the DmSwitch makes routing by hardware.

## Example

This example illustrates how to show the hardware host table.

```
DmSwitch#show ip hardware host-table
IP address      MAC              VLAN  Port  PortCh  Hit
-----
10.11.12.13     00:E0:63:C4:C4:28  1     6     -       N

Total: 1          Free: 4095

DmSwitch#
```

## Related Commands

No related command.

# show ip hardware lpm-table

**show ip hardware lpm-table**

## Description

Shows the hardware longest prefix match table.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

The hardware longest prefix match table is used by DmSwitch to maps subnets to gateway MAC/VLAN/Port, since the DmSwitch makes routing by hardware.

## Example

This example illustrates how to show the hardware longest prefix match table.

```
DmSwitch#show ip hardware lpm-table
Network subnet      Next Hop MAC      VLAN  Port  PortCh  Hit  Local
-----
10.11.13.0/24       00:E0:63:C4:C4:28  1     6     -        N    N

Total: 1             Free: 16384

DmSwitch#
```

## **Related Commands**

No related command.

# show ip http

**show ip http**

## Description

Shows the HTTP server information.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

This command shows the HTTP and secure HTTP servers status (enabled or disabled), the configured access port for the both servers and the maximum connections allowed for their clients.

## Example

This example illustrates how to show the HTTP server information.

```
DmSwitch#show ip http
HTTP:
  HTTP status:  Enable
  HTTP port:    80

secure HTTP:
  HTTPS status:  Enable
  HTTPS port:    443

HTTP/HTTPS connections limit: 8

DmSwitch#
```

## Related Commands

Command	Description
<code>ip http</code>	Configures the internal HTTP server for external access.

# show ip igmp snooping

```
show ip igmp snooping [ mroute ]
```

## Description

Shows the IGMP snooping configuration.

## Syntax

Parameter	Description
<b>mroute</b>	(Optional) Click <a href="#">here</a> to see the "mroute" parameter description.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

This command shows the IGMP snooping status (enabled or disabled), the configured time parameters, query count, IGMP version and IGMP IP address.

## Example

This example illustrates how to show the HTTP server information.

```
DmSwitch#show ip igmp snooping
Service status:           Enabled
Querier status:           Enabled
Query count:              2
Query interval:           125 sec
Query max response time:  10 sec
Router port expire time:  300 sec
IGMP snooping version:    3
IGMP querier IP address:  (not set)
```

```
DmSwitch#
```



## Related Commands

Command	Description
<code>ip igmp</code>	Configures the IGMP snooping.
<code>ip igmp snooping vlan</code>	Configures static multicast entries in the mac address table.
<code>show ip igmp snooping mroute</code>	Shows the static entries in mac address table of the multicast routers.
<code>show mac-address-table multicast</code>	Shows known multicast addresses.

# show ip igmp snooping mroute

`show ip igmp snooping mroute [ vlan index ]`

## Description

Shows the static entries in mac address table of the multicast routers.

## Syntax

Parameter	Description
<code>vlan index</code>	(Optional) Specifies a VLAN index. (Range: 1-4094)

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

This command shows the VLAN index and the port number that is configured to connect a multicast router.

## Example

This example illustrates how to show the static entries in mac address table of the multicast routers.

```
DmSwitch#show ip igmp snooping mroute
VLAN M'cast Router Ports Type
----
1          Eth1/ 1 Static
DmSwitch#
```

## Related Commands

Command	Description
---------	-------------

Command	Description
<code>ip igmp</code>	Configures the IGMP snooping.
<code>ip igmp snooping vlan</code>	Configures static multicast entries in the mac address table.
<code>show ip igmp snooping</code>	Shows the IGMP snooping configuration.
<code>show mac-address-table multicast</code>	Shows known multicast addresses.

# show ip interface

**show ip interface**

## Description

Shows the interface information.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

This command shows the IP address configured for each VLAN.

## Example

This example illustrates how to show the interface information.

```
DmSwitch#show ip interface
VLAN 1  10.11.12.21/24
VLAN 2  10.11.13.21/24

DmSwitch#
```

## Related Commands

Command	Description
<b>ip address</b>	Sets an IP address for the selected VLAN.

# show ip ospf

```
show ip ospf [ border-routers ]
```

```
show ip ospf [ database [ max-age | self-originate ] ]
```

```
show ip ospf [ database [ asbr-summary | external | network | nssa-external  
| router | summary ] [ adv-router adv-router-ip-address | self-originate |  
link-state-ip-address [ adv-router adv-router-ip-address | self-originate ] ] ]
```

```
show ip ospf [ neighbor [ detail ] ]
```

```
show ip ospf [ route ]
```

```
show ip ospf [ vlan vlan-id ]
```

## Description

Shows the OSPF process parameters.

## Syntax

Parameter	Description
<b>border-routers</b>	(Optional) Border information for the area.
<b>database</b>	(Optional) Database summary.
<b>asbr-summary</b>	(Optional) ASBR summary link states.
<b>external</b>	(Optional) External link states.
<b>network</b>	(Optional) Network link states.
<b>nssa-external</b>	(Optional) NSSA external link state.
<b>router</b>	(Optional) Router link states.
<b>summary</b>	(Optional) Network summary link states.
<b>adv-router</b> <i>adv-router-ip-address</i>	(Optional) Advertising Router link states.
<i>link-state-ip-address</i>	(Optional) Link State ID.
<b>max-age</b>	(Optional) LSAs in MaxAge list.
<b>self-originate</b>	(Optional) Self-originated link states.
<b>neighbor detail</b>	(Optional) List neighbors (with or without details).
<b>route</b>	(Optional) Shows the OSPF routing table.
<b>vlan</b> <i>vlan-index</i>	(Optional) Advertising Router link states.

## Default

No default is defined.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the basic OSPF information.

```
DmSwitch#show ip ospf
  OSPF Routing Process, Router ID: 192.168.0.25
  Supports only single TOS (TOS0) routes
  This implementation conforms to RFC2328
  RFC1583Compatibility flag is disabled
  SPF schedule delay 1 secs, Hold time between two SPFs 1 secs
  Refresh timer 10 secs
  Number of external LSA 0. Checksum Sum 0x00000000
  Number of areas attached to this router: 1

  Area ID: 0.0.0.0 (Backbone)
    Number of VLANs in this area: Total: 1, Active: 1
    Number of fully adjacent neighbors in this area: 0
    Area has no authentication
    SPF algorithm executed 1 times
    Number of LSA 1
    Number of router LSA 1. Checksum Sum 0x0000ba20
    Number of network LSA 0. Checksum Sum 0x00000000
    Number of summary LSA 0. Checksum Sum 0x00000000
    Number of ASBR summary LSA 0. Checksum Sum 0x00000000
    Number of NSSA LSA 0. Checksum Sum 0x00000000

DmSwitch#
```

## Related Commands

Command	Description
<b>router ospf</b>	Enables and accesses the OSPF configuration.

# show ip rip

**show ip rip**

## Description

Shows the RIP process parameters.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the RIP information.

```
DmSwitch#show ip rip
Routing Protocol is "rip"
  Sending updates every 30 seconds with +/-50%, next due in 10 seconds
  Timeout after 180 seconds, garbage collect after 120 seconds
  Outgoing update filter list for all interface is not set
  Incoming update filter list for all interface is not set
  Default redistribution metric is 1
  Redistributing:
  Default version control: send version 2, receive any version
    Interface      Send  Recv  Key-chain
    vlan 1         2     1 2
    vlan 2         2     1 2
  Routing for Networks:
    192.168.100.0/24
```

```

192.168.200.0/24
Routing Information Sources:
  Gateway          BadPackets BadRoutes  Distance Last Update
Distance: (default is 120)
DmSwitch#

```

## Related Commands

Command	Description
<b>default-metric</b>	Defines the default metric of RIP protocol.
<b>distance</b>	Defines the administrative distance of RIP protocol.
<b>ip rip receive version</b>	Defines the RIP version of the accepted messages.
<b>ip rip send version</b>	Defines the RIP version of the sent messages.
<b>ip rip split-horizon</b>	Enables the split horizon funtion.
<b>neighbor</b>	Defines a neighbor router.
<b>network</b>	Associates a network with a RIP routing process.
<b>passive-interface</b>	Suppresses RIP routing updates on specified VLAN interfaces.
<b>redistribute</b>	Redistributes routes with a metric of RIP protocol.
<b>timers basic</b>	Defines the basic timers of RIP protocol.



# show ip route

**show ip route**

## Description

Shows the IP routing table.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

This command shows the static, connected and the RIP learned routes.

## Example

This example illustrates how to show the IP routing table.

```
DmSwitch#show ip route
Codes: C - connected, S - static, R - RIP, O - OSPF

S 10.11.14.0/24 [1/0] via 10.11.12.21 inactive
C 127.0.0.0/8 is directly connected, loopback
C 10.11.12.0/24 is directly connected, vlan 1
C 10.11.13.0/24 is directly connected, vlan 2

DmSwitch#
```

## Related Commands

Command	Description
<b>ip address</b>	Sets an IP address for the selected VLAN.

Command	Description
<code>ip route</code>	Adds a static route to the routing table.
<code>ip routing</code>	Enables the IP routing.
<code>show ip routing</code>	Shows the IP routing table.

# show ip routing

`show ip routing`

## Description

Shows the routing status.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the routing status.

```
DmSwitch#show ip routing
IP routing is enabled

DmSwitch#
```

## Related Commands

Command	Description
<code>ip route</code>	Adds a static route to the routing table.
<code>ip routing</code>	Enables the IP routing.
<code>show ip route</code>	Shows the IP routing table.

# show ip snmp-server

```
show ip snmp-server [ traps ]
```

## Description

Shows the SNMP server information.

## Syntax

Parameter	Description
<b>traps</b>	(Optional) Click here to see the "traps" parameter description.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

This command shows the SNMP server status (enabled or disabled), the communities and users configured, the traps recipient hosts and the version of SNMP protocol used for the communication.

## Example

This example illustrates how to show the SNMP server information.

```
DmSwitch#show ip snmp-server
SNMP status: Enable
```

```
Local SNMP engineID: 80000E7D030004DF006A79
```

```
SNMP Community:
  public(Read-Only)
```

```
SNMPv3 User:
  USER          ACCESS      AUTHENTICATION  PRIVACY
  manager       Read/Write  MD5             AES
```

```
SNMPv(1|2c) Trap Manager:
  IP          COMMUNITY      VERSION
  10.1.1.10   management      2c

SNMPv3 Trap Manager:
  IP          USER          AUTHENTICATION  PRIVACY
  10.1.1.11   manager        MD5             AES

DmSwitch#
```

## Related Commands

Command	Description
<b>ip snmp-server</b>	Configures the internal SNMP server.
<b>ip snmp-server traps</b>	Enables sending of SNMP traps.

# show ip snmp-server traps

**show ip snmp-server traps**

## Description

Shows the SNMP traps status.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
5.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the SNMP traps status.

```
DmSwitch#show ip snmp-server traps
TRAP                                STATUS
alarm-status-change                 enable
authentication                       enable
cold-warm-start                     enable
config-change                       enable
config-save                         enable
critical-event-detected              enable
critical-event-recovered              enable
duplicated-ip                       enable
fan-status-change                   enable
forbidden-access                     enable
link-flap-detected                   enable
link-flap-no-more-detected           enable
link-up-down                         enable
login-fail                           enable
login-success                       enable
loopback-detected                   enable
loopback-no-more-detected            enable
```

```
power-status-change      enable
sfp-presence             enable
stack-attach             enable
stack-detach             enable
traps-lost               enable
unidir-link-detected     enable
unidir-link-recovered    enable
```

DmSwitch#

## Related Commands

Command	Description
<b>ip snmp-server</b>	Configures the internal SNMP server.

# show ip ssh

**show ip ssh**

## Description

Shows the SSH server information.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

This command shows the SSH server status (enabled or disabled), its timeout, key size, the generated host key pair and the limit client connections.

## Example

This example illustrates how to show the SSH server information.

```
DmSwitch#show ip ssh
SSH Enabled
  Timeout:                120
  Server key size:        768
  Fingerprints:
    RSA: 48:1b:d6:7c:c9:9d:41:75:1f:f7:f3:35:d8:bd:28:7d
    DSA: cf:4b:dd:ee:00:f7:9f:6e:82:e6:58:40:de:c3:04:c4
  SSH connections limit: 8

DmSwitch#
```

## Related Commands



Command	Description
<code>ip ssh</code>	Configures the internal SSH server for external access.

# show ip telnet

`show ip telnet`

## Description

Shows the Telnet server information.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

This command shows the Telnet server status (enabled or disabled) and the maximum connections allowed for Telnet clients.

## Example

This example illustrates how to show the Telnet server information.

```
DmSwitch#show ip telnet
Telnet status:          Enable
Telnet connections limit: 8

DmSwitch#
```

## Related Commands

Command	Description
<code>ip telnet</code>	Configures the internal Telnet server for external access.

# show l2protocol-tunnel

```
show l2protocol-tunnel [ interface { ethernet [ unit-number/ ] port-number |  
port-channel channel-group-number } ]
```

## Description

Shows Layer 2 Protocols Tunneling information.

## Syntax

Parameter	Description
<b>interface</b>	(Optional) Shows the information of a specific interface.
<b>ethernet</b> [ <i>unit-number/</i> ] <i>port-number</i>	Shows information of a specific unit and port.
<b>port-channel</b> <i>channel-group-number</i>	Shows information of a specific port channel. The port channel must be specified in accordance with the port channel configured in the switch. (Range: 1-32)

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the tunneling configurations of a specific Ethernet port.

```
DmSwitch#show l2protocol-tunnel interface ethernet 1  
Eth 1/1  
  CDP packets tunneling: Disabled  
  STP packets tunneling: Enabled  
  VTP packets tunneling: Disabled  
  PVST packets tunneling: Disabled  
  UDLD packets tunneling: Disabled
```

```
PAgP packets tunneling: Disabled
LACP packets tunneling: Disabled
```

```
DmSwitch#
```

## Related Commands

Command	Description
<b>l2protocol-tunnel (Global configuration)</b>	Configures a Layer 2 protocols tunneling.
<b>l2protocol-tunnel (Interface configuration)</b>	Configures Layer 2 protocols tunneling for the Ethernet interface.

# show lacp counters

```
show lacp counters [ | { begin | exclude | include } expression ]
```

## Description

Shows the LACP traffic counters.

## Syntax

Parameter	Description
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

This command shows the transmitted and received data packets and bytes, the transmitted and received marker and marker response, and the error packets.

## Example

This example illustrates how to show the LACP traffic counters.

```
DmSwitch#show lacp counters
          LACPDUs          Marker      Marker Response      LACPDUs
Port      Sent   Recv      Sent   Recv      Sent   Recv      Pkts Err
-----
Aggregator id 1 (channel-group 1)
```

```
eth 1/1    13    13    0    0    0    0    0
eth 1/2    13    13    0    0    0    0    0

DmSwitch#
```

## Related Commands

Command	Description
<b>lacp</b>	Enables and configures LACP status.
<b>show lacp internal</b>	Shows the LACP internal information.
<b>show lacp group</b>	Shows the LACP channel group information.
<b>show lacp neighbors</b>	Shows the LACP neighbors information.
<b>show lacp sysid</b>	Shows the system identifier used by LACP.

# show lacp *group*

```
show lacp group { counters | internal | neighbors } [ | { begin | exclude | include }  
expression ]
```

## Description

Shows the specified LACP channel group information.

## Syntax

Parameter	Description
<i>group</i>	Specifies a group channel. (Range: 1-8)
<b>counters</b>	Shows the traffic counters.
<b>internal</b>	Shows the internal information.
<b>neighbors</b>	Shows the neighbors information.
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the specific LACP channel group counters.

```
DmSwitch#show lacp 1 counters
```

```

          LACPDUs      Marker      Marker Response      LACPDUs
Port      Sent   Recv      Sent   Recv      Sent   Recv      Pkts Err
-----
Aggregator id 1 (channel-group 1)

eth 1/1    326    326      0      0        0      0        0
eth 1/2    326    326      0      0        0      0        0

DmSwitch#

```

## Related Commands

Command	Description
<b>lacp</b>	Enables and configures LACP status.
<b>show lacp counters</b>	Shows the LACP traffic counters.
<b>show lacp internal</b>	Shows the LACP internal information.
<b>show lacp neighbors</b>	Shows the LACP neighbors information.
<b>show lacp sysid</b>	Shows the system identifier used by LACP.



# show lacp internal

```
show lacp counters [ | { begin | exclude | include } expression ]
```

## Description

Shows the LACP internal information.

## Syntax

Parameter	Description
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

This command shows the flags, priority, keys and the ports states that compose the LACP groups in the Dm-Switch.

## Example

This example illustrates how to show the LACP internal information.

```
DmSwitch#show lacp internal
Flags: S - Device is requesting Slow LACPDUs F - Device is requesting Fast LACPDUs
      A - Device is in Active Mode           P - Device is in Passive Mode

Port state: A - LACP_Activity   T - LACP_Timeout   G - Aggregation   E - Expired
            S - Synchronization D - Distributing   C - Collecting   F - Defaulted
```

```
Aggregatord id 1 (channel-group 1)
```

Port	Flags	LACP port Priority	Admin Key	Oper Key	Port State
eth 1/1	SA	32768	0x100	0x102	AGSCD
eth 1/2	SA	32768	0x100	0x102	AGSCD

```
DmSwitch#
```

## Related Commands

Command	Description
<b>lacp</b>	Enables and configures LACP status.
<b>show lacp counters</b>	Shows the LACP traffic counters.
<b>show lacp group</b>	Shows the LACP channel group information.
<b>show lacp neighbors</b>	Shows the LACP neighbors information.
<b>show lacp sysid</b>	Shows the system identifier used by LACP.

# show lacp neighbors

```
show lacp neighbors [ | { begin | exclude | include } expression ]
```

## Description

Shows the LACP neighbors information.

## Syntax

Parameter	Description
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

This command shows the flags, priority, keys, the neighbor ports states and system identifier that compose the LACP groups.

## Example

This example illustrates how to show the LACP neighbors counters.

```
DmSwitch#show lacp neighbors
Flags: S - Device is requesting Slow LACPDUs F - Device is requesting Fast LACPDUs
       A - Device is in Active Mode           P - Device is in Passive Mode

Port state: A - LACP_Activity   T - LACP_Timeout   G - Aggregation   E - Expired
            S - Synchronization D - Distributing   C - Collecting   F - Defaulted
```

```
Aggregator id 1 (channel-group 1)
```

```
Partner's information:
```

Port	System ID	Flags	LACP port Priority	Oper Key	Port Number	Port State
eth 1/1	32768,0004.df00.089e	SA	32768	0x102	1	AGSCD
eth 1/2	32768,0004.df00.089e	SA	32768	0x102	8	AGSCD

```
DmSwitch#
```

## Related Commands

Command	Description
<b>lacp</b>	Enables and configures LACP status.
<b>show lacp counters</b>	Shows the LACP traffic counters.
<b>show lacp group</b>	Shows the LACP channel group information.
<b>show lacp internal</b>	Shows the LACP internal information.
<b>show lacp sysid</b>	Shows the system identifier used by LACP.

# show lacp sysid

```
show lacp sysid [ | { begin | exclude | include } expression ]
```

## Description

Shows the system identifier used by LACP.

## Syntax

Parameter	Description
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the system identifier used by LACP.

```
DmSwitch#show lacp sysid
32768,0004.df00.0b0d

DmSwitch#
```

## Related Commands

Command	Description
<b>lacp</b>	Enables and configures LACP status.
<b>show lacp counters</b>	Shows the LACP traffic counters.
<b>show lacp group</b>	Shows the LACP channel group information.
<b>show lacp internal</b>	Shows the LACP internal information.
<b>show lacp neighbors</b>	Shows the LACP neighbors information.

# show link-flap

```
show link-flap [ | { begin | exclude | include } expression ]
```

## Description

Shows link-flap information.

## Syntax

Parameter	Description
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the link-flap information.

```
DmSwitch#show link-flap
```

Port	Enable	Configuration			Detection		Unblock Timeout	Link Flap
		Flaps	Interv	Unblock	Flaps	Interv		
1/ 1	YES	10	20	30	0	----	-----	NO
1/ 2	YES	10	20	30	0	----	-----	NO
1/ 3	YES	10	20	30	0	----	-----	NO

1/ 4	YES	10	20	30	0	----	-----	NO
1/ 5	YES	10	20	30	0	----	-----	NO
1/ 6	YES	10	20	30	0	----	-----	NO
1/ 7	YES	10	20	30	0	----	-----	NO
1/ 8	YES	10	20	30	0	----	-----	NO
1/ 9	YES	10	20	30	0	----	-----	NO
1/10	YES	10	20	30	0	----	-----	NO
1/11	YES	10	20	30	0	----	-----	NO
1/12	YES	10	20	30	0	----	-----	NO
1/13	YES	10	20	30	0	----	-----	NO
1/14	YES	10	20	30	0	----	-----	NO
1/15	YES	10	20	30	0	----	-----	NO
1/16	YES	10	20	30	0	----	-----	NO
1/17	YES	10	20	30	0	----	-----	NO
1/18	YES	10	20	30	0	----	-----	NO
1/19	YES	10	20	30	0	----	-----	NO
1/20	YES	10	20	30	0	----	-----	NO
1/21	YES	10	20	30	0	----	-----	NO
1/22	YES	10	20	30	0	----	-----	NO
1/23	YES	10	20	30	0	----	-----	NO
1/24	YES	10	20	30	0	----	-----	NO
1/25	YES	10	40	30	0	----	-----	NO
1/26	YES	10	40	30	0	----	-----	NO
1/27	YES	10	40	30	0	----	-----	NO
1/28	YES	10	40	30	0	----	-----	NO

DmSwitch#

Related Commands

Command	Description
link-flap	Configures Link-Flap Detection for Ethernet interface



# show lldp

```
show lldp [ neighbor ] [ | { begin | exclude | include } expression ]
```

## Description

Shows LLDP configuration information.

## Syntax

Parameter	Description
<b>neighbor</b>	(Optional) Click here to see the "neighbor" parameter description.
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the LLDP configuration information.

```
DmSwitch#show lldp

LLDP Configuration
State                : enable
Transmit Interval    : 30 sec
```

```

Hold Value           : 4
Transmit Delay       : 2 sec
Notification Interval : 5 sec
Re-init Delay        : 2 sec

```

Port	Tx State	Rx State	SNMP Notification	Optional enabled transmit TLVs
1/1	ENABLE	ENABLE	DISABLE	-----
1/2	ENABLE	ENABLE	DISABLE	-----
1/3	ENABLE	ENABLE	DISABLE	P--CM
1/4	ENABLE	ENABLE	DISABLE	-----
1/5	ENABLE	ENABLE	DISABLE	PND CM
1/6	ENABLE	ENABLE	DISABLE	-----
1/7	ENABLE	ENABLE	DISABLE	-----
1/8	ENABLE	ENABLE	DISABLE	-----
1/9	ENABLE	ENABLE	DISABLE	-----
1/10	ENABLE	ENABLE	DISABLE	-N--M
1/11	ENABLE	ENABLE	DISABLE	-----
1/12	ENABLE	ENABLE	DISABLE	-----
1/13	ENABLE	ENABLE	DISABLE	-----
1/14	ENABLE	ENABLE	DISABLE	-----
1/15	ENABLE	ENABLE	DISABLE	-----
1/16	ENABLE	ENABLE	DISABLE	-----
1/17	ENABLE	ENABLE	DISABLE	-----
1/18	ENABLE	ENABLE	DISABLE	-----
1/19	ENABLE	ENABLE	DISABLE	-----
1/20	ENABLE	ENABLE	DISABLE	-----
1/21	ENABLE	ENABLE	DISABLE	-----
1/22	ENABLE	ENABLE	DISABLE	-----
1/23	ENABLE	ENABLE	DISABLE	-----
1/24	ENABLE	ENABLE	DISABLE	-----
1/25	ENABLE	ENABLE	DISABLE	-----
1/26	ENABLE	ENABLE	DISABLE	-----
1/27	ENABLE	ENABLE	DISABLE	-----
1/28	ENABLE	ENABLE	DISABLE	-----

Flags: (P) Port Description, (N) System Name, (D) System Description  
(C) System Capabilities, (M) Mgmt Addr

DmSwitch#

## Related Commands

Command	Description
<b>lldp</b>	Enables the LLDP operation in the DmSwitch.
<b>lldp admin-status</b>	Configures the administratively desired status of the local LLDP agent.
<b>lldp notification</b>	Configure speed and duplex operation.
<b>lldp notification-interval</b>	Configures the allowed interval at which Simple Network Management Protocol (SNMP) notifications can be sent. If multiple neighbor information changes occur after the sent notification, no additional notifications are sent.
<b>lldp reinitialize-delay</b>	Configures the delay that applies to a re-initialization attempt after LLDP ports were disabled or the link went down.
<b>lldp tlvs-tx-enable</b>	Configures which optional TLVs are to be sent to neighbors.

Command	Description
<b>lldp transmit-delay</b>	Configures the delay time between successive frame transmissions initiated by a value change or status change in any of the LLDP local systems Management Information Base (MIB). The auto option uses the formula, $(0.25 * \text{transmit-interval})$ , to calculate the number of seconds.
<b>lldp transmit-hold</b>	Calculates the actual time-to-live (TTL) value used in the LLDP PDU packets. The formula is $\text{transmit-interval} * \text{transmit-hold}$ .
<b>lldp transmit-interval</b>	Configures the periodic transmit interval for LLDP protocol data units (PDUs).
<b>show lldp neighbor</b>	Shows LLDP neighbor information.

# show lldp neighbor

```
show lldp neighbor [ ethernet [ unit-number/ ] port-number ] [ | { begin | exclude | include } expression ]
```

## Description

Shows LLDP neighbor information.

## Syntax

Parameter	Description
<b>ethernet</b> [ <i>unit-number/</i> ] <i>port-number</i>	(Optional) Shows LLDP neighbor information of a specific unit and port.
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the LLDP neighbor information of a specific port.

```
DmSwitch#show lldp neighbor ethernet 5
LLDP Eth 1/5      Total neighbors = 1
```

```

Neighbor:
  Chassis ID (subtype 4): 00:04:DF:00:6C:6C
  Port ID (subtype 5): Port18
  Port Description      : Ethernet Port on unit 1, port:18
  System Name           : DmSwitch3000
  System Description    : DmSwitch3224F2
  System Capabilities Supported:
                        bridge
  System Capabilities Enabled:
                        bridge
  Management Address    : 192.168.0.25
                        Interface Subtype: ifIndex
                        Interface Number : 1001

DmSwitch#

```

## Related Commands

Command	Description
<b>lldp</b>	Enables the LLDP operation in the DmSwitch.
<b>lldp admin-status</b>	Configures the administratively desired status of the local LLDP agent.
<b>lldp notification</b>	Configure speed and duplex operation.
<b>lldp notification-interval</b>	Configures the allowed interval at which Simple Network Management Protocol (SNMP) notifications can be sent. If multiple neighbor information changes occur after the sent notification, no additional notifications are sent.
<b>lldp reinitialize-delay</b>	Configures the delay that applies to a re-initialization attempt after LLDP ports were disabled or the link went down.
<b>lldp tlvs-tx-enable</b>	Configures which optional TLVs are to be sent to neighbors.
<b>lldp transmit-delay</b>	Configures the delay time between successive frame transmissions initiated by a value change or status change in any of the LLDP local systems Management Information Base (MIB). The auto option uses the formula, (0.25 * transmit-interval), to calculate the number of seconds.
<b>lldp transmit-hold</b>	Calculates the actual time-to-live (TTL) value used in the LLDP PDU packets. The formula is transmit-interval * transmit-hold.
<b>lldp transmit-interval</b>	Configures the periodic transmit interval for LLDP protocol data units (PDUs).
<b>show lldp</b>	Shows LLDP configuration information.

# show log

```
show log { flash | ram } [ tail | [ { begin | exclude | include } expression ] ]
```

## Description

Shows log messages.

## Syntax

Parameter	Description
<b>flash</b>	Shows the events stored in flash memory.
<b>ram</b>	Shows the events stored in RAM memory.
<b>tail</b>	(Optional) Shows only the last events.
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the last logged events in flash memory.

```
DmSwitch#show log flash tail
Jan  5 23:00:48 swa : Interface ethernet 1/27 changed state to up
Jan  5 23:00:48 swa : Interface ethernet 1/27 changed state to down
Jan  5 23:00:50 swa : Interface ethernet 1/27 changed state to up
```

```

Jan  5 23:00:50 swa : Interface ethernet 1/27 changed state to down
Jan  1 00:01:00 DmSwitch : Unit 1: Power source 1 ok.
Jan  1 00:01:00 DmSwitch : Unit 1: Power source 1 ok.
Jan  1 00:01:00 DmSwitch : Unit 1: Power source 1 ok.
Jan  1 00:19:34 DmSwitch : CPU usage > 90%
Jan  1 00:27:52 DmSwitch : CPU usage < 90%
Jan  1 00:01:00 DmSwitch : Unit 1: Power source 1 ok.
DmSwitch#

```

## Related Commands

Command	Description
<b>clear logging</b>	Deletes log messages.
<b>logging facility</b>	Sets the facility type for remote logging.
<b>logging history</b>	Configures the level of events to be stored in memory.
<b>logging host</b>	Configures a remote syslog server.
<b>logging on</b>	Enables the logging of events.
<b>logging sendmail</b>	Enables and configures the sending of logs via e-mail.
<b>logging trap</b>	Configures the level of events that will be sent to remote server.
<b>show logging</b>	Shows logging configuration.

# show logging

```
show logging { debug | flash | ram | sendmail | trap }
```

## Description

Shows logging configuration.

## Syntax

Parameter	Description
<b>debug</b>	Shows the settings for debug messages logging.
<b>flash</b>	Shows the settings for storing events in flash memory.
<b>ram</b>	Shows the settings for storing events in RAM memory.
<b>sendmail</b>	Shows the settings for sending events through SMTP.
<b>trap</b>	Shows the settings for remote logging.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

This command shows the logging status for storing events in flash or RAM, and sending by e-mail or to a remote host.

## Example

This example illustrates how to show the settings of logging events in flash memory.

```
DmSwitch#show logging flash
      Syslog logging: Enabled
      History logging in flash: error (3)
DmSwitch#
```



## Related Commands

Command	Description
<code>clear logging</code>	Deletes log messages.
<code>logging facility</code>	Sets the facility type for remote logging.
<code>logging history</code>	Configures the level of events to be stored in memory.
<code>logging host</code>	Configures a remote syslog server.
<code>logging on</code>	Enables the logging of events.
<code>logging sendmail</code>	Enables and configures the sending of logs via e-mail.
<code>logging trap</code>	Configures the level of events that will be sent to remote server.
<code>show log</code>	Shows log messages.

# show loopback-detection

```
show loopback-detection [ | { begin | exclude | include } expression ]
```

## Description

Shows loopback detection information.

## Syntax

Parameter	Description
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the loopback-detection information.

```
DmSwitch#show loopback-detection
```

Port	Enabled	Unblock-Time	Timeout	Blocked	Loopback
1/ 1	YES	30	--	NO	NO
1/ 2	YES	30	--	NO	NO
1/ 3	YES	30	--	NO	NO
1/ 4	YES	30	--	NO	NO

1/ 5	YES	30	--	NO	NO
1/ 6	YES	30	--	NO	NO
1/ 7	YES	30	--	NO	NO
1/ 8	YES	30	--	NO	NO
1/ 9	YES	30	--	NO	NO
1/10	YES	30	--	NO	NO
1/11	YES	30	--	NO	NO
1/12	YES	30	--	NO	NO
1/13	YES	30	--	NO	NO
1/14	YES	30	--	NO	NO
1/15	YES	30	--	NO	NO
1/16	YES	30	--	NO	NO
1/17	YES	30	--	NO	NO
1/18	YES	30	--	NO	NO
1/19	YES	30	--	NO	NO
1/20	YES	30	--	NO	NO
1/21	YES	30	--	NO	NO
1/22	YES	30	--	NO	NO
1/23	YES	30	--	NO	NO
1/24	YES	30	--	NO	NO
1/25	YES	30	--	NO	NO
1/26	YES	30	--	NO	NO
1/27	YES	30	--	NO	NO
1/28	YES	30	--	NO	NO

DmSwitch#

## Related Commands

Command	Description
<b>loopback-detection</b>	Configures Loopback Detection for Ethernet interface

# show mac-address-table

```
show mac-address-table [ aging-time ]
```

```
show mac-address-table [ multicast ]
```

```
show mac-address-table [ address mac-address... | interface { ethernet [ unit-number/  
] port-number | port-channel channel-group-number }... | unit unit-number... | control-vlan  
index... ]
```

## Description

Shows the MAC address table.

## Syntax

Parameter	Description
<b>aging-time</b>	(Optional) Click here to see the "aging-time" parameter description.
<b>multicast</b>	(Optional) Click here to see the "multicast" parameter description.
<b>address</b> <i>mac-address</i>	(Optional) Shows the table filtering by an address.
<b>interface</b>	(Optional) Shows the table filtering by a specific interface.
<b>ethernet</b> [ <i>unit-number/</i> ] <i>port-number</i>	Shows the table filtering by a specific unit and port.
<b>port-channel</b> <i>channel-group-number</i>	Shows the table filtering by a specific port channel. The port channel must be specified in accordance with the port channel configured in the switch. (Range: 1-32)
<b>unit</b> <i>unit-number</i>	(Optional) Shows the table filtering by a specific unit.
<b>vlan</b> <i>index</i>	(Optional) Shows the table filtering by an VLAN ID. (Range: 1-4094)

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Multicast addresses are not displayed on the table, but they are included in the total counting since each multicast address needs a referencing entry in the MAC address table. Use the **show mac-address-table multicast** command to view the multicast address table.

## Example

This example illustrates how to show the MAC address table filtered by a VLAN index.

```
DmSwitch#show mac-address-table vlan 1
Total MAC Addresses for this criterion: 8

Unit Interface MAC Address      VLAN Type
----
1      Eth 1/ 1 00-13-20-1f-94-85 1      Learned
1      Eth 1/ 1 01-02-03-04-05-06 1      Static
1      Eth 1/12 00-0c-f1-ac-92-87 1      Learned
1      Eth 1/12 00-0c-f1-ac-92-f0 1      Learned
1      Eth 1/12 00-12-a9-e4-1e-a5 1      Learned
1      Eth 1/12 00-15-f2-59-b1-07 1      Learned
1      Eth 1/12 00-15-f2-bc-d4-ee 1      Learned
1      Eth 1/12 00-e0-63-c4-c4-28 1      Learned
DmSwitch#
```

## Related Commands

Command	Description
<b>mac-address-table static</b>	Adds a static address to MAC address table.
<b>mac-address-table port-maximum</b>	Sets the VLAN MAC address table maximum number of entries per port.
<b>show mac-address-table multicast</b>	Shows known multicast addresses.

# show mac-address-table aging-time

`show mac-address-table aging-time`

## Description

Shows the MAC address table aging time configuration.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the aging time configuration.

```
DmSwitch#show mac-address-table aging-time
Aging mode: global.
Global aging time: 300 sec.
DmSwitch#
```

## Related Commands

Command	Description
<code>mac-address-table aging-time (Global configuration)</code>	Sets the aging time for MAC address table entries.

# show mac-address-table multicast

```
show mac-address-table multicast [ igmp-snooping | user | vlan index [
igmp-snooping | user ] ]
```

## Description

Shows known multicast addresses.

## Syntax

Parameter	Description
<b>igmp-snooping</b>	(Optional) Shows the addresses learned through IGMP snooping.
<b>user</b>	(Optional) Shows the addresses configured by users.
<b>vlan index</b>	(Optional) Shows the addresses filtering by a VLAN ID. (Range: 1-4094)

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the multicast addresses filtered by VLAN index.

```
DmSwitch#show mac-address-table multicast vlan 1
VLAN M'cast IP addr. Member ports    Type
-----
    1    224.10.20.30          Eth 1/ 1  Static
DmSwitch#
```

## Related Commands

Command	Description
<code>clear mac-address-table</code>	Erases entries stored in the MAC address table.
<code>ip igmp snooping vlan</code>	Configures static multicast entries in the mac address table.
<code>show ip igmp snooping mroute</code>	Shows the static entries in mac address table of the multicast routers.
<code>show mac-address-table multicast</code>	Shows known multicast addresses.



# show management

```
show management { all-client | http-client | snmp-client | telnet-client |  
ssh-client } [ [ { begin | exclude | include } expression ]
```

## Description

Shows the management IP filters.

## Syntax

Parameter	Description
<b>all-client</b>	Shows the clients IP addresses to HTTP, SNMP, SSH and Telnet internal servers.
<b>http-client</b>	Shows the clients IP addresses to HTTP internal server.
<b>snmp-client</b>	Shows the clients IP addresses to SNMP internal server.
<b>telnet-client</b>	Shows the clients IP addresses to SSH internal server.
<b>ssh-client</b>	Shows the clients IP addresses to Telnet internal server.
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show all clients IP addresses.

```
DmSwitch#show management all-client
Management IP filter:
  Telnet client:
    10.11.12.22/32
    10.11.13.22/32

  HTTP client:
    10.11.12.22/32
    10.11.13.22/32

  SNMP client:
    10.11.12.22/32
    10.11.13.22/32

  SSH client:
    10.11.12.22/32
    10.11.13.22/32

DmSwitch#
```

## Related Commands

Command	Description
<b>management</b>	Filters client IP address that tries to access internal servers.

# show managers

**show managers** [ | { **begin** | **exclude** | **include** } *expression* ]

## Description

Shows the connected managers using terminals.

## Syntax

Parameter	Description
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the connected managers.

```
DmSwitch#show managers
User on CLI          Uptime
admin                3 d, 3 h, 21 m, 59 s
test_user            7 h, 55 m, 27 s
DmSwitch#
```

## Related Commands

Command	Description
<code>username</code>	Creates users and configures access to the DmSwitch.

# show meter

```
show meter [ id { id }... | rate-limit { rate }... | burst { burst-size }... | sort { remark }... ]
```

## Description

Shows meters configuration.

## Syntax

Parameter	Description
<b>id</b> <i>id</i>	(Optional) Specifies the meter by ID
<b>rate-limit</b> <i>rate</i>	(Optional) Specifies the meter by rate-limit
<b>burst</b> <i>burst-size</i>	(Optional) Specifies the meter by maximum burst size
<b>sort</b>	(Optional) Sorting method
<b>remark</b>	Sorts by remark

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the meters configuration

```
DmSwitch#show meter
Meter 1:
  Filter(s):
  Rate-limit: 64 kbit/s
  Burst:      32 kbit

DmSwitch#
```

## Related Commands

Command	Description
<code>meter</code>	Configures a meter to be used by a filter
<code>filter</code>	Creates or configures a traffic filter

# show monitor

```
show monitor [ | { begin | exclude | include } expression ]
```

## Description

Shows traffic monitoring configuration.

## Syntax

Parameter	Description
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the traffic monitoring configuration.

```
DmSwitch#show monitor
Traffic Monitor
-----
Preserve format:    Disabled
Destination port:   Eth1/28
Source ports:       Eth1/1  (Rx/Tx)
```

DmSwitch#

## Related Commands

Command	Description
<b>monitor</b>	Configures the traffic monitoring.
<b>monitor source</b>	Sets the interface as a monitoring source.



# show oam

```
show oam [ | { begin | exclude | include } expression ]
```

## Description

Shows oam information.

## Syntax

Parameter	Description
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the OAM information.

```
DmSwitch#show oam
```

```
Events:          UL - Link Down/Unidirectional link  CE - Critical Event
                  TO - Link OAM timeout
                  NO - No event  -- - OAM disabled/Interface shutdown/Unknown(Remote)

Discovery:       UN - Unsatisfied/Unknown(Remote)  IN - Incomplete  CO - Complete
                  -- - Local OAM disabled/Local interface shutdown
```

Dest. Address: ST - Standard IEEE OAMPDUs destination MAC address  
 AL - Alternative OAMPDUs destination MAC address

Port	Enabled	Local	Remote	Discovery		Destination
		Event	Event	Local	Remote	Address
1/ 1	YES	UL	--	UN	UN	ST
1/ 2	YES	UL	--	UN	UN	ST
1/ 3	YES	UL	--	UN	UN	ST
1/ 4	YES	UL	--	UN	UN	ST
1/ 5	YES	UL	--	UN	UN	ST
1/ 6	YES	UL	--	UN	UN	ST
1/ 7	YES	UL	--	UN	UN	ST
1/ 8	YES	UL	--	UN	UN	ST
1/ 9	YES	UL	--	UN	UN	ST
1/10	YES	UL	--	UN	UN	ST
1/11	YES	UL	--	UN	UN	ST
1/12	YES	UL	--	UN	UN	ST
1/13	YES	UL	--	UN	UN	ST
1/14	YES	UL	--	UN	UN	ST
1/15	YES	UL	--	UN	UN	ST
1/16	YES	UL	--	UN	UN	ST
1/17	YES	UL	--	UN	UN	ST
1/18	YES	UL	--	UN	UN	ST
1/19	YES	UL	--	UN	UN	ST
1/20	YES	UL	--	UN	UN	ST
1/21	YES	UL	--	UN	UN	ST
1/22	YES	UL	--	UN	UN	ST
1/23	YES	UL	--	UN	UN	ST
1/24	YES	UL	--	UN	UN	ST
1/25	YES	UL	--	UN	UN	ST
1/26	YES	UL	--	UN	UN	ST
1/27	YES	UL	--	UN	UN	ST
1/28	YES	UL	--	UN	UN	ST

DmSwitch#

## Related Commands

Command	Description
<b>oam</b>	Enables ou disables OAM for Ethernet interface

# show privilege

**show privilege**

## Description

Shows the privilege level for the current user.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the current privilege level.

```
DmSwitch#show privilege
Current privilege level is 1
DmSwitch#
```

## Related Commands

Command	Description
<b>show running-config</b>	Shows the current operating configuration.
<b>username</b>	Creates users and configures access to the DmSwitch.

# show profile-config

```
show profile-config { metro } [ | { begin | exclude | include } expression ]
```

## Description

Shows the predefined DmSwitch profile configuration.

## Syntax

Parameter	Description
<b>metro</b>	A predefined profile to be used with Metropolitan Area Networks.
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the predefined DmSwitch profile configuration.

```
DmSwitch#show profile-config metro
Building configuration...
!
hostname DmSwitch
!
```

```
(...)

!
interface vlan 1
  name DefaultVlan
  ip address dhcp
  set-member untagged ethernet range 1/1 1/24
  set-member tagged ethernet range 1/25 1/28
!
interface ethernet 1/1
  shutdown
  no spanning-tree 1
  no switchport ingress-filtering
  switchport egress-block ethernet range 1/2 1/24
!

(...)

!
spanning-tree 1
spanning-tree 1 vlan all
!
DmSwitch#
```

## Related Commands

Command	Description
<b>copy</b>	Copies configuration and firmware.
<b>diff</b>	Compares and shows the differences between two configurations.
<b>show running-config</b>	Shows the current operating configuration.

# show public-key

**show public-key** [ **host** | **user** ]

## Description

Shows the public key information.

## Syntax

Parameter	Description
<b>host</b>	(Optional) Shows the public key for switch.
<b>user</b>	(Optional) Shows the public key for users.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.
4.0	The <b>user</b> option was added.

## Usage Guidelines

The **show public-key host** command shows the information after generating RSA/DSA host key pair.

## Example

This example illustrates how to show the public key.

```
DmSwitch#show public-key host
RSA1 public key:
1024 35 129859966075478344584185473165858502577067021705714933834017018741920709027853939961
67044063492115350918047131882003102146525942184725247962601993512680017968979787604944980713
48610855343300081293568263559463964113860188854662008584323102158689706051004897866645855925
35061587040012279760776120995334148579839

DSA public key:
ssh-dss AAAAB3NzaC1kc3MAAACBAKlYoucNws7AnqvhB60SDvqIe197mS/LoCo43h7PtF3x62n+DkQLkjigB7Xi jYaD
yQrqBK51UmUhcHX610rObgDBZRLYfer9mWUQVKmJMTS2MycVY/MQgCVfNlYvs9JHiAbRoqTL7BeEoi8SUbUm9qJ8tzOb
4vKM4niPgOzHbJLzAAAAFQCoEq2FDHgPlKK243nnQJKpGj/NMQAAAIAv43oklJwQX2R+8L/ESiO8vuWrrzrvK7rL+gi5
```

```
OexU2xuS4e1ZpVF2AUhmmYP0jaWolNo22R9CxQaWdlEbTrX+wJ2ci0whJHh2inuDxAF+HSj2LX1yWj8KdqiOwroVxv17
T/wglYeYyBDmaWHvCDkuvlTCbuYuxyVqkHlwcF4JygAAAIBoobnThzwGFVViwcfBwsFSAv3e7OiTmNRrGclAY7HafBab
3V1sRJuEZH5kcr00s0jGpQL8VKSHqjgn0yFSG9gefXay2Ae4YWEAxTDI3wGVCptlqwUHIILwrPBe6/bDgQ4NN1biafFEf
+3Nhbt1XDYgHMvKdbrmqF7PQ7Udn2TkaIA==
```

```
DmSwitch#
```

## Related Commands

Command	Description
<b>ip ssh host-key clear</b>	Configures the internal SSH server for external access.
<b>ip ssh host-key generate</b>	Configures the internal SSH server for external access.
<b>show ip ssh</b>	Shows the SSH server information.

# show queue config

**show queue config** [ **ethernet** { **range** { [ *first-unit-number*/ ] *first-port-number* [ *last-unit-number*/ ] *last-port-number* } | [ *unit-number*/ ] *port-number* } ]

## Description

Use to show the queue configuration.

## Syntax

Parameter	Description
[ <i>unit-number</i> / ] <i>port-number</i>	Shows a specific unit and port queue configuration
<b>range</b> [ <i>first-unit-number</i> / ] <i>first-port-number</i> [ <i>last-unit-number</i> / ] <i>last-port-number</i>	Shows a range of specific units and ports queue configuration

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

### Release History

4.0	This command was introduced. Before this was called <b>show qos config</b> .
-----	--

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the queue configuration.

```
DmSwitch#show queue config ethernet 2
```

Port	Queue	Mode	Max-Bw	Min-Bw	Weight	SP-Queue
1/ 2	0	WRR	unlimit	-----	1	NO
1/ 2	1	WRR	unlimit	-----	2	NO
1/ 2	2	WRR	unlimit	-----	4	NO
1/ 2	3	WRR	unlimit	-----	6	NO



```

1/ 2    4    WRR    unlimit    -----    8    NO
1/ 2    5    WRR    unlimit    -----    10   NO
1/ 2    6    WRR    unlimit    -----    12   NO
1/ 2    7    WRR    unlimit    -----    14   NO
-----
DmSwitch#

```

## Related Commands

Command	Description
<b>queue max-bw</b>	Configures the maximum bandwidth allocation per queue
<b>queue sched-mode sp</b>	Configures Ethernet interface queues in Strict Priority schedule mode.
<b>queue sched-mode wfq</b>	Configures Ethernet interface queues in Weighted Fair Queueing schedule mode
<b>queue sched-mode wrr</b>	Configures Ethernet interface queues in Weighted Round Robin schedule mode
<b>queue cos-map</b>	Maps CoS priorities to queues

# show queue cos-map

**show queue cos-map**

## Description

Use to show map of CoS priorities to queues.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

### Release Modification

---

4.0	This command was introduced. Before this was called <b>show qos cos-map</b> .
-----	---

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the CoS mappings.

```
DmSwitch#show queue cos-map
-----+-----+
Queue | 802.1P Priority |
-----+-----+
  0   | 0               |
  1   | 1               |
  2   | 2               |
  3   | 3               |
  4   | 4               |
  5   | 5               |
  6   | 6               |
  7   | 7               |
-----+-----+
DmSwitch#
```

## Related Commands

Command	Description
<code>queue cos-map</code>	Maps CoS priorities to queues
<code>queue max-bw</code>	Configures the maximum bandwidth allocation per queue
<code>queue sched-mode sp</code>	Configures Ethernet interface queues in Strict Priority schedule mode.
<code>queue sched-mode wfq</code>	Configures Ethernet interface queues in Weighted Fair Queueing schedule mode
<code>queue sched-mode wrr</code>	Configures Ethernet interface queues in Weighted Round Robin schedule mode

# show radius-server

**show radius-server**

## Description

Shows RADIUS server information.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the RADIUS server information.

```
DmSwitch#show radius-server
RADIUS authentication configuration:
  Default Key:  *****
  Default Port: 1812
  Timeout:      5
  Retries:      2
  Host 1:
    Address:    10.10.10.15
    Port:       333
  Host 2:
  Host 3:
  Host 4:
  Host 5:
DmSwitch#
```

## Related Commands

Command	Description
<code>authentication login</code>	Defines the login authentication method and its precedence.
<code>radius-server acct-port</code>	Configures the default RADIUS server accounting port.
<code>radius-server auth-port</code>	Configures the default RADIUS server authentication port.
<code>radius-server host</code>	Configures a specific RADIUS server.
<code>radius-server key</code>	Configures the default RADIUS server key string.
<code>radius-server retries</code>	Configures the RADIUS server retries.
<code>radius-server timeout</code>	Configures the RADIUS server timeout.

# show rmon alarm

```
show rmon alarm [ | { begin | exclude | include } expression ]
```

## Description

Shows the RMON alarm table.

## Syntax

Parameter	Description
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the RMON alarm table.

```
DmSwitch#show rmon alarm
Alarm 1 is active, owned by test
Monitors .1.3.6.1.2.1.2.2.1.14.5 every 30 second(s)
Taking delta sample, last value was 0
Rising threshold is 10, assigned to event 1
Falling threshold is 0, assigned to event 0
On startup enable rising or falling alarm
```

DmSwitch#

## Related Commands

Command	Description
<b>rmon</b>	Configures an RMON.
<b>rmon alarm</b>	Configures an RMON alarm.
<b>rmon collection history</b>	Configures a RMON history group of statistics.
<b>rmon collection stats</b>	Configures a RMON collection of statistics.
<b>rmon event</b>	Configures an RMON event.
<b>show rmon event</b>	Shows the RMON event table.
<b>show rmon history</b>	Shows the RMON history table.
<b>show running-config</b>	Shows the current operating configuration.
<b>show rmon statistics</b>	Shows the RMON statistics table.

# show rmon event

```
show rmon event [ | { begin | exclude | include } expression ]
```

## Description

Shows the RMON event table.

## Syntax

Parameter	Description
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the RMON event table.

```
DmSwitch#show rmon event
Event 1 is active, owned by test
Description is HighErrors
Event firing causes log and trap to community eventtrap, last fired at sysUpTime 0

DmSwitch#
```



## Related Commands

Command	Description
<code>rmon</code>	Configures an RMON.
<code>rmon alarm</code>	Configures an RMON alarm.
<code>rmon collection history</code>	Configures a RMON history group of statistics.
<code>rmon collection stats</code>	Configures a RMON collection of statistics.
<code>rmon event</code>	Configures an RMON event.
<code>show rmon alarm</code>	Shows the RMON alarm table.
<code>show rmon history</code>	Shows the RMON history table.
<code>show running-config</code>	Shows the current operating configuration.
<code>show rmon statistics</code>	Shows the RMON statistics table.

# show rmon history

```
show rmon history [ index ] [ | { begin | exclude | include } expression ]
```

## Description

Shows the RMON history table.

## Syntax

Parameter	Description
<i>index</i>	(Optional) Identifies the RMON history group of statistics. (Range: 1-65535)
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the RMON history table.

```
DmSwitch#show rmon history
Entry 5 is active, and owned by test
Monitors ifEntry.1.5 every 30 second(s)
Requested # of time intervals, ie buckets, is 8,
Sample # 1 began measure at sysUpTime 1505
```

```

Drop events           :0
Octets                :5236
Pkts                  :77
Broadcast pkts        :0
Multicast pkts        :77
CRCA align errors     :0
Undersize pkts        :0
Oversize pkts         :0
Fragments             :0
Jabbers               :0
Collisions            :0
Utilization           :0
Sample # 2 began measure at sysUpTime 1535
Drop events           :0
Octets                :5236
Pkts                  :77
Broadcast pkts        :0
Multicast pkts        :77
CRCA align errors     :0
Undersize pkts        :0
Oversize pkts         :0
Fragments             :0
Jabbers               :0
Collisions            :0
Utilization           :0
Sample # 3 began measure at sysUpTime 1565
Drop events           :0
Octets                :5372
Pkts                  :79
Broadcast pkts        :0
Multicast pkts        :79
CRCA align errors     :0
Undersize pkts        :0
Oversize pkts         :0
Fragments             :0
Jabbers               :0
Collisions            :0
Utilization           :0

DmSwitch#

```

## Related Commands

Command	Description
<b>rmon</b>	Configures an RMON.
<b>rmon alarm</b>	Configures an RMON alarm.
<b>rmon collection history</b>	Configures a RMON history group of statistics.
<b>rmon collection stats</b>	Configures a RMON collection of statistics.
<b>rmon event</b>	Configures an RMON event.
<b>show rmon alarm</b>	Shows the RMON alarm table.
<b>show rmon event</b>	Shows the RMON event table.
<b>show running-config</b>	Shows the current operating configuration.
<b>show rmon statistics</b>	Shows the RMON statistics table.

# show rmon statistics

```
show rmon statistics [ index ] [ | { begin | exclude | include } expression ]
```

## Description

Shows the RMON statistics table.

## Syntax

Parameter	Description
<i>index</i>	(Optional) Identifies the RMON group of statistics. (Range: 1-65535)
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the RMON statistics table.

```
DmSwitch#show rmon statistics
Collection 5 on Eth 1/5 is active, and owned by test
Monitors ifEntry.1.5 wich has received:
Drop events           : 0
Octets                : 340
```

```

Pkts                               : 5
Broadcast pkts                     : 0
Multicast pkts                     : 5
CRCa align errors                  : 0
Undersize pkts                     : 0
Oversize pkts                      : 0
Fragments                          : 0
Jabbers                            : 0
Collisions                         : 0
Pkts 640 octets                    : 0
Pkts 65 to 127 octets              : 5
Pkts 128 to 2550 octets            : 0
Pkts 256 to 5110 octets            : 0
Pkts 512 to 10230 octets           : 0
Pkts 1024 to 1518 Octets           : 0

```

DmSwitch#

## Related Commands

Command	Description
<b>rmon</b>	Configures an RMON.
<b>rmon alarm</b>	Configures an RMON alarm.
<b>rmon collection history</b>	Configures a RMON history group of statistics.
<b>rmon collection stats</b>	Configures a RMON collection of statistics.
<b>rmon event</b>	Configures an RMON event.
<b>show rmon alarm</b>	Shows the RMON alarm table.
<b>show rmon event</b>	Shows the RMON event table.
<b>show rmon history</b>	Shows the RMON history table.
<b>show running-config</b>	Shows the current operating configuration.

# show running-config

**show running-config** [ | { **begin** | **exclude** | **include** } *expression* ]

## Description

Shows the current operating configuration.

## Syntax

Parameter	Description
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

This show command can be use to look, for example, configured users, the status of internal servers, enabled protocols, the status of VLANs and interfaces, etc.

## Example

This example illustrates how to show the current operating configuration.

```
DmSwitch#show flash-config 4
Building configuration...
!
hostname DmSwitch
!
username admin access-level 15
username admin password 7 d033e22ae348aeb5660fc2140aec35850c4da997
```

```
username guest access-level 0
username guest password 7 35675e68f4b5af7b995d9205ad0fc43842f16450
!
ip telnet server
ip http server
ip http secure-server
no ip ssh server
!
ip snmp-server community public ro
!
interface vlan 1
 name DefaultVlan
 ip address 192.168.0.25/24
 set-member untagged ethernet all
!
spanning-tree 1
spanning-tree 1 vlan all
!
DmSwitch#
```

## Related Commands

Command	Description
<b>diff</b>	Compares and shows the differences between two configurations.
<b>show flash-config</b>	Shows the configuration stored in a specific flash position.
<b>show startup-config</b>	Shows the startup flash configuration.

# show sntp

**show sntp** [ | { **begin** | **exclude** | **include** } *expression* ]

## Description

Shows Simple Network Time Protocol information.

## Syntax

Parameter	Description
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the Sntp information.

```
DmSwitch#show sntp
Current time: Tue Aug 8 10:02:06 2006

SNTP Status: enabled
SNTP poll interval: 30
SNTP server 1: 200.132.0.132

Last successful update: 8 s ago.
```



```
Server used: 200.132.0.132
Next attempt: in 22 s.
DmSwitch#
```

## Related Commands

Command	Description
<b>sntp</b>	Configures the Simple Network Time Protocol.

# show spanning-tree

```
show spanning-tree [ | { begin | exclude | include } expression ]
```

```
show spanning-tree configuration [ | { begin | exclude | include } expression ]
```

```
show spanning-tree instance [ table ]
```

```
show spanning-tree instance [ ethernet [ unit-number/ ] port-number | port-channel  
channel-group-number ] [ | { begin | exclude | include } expression ]
```

## Description

Shows spanning-tree configuration and status.

## Syntax

Parameter	Description
<b>configuration</b>	Shows global spanning-tree configurations.
<i>instance</i>	Specifies the spanning-tree instance (Range: 0-15).
<b>ethernet</b> [ <i>unit-number/</i> ] <i>port-number</i>	(Optional) Shows spanning-tree instance status of a specific unit and port.
<b>port-channel</b> <i>channel-group-number</i>	(Optional) Shows spanning-tree instance status of a specific port channel. The port channel must be specified in accordance with the port channel configured in the switch. (Range: 1-32)
<b>table</b>	(Optional) Shows spanning-tree instance status in table format.
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.
4.0	The instance range was changed from 1-15 to 0-15. The <b>configuration</b> parameter was added. Without arguments, the command displays information for all instances. The command output was changed to a more compact format.

## Usage Guidelines

You can use this show command to display global, per-instance and per-interface configuration and status for the spanning-tree protocol.

## Example

This example illustrates how to show the spanning-tree global configuration.

```
DmSwitch#show spanning-tree configuration

Spanning-tree information
-----
Spanning tree mode:          RSTP
BPDU guard status:          Disabled
MST name:
MST revision:                0
MST configuration digest:    0xE13A80F11ED0856ACD4EE3476941C73B

Instance      Protected VLANs
-----
1 (RSTP01)    All

DmSwitch#
```

This example illustrates how to show the spanning-tree instance status.

```
DmSwitch#show spanning-tree 1

Spanning-tree 1 (RSTP01) information
-----
Members:          All VLANs
Bridge info:       32769.0004df006a23, priority: 32768 + ID 1
Root info:         32769.0004df006992, port: PortCh 1, cost: 200000
Bridge times:      hello: 2, forward: 15, max age: 20, max hops: 20
Root times:        hello: 2, forward: 15, max age: 20
Topology changes:  total: 9, last: 13563s

Unit 1            2  4  6  8 10 12 14 16 18 20 22 24 26 28
                                     RF RF
                                     RF RF
                  1  3  5  7  9 11 13 15 17 19 21 23 25 27

DmSwitch#
```

This example illustrates how to show the spanning-tree interface status.

```
DmSwitch#show spanning-tree 1 ethernet 1/1
```

```
Eth 1/ 1 information
```

```
-----
Role / State:      Root Forwarding
Port info:         id: 128.1, priority: 128, cost: 200000
Root info:         32769.0004df006992, cost: 0
Designated info:   32769.0004df006992, port: 128.1
Edge port:         admin: disabled, oper: disabled
Link type:         admin: auto, oper: point-to-point
Received BPDUs:    STP Config.: 0, STP TCN: 0, RSTP/MSTP: 3
Transmitted BPDUs: STP Config.: 0, STP TCN: 0, RSTP/MSTP: 3
Detected version:   RSTP (version 2) or newer
Restricted role:    disabled
Restricted TCN:     disabled
```

```
DmSwitch#
```

## Related Commands

Command	Description
<b>spanning-tree</b>	Configure Spanning-Tree parameters.
<b>spanning-tree</b> <i>instance</i>	Enables a Spanning-tree instance.
<b>spanning-tree (Interface configuration)</b>	Adds an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree edge-port (Interface configuration)</b>	Defines the Ethernet interface as the spanning-tree edge port.
<b>spanning-tree</b> <i>instance</i>	Configures an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree</b> <i>instance</i> <b>forward-delay</b>	Configures the Spanning-Tree Algorithm forward delay time.
<b>spanning-tree</b> <i>instance</i> <b>hello-time</b>	Configures the Spanning-Tree Algorithm hello time.
<b>spanning-tree</b> <i>instance</i> <b>max-age</b>	Configures the Spanning-Tree Algorithm maximum age.
<b>spanning-tree</b> <i>instance</i> <b>max-hops</b>	Configures the Spanning-Tree Algorithm maximum hops parameter.
<b>spanning-tree</b> <i>instance</i> <b>priority</b>	Specifies the spanning-tree priority in the DmSwitch.
<b>spanning-tree</b> <i>instance</i> <b>vlan-group</b>	Adds VLAN groups to a spanning-tree instance.
<b>spanning-tree link-type (Interface configuration)</b>	Specifies the type of link used with spanning-tree.
<b>spanning-tree mode</b>	Configures the spanning-tree mode.

# show stacking

```
show stacking [ | { begin | exclude | include } expression ]
```

## Description

Shows stacking information.

## Syntax

Parameter	Description
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

If the front panel keys are disabled (Keys state parameter), the Stack/Uplink key and the Master/Slave key status will be displayed as "forced".

## Example

This example illustrates how to show the stacking information.

```
DmSwitch#show stacking
```

```
Stacking information:
```

```
Keys state: Enabled  
Keys delay: 5
```

```
Stack/Uplink key:   Uplink
Master/Slave key:   Master
```

```
Status:  not connected
```

Unit	Model	Serial	Firmware Version	Stacking Version	Bootloader Version
1	DmSwitch3224F1	300121	3.1	1	1.1.2-1

```
DmSwitch#
```

## Related Commands

Command	Description
<b>stacking keys</b>	Enables stacking and the stacking keys.

# show startup-config

**show startup-config**

## Description

Shows the startup flash configuration.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

This command shows the stored configuration in a specific flash memory position set as startup. It also shows the configuration in the same structure that the information presented in the **show running-config** command.

## Example

This example illustrates how to show the startup flash configuration.

```
DmSwitch#show startup-config
Building configuration...
!
hostname DmSwitch
!
username admin access-level 15
username admin password 7 d033e22ae348aeb5660fc2140aec35850c4da997
username guest access-level 0
username guest password 7 35675e68f4b5af7b995d9205ad0fc43842f16450
!
ip telnet server
ip http server
ip http secure-server
no ip ssh server
!
ip snmp-server community public ro
!
```

```
interface vlan 1
  name DefaultVlan
  ip address 192.168.0.25/24
  set-member untagged ethernet all
!
spanning-tree 1
spanning-tree 1 vlan all
!
DmSwitch#
```

## Related Commands

Command	Description
<b>copy</b>	Copies configuration and firmware.
<b>erase</b>	Erases spare firmware or configuration position.
<b>select</b>	Selects the startup firmware and flash for the next reboot.
<b>show flash</b>	Shows flash information.
<b>show flash-config</b>	Shows the configuration stored in a specific flash position.
<b>show running-config</b>	Shows the current operating configuration.



# show system

**show system**

## Description

Shows system information.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

You can use this show command to see the product model, factory serial number, hostname, location and other characteristics.

## Example

This example illustrates how to show the system information.

```
DmSwitch#show system

Product
-----
Model:           DmSwitch3224F1
OID:             1.3.6.1.4.1.3709.1.2.13

Factory
-----
Serial number:   300121
MAC Address:     00:04:DF:00:08:9D

User configurable
-----
Name:            DmSwitch
Location:        Brazil
Contact:         Datacom
```

DmSwitch#

## Related Commands

Command	Description
<code>hostname</code>	Specifies a host name.
<code>ip snmp-server</code>	Configures the internal SNMP server.

# show tacacs-server

**show tacacs-server**

## Description

Shows TACACS server information.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the TACACS server information.

```
DmSwitch#show tacacs-server
TACACS authentication configuration:
  Server: 10.10.11.20
  Key:    *****
  Port:   8380
DmSwitch#
```

## Related Commands

Command	Description
<b>authentication login</b>	Defines the login authentication method and its precedence.
<b>tacacs-server host</b>	Configures the TACACS server IP address.
<b>tacacs-server key</b>	Configures the TACACS server key string.

Command	Description
<code>tacacs-server port</code>	Configures the TACACS server port.

# show tech-support

```
show tech-support [ detail ]
```

## Description

Shows relevant information to be used by technical support.

## Syntax

No parameter accepted.

Parameter	Description
<code>unit detail</code>	(Optional) Show detailed information.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
6.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

Not available.

## Related Commands

No related command.

# show uptime

**show uptime**

## Description

Shows the system clock, system uptime and load average.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

The load average values correspond to the past 1, 5 and 15 minutes.

## Example

This example illustrates how to show the system uptime and load.

```
DmSwitch#show uptime
04:55:47 up 1 day, 4:55, load average: 1.45, 1.24, 1.13
DmSwitch#
```

## Related Commands

Command	Description
<b>show clock</b>	Shows the system clock and timezone.
<b>show cpu</b>	Shows CPU information.

# show users

```
show users [ | { begin | exclude | include } expression ]
```

## Description

Shows the users information.

## Syntax

Parameter	Description
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
5.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the users information.

```
DmSwitch#show users
USER                                ACCESS LEVEL  PASSWORD
-----
admin                                15            d033e22ae348aeb5660fc2140aec35850c4da997
guest                                0             35675e68f4b5af7b995d9205ad0fc43842f16450
DmSwitch#
```

## Related Commands

Command	Description
<code>username</code>	Creates users and configures access to the DmSwitch.



# show vlan

```
show vlan [ id index | name name | table [ id index | name name ] ] [ | { begin | exclude | include } expression ]
```

## Description

Shows the Virtual LAN settings.

## Syntax

Parameter	Description
<b>id</b> <i>index</i>	(Optional) Shows VLAN settings from a specific VLAN ID. (Range: 1-4094)
<b>name</b> <i>name</i>	(Optional) Shows VLAN settings from a specific VLAN name.
<b>table</b>	(Optional) Shows VLAN settings in table format.
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the VLAN settings from a specific VLAN index.

```

DmSwitch#show vlan id 1
VLAN:                1 [VlanName]
Type:                Static
Status:              Active
IP Address:          143.54.83.172/28
Aging-time:          300 sec.
Learn-copy:          Disabled
MAC maximum:         Disabled
Proxy ARP:           Disabled
STP:                 on instance 1
Members:             Eth1/1 (static, untagged)
                   Eth1/4 to Eth1/28 (static, untagged)
                   Port-Channel01 (static, untagged)

DmSwitch#

```

## Related Commands

Command	Description
<b>clear mac-address-table</b>	Erases entries stored in the MAC address table.
<b>ip address</b>	Sets an IP address for the selected VLAN.
<b>ip proxy-arp</b>	Enables proxy ARP on selected VLAN.
<b>mac-address-table aging-time (VLAN configuration)</b>	Sets the aging time for MAC address table entries for the specified VLAN.
<b>mac-address-table learn-copy</b>	Configures the learn of MAC addresses by copying existing entries.
<b>mac-address-table port-maximum</b>	Sets the VLAN MAC address table maximum number of entries per port.
<b>set-member forbidden</b>	Adds via GVRP forbidden members to a selected VLAN.
<b>set-member tagged</b>	Adds tagged members to selected VLAN.
<b>set-member untagged</b>	Adds untagged members to selected VLAN.
<b>show mac-address-table</b>	Shows the MAC address table.
<b>shutdown (VLAN configuration)</b>	Deactivates the selected VLAN.
<b>spanning-tree instance vlan-group</b>	Adds VLAN groups to a spanning-tree instance.

# show vlan-group

```
show vlan-group [ id index ] [ | { begin | exclude | include } expression ]
```

## Description

Shows the VLAN group settings.

## Syntax

Parameter	Description
<i>id index</i>	(Optional) Shows VLAN group settings from a specific group. (Range: 0-31)
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
5.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the VLAN group settings.

```
DmSwitch#show vlan-group

VLAN Group 1
STP protected:      1
EAPS protected:    (none)
```

```
Member VLANs:      VLAN 15 to VLAN 20

VLAN Group 2
STP protected:      1
EAPS protected:      5
Member VLANs:      VLAN 1 to VLAN 14

DmSwitch#
```

## Related Commands

Command	Description
<b>eaps domain</b> <b>protected-vlans</b>	Defines the VLAN groups that will be protected by EAPS ring.
<b>spanning-tree</b> <i>instance</i> <b>vlan-group</b>	Adds VLAN groups to a spanning-tree instance.
<b>vlan-group</b>	Create a VLAN group and manage its members.

# show vrrp

```
show vrrp [ | { begin | exclude | include } expression ]
```

## Description

Shows Virtual Router Redundancy Protocol information.

## Syntax

Parameter	Description
<b>begin</b>	(Optional) Prints lines which begin matches a pattern.
<b>exclude</b>	(Optional) Prints lines unmatching a pattern.
<b>include</b>	(Optional) Prints lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
5.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the VRRP information.

```
DmSwitch#show vrrp
Vlan2 - Group 7
State is Master
Virtual IP address is 10.0.0.2
Virtual MAC address is 0000.5e00.0107
Advertisement interval is 1.000 sec
Preemption enabled
Priority is 100
```

```
Master Router is 10.0.0.2, priority is 100  
DmSwitch#
```

## Related Commands

Command	Description
<b>vrrp ip</b>	Configures VRRP IP on a VLAN.
<b>vrrp priority</b>	Configures the priority for a VRRP group.
<b>vrrp shutdown</b>	Configures the VRRP group status.

# telnet

**telnet** { *host* } [ *port-number* ]

## Description

Allows you to Telnet from the current command-line interface session to another host.

## Syntax

Parameter	Description
<i>host</i>	Specifies the IP or host-name to connect to.
<i>port-number</i>	(Optional) Specifies the port-number.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to start a telnet connection to a host or to another DmSwitch.

```
DmSwitch#telnet 192.168.0.1
```

```
Entering character mode  
Escape character is '^'].
```

```
Another_DmSwitch login:
```

## Related Commands

No related command.



# terminal paging

**terminal paging**

**no terminal paging**

## Description

Allows to set a filter for paging through text one screenful at a time.

Inserting **no** as a prefix for this command makes terminal screen to roll continuously.

## Syntax

No parameter accepted.

## Default

Enabled.

## Command Modes

User EXEC.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to disable paging.

```
DmSwitch#no terminal paging
DmSwitch#
```

You can verify that the paging was configured by entering the **show running-config** privileged EXEC configuration command.

## Related Commands

Command	Description
---------	-------------

Command	Description
<code>show running-config</code>	Shows the current operating configuration.

# terminal timeout

```
terminal timeout { seconds }
```

```
no terminal timeout
```

## Description

Allows to set an idle timeout for terminal. When the timeout is reached the system issues an auto-logout.

Inserting **no** as a prefix for this command, it will disable the terminal timeout feature.

## Syntax

Parameter	Description
<i>seconds</i>	Specifies the number of seconds until timeout. (Range: 15-3600)

## Default

Disabled.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to set an idle timeout for terminal.

```
DmSwitch#terminal timeout 600
DmSwitch#
```

You can verify that the timeout was configured by entering the **show running-config** privileged EXEC configuration command.

## Related Commands

Command	Description
<code>show running-config</code>	Shows the current operating configuration.

# traceroute

**traceroute** { *destination-host* }

## Description

Enables you to trace the routed path between the switch and a destination host.

## Syntax

Parameter	Description
<i>destination-host</i>	Specifies the IP or host-name of the destination host.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

To use a host-name parameter, you must first configure DNS.

Each router along the path is displayed.

## Example

This example shows how to trace the routed path between the switch and a destination host.

```
DmSwitch#traceroute 192.168.0.1
```

## Related Commands

No related command.

# unit

**unit** { *unit* }

## Description

Sets a default unit for the current session.

## Syntax

Parameter	Description
<i>unit</i>	Specifies the new default unit. (Range: 1-8)

## Default

Disabled.

## Command Modes

User EXEC.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how set the unit 2 as the default unit.

```
DmSwitch#unit 2
DmSwitch#
```

## Related Commands

No related command.

# Chapter 3. Configure Commands

## accounting

```
accounting { radius | tacacs }
```

```
no accounting { radius | tacacs }
```

### Description

Enables Accounting.

### Syntax

Parameter	Description
<b>radius</b>	Enables RADIUS accounting
<b>tacacs</b>	Enables TACACS accounting

### Default

Disabled.

### Command Modes

Global configuration.

### Command History

Release	Modification
4.1	This command was introduced.

### Usage Guidelines

Not available.

### Example

This example shows how to configure the RADIUS accounting.

```
DmSwitch(config)#accounting radius
DmSwitch(config)#
```

The configuration can be verified by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>radius-server host</b>	Configures a specific RADIUS server.
<b>radius-server key</b>	Configures the default RADIUS server key string.
<b>radius-server acct-port</b>	Configures the default RADIUS server accounting port.
<b>radius-server retries</b>	Configures the RADIUS server retries.
<b>radius-server timeout</b>	Configures the RADIUS server timeout.
<b>tacacs-server host</b>	Configures the TACACS server IP address.
<b>tacacs-server key</b>	Configures the TACACS server key string.
<b>tacacs-server port</b>	Configures the TACACS server port.
<b>show radius-server</b>	Shows RADIUS server information.
<b>show tacacs-server</b>	Shows TACACS server information.
<b>show running-config</b>	Shows the current operating configuration.



# arp aging-time

**arp aging-time** { *seconds* }

**no arp aging-time**

## Description

Defines the aging time of each entry in the ARP table.

Inserting **no** as a prefix for this command, it will reset the aging time to the default value for new entries in the ARP table.

## Syntax

Parameter	Description
<i>seconds</i>	Specifies the aging time in seconds. (Range: 10-1000000)

## Default

300 seconds.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to change the aging time to 1000 seconds.

```
DmSwitch#arp aging-time 1000
DmSwitch#
```

You can verify that the value was changed by entering the **show running-config** privileged EXEC configuration command.

## Related Commands

Command	Description
<code>show running-config</code>	Shows the current operating configuration.

# authentication login

```
authentication login { local | tacacs | radius } [ local | tacacs | radius ] [ local  
| tacacs | radius ]
```

```
no authentication login
```

## Description

Defines the login authentication method and its precedence.

## Syntax

Parameter	Description
<b>local</b>	Local database authentication.
<b>radius</b>	RADIUS server authentication.
<b>tacacs</b>	Configures login to TACACS server

## Default

Local authentication method only.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure the RADIUS authentication method as the first option, followed by Local and TACACS, respectively.

```
DmSwitch(config)#authentication login radius local tacacs  
DmSwitch(config)#
```

You can verify the configured authentication method precedence by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>tacacs-server host</b>	Configures the TACACS server IP address.
<b>tacacs-server key</b>	Configures the TACACS server key string.
<b>tacacs-server port</b>	Configures the TACACS server port.
<b>radius-server acct-port</b>	Configures the default RADIUS server accounting port.
<b>radius-server auth-port</b>	Configures the default RADIUS server authentication port.
<b>radius-server host</b>	Configures a specific RADIUS server.
<b>radius-server key</b>	Configures the default RADIUS server key string.
<b>radius-server retries</b>	Configures the RADIUS server retries.
<b>radius-server timeout</b>	Configures the RADIUS server timeout.
<b>show authentication</b>	Shows information about login authentication method and its precedence.
<b>show radius-server</b>	Shows RADIUS server information.
<b>show running-config</b>	Shows the current operating configuration.
<b>show tacacs-server</b>	Shows TACACS server information.

# authorization

**authorization tacacs**

**no authorization tacacs**

## Description

Enables Authorization.

## Syntax

Parameter	Description
<b>tacacs</b>	Enables TACACS authorization

## Default

Disabled.

## Command Modes

Global configuration.

## Command History

Release	Modification
6.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure the TACACS authorization.

```
DmSwitch(config)#authorization tacacs
DmSwitch(config)#
```

The configuration can be verified by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
---------	-------------

Command	Description
<code>tacacs-server host</code>	Configures the TACACS server IP address.
<code>tacacs-server key</code>	Configures the TACACS server key string.
<code>tacacs-server port</code>	Configures the TACACS server port.
<code>show tacacs-server</code>	Shows TACACS server information.
<code>show running-config</code>	Shows the current operating configuration.

# banner login

**banner login**

**no banner login**

## Description

Specifies a message to be displayed before the login prompts.

The **no** command deletes the login banner.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

After entering the **banner login** command, start the message by entering a delimiting character of your choice, followed by one or more lines of text, terminating the message with the second occurrence of the delimiting character. Then, press <enter> to save the text.

## Example

This example shows how to set a login banner.

```
DmSwitch(config)#banner login
c <text> c, where c is any delimiting character
=You are reading
  a login banner test.
This is a example.=
DmSwitch(config)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

No related command.



# batch *index date*

```
batch index date { min { minute... | all | range first-minute last-minute... } [ hour { hour... |  
all | range first-hour last-hour... } [ day-of-month { day-month... | all | range first-day-month  
last-day-month... } [ month { month... | all | range first-month last-month... } [ day-of-week {  
day-week... | all | range first-day-week last-day-week... } ] ] ] }
```

## Description

Schedules the execution of batch file.

## Syntax

Parameter	Description
<i>index</i>	Specifies the batch file index. (Range: 1-16)
<b>min</b>	Schedules the minutes that the batch file will be executed.
<i>minute</i>	Specifies a minute of an hour. (Range: 0-59)
<b>all</b>	Specifies all possibilities of a before parameter in the command.
<b>range</b> <i>first-minute last-minute</i>	Specifies a range of minutes in an hour. (Range: 0-59)
<b>hour</b>	(Optional) Schedules the hours that the batch file will be executed.
<i>hour</i>	Specifies an hour of a day. (Range: 0-23)
<b>range</b> <i>first-hour last-hour</i>	Specifies a range of hours in a day. (Range: 0-23)
<b>day-of-month</b>	(Optional) Schedules the days of month that the batch file will be executed.
<i>day-month</i>	Specifies a day of a month. (Range: 1-31)
<b>range</b> <i>first-day-month last-day-month</i>	Specifies a range of days in a month. (Range: 1-31)
<b>month</b>	(Optional) Schedules the months of year that the batch file will be executed.
<i>month</i>	Specifies a month of an year. (Range: 1-12)
<b>range</b> <i>first-month last-month</i>	Specifies a range of months in an year. (Range: 1-12)
<b>day-of-week</b>	(Optional) Schedules the days of week that the batch file will be executed.
<i>day-week</i>	Specifies a day of week where 0 represents Sunday. (Range: 0-6)
<b>range</b> <i>first-day-week last-day-week</i>	Specifies a range of days in a week where 0 represents Sunday. (Range: 0-6)

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

The batch file must be enabled for its execution in accordance with its schedules.

## Example

This example shows how to schedule the batch file specified by index 1 to be executed on Saturdays at 7 o'clock.

```
DmSwitch#batch 1 date min 0 hour 7 day-of-month all month all day-of-week 6
DmSwitch#
```

You can verify that the batch file was scheduled by entering the **show batch** privileged EXEC command.

## Related Commands

Command	Description
<b>batch index disable</b>	Disables the batch file execution.
<b>batch index enable</b>	Enables the batch file execution in accordance with its schedules.
<b>batch index remark</b>	Specifies a remark for a batch file.
<b>batch index start-session</b>	Starts a batch file session where all sequence of 'executed' commands are saved.
<b>batch new</b>	Creates a new batch file.
<b>batch term-session</b>	Finishes a batch file session that was previously started to save all sequence of 'executed' commands.
<b>show batch</b>	Shows the existing batch files and their contents.
<b>show running-config</b>	Shows the current operating configuration.

# batch *index* disable

**batch index disable**

## Description

Disables the batch file execution.

## Syntax

Parameter	Description
<i>index</i>	Specifies the batch file index. (Range: 1-16)

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to disable the batch file specified by index 1.

```
DmSwitch#batch 1 disable
DmSwitch#
```

You can verify that the batch file was disabled by entering the **show batch** privileged EXEC command.

## Related Commands

Command	Description
<b>batch index date</b>	Schedules the execution of batch file.
<b>batch index enable</b>	Enables the batch file execution in accordance with its schedules.

Command	Description
<b>batch index remark</b>	Specifies a remark for a batch file.
<b>batch index start-session</b>	Starts a batch file session where all sequence of 'executed' commands are saved.
<b>batch new</b>	Creates a new batch file.
<b>batch term-session</b>	Finishes a batch file session that was previously started to save all sequence of 'executed' commands.
<b>show batch</b>	Shows the existing batch files and their contents.
<b>show running-config</b>	Shows the current operating configuration.

# batch *index* enable

**batch index enable**

## Description

Enables the batch file execution in accordance with its schedules.

## Syntax

Parameter	Description
<i>index</i>	Specifies the batch file index. (Range: 1-16)

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to enable the batch file specified by index 1.

```
DmSwitch#batch 1 enable
DmSwitch#
```

You can verify that the batch file was disabled by entering the **show batch** privileged EXEC command.

## Related Commands

Command	Description
<b>batch index date</b>	Schedules the execution of batch file.
<b>batch index disable</b>	Disables the batch file execution.

Command	Description
<b>batch index remark</b>	Specifies a remark for a batch file.
<b>batch index start-session</b>	Starts a batch file session where all sequence of 'executed' commands are saved.
<b>batch new</b>	Creates a new batch file.
<b>batch term-session</b>	Finishes a batch file session that was previously started to save all sequence of 'executed' commands.
<b>show batch</b>	Shows the existing batch files and their contents.
<b>show running-config</b>	Shows the current operating configuration.

# batch *index* remark

**batch index remark** { *remark* }

## Description

Specifies a remark for a batch file.

## Syntax

Parameter	Description
<i>index</i>	Specifies the batch file index. (Range: 1-16)
<i>remark</i>	Specifies a remark.

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to specify the remark "test" for the batch file specified by index 1.

```
DmSwitch#batch 1 remark test
DmSwitch#
```

You can verify that the information was deleted by entering the **show batch** privileged EXEC command.

## Related Commands

Command	Description
<b>batch index date</b>	Schedules the execution of batch file.

Command	Description
<b>batch index disable</b>	Disables the batch file execution.
<b>batch index enable</b>	Enables the batch file execution in accordance with its schedules.
<b>batch index start-session</b>	Starts a batch file session where all sequence of 'executed' commands are saved.
<b>batch new</b>	Creates a new batch file.
<b>batch term-session</b>	Finishes a batch file session that was previously started to save all sequence of 'executed' commands.
<b>show batch</b>	Shows the existing batch files and their contents.
<b>show running-config</b>	Shows the current operating configuration.



# batch *index* start-session

**batch *index* start-session**

## Description

Starts a batch file session where all sequence of "executed" commands are saved.

## Syntax

Parameter	Description
<i>index</i>	Specifies the batch file index. (Range: 1-16)

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Show commands are not saved in the batch file because the batch files are executed in background.

## Example

This example shows how to start a batch file session for the batch file specified by index 1.

```
DmSwitch#batch 1 start-session
Batch-1#
```

You can verify that the batch file session was started as it is shown in the new prompt.

## Related Commands

Command	Description
<b>batch index date</b>	Schedules the execution of batch file.
<b>batch index disable</b>	Disables the batch file execution.

Command	Description
<b>batch index enable</b>	Enables the batch file execution in accordance with its schedules.
<b>batch index remark</b>	Specifies a remark for a batch file.
<b>batch new</b>	Creates a new batch file.
<b>batch term-session</b>	Finishes a batch file session that was previously started to save all sequence of 'executed' commands.
<b>show batch</b>	Shows the existing batch files and their contents.
<b>show running-config</b>	Shows the current operating configuration.

# batch new

**batch new** { *index* }

**no batch** { *index* }

## Description

Creates a new batch file.

Inserting **no** as a prefix for this command, it will delete the specified batch file.

## Syntax

Parameter	Description
<b>new</b> <i>index</i>	Specifies the batch file index. (Range: 1-16)

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to create a new batch file with index 1.

```
DmSwitch#batch new 1
DmSwitch#
```

You can verify that the batch file was created by entering the **show batch** privileged EXEC command.

## Related Commands

Command	Description
<b>batch index date</b>	Schedules the execution of batch file.
<b>batch index disable</b>	Disables the batch file execution.
<b>batch index enable</b>	Enables the batch file execution in accordance with its schedules.
<b>batch index remark</b>	Specifies a remark for a batch file.
<b>batch index start-session</b>	Starts a batch file session where all sequence of 'executed' commands are saved.
<b>batch term-session</b>	Finishes a batch file session that was previously started to save all sequence of 'executed' commands.
<b>show batch</b>	Shows the existing batch files and their contents.
<b>show running-config</b>	Shows the current operating configuration.

# batch term-session

**batch term-session**

## Description

Finishes a batch file session that was previously started to save all sequence of "executed" commands.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Show commands are not saved in the batch file because batch files are executed in background.

## Example

This example shows how to finish the batch file session for the batch file specified by index 1.

```
Batch-1(config)#batch term-session
Save typed commands? <Y/n> y
DmSwitch#
```

You can verify that the batch file session was finished by entering the **show batch** privileged EXEC command.

## Related Commands

Command	Description
<b>batch index date</b>	Schedules the execution of batch file.
<b>batch index disable</b>	Disables the batch file execution.
<b>batch index enable</b>	Enables the batch file execution in accordance with its schedules.
<b>batch index remark</b>	Specifies a remark for a batch file.

<b>Command</b>	<b>Description</b>
<b>batch index start-session</b>	Starts a batch file session where all sequence of 'executed' commands are saved.
<b>batch new</b>	Creates a new batch file.
<b>show batch</b>	Shows the existing batch files and their contents.
<b>show running-config</b>	Shows the current operating configuration.

# bridge-ext gvrp

**bridge-ext gvrp**

**no bridge-ext gvrp**

## Description

Globally enables GVRP (GARP VLAN Registration Protocol) for the switch.

Inserting **no** as a prefix for this command, it will disable the GVRP.

## Syntax

No parameter accepted.

## Default

GVRP is disabled.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

With the GVRP globally enabled, specific ports that there are GVRP enabled can automatically learn VLANs from connected devices where GVRP is also enabled.

## Example

This example shows how to enable the GVRP globally for the switch.

```
DmSwitch(config)#bridge-ext gvrp
DmSwitch(config)#
```

You can verify that the GVRP was enabled by entering the **show bridge-ext** privileged EXEC command.

## Related Commands

Command	Description
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Command	Description
<code>garp timer</code>	Set values for GARP timers.
<code>show garp</code>	Shows GARP properties.
<code>show gvrp</code>	Shows GVRP configuration.
<code>show running-config</code>	Shows the current operating configuration.
<code>switchport gvrp</code>	Enables GVRP for a specific port.



# clock timezone

```
clock timezone { name hour [ minute ] }
```

```
no clock timezone
```

## Description

Specifies the timezone.

Inserting **no** as a prefix for this command, it will reset timezone to default value.

## Syntax

Parameter	Description
<i>name</i>	Specifies a name for timezone.
<i>hour</i>	Hours offset from UTC. (Range: -23 - +24)
<i>minute</i>	(Optional) Minutes offset from UTC. (Range: 0-60)

## Default

0 hours and 0 minutes offset from UTC, without name.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to specify the timezone with name "BRA", and -3 hours and 0 minutes offset from UTC.

```
DmSwitch#clock timezone BRA -3 0
DmSwitch#
```

You can verify that the information was deleted by entering the **show clock** privileged EXEC command.

## Related Commands

Command	Description
<b>show clock</b>	Shows the system clock and timezone.

# counter

```
counter { new | id } [ remark { name } ]
```

```
no counter { id }
```

## Description

Configure a counter to be used by a filter.

## Syntax

Parameter	Description
<b>new</b>	Creates a new counter
<i>id</i>	Selects a counter to edit by ID
<b>remark</b> <i>name</i>	(Optional) Adds a remark text

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to create a new counter.

```
DmSwitch(config)#counter new remark first_counter
Counter 1 created.
DmSwitch(config)#
```

You can verify that the configuration was created by entering the **show counter** privileged EXEC command.

## Related Commands

Command	Description
<code>show counter</code>	Shows counters values and configuration
<code>filter</code>	Creates or configures a traffic filter
<code>show running-config</code>	Shows the current operating configuration.

# cpu-dos-protect

**cpu-dos-protect rate-limit** *packets*

**no cpu-dos-protect**

## Description

Limits the packet rate that is processed by CPU.

Inserting **no** as a prefix for this command, it will disable the cpu-dos-protect.

## Syntax

Parameter	Description
<i>packets</i>	Specifies a limit of packets processed by the CPU per second. (Range: 1-2000000000)

## Default

Disabled.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

This command can be used to prevent "denial of service" attacks to the CPU, where an attacker could generate a packet flood and require a large amount of processing that would negatively affect execution of other system tasks.

However, a very low limit could cause loss of critical traffic as protocol PDUs, management connections, etc.

## Example

This example shows how to limit CPU packet rate in 3000000 packets per second.

```
DmSwitch#cpu-dos-protect rate-limit 3000000
DmSwitch#
```

You can verify that the limit rate was changed by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>show cpu</b>	Shows CPU information.
<b>show cpu-dos-protect</b>	Shows the CPU denial of service protection information.
<b>show running-config</b>	Shows the current operating configuration.

# dot1x

```
dot1x { default | system-auth-control }
```

```
no dot1x system-auth-control
```

## Description

Configures the 802.1X port-based access control.

The **no** command will disable 802.1X globally.

## Syntax

Parameter	Description
<b>default</b>	Changes the 802.1X global and port settings to default values.
<b>system-auth-control</b>	Enables the 802.1X globally.

## Default

802.1X is disabled.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

By using the **dot1x default** command, 802.1X will return to disable mode.

## Example

This example shows how to enable the 802.1X authentication globally on the DmSwitch

```
DmSwitch(config)#dot1x system-auth-control  
DmSwitch(config)#
```

You can verify the 802.1X status by entering the **show dot1x** privileged EXEC command.

## Related Commands

Command	Description
<code>dot1x max-req</code>	Sets the maximum EAP request/identity packet retransmissions.
<code>dot1x port-control</code>	Sets the dot1x mode on a port interface.
<code>dot1x re-authentication</code>	Enables or disables periodic re-authentication.
<code>dot1x timeout</code>	Defines dot1x timeout values.
<code>show dot1x</code>	Shows 802.1X information.
<code>show running-config</code>	Shows the current operating configuration.



# eaps domain

**eaps domain**

**no eaps domain**

## Description

Creates a new EAPS domain.

Inserting **no** as a prefix for this command, it will delete the EAPS domain.

## Syntax

Parameter	Description
<i>domain</i>	Specifies a domain id.

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.
5.0	A specific domain is no longer referenced by name, but by id.

## Usage Guidelines

Before you create a EAPS domain, you must disable the spanning-tree protocol.

## Example

This example shows how to create a domain with id 1.

```
DmSwitch(config)#eaps 1
DmSwitch(config)#
```

You can verify that the domain was created by entering the **show eaps** privileged EXEC command.

## Related Commands

Command	Description
<b>eaps domain control-vlan</b>	Configures the control VLAN for the EAPS domain.
<b>eaps domain failtime</b>	Defines the interval time that the secondary port of DmSwitch master in a EAPS ring waits without receiving the two hello packets before changing the status of EAPS ring to fail.
<b>eaps domain hellotime</b>	Defines the interval between the sending of two hello packets.
<b>eaps domain mode</b>	Configures the mode of DmSwitch in EAPS domain.
<b>eaps domain name</b>	Renames the domain.
<b>eaps domain port</b>	Defines both primary and secondary ports of DmSwitch in EAPS ring.
<b>eaps domain protected-vlans</b>	Defines the VLAN groups that will be protected by EAPS ring.
<b>show eaps</b>	Shows EAPS settings.
<b>show running-config</b>	Shows the current operating configuration.
<b>vlan group</b>	Create a VLAN group and manage its members.

# eaps *domain* control-vlan

**eaps *domain* control-vlan** { **id** *index* | **name** *name* }

**no eaps *domain* control-vlan**

## Description

Configures the control VLAN for the EAPS domain.

Inserting **no** as a prefix for this command, it will remove the control VLAN records for the specified EAPS domain.

## Syntax

Parameter	Description
<i>domain</i>	Specifies a domain id.
<b>id</b> <i>index</i>	Specifies an enabled VLAN by index. (Range: 1-4094)
<b>name</b> <i>name</i>	Specifies an enabled VLAN by name.

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.
5.0	A specific domain is no longer referenced by name, but by id.

## Usage Guidelines

The control VLAN is used for control traffic from the EAPS protocol. It cannot be used for data traffic.

For the primary and secondary ports of the domain, the control VLAN always have a forwarding state. For the remaining ports, the control VLAN always have a blocked state.

## Example

This example shows how to configure the VLAN index 100 to be the control VLAN for the EAPS domain.

```
DmSwitch(config)#eaps 1 control-vlan id 100
DmSwitch(config)#
```

You can verify that the information was deleted by entering the **show eaps** privileged EXEC command.

## Related Commands

Command	Description
<b>eaps domain</b>	Creates a new EAPS domain.
<b>eaps domain failtime</b>	Defines the interval time that the secondary port of DmSwitch master in a EAPS ring waits without receiving the two hello packets before changing the status of EAPS ring to fail.
<b>eaps domain hellotime</b>	Defines the interval between the sending of two hello packets.
<b>eaps domain mode</b>	Configures the mode of DmSwitch in EAPS domain.
<b>eaps domain name</b>	Renames the domain.
<b>eaps domain port</b>	Defines both primary and secondary ports of DmSwitch in EAPS ring.
<b>eaps domain protected-vlans</b>	Defines the VLAN groups that will be protected by EAPS ring.
<b>show eaps</b>	Shows EAPS settings.
<b>show running-config</b>	Shows the current operating configuration.
<b>vlan group</b>	Create a VLAN group and manage its members.

# eaps *domain* failtime

**eaps domain failtime** { *seconds* }

**no eaps domain failtime**

## Description

Configures the amount of time that causes the EAPS Master node to enter the FAILED state if no hello packet is received.

Inserting **no** as a prefix for this command, it will reset failtime to the default value.

## Syntax

Parameter	Description
<i>domain</i>	Specifies a domain id.
<i>seconds</i>	Specifies the maximum time to declare the FAILED state when no hello packets are received. Must be greater than hellotime for this domain.

## Default

3 seconds.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.
5.0	A specific domain is no longer referenced by name, but by id.

## Usage Guidelines

The "hello" packets are sent on the primary port from the Master switch and are expected to be received on its secondary port. If no hello packets are received on the secondary port after failtime seconds the Master switch enters the FAILED state.

This is an alternate method for detecting ring failures. In most situations, the Master switch will enter the

FAILED state after receiving link down notifications from other switches or from itself which is faster than the failtime method.

Use lower values of failtime to ensure faster ring protection. Use higher values to be more tolerant to hello packet losses.

## Example

This example shows how to change the failtime parameter for an EAPS domain

```
DmSwitch(config)#eaps 1 failtime 5
DmSwitch(config)#
```

You can verify that the interval time was changed by entering the **show eaps detail** privileged EXEC command.

## Related Commands

Command	Description
<b>eaps domain</b>	Creates a new EAPS domain.
<b>eaps domain control-vlan</b>	Configures the control VLAN for the EAPS domain.
<b>eaps domain hellotime</b>	Defines the interval between the sending of two hello packets.
<b>eaps domain mode</b>	Configures the mode of DmSwitch in EAPS domain.
<b>eaps domain name</b>	Renames the domain.
<b>eaps domain port</b>	Defines both primary and secondary ports of DmSwitch in EAPS ring.
<b>eaps domain protected-vlans</b>	Defines the VLAN groups that will be protected by EAPS ring.
<b>show eaps</b>	Shows EAPS settings.
<b>show running-config</b>	Shows the current operating configuration.
<b>vlan group</b>	Create a VLAN group and manage its members.

# eaps *domain* hellotime

```
eaps domain hellotime { second }
```

```
no eaps domain hellotime
```

## Description

Configures the sending interval for "hello" packets.

Inserting **no** as a prefix for this command, it will reset hellotime to the default value.

## Syntax

Parameter	Description
<i>domain</i>	Specifies a domain id.
<i>second</i>	Specifies the interval between the sending of two "hello" packets in seconds. It must be less than the failtime parameter for this domain.

## Default

1 second.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.
5.0	A specific domain is no longer referenced by name, but by id.

## Usage Guidelines

The "hello" packets are sent on the primary port from the Master switch and are expected to be received on its secondary port. A hello packet received puts the EAPS domain in the COMPLETE state (Master switch).

Use lower values to ensure faster state transitions for the EAPS protocol. Use higher values to reduce control traffic on the network.

## Example

This example shows how to change the interval time between two "hello" packets to 2 seconds.

```
DmSwitch(config)#eaps 1 hellotime 2
DmSwitch(config)#
```

You can verify that the interval time was changed by entering the **show eaps detail** privileged EXEC command.

## Related Commands

Command	Description
<b>eaps domain</b>	Creates a new EAPS domain.
<b>eaps domain control-vlan</b>	Configures the control VLAN for the EAPS domain.
<b>eaps domain failtime</b>	Defines the interval time that the secondary port of DmSwitch master in a EAPS ring waits without receiving the two hello packets before changing the status of EAPS ring to fail.
<b>eaps domain mode</b>	Configures the mode of DmSwitch in EAPS domain.
<b>eaps domain name</b>	Renames the domain.
<b>eaps domain port</b>	Defines both primary and secondary ports of DmSwitch in EAPS ring.
<b>eaps domain protected-vlans</b>	Defines the VLAN groups that will be protected by EAPS ring.
<b>show eaps</b>	Shows EAPS settings.
<b>show running-config</b>	Shows the current operating configuration.
<b>vlan group</b>	Create a VLAN group and manage its members.



# eaps *domain* mode

**eaps domain mode { master | transit }**

## Description

Configures the mode of a switch in the EAPS domain.

## Syntax

Parameter	Description
<i>domain</i>	Specifies a domain id.
<b>master</b>	Defines the master mode.
<b>transit</b>	Defines the transit mode.

## Default

After an EAPS domain is created, the switch is in Transit mode.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.
5.0	A specific domain is no longer referenced by name, but by id.

## Usage Guidelines

You must configure exactly one switch as Master on each EAPS domain. The remaining switches must be configured as Transit.

The Master switch performs some control operations on the EAPS domain. In normal conditions, the secondary port of the Master switch is the one that is blocked for traffic in order to avoid the Ethernet ring becoming a network loop.

## Example

This example shows how to configure a DmSwitch as master.

```
DmSwitch(config)#eaps 1 mode master
DmSwitch(config)#
```

You can verify that the configuration was made by entering the **show eaps** privileged EXEC command.

## Related Commands

Command	Description
<b>eaps domain</b>	Creates a new EAPS domain.
<b>eaps domain control-vlan</b>	Configures the control VLAN for the EAPS domain.
<b>eaps domain failtime</b>	Defines the interval time that the secondary port of DmSwitch master in a EAPS ring waits without receiving the two hello packets before changing the status of EAPS ring to fail.
<b>eaps domain hellotime</b>	Defines the interval between the sending of two hello packets.
<b>eaps domain name</b>	Renames the domain.
<b>eaps domain port</b>	Defines both primary and secondary ports of DmSwitch in EAPS ring.
<b>eaps domain protected-vlans</b>	Defines the VLAN groups that will be protected by EAPS ring.
<b>show eaps</b>	Shows EAPS settings.
<b>show running-config</b>	Shows the current operating configuration.
<b>vlan group</b>	Create a VLAN group and manage its members.

# eaps *domain name*

**eaps *domain name* { *name* }**

## Description

Renames the EAPS domain.

## Syntax

Parameter	Description
<i>domain</i>	Specifies a domain id.
<i>name</i>	Specifies a new name for domain.

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.
5.0	A specific domain is no longer referenced by name, but by id.

## Usage Guidelines

Not available.

## Example

This example shows how to set the domain 1 name to "test".

```
DmSwitch(config)#eaps 1 name test
DmSwitch(config)#
```

You can verify that the domain was renamed by entering the **show eaps** privileged EXEC command.

## Related Commands

Command	Description
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Command	Description
<b>eaps domain</b>	Creates a new EAPS domain.
<b>eaps domain control-vlan</b>	Configures the control VLAN for the EAPS domain.
<b>eaps domain failtime</b>	Defines the interval time that the secondary port of DmSwitch master in a EAPS ring waits without receiving the two hello packets before changing the status of EAPS ring to fail.
<b>eaps domain hellotime</b>	Defines the interval between the sending of two hello packets.
<b>eaps domain mode</b>	Configures the mode of DmSwitch in EAPS domain.
<b>eaps domain port</b>	Defines both primary and secondary ports of DmSwitch in EAPS ring.
<b>eaps domain protected-vlans</b>	Defines the VLAN groups that will be protected by EAPS ring.
<b>show eaps</b>	Shows EAPS settings.
<b>show running-config</b>	Shows the current operating configuration.
<b>vlan group</b>	Create a VLAN group and manage its members.

## eaps domain port

```
eaps domain port { primary | secondary } { ethernet [ unit-number/ ] port-number |  
port-channel channel-group-number }
```

```
no eaps domain port { primary | secondary }
```

### Description

Configures the two ports that participate on an EAPS domain.

Inserting **no** as a prefix for this command, it will remove the configured ports from the EAPS domain.

### Syntax

Parameter	Description
<i>domain</i>	Specifies a domain id.
<b>primary</b>	Sets a specific port as primary.
<b>secondary</b>	Sets a specific port as secondary.
<b>ethernet</b> <i>unit-number/port-number</i>	Specifies an Ethernet unit (optional) and port.
<b>port-channel</b> <i>channel-group-number</i>	Specifies a port channel. The port channel must be specified in accordance with the port channel configured in the switch. (Range: 1-32)

### Default

No default is defined.

### Command Modes

Global configuration.

### Command History

Release	Modification
3.1	This command was introduced.
5.0	A specific domain is no longer referenced by name, but by id.

### Usage Guidelines

The primary and secondary ports have no distinct functionality on Transit switches.

In normal conditions, the secondary port of the Master switch is the one that is blocked for traffic in order to

avoid the Ethernet ring becoming a network loop.

## Example

This example shows how to define the ethernet port 1/25 as the primary port on the EAPS domain.

```
DmSwitch(config)#eaps 1 port primary ethernet 1/25
DmSwitch(config)#
```

You can verify that the information was configured by entering the **show eaps** privileged EXEC command.

## Related Commands

Command	Description
<b>eaps domain</b>	Creates a new EAPS domain.
<b>eaps domain control-vlan</b>	Configures the control VLAN for the EAPS domain.
<b>eaps domain failtime</b>	Defines the interval time that the secondary port of DmSwitch a EAPS ring waits without receiving the two hello packets before changing the status of EAPS ring to fail.
<b>eaps domain hellotime</b>	Defines the interval between the sending of two hello packets.
<b>eaps domain mode</b>	Configures the mode of DmSwitch in EAPS domain.
<b>eaps domain name</b>	Renames the domain.
<b>eaps domain protected-vlans</b>	Defines the VLAN groups that will be protected by EAPS ring.
<b>show eaps</b>	Shows EAPS settings.
<b>show running-config</b>	Shows the current operating configuration.
<b>vlan group</b>	Create a VLAN group and manage its members.

# eaps *domain* protected-vlans

```
eaps domain protected-vlans vlan-group { index | range first-index last-index | all }
```

```
no eaps domain protected-vlans vlan-group { index | range first-index last-index | all }
```

## Description

Defines the VLAN groups that will be protected by an EAPS domain.

Inserting **no** as a prefix for this command, it will remove the protected VLAN group records for the specified EAPS domain.

## Syntax

Parameter	Description
<i>domain</i>	Specifies a domain id.
<i>index</i>	Specifies a single VLAN group. (Range: 0-31)
<b>range</b> <i>first-index last-index</i>	Specifies a range of VLAN group IDs.
<b>all</b>	Specifies all VLAN groups.

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.
5.0	A specific domain is no longer referenced by name, but by id. The protected VLANs are specified using VLAN groups.

## Usage Guidelines

For the primary and secondary ports of the domain, the protected VLAN groups have a forwarding or blocked state depending on the EAPS protocol execution. For the remaining ports, the protected VLAN groups always have a forwarding state.

## Example

This example shows how to protect VLAN groups 1 to 5 on an EAPS ring.

```
DmSwitch(config)#eaps 1 protected-vlans vlan-group range 1 5
DmSwitch(config)#
```

You can verify that the configuration was done by entering the **show eaps detail** privileged EXEC command.

## Related Commands

Command	Description
<b>eaps domain</b>	Creates a new EAPS domain.
<b>eaps domain control-vlan</b>	Configures the control VLAN for the EAPS domain.
<b>eaps domain failtime</b>	Defines the interval time that the secondary port of DmSwitch master in a EAPS ring waits without receiving the two hello packets before changing the status of EAPS ring to fail.
<b>eaps domain hellotime</b>	Defines the interval between the sending of two hello packets.
<b>eaps domain mode</b>	Configures the mode of DmSwitch in EAPS domain.
<b>eaps domain name</b>	Renames the domain.
<b>eaps domain port</b>	Defines both primary and secondary ports of DmSwitch in EAPS ring.
<b>show eaps</b>	Shows EAPS settings.
<b>show running-config</b>	Shows the current operating configuration.
<b>vlan group</b>	Create a VLAN group and manage its members.



# external-alarm

```
external-alarm { fan | psu | in1 | in2 | in3 }
```

```
no external-alarm [ fan | psu | in1 | in2 | in3 ]
```

## Description

Enables the external alarm output which is based on configurable sources.

Inserting **no** as a prefix for this command, it will disable the external alarm.

## Syntax

Parameter	Description
<b>fan</b>	Enables external alarm for fan failure.
<b>psu</b>	Enables external alarm for power supply failure.
<b>in1</b>	Enables external alarm for external alarm input 1.
<b>in2</b>	Enables external alarm for external alarm input 2.
<b>in3</b>	Enables external alarm for external alarm input 3.

## Default

External alarm output is disabled for all sources.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Use the external alarm output to send an electrical signal to an external device based on internal and/or external events.

## Example

This example shows how to enable the external alarm for fan failure.

```
DmSwitch(config)#external-alarm fan
DmSwitch(config)#
```

You can verify that the alarm was enabled by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>show running-config</b>	Shows the current operating configuration.

# fetch tftp

```
fetch tftp { public-key { ip-address public-key-file-name user-name } |  
https-certificate { ip-address certificate-file-name private-key-file-name password } }
```

## Description

Fetches a key or certificate from a tftp server.

## Syntax

Parameter	Description
<b>public-key</b>	Fetches a public-key.
<i>ip-address</i>	Specifies the server from which the public key will be obtained.
<i>public-key-file-name</i>	Specifies the file that contains the public key.
<i>user-name</i>	Specifies the user name for the key or certificate.
<b>https-certificate</b>	Fetches a https-certificate.
<i>certificate-file-name</i>	Specifies the filename that contains the https certificate.
<i>private-key-file-name</i>	Specifies the name of the file for the private key.
<i>password</i>	Specifies the password for the certificate.

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to fetch a public key from TFTP server for user "test".

```
DmSwitch#fetch tftp public-key 10.20.30.40 key_dsa.pub test
```

DmSwitch#

## Related Commands

Command	Description
<b>show public-key</b>	Shows the public key information.
<b>show running-config</b>	Shows the current operating configuration.

# filter

```
filter new { action { parameters } } | [match { parameters } | meter meter-id | out-action parameters | remark text | priority priority ]
```

```
filter id { action { parameters } | match { parameters } | meter meter-id | out-action parameters | remark text | priority priority }
```

```
no filter id
```

## Description

Create or configure a traffic filter. Filters can match packets by various protocol fields and perform actions that change, discard or forward the packet in some ways.

## Syntax

Parameter	Description
<b>new</b>	Creates a new filter
<b>id</b>	Selects a filter to edit by ID
<b>Action parameters</b>	<b>Adds an action to the filter</b>
<b>permit</b>	Causes the packet to be switched
<b>deny</b>	Discards the packet
<b>monitor</b>	Copies the packet to the monitor destination interface
<b>802.1p priority</b>	Inserts 802.1p priority value
<b>802.1p-from-tos</b>	Inserts 802.1p priority from IP ToS Precedence
<b>drop-precedence</b>	Internally sets packet to drop-precedence
<b>dscp ip-value</b>	Inserts Differentiated Services Code Point
<b>counter counter-id</b>	Counts packets of a flow
<b>tos ip-precedence</b>	Inserts IP ToS Precedence value
<b>tos-from-802.1p</b>	Inserts IP ToS Precedence from 802.1p priority
<b>vlan vlan-id</b>	Inserts VLAN ID
<b>egress-block ethernet</b> [ <i>unit-number/</i> ] <i>port-number</i>	Sets Ethernet port(s) to block adding a specific unit and port
<b>range</b> [ <i>first-unit-number/</i> ] <i>first-port-number</i> [ <i>last-unit-number/</i> ] <i>last-port-number</i>	Adds a range of specific units and ports
<b>Match parameters</b>	<b>Sets a packet field to be matched</b>
<b>802.1p priority</b>	Specifies 802.1p priority value (for outer or single tag)
<b>802.1p-inner priority</b>	Specifies 802.1p priority value (for inner tag)
<b>all</b>	Matches all packets

**Match parameters****destination-ip****host** *ip***range** *first-ip last-ip**ip netmask***destination-mac****host** *mac**mac macmask***destination-port***L4-port***range** *first-L4-port last-L4-port***dscp** *dscp***ethertype***ethertype***range** *first\_ethertype last\_ethertype***generic***value**mask**offset***protocol****icmp****tcp****udp***value***source-ip****host** *ip***range** *first-ip last-ip**ip netmask***source-mac****host** *mac**mac macmask***source-port***L4-port***range** *first-L4-port last-L4-port***tos-bits** *tos-value***tos-precedence***tos-precedence-value***vlan****vlan-inner***vlan-id***range** *first-vlan-id last-vlan-id***Sets a packet field to be matched**

Specifies destination IP address

Single IP address

Range of IP addresses

Maskable IP address and address bitmask

Specifies destination MAC address

Host MAC address

Maskable MAC address (XX-XX-XX-XX-XX-XX) and address bitmask (XX-XX-XX-XX-XX-XX)

Specifies L4 (TCP/UDP) destination port

Single L4 port number

Specifies a range of L4 port numbers

Specifies IP DSCP value

Specifies EtherType field

Single EtherType value

Range of EtherType values

Specifies a generic match

Value to be matched

Mask to packet data (1 to the bits of interest - bit-wise AND)

Data offset

Specifies L4 protocol

Internet Control Message Protocol

Transmission Control Protocol

User Datagram Protocol

IP Protocol field value

Specifies source IP address

Single IP address

Range of IP addresses

Maskable IP address and address bitmask

Specifies source MAC address

Host MAC address

Maskable MAC address (XX-XX-XX-XX-XX-XX) and address bitmask (XX-XX-XX-XX-XX-XX)

Specifies L4 (TCP/UDP) source port

Single L4 port number

Specifies a range of L4 port numbers

Specifies IP ToS lower bits (bits 1-4)

Specifies the IP ToS Precedence (bits 5-7)

Specifies the VLAN ID (for outer or single tag)

Specifies the VLAN ID (for inner tag)

Single VLAN ID

Range of VLAN IDs

Other parameters	Description
<b>disable</b>	Disables the filter
<b>enable</b>	Enables the filter
<b>ingress ethernet</b>	Applies the filter to an ingress Ethernet port
<b>all</b>	Adds all ports
<b>range</b> [ <i>first-unit-number/</i> ] <i>first-port-number</i> [ <i>last-unit-number/</i> ] <i>last-port-number</i>	Adds a range of specific units and ports
[ <i>unit-number/</i> ] <i>port-number</i>	Adds a specific unit and port
<b>meter</b> <i>meter-id</i>	Sets a meter to be associated to this filter
<b>out-action</b>	Action when the packet is out-of-profile (meter)
<b>permit</b>	Causes the packet to be switched
<b>deny</b>	Discards the packet
<b>drop-precedence</b>	Internally sets packet to drop-precedence
<b>dscp</b> <i>ip-value</i>	Inserts Differentiated Services Code Point
<b>remark</b> <i>text</i>	Adds a remark text
<b>priority</b> <i>priority</i>	Configures the filter priority. Higher values indicate better priority.

## Default

By default, no filter is created.

A new filter matches all packets if no match parameters are specified.

A new filter is applied to all ports if no ingress ports are specified.

A new filter has a default priority of 8 if no priority is specified.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.
4.0	The <i>match generic</i> parameter was added.
4.1	The following matching options were added: <b>vlan-inner</b> , <b>802.1p-inner</b> , <b>source-ip range</b> and <b>destination-ip range</b> . CRIAR NOVA LINHA AQUI In a new filter with no ingress port set, the default behavior was changed to apply it to all ingress ports.

## Usage Guidelines

Each filter created may specify multiple non-conflicting actions and multiple matches. Multiple actions are applied in parallel. Multiple matches are combined as a logical AND.

Filter priorities are used when two or more filters match the same packet and their actions conflict (i.e. the actions modify the same packet field(s) or they are permit/deny actions). In that case the highest priority filter has its action executed. Filters can share the same priority if their matches are related to the same packet fields (but not the same field values).

A filter containing matches with ranges of values may require additional resources to be implemented. That corresponds to more than one priority being necessary for the filter. If that is the case, the user will be informed at filter creation. If the filter requires N priorities to be implemented, there must be N available priorities beginning on the filter specified priority.

That need for additional priorities is related to the range starting and ending values. No additional priorities are needed when the range is aligned with power of two values (i.e. when the lower limit is a power of two and the upper limit is a power of two minus one).

When editing a filter, only the specified properties are changed. If the editing includes one or more matches, all original filter matches are removed. If it includes actions, all original actions are removed.

## Example

This example shows how to create a filter to discard all tcp packets incoming in the interface Ethernet 1.

```
DmSwitch(config)#filter new action deny match protocol tcp ingress ethernet 1 remark tcp_discard
Filter 1 created.
DmSwitch(config)#
```

You can verify that the configuration was created by entering the **show filter** privileged EXEC command.

## Related Commands

Command	Description
<b>show filter</b>	Shows filters information.
<b>meter</b>	Configures a meter to be used by a filter
<b>counter</b>	Configures a counter to be used by a filter
<b>show running-config</b>	Shows the current operating configuration.



# hostname

**hostname** { *name* }

**no hostname**

## Description

Specifies a hostname for the equipment.

Inserting **no** as a prefix for this command, it will return to its default name.

## Syntax

Parameter	Description
<i>name</i>	Specifies a name.

## Default

Default hostname is "DmSwitch3000".

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to specify the hostname "ClientABC".

```
DmSwitch(config)#hostname ClientABC
ClientABC(config)#
```

It is possible to verify the hostname by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<code>show running-config</code>	Shows the current operating configuration.

# interface ethernet

```
interface ethernet { all | [ unit-number/ ] port-number | range { [ first-unit-number/ ] first-port-number [ last-unit-number/ ] last-port-number } }
```

## Description

Enables the interface configuration mode.

## Syntax

Parameter	Description
<b>all</b>	Enables for all ports.
[ <i>unit-number/</i> ] <i>port-number</i>	Enables for a specific unit and port.
<b>range</b> { [ <i>first-unit-number/</i> ] <i>first-port-number</i> [ <i>last-unit-number/</i> ] <i>last-port-number</i> }	Enables for a range of specific units and ports.

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to enable the interface configuration mode for port range 1 to 10 of unit 1.

```
DmSwitch#interface ethernet range 1/1 1/10
DmSwitch(config-if-eth-1/1-to-1/10)#
```

You can verify that the port range was accepted as it is shown in the new prompt.

## Related Commands

No related command.

# interface port-channel

```
interface port-channel { port-channel-number }
```

## Description

Enables the port-channel configuration mode. The port-channel is created if it doesn't exist.

## Syntax

Parameter	Description
<i>port-channel-number</i>	Enables for a specific port channel. The port channel must be specified in accordance with the port channel configured in the switch. (Range: 1-32)

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to enable the interface configuration mode for port-channel 1.

```
DmSwitch#interface port-channel 1
DmSwitch(config-if-port-ch-1)#
```

You can verify that the port range was accepted as it is shown in the new prompt.

## Related Commands

No related command.

# interface vlan

```
interface vlan { all | index | range first-index last-index }
```

## Description

Enables the VLAN configuration mode. The VLAN is created and enabled if it does not exist.

## Syntax

Parameter	Description
<b>all</b>	Enables for all VLANs.
<i>index</i>	Enables for a specific VLAN index. (Range: 1-4094)
<b>range</b> <i>first-index last-index</i>	Enables for a range of specific VLANs index. (Range: 1-4094)

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to enable for all VLANs.

```
DmSwitch#interface vlan all
Iterating over 4094 VLANs. Next commands may take a while...
DmSwitch(config-if-vlan-all)#
```

You can verify that the VLAN range was accepted as it is shown in the new prompt.

## Related Commands

No related command.

# ip default-gateway

```
ip default-gateway { ip-address }
```

```
no ip default-gateway
```

## Description

Configures the default gateway for DmSwitch.

Inserting **no** as a prefix for this command, it will remove the default gateway.

## Syntax

Parameter	Description
<i>ip-address</i>	Specifies the default gateway IP address.

## Default

No default gateway is configured.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure the IP address "10.1.1.1" for default gateway of DmSwitch.

```
DmSwitch(config)#ip default-gateway 10.1.1.1
DmSwitch(config)#
```

You can verify that the IP address was configured by entering the **show ip default-gateway** privileged EXEC command.



## Related Commands

Command	Description
<code>ip address</code>	Sets an IP address for the selected VLAN.
<code>show ip default-gateway</code>	Shows the configured default gateway.
<code>show running-config</code>	Shows the current operating configuration.

# ip dhcp relay

`ip dhcp relay`

`no ip dhcp relay`

## Description

Enables DHCP relay globally.

Inserting **no** as a prefix for this command will disable DHCP relay globally.

## Syntax

No parameter accepted.

## Default

Disabled.

## Command Modes

Global configuration.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to activate DHCP relay globally.

```
DmSwitch(config)#ip dhcp relay
DmSwitch(config)#
```

You can verify that the DHCP relay was enabled by entering the **show ip dhcp** privileged EXEC command.

## Related Commands

Command	Description
---------	-------------

Command	Description
<code>ip dhcp relay information option</code>	Enables DHCP Agent Information Option (option 82).
<code>ip dhcp relay information trusted</code>	Mark a Vlan as a trusted interface.
<code>ip dhcp relay vlan</code>	Enables DHCP relay on the selected Vlan.
<code>ip helper-address</code>	Add an address to the list of DHCP servers.
<code>show ip dhcp</code>	Shows the DHCP settings.

# ip dhcp relay information option

```
ip dhcp relay information option
```

```
no ip dhcp relay information option
```

## Description

Enables DHCP Agent Information Option (option 82).

Inserting **no** as a prefix for this command will disable DHCP Agent Information Option.

## Syntax

No parameter accepted.

## Default

Disabled.

## Command Modes

Global configuration.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to activate DHCP Agent Information Option.

```
DmSwitch(config)#ip dhcp relay information option
DmSwitch(config)#
```

You can verify that the DHCP relay was enabled by entering the **show ip dhcp** privileged EXEC command.

## Related Commands

Command	Description
<b>ip dhcp relay</b>	Enables DHCP relay globally.

Command	Description
<b>ip dhcp relay information trusted</b>	Mark a Vlan as a trusted interface.
<b>ip dhcp relay vlan</b>	Enables DHCP relay on the selected Vlan.
<b>ip helper-address</b>	Add an address to the list of DHCP servers.
<b>show ip dhcp</b>	Shows the DHCP settings.

# ip dhcp relay information trusted

```
ip dhcp relay information trusted { all | index | range first-index last-index }
```

```
no ip dhcp relay information trusted { all | index | range first-index last-index }
```

## Description

Mark a Vlan as a trusted interface. If a packet is received with the option 82 field set, and a giaddr field not set, the packet is discarded, unless the incoming packet came from a trusted interface.

Inserting **no** as a prefix for this command will mark the selected vlan as untrusted.

## Syntax

Parameter	Description
<b>all</b>	Enables for all VLANs.
<i>index</i>	Enables for a specific VLAN index. (Range: 1-4094)
<b>range</b> <i>first-index last-index</i>	Enables for a range of specific VLANs index. (Range: 1-4094)

## Default

All untrusted.

## Command Modes

Global configuration.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to mark Vlan 2 as a trusted interface.

```
DmSwitch(config)#ip dhcp relay information trusted 2
DmSwitch(config)#
```

You can verify that the Vlan is marked as trusted by entering the **show ip dhcp** privileged EXEC command.

## Related Commands

Command	Description
<b>ip dhcp relay</b>	Enables DHCP relay globally.
<b>ip dhcp relay information option</b>	Enables DHCP Agent Information Option (option 82).
<b>ip dhcp relay vlan</b>	Enables DHCP relay on the selected Vlan.
<b>ip helper-address</b>	Add an address to the list of DHCP servers.
<b>show ip dhcp</b>	Shows the DHCP settings.

# ip dhcp relay vlan

```
ip dhcp relay vlan { all | index | range first-index last-index }
```

```
no ip dhcp relay vlan { all | index | range first-index last-index }
```

## Description

Enables DHCP relay on the selected vlan.

Inserting **no** as a prefix for this command will disable DHCP relay on vlan.

## Syntax

Parameter	Description
<b>all</b>	Enables for all VLANs.
<i>index</i>	Enables for a specific VLAN index. (Range: 1-4094)
<b>range</b> <i>first-index last-index</i>	Enables for a range of specific VLANs index. (Range: 1-4094)

## Default

Disabled.

## Command Modes

Global configuration.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to activate DHCP relay on Vlan 2.

```
DmSwitch(config)#ip dhcp relay
DmSwitch(config)#ip dhcp relay vlan 2
DmSwitch(config)#
```



You can verify that the DHCP relay was activated by entering the **show ip dhcp** privileged EXEC command.

## Related Commands

Command	Description
<b>ip dhcp relay</b>	Enables DHCP relay globally.
<b>ip dhcp relay information option</b>	Enables DHCP Agent Information Option (option 82).
<b>ip dhcp relay information trusted</b>	Mark a Vlan as a trusted interface.
<b>ip helper-address</b>	Add an address to the list of DHCP servers.
<b>show ip dhcp</b>	Shows the DHCP settings.

# ip dns server

```
ip dns-server { primary-ip-address [ secondary-ip-address ] }
```

```
no ip dns-server
```

## Description

Configures the DNS servers used by DmSwitch.

Inserting **no** as a prefix for this command, it will remove the specified DNS servers.

## Syntax

Parameter	Description
<i>primary-ip-address</i>	Specifies the IP address of primary DNS servers.
<i>secondary-ip-address</i>	(Optional) Specifies the IP address of secondary DNS servers.

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure the IP address "10.1.1.1" for primary DNS server and "10.1.1.2" for secondary DNS server.

```
DmSwitch(config)#ip dns-server 10.1.1.1 10.1.1.2
DmSwitch(config)#
```

You can verify that the two DNS servers were configured by entering the **show ip dns-servers** privileged EXEC command.

## Related Commands

Command	Description
<b>ip address</b>	Sets an IP address for the selected VLAN.
<b>show ip</b>	Shows the IP configuration.
<b>show ip dns-servers</b>	Shows the configured DNS servers.
<b>show running-config</b>	Shows the current operating configuration.

# ip helper-address

**ip helper-address** { *ip-address* }

**no ip helper-address** { *ip-address* }

## Description

Add an address to the list of DHCP servers.

Inserting **no** as a prefix for this command will erase the address from the list.

## Syntax

Parameter	Description
<i>ip-address</i>	Specifies the IP address to the list of DHCP servers

## Default

Disabled.

## Command Modes

Global configuration.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to add the address 192.168.0.254 to the DHCP relay servers list.

```
DmSwitch(config)#ip helper-address 192.168.0.254
DmSwitch(config)#
```

You can verify that the address was added to the list by entering the **show ip dhcp** privileged EXEC command.

## Related Commands

Command	Description
<code>ip dhcp relay</code>	Enables DHCP relay globally.
<code>ip dhcp relay information option</code>	Enables DHCP Agent Information Option (option 82).
<code>ip dhcp relay information trusted</code>	Mark a Vlan as a trusted interface.
<code>ip dhcp relay vlan</code>	Enables DHCP relay on the selected Vlan.
<code>show ip dhcp</code>	Shows the DHCP settings.

# ip http

```
ip http { max-connections max-connections-number | server | port port-number |  
secure-server | secure-port port-number }
```

```
no ip http { max-connections | server | port | secure-server | secure-port }
```

## Description

Configures the internal HTTP server for external access.

Inserting **no** as a prefix for this command, it will stop the HTTP server or reset binded ports to the default value.

It can also reset the maximum number of connections on the HTTP server to default value.

## Syntax

Parameter	Description
<b>max-connections</b> <i>max-connections-number</i>	Specifies the maximum number of connections on HTTP server. (Range: 1-32)
<b>server</b>	Enables the internal HTTP server.
<b>port</b> <i>port-number</i>	Specifies a port number for access the HTTP server. (Range: 1-65535)
<b>secure-server</b>	Enables the internal secure HTTP server.
<b>secure-port</b> <i>port-number</i>	Specifies a port number for access the secure HTTP server. (Range: 1-65535)

## Default

Max-connections: 8

Port: 80

Secure-port: 443

HTTP and secure HTTP are enabled.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to enable the secure HTTP server.

```
DmSwitch(config)#ip http secure-server
DmSwitch(config)#
```

You can verify that the secure HTTP server was enabled by entering the **show ip http** privileged EXEC command.

This example shows how to change to 3000 the access port of HTTP server.

```
DmSwitch(config)#ip http port 3000
DmSwitch(config)#
```

You can verify that the port of HTTP server was changed by entering the **show ip http** privileged EXEC command.

## Related Commands

Command	Description
<b>management</b>	Filters client IP address that tries to access internal servers.
<b>show ip http</b>	Shows the HTTP server information.
<b>show management</b>	Shows the management IP filters.
<b>show running-config</b>	Shows the current operating configuration.

# ip igmp

```
ip igmp snooping [ ip ip-address querier | query-count query-count | query-interval  
query-interval | query-max-response-time query-time | router-port-expire-time router-  
time | version version-number | vlan parameters ]
```

```
no ip igmp snooping [ ip querier | query-count | query-interval |  
query-max-response-time | router-port-expire-time | version | vlan ]
```

## Description

Configures the IGMP snooping.

Inserting **no** as a prefix for this command, it will stop the IGMP snooping or reset parameters to the default value or delete the IGMP IP address.

## Syntax

Parameter	Description
<b>snooping</b>	Enables the IGMP snooping.
<b>ip ip-address</b>	(Optional) Sets the IP address used by the switch when sending IGMP queries.
<b>querier</b>	(Optional) Enables IGMP snooping to act as querier.
<b>query-count query-count</b>	(Optional) Sets the number of queries without response that the switch waits before removing the multicast entries from its forwarding table. (Range: 2-10)
<b>query-interval query-interval</b>	(Optional) Sets the time interval between sending queries. (Range: 60-125)
<b>query-max-response-time query-time</b>	(Optional) Sets the maximum response time that a host waits before replying with a membership report to a querier. (Range: 5-25)
<b>router-port-expire-time router-time</b>	(Optional) Sets the time interval that the switch waits for a query before removing the mrouter entry from its forwarding table. (Range: 300-500)
<b>version version-number</b>	(Optional) Sets the IGMP version used by the switch. (Range: 1-3)
<b>vlan parameters</b>	(Optional) Enables the VLAN configuration. Click here to see the parameters description.

## Default

Query-number: 2

Query-interval: 125 seconds



Query-time: 10 seconds

Router-time: 300 seconds

Version-number: 2

IGMP snooping is disabled.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

In some cases where more than one switch is configured as querier on the network, the switch with the lowest IP address will be elected as querier. When the IGMP IP is not configured, the switch will use the first available IP from its IP interfaces. IGMP querier functions will not work without a source IP address.

## Example

This example shows how to enable IGMP snooping to act as a querier.

```
DmSwitch(config)#ip igmp snooping querier
DmSwitch(config)#
```

You can verify that the IGMP snooping was enabled by entering the **show ip igmp snooping** privileged EXEC command.

This example shows how to change the IGMP version.

```
DmSwitch(config)#ip igmp snooping version 3
DmSwitch(config)#
```

You can verify that the IGMP version was changed by entering the **show ip igmp snooping** privileged EXEC command.

## Related Commands

Command	Description
<b>ip igmp snooping vlan</b>	Configures static multicast entries in the mac address table.
<b>show ip igmp snooping</b>	Shows the IGMP snooping configuration.

**Command**

`show ip igmp snooping mroute`

`show mac-address-table multicast`

**Description**

Shows the static entries in mac address table of the multicast routers.

Shows known multicast addresses.

# ip igmp snooping vlan

```
ip igmp snooping vlan { index } { mroute | static ip-address } { ethernet [ unit-number/  
] port-number | port-channel port-channel-number }
```

```
no ip igmp snooping vlan { index } { mroute | static ip-address } { ethernet [ unit-  
number/ ] port-number | port-channel port-channel-number }
```

## Description

Configures static multicast entries in the mac address table, indicating a port where there is connected a multicast router or a multicast group client.

Inserting **no** as a prefix for this command, it will delete a static multicast entry.

## Syntax

Parameter	Description
<i>index</i>	Specifies a VLAN index. (Range: 1-4094)
<b>mroute</b>	Defines that the entry is connected statically to a multicast router.
<b>static ip-address</b>	Defines that the entry is for a multicast client of the specified multicast group IP address.
<b>ethernet</b> [ <i>unit-number/</i> ] <i>port-number</i>	Specifies the ethernet unit/port number.
<b>port-channel</b> <i>port-channel-number</i>	Specifies the port-channel number.

## Default

No static multicast entries.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

By configuring a static multicast IP entry on an port, the DmSwitch will always forward multicast traffic for this group on this port.

Example

This example shows how to adds a static multicast entry in the mac address table, indicating the port where there is connected a multicast router.

```
DmSwitch(config)#ip igmp snooping vlan 1 mroute ethernet 1
DmSwitch(config)#
```

You can verify that the multicast entry was added by entering the **show ip igmp snooping mroute** privileged EXEC command.

Related Commands

Command	Description
<b>ip igmp</b>	Configures the IGMP snooping.
<b>show ip igmp snooping</b>	Shows the IGMP snooping configuration.
<b>show ip igmp snooping mroute</b>	Shows the static entries in mac address table of the multicast router.
<b>show mac-address-table multicast</b>	Shows known multicast addresses.

# ip route

```
ip route { destination-ip-address/mask forwarding-ip-address }
```

```
no ip route { destination-ip-address/mask forwarding-ip-address }
```

## Description

Adds a static route to the routing table.

Inserting **no** as a prefix for this command, it will remove the specified static route.

## Syntax

Parameter	Description
<i>destination-ip-address/mask</i>	Specifies the destination network.
<i>forwarding-ip-address</i>	Specifies the gateway to reach the destination network.

## Default

No default is defined.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Use the mask /32 to indicate a host.

## Example

This example shows how to establish a static route to the network "10.2.1.0/24" through gateway "10.1.1.1".

```
DmSwitch(config)#ip route 10.2.1.0/24 10.1.1.1
```

```
DmSwitch(config)#
```

You can verify that the static route was added by entering the **show ip route** privileged EXEC command.

## Related Commands

Command	Description
<b>ip routing</b>	Enables the IP routing.
<b>show ip route</b>	Shows the IP routing table.
<b>show ip routing</b>	Shows the routing status.

# ip routing

**ip routing**

**no ip routing**

## Description

Enables the IP routing.

The **no** command form disables IP routing.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to enable the IP routing.

```
DmSwitch(config)#ip routing
DmSwitch(config)#
```

You can verify that the IP routing was enabled by entering the **show ip routing** privileged EXEC command.

## Related Commands

Command	Description
<code>ip route</code>	Adds a static route to the routing table.
<code>show ip route</code>	Shows the IP routing table.
<code>show ip routing</code>	Shows the routing status.
<code>show running-config</code>	Shows the current operating configuration.



# ip snmp-server

```
ip snmp-server [ community { community-name [ rw | ro ] } | contact { contact-name } ]
```

```
ip snmp-server [ host { ip-address version } { { 1 | 2c } { community-name } | { 3 } { user-name [ { md5 | sha } { authentication-password } [ aes { privacy-password } | des { privacy-password } ] ] } } ]
```

```
ip snmp-server [ location { location } | traps [ parameters ] ]
```

```
ip snmp-server [ user { user-name } { rw | ro } { md5 | sha } { authentication-password } [ aes { privacy-password } | des { privacy-password } ] ]
```

```
no ip snmp-server [ community community-name | contact | host ip-address | location | user user-name ]
```

## Description

Configures the internal SNMP server.

Inserting **no** as a prefix for this command, it will stop SNMP server or remove the specified configuration.

## Syntax

Parameter	Description
<b>community</b> <i>community-name</i>	(Optional) Creates a new community with the specified name.
<b>rw</b>	Specifies that the access is read and write.
<b>ro</b>	Specifies that the access is read only.
<b>contact</b> <i>contact-name</i>	(Optional) Sets the DmSwitch's contact name. Is accepted spaces for the variable <i>contact-name</i> .
<b>host</b> <i>ip-address</i>	(Optional) Sets the IP address of a manager device. It will receive the traps of a specific community sent by DmSwitch.
<i>community-name</i>	Specifies the community name.
<b>version</b>	Specifies a SNMP version.
<b>1</b>	Sets the SNMP version 1.
<b>2c</b>	Sets the SNMP version 2c.
<b>3</b>	Sets the SNMP version 3.
<b>location</b> <i>location</i>	(Optional) Sets the DmSwitch's location. It accepts spaces.
<b>user</b> <i>user-name</i>	(Optional)Creates a new user with the specified name.
<b>md5</b>	Uses MD5 algorithm for the user authentication.
<b>sha</b>	Uses SHA algorithm for the user authentication.

Parameter	Description
<i>authentication-password</i>	Specifies the authentication password.
<b>aes</b>	(Optional) Uses AES algorithm for the data transmission privacy.
<b>des</b>	(Optional) Uses DES algorithm for the data transmission privacy.
<i>privacy-password</i>	Specifies the password for privacy (encryption) service.
<b>traps parameters</b>	Disables sending of SNMP traps. Click here to see the parameters description.

## Default

SNMP server is enabled.

Community read-only "public".

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to set the manager device for the community "management" using a SNMP version 2c.

```
DmSwitch(config)#ip snmp-server host 10.1.1.10 version 2c management
DmSwitch(config)#
```

You can verify that the manager device was set by entering the **show ip snmp-server** privileged EXEC command.

This example shows how to create a new user called "manager". It has read and write access using the algorithms MD5 and AES for authentication and privacy, respectively.

```
DmSwitch(config)#ip snmp-server user manager rw md5 auth_pswd aes priv_pswd
DmSwitch(config)#
```

You can verify that the user was created by entering the **show running-config** privileged EXEC command.

The **contact** and **location** configurations can be verified by entering the **show system** command.

## Related Commands

Command	Description
<b>ip snmp-server trap</b>	Enables sending of SNMP traps.
<b>management</b>	Filters client IP address that tries to access internal servers.
<b>show ip snmp-server</b>	Shows the SNMP server information.
<b>show management</b>	Shows the management IP filters.
<b>show running-config</b>	Shows the current operating configuration.
<b>show system</b>	Shows system information.

## ip snmp-server traps

```
ip snmp-server traps [ alarm-status-change | authentication |  
cold-warm-start | config-change | config-save | critical-event-detected  
| critical-event-recovered | duplicated-ip | eaps-status-change  
| fan-status-change | forbidden-access | link-flap-detected |  
link-flap-no-more-detected | link-up-down | login-fail | login-success  
| loopback-detected | loopback-no-more-detected | power-status-change  
| sfp-presence | stack-attach | stack-detach | traps-lost |  
unidir-link-detected | unidir-link-recovered ]
```

```
no ip snmp-server traps [ alarm-status-change | authentication |  
cold-warm-start | config-change | config-save | critical-event-detected  
| critical-event-recovered | duplicated-ip | eaps-status-change  
| fan-status-change | forbidden-access | link-flap-detected |  
link-flap-no-more-detected | link-up-down | login-fail | login-success  
| loopback-detected | loopback-no-more-detected | power-status-change  
| sfp-presence | stack-attach | stack-detach | traps-lost |  
unidir-link-detected | unidir-link-recovered ]
```

### Description

Enables the sending of SNMP traps.

Inserting **no** as a prefix for this command, it will disable all or the specified SNMP trap.

### Syntax

Parameter	Description
<b>alarm-status-change</b>	(Optional) Issues alarm-status-change traps.
<b>authentication</b>	(Optional) Issues authentication failure traps.
<b>cold-warm-start</b>	(Optional) Issues cold-start and warm-start traps.
<b>config-change</b>	(Optional) Issues config-change traps.
<b>config-save</b>	(Optional) Issues config-save traps.
<b>critical-event-detected</b>	(Optional) Issues critical-event-detected traps.
<b>critical-event-recovered</b>	(Optional) Issues critical-event-recovered traps.
<b>duplicated-ip</b>	(Optional) Issues duplicated-ip traps.
<b>eaps-status-change</b>	(Optional) Issues eaps-status-change traps.
<b>fan-status-change</b>	(Optional) Issues fan-status-change traps.
<b>forbidden-access</b>	(Optional) Issues forbidden-access traps.
<b>link-flap-detected</b>	(Optional) Issues link-flap-detected traps.
<b>link-flap-no-more-detected</b>	(Optional) Issues link-flap-no-more-detected traps.
<b>link-up-down</b>	(Optional) Issues link-up or link-down traps.
<b>login-fail</b>	(Optional) Issues login-fail traps.
<b>login-success</b>	(Optional) Issues login-success traps.

Parameter	Description
<b>loopback-detected</b>	(Optional) Issues loopback-detected traps.
<b>loopback-no-more-detected</b>	(Optional) Issues loopback-no-more-detected traps.
<b>power-status-change</b>	(Optional) Issues power-status-change traps.
<b>sfp-presence</b>	(Optional) Issues sfp-presence traps.
<b>stack-attach</b>	(Optional) Issues stack-attach traps.
<b>stack-detach</b>	(Optional) Issues stack-detach traps.
<b>traps-lost</b>	(Optional) Issues traps-lost traps.
<b>unidir-link-detected</b>	(Optional) Issues unidir-link-detected traps.
<b>unidir-link-recovered</b>	(Optional) Issues unidir-link-recovered traps.

## Default

The sending of all SNMP traps are enabled.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.
4.0	New traps: critical event, link flap and unidirectional link. The "loopback-on-port" trap has changed its name.

## Usage Guidelines

Not available.

## Example

This example shows how to enable the DmSwitch to send both cold-start and warm-start SNMP traps.

```
DmSwitch(config)#ip snmp-server traps cold-warm-start
DmSwitch(config)#
```

You can verify that the sending was enabled by entering the **show running-config** privileged EXEC command. As default, all traps are enable and only the disable traps are shown by this command. Then, if you do not see a trap that was enabled, the command was completed successfully.

## Related Commands

Command	Description
<b>ip snmp-server</b>	Configures the internal SNMP server.

Command	Description
<code>show ip snmp-server</code>	Shows the SNMP server information.
<code>show running-config</code>	Shows the current operating configuration.

# ip ssh

```
ip ssh { max-connections max-connections-number | server | timeout seconds |  
server-key size number-of-bits }
```

```
ip ssh { host-key { generate [ rsa | dsa ] | clear [ rsa | dsa ] } }
```

```
no ip ssh { max-connections | server | timeout | server-key size }
```

## Description

Configures the internal SSH server for external access.

Inserting **no** as a prefix for this command, it will stop the SSH server or reset the specified parameter to the default value.

## Syntax

Parameter	Description
<b>max-connections</b> <i>max-connections-number</i>	Specifies the maximum number of connections on SSH server. (Range: 1-32)
<b>server</b>	Enables the internal SSH server.
<b>timeout</b> <i>seconds</i>	Defines the amount of time that the SSH server wait a response from a client during the authentication. (Range: 0-600)
<b>server-key size</b> <i>number-of-bits</i>	Defines the number of bits that compose the authentication key. (Range: 512- 896)
<b>host-key</b>	Configures the host key pair (public and private)
<b>generate</b>	Generates the specified host key pair
<b>rsa</b>	(Optional) Specifies the RSA key for SSH version 1.
<b>dsa</b>	(Optional) Specifies the DSA key for SSH version 2.
<b>clear</b>	Clears the specified host keys from memory

## Default

Max-connections: 8 connections

Timeout: 120 seconds

Server-key size: 768 bits

SSH server is disabled.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

The host-key pair must be generated in order to enable SSH.

## Example

This example shows how to generate the DSA host key pair for SSH version 2.

```
DmSwitch(config)#ip ssh host-key generate dsa
Generating dsa keys...
Fingerprint: 2e:64:59:be:76:e5:e5:a1:bf:0f:a2:31:2f:8e:84:46
DmSwitch(config)#
```

You can verify that the key pair was generated by entering the **show ip ssh** privileged EXEC command.

## Related Commands

Command	Description
<b>management</b>	Filters client IP address that tries to access internal servers.
<b>show ip ssh</b>	Shows the SSH server information.
<b>show management</b>	Shows the management IP filters.
<b>show running-config</b>	Shows the current operating configuration.
<b>show system</b>	Shows system information.
<b>terminal timeout</b>	Sets an idle timeout for terminal.



# ip telnet

```
ip telnet { max-connections max-connections-number | server }
```

```
no ip telnet { max-connections | server }
```

## Description

Configures the internal Telnet server for external access.

Inserting **no** as a prefix for this command, it will stop the Telnet server or reset the maximum number of connections to the default value.

## Syntax

Parameter	Description
<b>max-connections</b> <i>max-connections-number</i>	Specifies the maximum number of connections on Telnet server. (Range: 1-32)
<b>server</b>	Enables the internal Telnet server.

## Default

Max-connections: 8 connections

Telnet server is enabled.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to change the maximum number of connections to 20.

```
DmSwitch(config)#ip telnet max-connections 20
DmSwitch(config)#
```

You can verify that the maximum number of connections was changed by entering the **show ip telnet** privileged EXEC command.

## Related Commands

Command	Description
<b>management</b>	Filters client IP address that tries to access internal servers.
<b>show ip telnet</b>	Shows the Telnet server information.
<b>show management</b>	Shows the management IP filters.
<b>show running-config</b>	Shows the current operating configuration.
<b>terminal timeout</b>	Sets an idle timeout for terminal.

# key chain

```
key chain { name }
```

```
no key chain { name }
```

## Description

Configures a key chain.

The **no** command removes the configured key chain.

## Syntax

Parameter	Description
<i>name</i>	Specifies the name of key chain.

## Default

No key chain is configured.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

Global configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Key chain management is a method of authentication to configure shared secrets on all the entities, which exchange secrets such as keys before establishing trust with each other.

## Example

This example shows how to specify a key chain name.

```
DmSwitch(config)#key chain test
```

```
DmSwitch(config-keychain) #
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>key id</b>	Specifies a key identifier.
<b>key-string</b>	Configures the text string for a key identifier.
<b>show running-config</b>	Shows the current operating configuration.

# l2protocol-tunnel

```
l2protocol-tunnel { dest-mac-address mac-address }
```

```
no l2protocol-tunnel { dest-mac-address }
```

## Description

Configures the layer 2 protocols tunneling.

Inserting **no** as a prefix for this command, it will delete the destination MAC address defined for the layer 2 protocol tunneling.

## Syntax

Parameter	Description
<b>dest-mac-address</b> <i>mac-address</i>	Defines a destination MAC address. It will be used by the packets that have been tunneled.

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

The configured destination MAC address must be the same on all switches on the tunnelling path.

## Example

This example shows how to define a MAC address to be used by the layer 2 protocol tunneling.

```
DmSwitch(config)#l2protocol-tunnel dest-mac-address 01-02-03-04-05-06  
DmSwitch(config)#
```

You can verify that the MAC address was defined by entering the **show l2protocol-tunnel** privileged EXEC command.

## Related Commands

Command	Description
<b>show l2protocol-tunnel</b>	Shows Layer 2 Protocols Tunneling information.
<b>l2protocol-tunnel</b> (Interface configuration)	Configures Layer 2 protocols tunneling for the Ethernet interface.

# lldp

**lldp**

**no lldp**

## Description

Enables the LLDP operation in the DmSwitch.

Inserting **no** as a prefix for this command, it will disable the LLDP operation.

## Syntax

No parameter accepted.

## Default

LLDP is disabled.

## Command Modes

Global configuration.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to enable LLDP operation.

```
DmSwitch(config)#lldp
DmSwitch(config)#
```

You can verify that LLDP operation was enable by entering the **show lldp** privileged EXEC command.

## Related Commands

Command	Description
<b>lldp admin-status</b>	Configures the administratively desired status of the local LLDP agent.

Command	Description
<b>lldp notification</b>	Configure speed and duplex operation.
<b>lldp notification-interval</b>	Configures the allowed interval at which Simple Network Management Protocol (SNMP) notifications can be sent. If multiple neighbor information changes occur after the sent notification, no additional notifications are sent.
<b>lldp reinitialize-delay</b>	Configures the delay that applies to a re-initialization attempt after LLDP ports were disabled or the link went down.
<b>lldp tlvs-tx-enable</b>	Configures which optional TLVs are to be sent to neighbors.
<b>lldp transmit-delay</b>	Configures the delay time between successive frame transmissions initiated by a value change or status change in any of the LLDP local systems Management Information Base (MIB). The auto option uses the formula, $(0.25 * \text{transmit-interval})$ , to calculate the number of seconds.
<b>lldp transmit-hold</b>	Calculates the actual time-to-live (TTL) value used in the LLDP PDU packets. The formula is $\text{transmit-interval} * \text{transmit-hold}$ .
<b>lldp transmit-interval</b>	Configures the periodic transmit interval for LLDP protocol data units (PDUs).
<b>show lldp</b>	Shows LLDP configuration information.
<b>show lldp neighbor</b>	Shows LLDP neighbor information.



# lldp notification-interval

**lldp notification-interval** *seconds*

**no lldp notification-interval**

## Description

Configures the allowed interval at which Simple Network Management Protocol (SNMP) notifications can be sent. If multiple neighbor information changes occur after the sent notification, no additional notifications are sent.

Inserting **no** as a prefix for this command, it will reset the notification interval to the default value.

## Syntax

Parameter	Description
<i>seconds</i>	Specifies the interval at which lldp notifications are sent. (Range: 5-3600)

## Default

The default value is 5 seconds.

## Command Modes

Global configuration.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure an interval of 120 seconds for SNMP notifications.

```
DmSwitch(config)#lldp notification-interval 120
DmSwitch(config)#
```

You can verify that the notification interval was configured by entering the **show lldp** privileged EXEC command.

## Related Commands

Command	Description
<b>lldp</b>	Enables the LLDP operation in the DmSwitch.
<b>lldp admin-status</b>	Configures the administratively desired status of the local LLDP agent.
<b>lldp notification</b>	Configure speed and duplex operation.
<b>lldp reinitialize-delay</b>	Configures the delay that applies to a re-initialization attempt after LLDP ports were disabled or the link went down.
<b>lldp tlvs-tx-enable</b>	Configures which optional TLVs are to be sent to neighbors.
<b>lldp transmit-delay</b>	Configures the delay time between successive frame transmissions initiated by a value change or status change in any of the LLDP local systems Management Information Base (MIB). The auto option uses the formula, $(0.25 * \text{transmit-interval})$ , to calculate the number of seconds.
<b>lldp transmit-hold</b>	Calculates the actual time-to-live (TTL) value used in the LLDP PDU packets. The formula is $\text{transmit-interval} * \text{transmit-hold}$ .
<b>lldp transmit-interval</b>	Configures the periodic transmit interval for LLDP protocol data units (PDUs).
<b>show lldp</b>	Shows LLDP configuration information.
<b>show lldp neighbor</b>	Shows LLDP neighbor information.

# lldp reinitialize-delay

**lldp reinitialize-delay** *seconds*

**no lldp reinitialize-delay**

## Description

Configures the delay that applies to a re-initialization attempt after LLDP ports were disabled.

Inserting **no** as a prefix for this command, it will reset the reinitialize delay to the default value.

## Syntax

Parameter	Description
<i>seconds</i>	Specifies the delay that applies to the re-initialization attempt.(Range: 1-10)

## Default

The default value is 2 seconds.

## Command Modes

Global configuration.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure a re-initialization delay of 10 seconds.

```
DmSwitch(config)#lldp reinitialize-delay 10
DmSwitch(config)#
```

You can verify that the re-initialization delay was configured by entering the **show lldp** privileged EXEC command.

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>lldp</b>	Enables the LLDP operation in the DmSwitch.
<b>lldp admin-status</b>	Configures the administratively desired status of the local LLDP agent.
<b>lldp notification</b>	Configure speed and duplex operation.
<b>lldp notification-interval</b>	Configures the allowed interval at which Simple Network Management Protocol (SNMP) notifications can be sent. If multiple neighbor information changes occur after the sent notification, no additional notifications are sent.
<b>lldp tlvs-tx-enable</b>	Configures which optional TLVs are to be sent to neighbors.
<b>lldp transmit-delay</b>	Configures the delay time between successive frame transmissions initiated by a value change or status change in any of the LLDP local systems Management Information Base (MIB). The auto option uses the formula, $(0.25 * \text{transmit-interval})$ , to calculate the number of seconds.
<b>lldp transmit-hold</b>	Calculates the actual time-to-live (TTL) value used in the LLDP PDU packets. The formula is $\text{transmit-interval} * \text{transmit-hold}$ .
<b>lldp transmit-interval</b>	Configures the periodic transmit interval for LLDP protocol data units (PDUs).
<b>show lldp</b>	Shows LLDP configuration information.
<b>show lldp neighbor</b>	Shows LLDP neighbor information.

# lldp transmit-delay

```
lldp transmit-delay { auto | seconds }
```

```
no lldp transmit-delay
```

## Description

Configures the delay time between successive frame transmissions initiated by a value change or status change in any of the LLDP local systems Management Information Base (MIB).

Inserting **no** as a prefix for this command, it will reset the transmit interval to the default value.

## Syntax

Parameter	Description
<b>auto</b>	Uses the formula, $(0.25 * \text{transmit-interval})$ , to calculate the seconds.
<i>seconds</i>	Specifies the delay time between successive frame transmissions. (Range: 1-8192)

## Default

The default value is 2 seconds.

## Command Modes

Global configuration.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how automatically to configure the delay time between successive LLDP frame transmissions.

```
DmSwitch(config)#lldp transmit-delay auto
```

```
DmSwitch(config)#
```

You can verify that the auto transmit delay was configured by entering the **show lldp** privileged EXEC command.

## Related Commands

Command	Description
<b>lldp</b>	Enables the LLDP operation in the DmSwitch.
<b>lldp admin-status</b>	Configures the administratively desired status of the local LLDP agent.
<b>lldp notification</b>	Configure speed and duplex operation.
<b>lldp notification-interval</b>	Configures the allowed interval at which Simple Network Management Protocol (SNMP) notifications can be sent. If multiple neighbor information changes occur after the sent notification, no additional notifications are sent.
<b>lldp reinitialize-delay</b>	Configures the delay that applies to a re-initialization attempt after LLDP ports were disabled or the link went down.
<b>lldp tlvs-tx-enable</b>	Configures which optional TLVs are to be sent to neighbors.
<b>lldp transmit-hold</b>	Calculates the actual time-to-live (TTL) value used in the LLDP PDU packets. The formula is transmit-interval * transmit-hold.
<b>lldp transmit-interval</b>	Configures the periodic transmit interval for LLDP protocol data units (PDUs).
<b>show lldp</b>	Shows LLDP configuration information.
<b>show lldp neighbor</b>	Shows LLDP neighbor information.

# lldp transmit-hold

`lldp transmit-hold value`

`no lldp transmit-hold`

## Description

Configures the transmit-hold that is used to calculate the actual time-to-live (TTL) value used in the LLDP PDU packets. The formula is transmit-interval \* transmit-hold.

Inserting **no** as a prefix for this command, it will reset the transmit-hold to the default value.

## Syntax

Parameter	Description
<i>value</i>	Specifies the TTL value to transmit. (Range: 2-10)

## Default

The default value is 4.

## Command Modes

Global configuration.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure the transmit-hold value of 5.

```
DmSwitch(config)#lldp transmit-hold 5
DmSwitch(config)#
```

You can verify that the the transmit-hold value was configured by entering the **show lldp** privileged EXEC command.

## Related Commands

Command	Description
<b>lldp</b>	Enables the LLDP operation in the DmSwitch.
<b>lldp admin-status</b>	Configures the administratively desired status of the local LLDP agent.
<b>lldp notification</b>	Configure speed and duplex operation.
<b>lldp notification-interval</b>	Configures the allowed interval at which Simple Network Management Protocol (SNMP) notifications can be sent. If multiple neighbor information changes occur after the sent notification, no additional notifications are sent.
<b>lldp reinitialize-delay</b>	Configures the delay that applies to a re-initialization attempt after LLDP ports were disabled or the link went down.
<b>lldp tlvs-tx-enable</b>	Configures which optional TLVs are to be sent to neighbors.
<b>lldp transmit-delay</b>	Configures the delay time between successive frame transmissions initiated by a value change or status change in any of the LLDP local systems Management Information Base (MIB). The auto option uses the formula, $(0.25 * \text{transmit-interval})$ , to calculate the number of seconds.
<b>lldp transmit-interval</b>	Configures the periodic transmit interval for LLDP protocol data units (PDUs).
<b>show lldp</b>	Shows LLDP configuration information.
<b>show lldp neighbor</b>	Shows LLDP neighbor information.



# lldp transmit-interval

```
lldp transmit-interval seconds
```

```
no lldp transmit-interval
```

## Description

Configures the periodic transmit interval for LLDP protocol data units (PDUs).

Inserting **no** as a prefix for this command, it will reset the transmit interval to the default value.

## Syntax

Parameter	Description
<i>seconds</i>	Specifies the time duration between LLDP transmissions. (Range: 5-32768)

## Default

The default value is 30 seconds.

## Command Modes

Global configuration.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure a transmit interval of 10 seconds for LLDP PDUs.

```
DmSwitch(config)#lldp transmit-interval 10
DmSwitch(config)#
```

You can verify that the transmit interval was configured by entering the **show lldp** privileged EXEC command.

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>lldp</b>	Enables the LLDP operation in the DmSwitch.
<b>lldp admin-status</b>	Configures the administratively desired status of the local LLDP agent.
<b>lldp notification</b>	Configure speed and duplex operation.
<b>lldp notification-interval</b>	Configures the allowed interval at which Simple Network Management Protocol (SNMP) notifications can be sent. If multiple neighbor information changes occur after the sent notification, no additional notifications are sent.
<b>lldp reinitialize-delay</b>	Configures the delay that applies to a re-initialization attempt after LLDP ports were disabled or the link went down.
<b>lldp tlvs-tx-enable</b>	Configures which optional TLVs are to be sent to neighbors.
<b>lldp transmit-delay</b>	Configures the delay time between successive frame transmissions initiated by a value change or status change in any of the LLDP local systems Management Information Base (MIB). The auto option uses the formula, $(0.25 * \text{transmit-interval})$ , to calculate the number of seconds.
<b>lldp transmit-hold</b>	Calculates the actual time-to-live (TTL) value used in the LLDP PDU packets. The formula is $\text{transmit-interval} * \text{transmit-hold}$ .
<b>show lldp</b>	Shows LLDP configuration information.
<b>show lldp neighbor</b>	Shows LLDP neighbor information.

# logging debug

```
logging debug { all | arp | bgp | eaps | gvrp | icmp | lacp | link | ospf | rip | stp | vrrp  
}
```

```
no logging debug { all | arp | bgp | eaps | gvrp | icmp | lacp | link | ospf | rip | stp |  
vrrp }
```

## Description

Configures logging of debug messages related to the selected option.

Inserting **no** as a prefix for this command, it will disable logging of debug messages related to the selected option.

## Syntax

Parameter	Description
<b>all</b>	Enables logging of all debug messages.
<b>arp</b>	Enables logging of ARP debug messages.
<b>bgp</b>	Enables logging of BGP debug messages.
<b>eaps</b>	Enables logging of EAPS debug messages.
<b>gvrp</b>	Enables logging of GVRP debug messages.
<b>icmp</b>	Enables logging of ICMP debug messages.
<b>lacp</b>	Enables logging of LACP debug messages.
<b>link</b>	Enables logging of link state debug messages.
<b>ospf</b>	Enables logging of OSPF debug messages.
<b>rip</b>	Enables logging of RIP debug messages..
<b>stp</b>	Enables logging of STP debug messages.
<b>vrrp</b>	Enables logging of VRRP debug messages.

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
6.0	This command was introduced.

## Usage Guidelines

This command configures logging of debug messages. To log debug messages in ram/flash memory, set the level of events to be stored in memory to 7, by using the **logging history** command. To send debug messages to an existing remote syslog server, set the level of events to be sent to 7, by using the **logging trap** command.

## Example

This example shows how to send STP debug messages to a remote syslog server.

```
DmSwitch(config)#logging host 10.11.12.13
DmSwitch(config)#logging trap 7
DmSwitch(config)#logging debug stp
DmSwitch(config)#
```

You can verify the debug messages logging configuration by entering the **show logging debug** privileged EXEC command.

## Related Commands

Command	Description
<b>logging facility</b>	Sets the facility type for remote logging.
<b>logging history</b>	Configures the level of events to be stored in memory.
<b>logging on</b>	Enables the logging of events.
<b>logging trap</b>	Configures the level of events that will be sent to remote server.
<b>logging host</b>	Configures a remote syslog server.
<b>show log</b>	Shows log messages.
<b>show logging</b>	Shows logging configuration.
<b>show running-config</b>	Shows the current operating configuration.

# logging facility

**logging facility** { *facility-type* }

**no logging facility**

## Description

Sets the facility type for remote logging.

Inserting **no** as a prefix for this command, it will disable the facility type for remote logging.

## Syntax

Parameter	Description
<i>facility-type</i>	Specifies the facility type. (Range: 16-23)

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to set the facility type 18 for remote logging.

```
DmSwitch(config)#logging facility 18
DmSwitch(config)#
```

You can verify that the facility type was set by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<code>logging history</code>	Configures the level of events to be stored in memory.
<code>logging host</code>	Configures a remote syslog server.
<code>logging on</code>	Enables the logging of events.
<code>logging sendmail</code>	Enables and configures the sending of logs via e-mail.
<code>logging trap</code>	Configures the level of events that will be sent to remote server.
<code>show log</code>	Shows log messages.
<code>show logging</code>	Shows logging configuration.
<code>show running-config</code>	Shows the current operating configuration.

# logging history

```
logging history { flash | ram } { log-level }
```

```
no logging history { flash | ram }
```

## Description

Configures the level of events to be stored in memory.

Inserting **no** as a prefix for this command, it will disable logging in the specified memory.

## Syntax

Parameter	Description
<b>flash</b>	Configures log level for flash memory.
<b>ram</b>	Configures log level for RAM memory.
<i>log-level</i>	Defines the range of log levels that will be saved in the specified memory. (Range: 0-7)

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure a range of 0 to 3 of log levels to be saved in flash memory.

```
DmSwitch(config)#logging history flash 3
DmSwitch(config)#
```

You can verify that the configuration was made by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>logging facility</b>	Sets the facility type for remote logging.
<b>logging host</b>	Configures a remote syslog server.
<b>logging on</b>	Enables the logging of events.
<b>logging sendmail</b>	Enables and configures the sending of logs via e-mail.
<b>logging trap</b>	Configures the level of events that will be sent to remote server.
<b>show log</b>	Shows log messages.
<b>show logging</b>	Shows logging configuration.
<b>show running-config</b>	Shows the current operating configuration.



# logging host

**logging host** { *ip-address* }

**no logging host**

## Description

Configures a remote syslog server.

Inserting **no** as a prefix for this command, it will remove the configuration of a remote syslog server.

## Syntax

Parameter	Description
<i>ip-address</i>	Specifies the IP address of the remote syslog server.

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to specify the IP address of the remote syslog server.

```
DmSwitch(config)#logging host 10.11.12.13
DmSwitch(config)#
```

You can verify that the IP address was configured by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<code>logging facility</code>	Sets the facility type for remote logging.
<code>logging history</code>	Configures the level of events to be stored in memory.
<code>logging on</code>	Enables the logging of events.
<code>logging sendmail</code>	Enables and configures the sending of logs via e-mail.
<code>logging trap</code>	Configures the level of events that will be sent to remote server.
<code>show log</code>	Shows log messages.
<code>show logging</code>	Shows logging configuration.
<code>show running-config</code>	Shows the current operating configuration.

# logging on

logging on

no logging on

## Description

Enables the logging of events.

Inserting **no** as a prefix for this command, it will disable the logging of events.

## Syntax

No parameter accepted.

## Default

Enabled.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to enable event logging.

```
DmSwitch(config)#logging on
DmSwitch(config)#
```

You can verify that the logging was enabled by entering the **show logging** privileged EXEC command.

## Related Commands

Command	Description
<b>logging facility</b>	Sets the facility type for remote logging.

Command	Description
<code>logging history</code>	Configures the level of events to be stored in memory.
<code>logging host</code>	Configures a remote syslog server.
<code>logging sendmail</code>	Enables and configures the sending of logs via e-mail.
<code>logging trap</code>	Configures the level of events that will be sent to remote server.
<code>show log</code>	Shows log messages.
<code>show logging</code>	Shows logging configuration.
<code>show running-config</code>	Shows the current operating configuration.

# logging sendmail

```
logging sendmail [ host ip-address | level log-level | source-email email-address |  
destination-email email-address ]
```

```
no logging sendmail [ host ip-address | level | source-email | destination-email  
email-address ]
```

## Description

Enables and configures the sending of logs via e-mail.

Inserting **no** as a prefix for this command, it will disable the sending of logs via e-mail or delete the specified configuration used for sending e-mails.

## Syntax

Parameter	Description
<b>host</b> <i>ip-address</i>	(Optional) Specifies the IP address of the SMTP server.
<b>level</b> <i>log-level</i>	(Optional) Defines the range of log levels that will be sent by email. (Range: 0-7)
<b>source-email</b> <i>email-address</i>	(Optional) Specifies the email address to use for the "from" field.
<b>destination-email</b> <i>email-address</i>	(Optional) Specifies the recipients email address of messages.

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure a email to use for the "from" field.

```
DmSwitch(config)#logging sendmail source-email dmswitch@datacom.ind.br
DmSwitch(config)#
```

You can verify that the email was configured by entering the **show logging sendmail** privileged EXEC command.

## Related Commands

Command	Description
<b>logging facility</b>	Sets the facility type for remote logging.
<b>logging history</b>	Configures the level of events to be stored in memory.
<b>logging host</b>	Configures a remote syslog server.
<b>logging on</b>	Enables the logging of events.
<b>logging trap</b>	Configures the level of events that will be sent to remote server.
<b>show log</b>	Shows log messages.
<b>show logging</b>	Shows logging configuration.
<b>show running-config</b>	Shows the current operating configuration.

# logging trap

```
logging trap { log-level }
```

```
no logging trap
```

## Description

Configures the level of events that will be sent to remote server.

Inserting **no** as a prefix for this command, it will disable the sending of logs to a remote server.

## Syntax

Parameter	Description
<i>log-level</i>	Defines the range of log levels that will be sent by trap. (Range: 0-7)

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure the range of log levels that will be sent by traps.

```
DmSwitch(config)#logging trap 3  
DmSwitch(config)#
```

You can verify that the range of log levels was configured by entering the **show logging trap** privileged EXEC command.

## Related Commands

Command	Description
<code>logging facility</code>	Sets the facility type for remote logging.
<code>logging history</code>	Configures the level of events to be stored in memory.
<code>logging host</code>	Configures a remote syslog server.
<code>logging on</code>	Enables the logging of events.
<code>logging sendmail</code>	Enables and configures the sending of logs via e-mail.
<code>show log</code>	Shows log messages.
<code>show logging</code>	Shows logging configuration.
<code>show running-config</code>	Shows the current operating configuration.



# mac-address-table aging-time

```
mac-address-table aging-time { aging-time | 0 | mode { global | vlan } }
```

```
no mac-address-table aging-time [ mode ]
```

## Description

Sets the length of time before removing unused dynamic entries in the MAC address table.

The **no** command form returns the aging time to the default value.

## Syntax

Parameter	Description
<i>aging-time</i>	Defines the global aging time in seconds. (Range: 10-1000000)
0	Disables the global aging time.
mode	Selects aging time mode.
global	Selects the global aging time mode.
vlan	Selects the VLAN aging time mode.

## Default

300 seconds

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

If you disable the MAC address table aging time, MAC addresses are learned and never removed from the table. When the table is full, packets with unknown source MAC addresses do not cause learning and packets with unknown destination MAC addresses are flooded.

When a specific port change its status to down, all entries on that port are removed from the MAC address table. This is independent of the aging time set to MAC address table entries.

## Example

This example shows how to changes the global aging time to 1000 seconds.

```
DmSwitch(config)#mac-address-table aging-time 1000
DmSwitch(config)#
```

You can verify the global aging time configuration by entering the **show mac-address-table aging-time** privileged EXEC command.

## Related Commands

Command	Description
<b>clear mac-address-table</b>	Erases entries stored in the MAC address table.
<b>mac-address-table aging-time (VLAN configuration)</b>	Sets the aging time for MAC address table entries for the specified VLAN.
<b>mac-address-table learn-copy (VLAN configuration)</b>	Configures the learn of MAC addresses by copying existing entries.
<b>mac-address-table port-maximum (VLAN configuration)</b>	Sets the VLAN MAC address table maximum number of entries per port.
<b>mac-address-table static</b>	Adds a static address to MAC address table.
<b>show mac-address-table</b>	Shows the MAC address table.
<b>show running-config</b>	Shows the current operating configuration.

# mac-address-table static

```
mac-address-table static { mac-address } { ethernet [ unit-number/ ] port-number |  
port-channel port-channel-number } { vlan vlan-id }
```

```
no mac-address-table static { mac-address } { vlan vlan-id }
```

## Description

Adds a static entry to the MAC address table. This will force packets with a specified destination MAC address and VLAN to be always forwarded to the specified interface.

The **no** command form removes a static entry from the MAC address table

## Syntax

Parameter	Description
<i>mac-address</i>	Defines the MAC address.
<b>ethernet</b> [ <i>unit-number/</i> ] <i>port-number</i>	Defines the ethernet unit (optional) and port to be associated with the static entry.
<b>port-channel</b> <i>port-channel-number</i>	Defines the port channel to be associated with the static entry.
<b>vlan</b> <i>vlan-id</i>	Defines the VLAN ID associated with the static entry. (Range: 1-4094)

## Default

By default, no static entries are configured.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to add a static MAC address on ethernet port 1 and VLAN 1.

```
DmSwitch(config)#mac-address-table static 00-01-02-03-04-05 ethernet 1 vlan 1
DmSwitch(config)#
```

You can verify that the static MAC address was added by entering the **show mac-address-table** privileged EXEC command.

## Related Commands

Command	Description
<b>clear mac-address-table</b>	Erases entries stored in the MAC address table.
<b>mac-address-table aging-time</b>	Sets the aging time for MAC address table entries.
<b>mac-address-table aging-time (VLAN configuration)</b>	Sets the aging time for MAC address table entries for the specified VLAN.
<b>mac-address-table learn-copy (VLAN configuration)</b>	Configures the learn of MAC addresses by copying existing entries.
<b>mac-address-table port-maximum (VLAN configuration)</b>	Sets the VLAN MAC address table maximum number of entries per port.
<b>show mac-address-table</b>	Shows the MAC address table.
<b>show running-config</b>	Shows the current operating configuration.

# management

```
management { all-client | http-client | snmp-client | ssh-client |  
telnet-client } { ip-address/mask }
```

```
no management { all-client | http-client | snmp-client | ssh-client |  
telnet-client } { ip-address/mask }
```

## Description

Filters client IP address to access internal servers.

Inserting **no** as a prefix for this command, it will remove the specified filter.

## Syntax

Parameter	Description
<b>all-client</b>	Adds clients IP addresses to HTTP, SNMP, SSH and Telnet internal servers.
<b>http-client</b>	Adds clients IP addresses to HTTP internal server.
<b>snmp-client</b>	Adds clients IP addresses to SNMP internal server.
<b>ssh-client</b>	Adds clients IP addresses to SSH internal server.
<b>telnet-client</b>	Adds clients IP addresses to Telnet internal server.
<i>ip-address/mask</i>	Specifies the clients network.

## Default

No filter is configured.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

The configuration to filter a different IP address that you are logged in (e.g. Telnet connection), disconnects your current session.

Use the mask /32 to indicate a unique host.

## Example

This example shows how to add a client IP address to access all internal servers.

```
DmSwitch(config)#management all-client 11.11.11.11/32
DmSwitch(config)#
```

You can verify that the client IP address was added by entering the **show management all-client** privileged EXEC command.

## Related Commands

Command	Description
<b>ip http</b>	Configures the internal HTTP server for external access.
<b>ip snmp</b>	Configures the internal SNMP server.
<b>ip ssh</b>	Configures the internal SSH server for external access.
<b>ip telnet</b>	Configures the internal Telnet server for external access.
<b>show ip http</b>	Shows the HTTP server information.
<b>show ip snmp</b>	Shows the SNMP server information.
<b>show ip ssh</b>	Shows the SSH server information.
<b>show ip telnet</b>	Shows the Telnet server information.
<b>show running-config</b>	Shows the current operating configuration.

# meter

```
meter { new | id } { mode flow } [ rate-limit { rate } | burst { burst-size } | remark { name } ]
```

```
no meter { id }
```

## Description

Configure a meter to be used by a filter.

## Syntax

Parameter	Description
<b>new</b>	Creates a new meter
<i>id</i>	Selects a meter to edit by ID
<b>rate-limit</b> <i>rate</i>	(Optional) Specifies the rate-limit in kbit/s (64 kbit/s granularity).
<b>burst</b> <i>burst-size</i>	(Optional) Specifies the maximum burst size in kbit (power of 2 steps).
<b>remark</b> <i>name</i>	(Optional) Adds a remark text.

## Default

By default, no meter is created. If no parameter is passed, the meter is created with 64kbit/s for rate-limit, 32kbit for maximum burst size and no remark text.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Using these meters, the filter can perform different actions on packets from a given flow depending on the state of the meter.

## Example

This example shows how to create a new meter.

```
DmSwitch(config)#meter new rate-limit 1536 burst 512 remark tcp_policy
```

```
Meter 1 created.  
DmSwitch(config)#
```

You can verify that the configuration was created by entering the **show meter** privileged EXEC command.

## Related Commands

Command	Description
<b>show meter</b>	Shows meters configuration.
<b>filter</b>	Creates or configures a traffic filter
<b>show running-config</b>	Shows the current operating configuration.



# monitor

```
monitor { destination { [ unit-number/ ] port-number } | preserve-format }
```

```
no monitor { destination | preserve-format }
```

## Description

Configures the traffic monitoring.

The **no** command form returns configurations to the default values.

## Syntax

Parameter	Description
<b>destination</b> [ <i>unit-number/</i> ] <i>port-number</i>	Specifies the monitor destination unit (optional) and port.
<b>preserve-format</b>	Monitors packets in the original format (tagged or untagged).

## Default

No monitoring is configured.

The preserve-format option is off.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

If you do not set the destination monitor port to preserve the original format, the output packets will be tagged or untagged as the configuration for this port.

## Example

This example shows how to configure a monitor port.

```
DmSwitch(config)#monitor destination 1/2
DmSwitch(config)#
```

You can verify that the port was configured by entering the **show monitor** privileged EXEC command.

## Related Commands

Command	Description
<b>monitor (Interface configuration)</b>	Sets the interface as a monitoring source.
<b>show monitor</b>	Shows traffic monitoring configuration.
<b>show running-config</b>	Shows the current operating configuration.

# queue cos-map

```
queue cos-map { queue-id priority 1st_queue_prio } [ 2nd_queue_prio ... 8th_queue_prio ]
```

```
no queue cos-map
```

## Description

Configure the map of CoS priorities to queues.

## Syntax

Parameter	Description
<i>queue-id</i>	Selects a meter to edit by ID
<b>priority</b> <i>1st_queue_prio</i>	1st CoS Priority of 8 possible
<i>2st_queue_prio</i>	2nd CoS Priority of 8 possible
...	...
<i>8th_queue_prio</i>	8th CoS Priority of 8 possible

## Default

Queue	802.1P Priority
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7

## Command Modes

Global configuration.

## Command History

Release	Modification
4.0	This command was introduced. Before this was called <b>qos cos-map</b> .

## Usage Guidelines

Not available.

## Example

This example shows how to map CoS priorities 0, 3 and 6 to queue 5.

```
DmSwitch(config)#queue cos-map 5 priority 0 3 6
DmSwitch(config)#
```

You can verify that the configuration was set by entering the **show queue cos-map** privileged EXEC command.

## Related Commands

Command	Description
<b>show queue cos-map</b>	Shows priority mappings
<b>queue max-bw</b>	Configures the maximum bandwidth allocation per queue
<b>queue sched-mode sp</b>	Configures Ethernet interface queues in Strict Priority schedule mode.
<b>queue sched-mode wfq</b>	Configures Ethernet interface queues in Weighted Fair Queueing schedule mode
<b>queue sched-mode wrr</b>	Configures Ethernet interface queues in Weighted Round Robin schedule mode
<b>show running-config</b>	Shows the current operating configuration.

# radius-server acct-port

```
radius-server acct-port { port-number }
```

```
no radius-server acct-port
```

## Description

Configures the default RADIUS server accounting port.

Inserting **no** as a prefix for this command, it will return to the default port number.

## Syntax

Parameter	Description
<i>port-number</i>	Specifies the port number. (Range: 1-65535)

## Default

Port number: 1813.

## Command Modes

Global Configuration.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

The accounting by a RADIUS server uses this default server port if no port is configured to a specific RADIUS host.

## Example

This example shows how to change the default RADIUS accounting port number.

```
DmSwitch(config)#radius-server acct-port 6500  
DmSwitch(config)#
```

The configuration can be verified by entering the **show radius-server** privileged EXEC command.

## Related Commands

Command	Description
<code>accounting</code>	Enable Accounting.
<code>radius-server host</code>	Configures a specific RADIUS server.
<code>radius-server key</code>	Configures the default RADIUS server key string.
<code>radius-server retries</code>	Configures the RADIUS server retries.
<code>radius-server timeout</code>	Configures the RADIUS server timeout.
<code>show running-config</code>	Shows the current operating configuration.
<code>show radius-server</code>	Shows RADIUS server information.

# radius-server auth-port

```
radius-server auth-port { port-number }
```

```
no radius-server auth-port
```

## Description

Configures the default RADIUS server authentication port.

Inserting **no** as a prefix for this command, it will return to the default port number.

## Syntax

Parameter	Description
<i>port-number</i>	Specifies the port number. (Range: 1-65535)

## Default

Port number: 1812.

## Command Modes

Global Configuration.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

The authentication login by a RADIUS server uses this default server port if no port is configured to a specific RADIUS host.

## Example

This example shows how to change the default RADIUS authentication port number.

```
DmSwitch(config)#radius-server auth-port 6500  
DmSwitch(config)#
```

The configuration can be verified by entering the **show radius-server** privileged EXEC command.

## Related Commands

Command	Description
<code>authentication login</code>	Defines the login authentication method and its precedence.
<code>radius-server acct-port</code>	Configures the default RADIUS server accounting port.
<code>radius-server host</code>	Configures a specific RADIUS server.
<code>radius-server key</code>	Configures the default RADIUS server key string.
<code>radius-server retries</code>	Configures the RADIUS server retries.
<code>radius-server timeout</code>	Configures the RADIUS server timeout.
<code>show running-config</code>	Shows the current operating configuration.
<code>show radius-server</code>	Shows RADIUS server information.



# radius-server host

```
radius-server host { index } { accounting | acct-port { acct-port-number } |  
authentication | auth-port { auth-port-number } | address { ip-address } | key { key-text } }
```

```
no radius-server host { index } { accounting | authentication }
```

## Description

Configures a specific RADIUS server.

The **no** command will remove the configuration for the specified host.

## Syntax

Parameter	Description
<i>index</i>	Specifies the server index. (Range: 1-5)
<b>accounting</b>	Enables RADIUS accounting.
<b>acct-port</b>	Specifies RADIUS server accounting port.
<i>acct-port-number</i>	Specifies the server accounting port number. (Range: 1-65535)
<b>authentication</b>	Enables RADIUS authentication.
<b>auth-port</b>	Specifies RADIUS server authentication port.
<i>auth-port-number</i>	Specifies the RADIUS server port number. (Range: 1-65535)
<b>address</b>	Specifies RADIUS server IP address.
<i>ip-address</i>	Specifies the server IP address.
<b>key</b>	Specifies RADIUS server key.
<i>key-text</i>	Specifies the server key string.

## Default

No host is configured.

## Command Modes

Global Configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

It configures the IP address, port and key for authentication and accounting in a specific RADIUS server.

It is possible to define until five RADIUS hosts.

## Example

This example shows how to define a RADIUS server.

```
DmSwitch(config)#radius-server host 1 address 10.10.50.70
DmSwitch(config)#radius-server host 1 auth-port 4050
DmSwitch(config)#radius-server host 1 authentication
DmSwitch(config)#radius-server host 1 key key_for_this_host
DmSwitch(config)#radius-server host 1 acct-port 4051
DmSwitch(config)#radius-server host 1 accounting
DmSwitch(config)#
```

The configuration can be verified by entering the **show radius-server** privileged EXEC command.

## Related Commands

Command	Description
<b>accounting</b>	Enable Accounting.
<b>authentication login</b>	Defines the login authentication method and its precedence.
<b>radius-server acct-port</b>	Configures the default RADIUS server accounting port.
<b>radius-server auth-port</b>	Configures the default RADIUS server authentication port.
<b>radius-server key</b>	Configures the default RADIUS server key string.
<b>radius-server retries</b>	Configures the RADIUS server retries.
<b>radius-server timeout</b>	Configures the RADIUS server timeout.
<b>show running-config</b>	Shows the current operating configuration.
<b>show radius-server</b>	Shows RADIUS server information.

# radius-server key

**radius-server key** { *key-text* }

**no radius-server key**

## Description

Configures the default RADIUS server key string.

Inserting **no** as a prefix for this command, it will remove the configured key.

## Syntax

Parameter	Description
<i>key-text</i>	Specifies the key string.

## Default

No key is configured.

## Command Modes

Global Configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

The authentication login by a RADIUS server uses this default server key if no key string is configured to a specific RADIUS host.

## Example

This example shows how to define the default RADIUS key string.

```
DmSwitch(config)#radius-server key this_is_a_test
DmSwitch(config)#
```

The configuration can be verified by entering the **show radius-server** privileged EXEC command.

## Related Commands

Command	Description
<code>authentication login</code>	Defines the login authentication method and its precedence.
<code>radius-server acct-port</code>	Configures the default RADIUS server accounting port.
<code>radius-server auth-port</code>	Configures the default RADIUS server authentication port.
<code>radius-server host</code>	Configures a specific RADIUS server.
<code>radius-server retries</code>	Configures the RADIUS server retries.
<code>radius-server timeout</code>	Configures the RADIUS server timeout.
<code>show running-config</code>	Shows the current operating configuration.
<code>show radius-server</code>	Shows RADIUS server information.

# radius-server retries

```
radius-server retries { retries }
```

```
no radius-server retries
```

## Description

Configures the RADIUS server retries.

Inserting **no** as a prefix for this command, it will return to the default retries value.

## Syntax

Parameter	Description
<i>retries</i>	Specifies the server retries. (Range: 1-5)

## Default

Retries: 2.

## Command Modes

Global Configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

It defines the number of login attempts in the RADIUS server.

## Example

This example shows how to change the RADIUS server retries.

```
DmSwitch(config)#radius-server retries 1
DmSwitch(config)#
```

The configuration can be verified by entering the **show radius-server** privileged EXEC command.

## Related Commands

Command	Description
<code>authentication login</code>	Defines the login authentication method and its precedence.
<code>radius-server acct-port</code>	Configures the default RADIUS server accounting port.
<code>radius-server auth-port</code>	Configures the default RADIUS server authentication port.
<code>radius-server host</code>	Configures a specific RADIUS server.
<code>radius-server key</code>	Configures the default RADIUS server key string.
<code>radius-server timeout</code>	Configures the RADIUS server timeout.
<code>show running-config</code>	Shows the current operating configuration.
<code>show radius-server</code>	Shows RADIUS server information.

# radius-server timeout

```
radius-server timeout { timeout }
```

```
no radius-server timeout
```

## Description

Configures the RADIUS server timeout.

Inserting **no** as a prefix for this command, it will return to the default timeout value.

## Syntax

Parameter	Description
<i>timeout</i>	Specifies the server timeout (in seconds). (Range: 1-65535)

## Default

Timeout: 5.

## Command Modes

Global Configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

It defines the number of login attempts in the RADIUS server.

## Example

This example shows how to change the RADIUS server timeout.

```
DmSwitch(config)#radius-server timeout 10
DmSwitch(config)#
```

The configuration can be verified by entering the **show radius-server** privileged EXEC command.

## Related Commands

Command	Description
<code>authentication login</code>	Defines the login authentication method and its precedence.
<code>radius-server acct-port</code>	Configures the default RADIUS server accounting port.
<code>radius-server auth-port</code>	Configures the default RADIUS server authentication port.
<code>radius-server host</code>	Configures a specific RADIUS server.
<code>radius-server key</code>	Configures the default RADIUS server key string.
<code>radius-server retries</code>	Configures the RADIUS server retries.
<code>show running-config</code>	Shows the current operating configuration.
<code>show radius-server</code>	Shows RADIUS server information.



# rmon

```
rmon [ alarm { parameters } | event { parameters } ]
```

```
no rmon [ alarm { parameters } | event { parameters } ]
```

## Description

Configures an RMON.

Inserting **no** as a prefix for this command, it will remove the specified RMON configuration.

## Syntax

Parameter	Description
<b>alarm</b> <i>parameters</i>	Configures an RMON alarm. <a href="#">Click here to see the alarm parameters description.</a>
<b>event</b> <i>parameters</i>	Configures an RMON event. <a href="#">Click here to see the event parameters description.</a>

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to remove all RMON configuration for the switch.

```
DmSwitch(config)#no rmon
DmSwitch(config)#
```

You can verify that all RMON configuration was removed by entering the **show running-config** privileged EXEC command.

## Related Commands

No related command.

# rmon alarm

```
rmon alarm { index } { OID oid-variable } { absolute | delta } { rising-threshold value } { [ event-number ] falling-threshold value } [ event-number ] [ owner string ]
```

```
no rmon alarm { index }
```

## Description

Configures an RMON alarm.

Inserting **no** as a prefix for this command, it will removes the specified RMON alarm.

## Syntax

Parameter	Description
<i>index</i>	Specifies the RMON alarm index. (Range: 1-65535)
<b>OID</b> <i>oid-variable</i>	Specifies the MIB object to monitor.
<b>absolute</b>	Tests each MIB variable directly.
<b>delta</b>	Tests the change between samples of a MIB variable.
<b>rising-threshold</b> <i>value</i>	Specified the rising threshold value. (Range: -2147483648 - 2147483648)
<b>falling-threshold</b> <i>value</i>	Specified the falling threshold value. (Range: -2147483648 - 2147483648)
<i>event-number</i>	Specifies the event number to trigger when the rising or falling threshold exceeds its limit.
<b>owner</b> <i>string</i>	Specifies the owner of the alarm.

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

You can set an alarm on any MIB object. The specified MIB must be an existing SNMP MIB object in standard dot notation (.1.3.6.1.2.1.2.2.1.14.5 for ifInErrors.5). The falling threshold must be lower than the rising threshold.

## Example

This example shows how to configure a RMON alarm index 1 that monitors the MIB variable ifInErrors.5 once every 30 seconds. If the ifInErrors.5 increase 10 or more, the alarm is triggered. The alarm in turn triggers event number 1, which is configured with the RMON event command. If the MIB value changes by 0, the alarm is reset and can be triggered again.

```
DmSwitch(config)#rmon alarm 1 .1.3.6.1.2.1.2.2.1.14.5 30 delta rising-threshold 10 1
falling-threshold 0 owner test
DmSwitch(config)#
```

You can verify that the RMON alarm was configured by entering the **show rmon alarm** privileged EXEC command.

## Related Commands

Command	Description
<b>rmon</b>	Configures an RMON.
<b>rmon collection history</b>	Configures a RMON history group of statistics.
<b>rmon collection stats</b>	Configures a RMON collection of statistics.
<b>rmon event</b>	Configures an RMON event.
<b>show rmon alarm</b>	Shows the RMON alarm table.
<b>show rmon event</b>	Shows the RMON event table.
<b>show rmon history</b>	Shows the RMON history table.
<b>show running-config</b>	Shows the current operating configuration.
<b>show rmon statistics</b>	Shows the RMON statistics table.

# rmon event

```
rmon event { index } [ batch index ] [ description string ] [ log ] [ owner string ] [ trap community ]
```

```
no rmon event { index }
```

## Description

Configures an RMON event.

Inserting **no** as a prefix for this command, it will remove the specified RMON event.

## Syntax

Parameter	Description
<i>index</i>	Specifies the RMON event index. (Range: 1-65535)
<b>batch</b> <i>index</i>	(Optional) Specifies a batch to be executed when the event is triggered. (Range: 1-16)
<b>description</b> <i>string</i>	(Optional) Specifies a description of the event.
<b>log</b>	(Optional) Generates an RMON log entry when the event is triggered.
<b>owner</b> <i>string</i>	(Optional) Specifies the owner of the event.
<b>trap</b> <i>community</i>	(Optional) Generates a trap when the event is triggered using the specified community.

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure a RMON event index 1 to define HighErrors. The event generates a log entry and a SNMP trap when the event is triggered by the alarm. The commands specified in batch 1 are executed in background when the event is triggered.

```
DmSwitch(config)#rmon event 1 description HighErrors log trap eventtrap batch 1 owner test
DmSwitch(config)#
```

You can verify that the RMON alarm was configured by entering the **show rmon event** privileged EXEC command.

## Related Commands

Command	Description
<b>rmon</b>	Configures an RMON.
<b>rmon alarm</b>	Configures an RMON alarm.
<b>rmon collection history</b>	Configures a RMON history group of statistics.
<b>rmon collection stats</b>	Configures a RMON collection of statistics.
<b>show rmon alarm</b>	Shows the RMON alarm table.
<b>show rmon event</b>	Shows the RMON event table.
<b>show rmon history</b>	Shows the RMON history table.
<b>show running-config</b>	Shows the current operating configuration.
<b>show rmon statistics</b>	Shows the RMON statistics table.

# router bgp

```
router bgp AS
```

```
no router bgp
```

## Description

Enables the BGP process with the specified *AS number* and provides access to its configuration.

Inserting **no** as a prefix for this command, it will disable BGP routing process.

## Syntax

Parameter	Description
AS	The Autonomous System (AS) number. (Range: 1-65535)

## Default

BGP process is disabled.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

Global configuration.

## Command History

Release	Modification
5.0	This command was introduced.

## Usage Guidelines

After enabling the BGP process, you can not create different BGP process under different AS number.

## Example

This example shows how to enable the protocol, configuring a BGP process for autonomous system 100.

```
DmSwitch(config)#router bgp 100
DmSwitch(config-router-bgp)#
```

Enter the **show ip bgp** privileged EXEC command to verify if the protocol was enabled.

## Related Commands

No related command.



# router ospf

`router ospf`

`no router ospf`

## Description

Enables the OSPF process and provides access to its configuration.

Inserting **no** as a prefix for this command, it will disable OSPF routing process.

## Syntax

No parameter accepted.

## Default

OSPF process is disabled.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

Global configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

The OSPF process only act when a network is associated by the **network** router ospf command.

## Example

This example shows how to enable the protocol.

```
DmSwitch(config)#router ospf
DmSwitch(config-router-ospf)#
```

Enter the **show ip ospf** privileged EXEC command to verify the protocol was enabled.

## Related Commands

No related command.

# router rip

**router rip**

**no router rip**

## Description

Enables the RIP process and provides access to its configuration.

Inserting **no** as a prefix for this command, it will disable RIP routing process.

## Syntax

No parameter accepted.

## Default

RIP process is disabled.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

The RIP process only act when a network is associated by the **network** router rip command.

## Example

This example shows how to enable the protocol.

```
DmSwitch(config)#router rip
DmSwitch(config-router-rip)#
```

Enter the **show ip rip** privileged EXEC command to verify the protocol was enabled.

## Related Commands

No related command.

# sntp

```
sntp { client | poll interval | server { ip-address key key-number } | authenticate |  
authentication-key { key-number md5 string } }
```

```
no sntp { client | poll | server ip-address | authenticate | authentication-key key-  
number }
```

## Description

Configures the Simple Network Time Protocol.

Inserting **no** as a prefix for this command, it will disable the SNTP configuration.

## Syntax

Parameter	Description
<b>client</b>	Enables the SNTP protocol, accepting time from specified time servers.
<b>poll</b> <i>interval</i>	Sets the interval at which the client polls for time. Seconds number of SNTP poll interval. (Range: 16-16384).
<b>server</b> <i>ip-address</i>	Specifies a time server. Specifies the IP address.
<b>key</b> <i>key-number</i>	Associates a key to a SNTP server. Specifies the key-number. Range(1-4294967295).
<b>authenticate</b>	Enables the authentication feature.
<b>authentication-key</b> <b>md5</b> <i>string</i>	Specifies a key-number. MD5. String up to eight characters for the key.

## Default

SNTP is disabled.

Poll interval: 30 seconds.

## Command Modes

Global configuration.

## Command History

Release	Modification
---------	--------------

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

You can configure one or more time servers.

## Example

This example shows how to changes the poll interval.

```
DmSwitch(config)#sntp poll 10000
DmSwitch(config)#
```

You can verify the SNTP configuration by entering the **show sntp** privileged EXEC command.

## Related Commands

Command	Description
<b>show sntp</b>	Shows Simple Network Time Protocol information.
<b>show running-config</b>	Shows the current operating configuration.

# spanning-tree

```
spanning-tree { instance [ instance-parameters ] | bpduguard | mode { mode-parameters } | mst { mst-parameters } }
```

```
no spanning-tree { instance [ instance-parameters ] | bpduguard | mode { mode-parameters } | mst { mst-parameters } }
```

## Description

Configures Spanning-tree parameters.

Inserting no as a prefix for this command, it will disable the specified spanning-tree parameters.

## Syntax

Parameter	Description
<i>instance</i>	Specifies the spanning-tree instance. (Range: 0-15)
<b>instance-parameters</b>	Specifies the spanning-tree instance parameters. Click <a href="#">here</a> to see the "instance-parameters" description.
<b>bpduguard</b>	Enables the Bridge Protocol Data Unit (BPDU) guard. Click <a href="#">here</a> to see the "bpduguard" command description.
<b>mode mode-parameters</b>	Configures the spanning-tree mode. Click <a href="#">here</a> to see the "mode-parameters" description.
<b>mst mst-parameters</b>	Defines parameters of Multiple Spanning-Tree (MST) configuration. Click <a href="#">here</a> to see the "mst-parameters" description.

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.
4.0	The instance range was changed from 1-15 to 0-15.

## Usage Guidelines

Not available.

## Example

This example shows how to enable a Spanning-Tree instance.

```
DmSwitch(config)#spanning-tree 1
DmSwitch(config)#
```

You can verify that the instance was enabled by entering the **show spanning-tree instance** privileged EXEC command.

## Related Commands

Command	Description
<b>spanning-tree instance</b>	Enables a Spanning-tree instance.
<b>spanning-tree (Interface configuration)</b>	Adds an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree bpduguard</b>	Enables the Bridge Protocol Data Unit (BPDU) guard.
<b>spanning-tree edge-port (Interface configuration)</b>	Defines the Ethernet interface as the spanning-tree edge port.
<b>spanning-tree instance</b>	Configures an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree instance forward-delay</b>	Configures the Spanning-Tree Algorithm forward delay time.
<b>spanning-tree instance hello-time</b>	Configures the Spanning-Tree Algorithm hello time.
<b>spanning-tree instance max-age</b>	Configures the Spanning-Tree Algorithm maximum age.
<b>spanning-tree instance priority</b>	Specifies the spanning-tree priority in the DmSwitch.
<b>spanning-tree instance vlan-group</b>	Adds VLAN groups to a spanning-tree instance.
<b>spanning-tree link-type</b>	Specifies the type of link used with spanning-tree.
<b>spanning-tree mode</b>	Configures the spanning-tree mode.
<b>spanning-tree mode</b>	Defines parameters of Multiple Spanning-Tree configuration.
<b>show running-config</b>	Shows the current operating configuration.
<b>show spanning-tree</b>	Shows spanning-tree configuration and status.
<b>vlan group</b>	Create a VLAN group and manage its members.



# spanning-tree bpduguard

**spanning-tree bpduguard**

**no spanning-tree bpduguard**

## Description

Enables the Bridge Protocol Data Unit (BPDU) guard.

Inserting **no** as a prefix for this command, it will disable the BPDU guard.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

The BPDU guard is used to prevent BPDU attacks from spanning-tree edge ports.

If an edge port receives a BPDU when BPDU guard is enabled, that port is administratively disabled.

## Example

This example shows how to enable BPDU guard.

```
DmSwitch(config)#spanning-tree bpduguard
DmSwitch(config)#
```

You can verify that BPDU guard was enabled by entering the **show spanning-tree** privileged EXEC command.

## Related Commands

Command	Description
<b>spanning-tree</b>	Configure Spanning-Tree parameters.
<b>spanning-tree</b> <i>instance</i>	Enables a Spanning-tree instance.
<b>spanning-tree</b> (Interface configuration)	Adds an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree edge-port</b> (Interface configuration)	Defines the Ethernet interface as the spanning-tree edge port.
<b>spanning-tree instance</b>	Configures an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree instance forward-delay</b>	Configures the Spanning-Tree Algorithm forward delay time.
<b>spanning-tree instance hello-time</b>	Configures the Spanning-Tree Algorithm hello time.
<b>spanning-tree instance max-age</b>	Configures the Spanning-Tree Algorithm maximum age.
<b>spanning-tree instance priority</b>	Specifies the spanning-tree priority in the DmSwitch.
<b>spanning-tree instance vlan-group</b>	Adds VLAN groups to a spanning-tree instance.
<b>spanning-tree link-type</b>	Specifies the type of link used with spanning-tree.
<b>spanning-tree mode</b>	Configures the spanning-tree mode.
<b>spanning-tree mode</b>	Defines parameters of Multiple Spanning-Tree configuration.
<b>show running-config</b>	Shows the current operating configuration.
<b>show spanning-tree</b>	Shows spanning-tree configuration and status.
<b>vlan group</b>	Create a VLAN group and manage its members.

# spanning-tree *instance*

**spanning-tree** *instance*

```
spanning-tree instance [ forward-delay { forward-delay-parameters } | hello-time {  
hello-time-parameters } | max-age { max-age-parameters } | max-hops { max-hops-parameters  
} | priority { priority-parameters } | root { root-parameters } | vlan-group { vlan-group-parameters }
```

```
no spanning-tree instance [ forward-delay | hello-time | max-age | max-hops |  
priority | vlan-group { vlan-group-parameters } ]
```

## Description

Enables a Spanning-tree instance and its configuration.

Inserting no as a prefix for this command, it will disable the specified spanning-tree instance.

## Syntax

Parameter	Description
<i>instance</i>	Specifies the spanning-tree instance. (Range: 0-15)
<b>forward-delay</b> <i>forward-delay-parameters</i>	(Optional) Configures the Spanning-Tree Algorithm forwarding delay time. Click here to see the "forward-delay-parameters" description.
<b>hello-time</b> <i>hello-time-parameters</i>	(Optional) Configures the Spanning-Tree Algorithm hello time. Click here to see the "hello-time-parameters" description.
<b>max-age</b> <i>max-age-parameters</i>	(Optional) Configures the Spanning-Tree Algorithm maximum age. Click here to see the "max-age-parameters" description.
<b>max-hops</b> <i>max-hops-parameters</i>	(Optional) Configures the Spanning-Tree Algorithm maximum hops. This is the maximum number of hops in a MSTP region before a BPDU is discarded. Click here to see the "max-hops-parameters" description.
<b>priority</b> <i>priority-parameters</i>	(Optional) Specifies the spanning-tree priority in the DmSwitch. Click here to see the "priority-parameters" description.
<b>root</b> <i>root-parameters</i>	(Optional) Configures the spanning-tree priority so that the equipment becomes the root bridge or a backup for the root bridge. Click here to see the "root-parameters" description.
<b>vlan-group</b> <i>vlan-group-parameters</i>	(Optional) Adds VLAN groups to a spanning-tree instance. Click here to see the "vlan-group-parameters" description.

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.
4.0	The instance range was changed from 1-15 to 0-15.

## Usage Guidelines

Not available.

## Example

This example shows how to enable a Spanning-Tree instance.

```
DmSwitch(config)#spanning-tree 1
DmSwitch(config)#
```

You can verify that the instance was enabled by entering the **show spanning-tree instance** privileged EXEC command.

## Related Commands

Command	Description
<b>spanning-tree</b>	Configure Spanning-Tree parameters.
<b>spanning-tree (Interface configuration)</b>	Adds an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree bpduguard</b>	Enables the Bridge Protocol Data Unit (BPDU) guard.
<b>spanning-tree edge-port (Interface configuration)</b>	Defines the Ethernet interface as the spanning-tree edge port.
<b>spanning-tree instance</b>	Configures an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree instance forward-delay</b>	Configures the Spanning-Tree Algorithm forward delay time.
<b>spanning-tree instance hello-time</b>	Configures the Spanning-Tree Algorithm hello time.
<b>spanning-tree instance max-age</b>	Configures the Spanning-Tree Algorithm maximum age.
<b>spanning-tree instance priority</b>	Specifies the spanning-tree priority in the DmSwitch.

Command	Description
<b>spanning-tree instance vlan-group</b>	Adds VLAN groups to a spanning-tree instance.
<b>spanning-tree link-type</b>	Specifies the type of link used with spanning-tree.
<b>spanning-tree mode</b>	Configures the spanning-tree mode.
<b>spanning-tree mst</b>	Defines parameters of Multiple Spanning-Tree configuration.
<b>show running-config</b>	Shows the current operating configuration.
<b>show spanning-tree</b>	Shows spanning-tree configuration and status.
<b>vlan group</b>	Create a VLAN group and manage its members.

# spanning-tree *instance* forward-delay

```
spanning-tree instance forward-delay { delay }
```

```
no spanning-tree instance forward-delay
```

## Description

Configures the Spanning-Tree Algorithm forwarding delay time.

Inserting **no** as a prefix for this command, it will return forwarding delay time to the default value.

## Syntax

Parameter	Description
<i>instance</i>	Specifies the spanning-tree instance. (Range: 0-15)
<i>delay</i>	Specifies the forwarding delay time in seconds. (Range: 4-30)

## Default

Delay: 15 seconds.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.
4.0	The instance range was changed from 1-15 to 0-15.

## Usage Guidelines

Not available.

## Example

This example shows how to configure the forwarding delay time.

```
DmSwitch(config)#spanning-tree 1 forward-delay 30
DmSwitch(config)#
```

You can verify that the delay time was configured by entering the **show spanning-tree instance** privileged EXEC command.

## Related Commands

Command	Description
<b>spanning-tree</b>	Configure Spanning-Tree parameters.
<b>spanning-tree</b>	Configure Spanning-Tree parameters.
<b>spanning-tree instance</b>	Enables a Spanning-tree instance.
<b>spanning-tree (Interface configuration)</b>	Adds an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree bpduguard</b>	Enables the Bridge Protocol Data Unit (BPDU) guard.
<b>spanning-tree edge-port (Interface configuration)</b>	Defines the Ethernet interface as the spanning-tree edge port.
<b>spanning-tree instance</b>	Configures an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree instance hello-time</b>	Configures the Spanning-Tree Algorithm hello time.
<b>spanning-tree instance max-age</b>	Configures the Spanning-Tree Algorithm maximum age.
<b>spanning-tree instance priority</b>	Specifies the spanning-tree priority in the DmSwitch.
<b>spanning-tree instance vlan-group</b>	Adds VLAN groups to a spanning-tree instance.
<b>spanning-tree link-type</b>	Specifies the type of link used with spanning-tree.
<b>spanning-tree mode</b>	Configures the spanning-tree mode.
<b>spanning-tree mode</b>	Defines parameters of Multiple Spanning-Tree configuration.
<b>show running-config</b>	Shows the current operating configuration.
<b>show spanning-tree</b>	Shows spanning-tree configuration and status.
<b>vlan group</b>	Create a VLAN group and manage its members.

# spanning-tree *instance* hello-time

```
spanning-tree instance hello-time { time }
```

```
no spanning-tree instance hello-time
```

## Description

Configures the Spanning-Tree Algorithm hello time.

Inserting **no** as a prefix for this command, it will return hello time to the default value.

## Syntax

Parameter	Description
<i>instance</i>	Specifies the spanning-tree instance. (Range: 0-15)
<i>time</i>	Specifies the hello time in seconds. (Range: 1-10)

## Default

Hello time: 2 seconds.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.
4.0	The instance range was changed from 1-15 to 0-15.

## Usage Guidelines

Not available.

## Example

This example shows how to configure the hello time.

```
DmSwitch(config)#spanning-tree 1 hello-time 5  
DmSwitch(config)#
```



You can verify that the hello time was configured by entering the **show spanning-tree instance** privileged EXEC command.

## Related Commands

Command	Description
<b>spanning-tree</b>	Configure Spanning-Tree parameters.
<b>spanning-tree instance</b>	Enables a Spanning-tree instance.
<b>spanning-tree (Interface configuration)</b>	Adds an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree bpduguard</b>	Enables the Bridge Protocol Data Unit (BPDU) guard.
<b>spanning-tree edge-port (Interface configuration)</b>	Defines the Ethernet interface as the spanning-tree edge port.
<b>spanning-tree instance</b>	Configures an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree instance forward-delay</b>	Configures the Spanning-Tree Algorithm forward delay time.
<b>spanning-tree instance max-age</b>	Configures the Spanning-Tree Algorithm maximum age.
<b>spanning-tree instance priority</b>	Specifies the spanning-tree priority in the DmSwitch.
<b>spanning-tree instance vlan-group</b>	Adds VLAN groups to a spanning-tree instance.
<b>spanning-tree link-type</b>	Specifies the type of link used with spanning-tree.
<b>spanning-tree mode</b>	Configures the spanning-tree mode.
<b>spanning-tree mode</b>	Defines parameters of Multiple Spanning-Tree configuration.
<b>show running-config</b>	Shows the current operating configuration.
<b>show spanning-tree</b>	Shows spanning-tree configuration and status.
<b>vlan group</b>	Create a VLAN group and manage its members.

# spanning-tree *instance* max-age

```
spanning-tree instance max-age { max-age-time }
```

```
no spanning-tree instance max-age
```

## Description

Configures the Spanning-Tree Algorithm maximum age.

Inserting **no** as a prefix for this command, it will return the maximum age to the default value.

## Syntax

Parameter	Description
<i>instance</i>	Specifies the spanning-tree instance. (Range: 0-15)
<i>max-age</i>	Specifies the maximum age in seconds. (Range: 6-40)

## Default

Maximum age: 20 seconds.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.
4.0	The instance range was changed from 1-15 to 0-15.

## Usage Guidelines

The value of maximum age must be less than:  $2 * (\text{forward\_delay} - 1)$ .

## Example

This example shows how to configure the maximum age.

```
DmSwitch(config)#spanning-tree 1 max-age 28
DmSwitch(config)#
```

You can verify that the maximum age was configured by entering the **show spanning-tree instance** privileged EXEC command.

## Related Commands

Command	Description
<b>spanning-tree</b>	Configure Spanning-Tree parameters.
<b>spanning-tree</b> <i>instance</i>	Enables a Spanning-tree instance.
<b>spanning-tree</b> ( <b>Interface configuration</b> )	Adds an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree bpduguard</b>	Enables the Bridge Protocol Data Unit (BPDU) guard.
<b>spanning-tree edge-port</b> ( <b>Interface configuration</b> )	Defines the Ethernet interface as the spanning-tree edge port.
<b>spanning-tree instance</b>	Configures an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree instance forward-delay</b>	Configures the Spanning-Tree Algorithm forward delay time.
<b>spanning-tree instance hello-time</b>	Configures the Spanning-Tree Algorithm hello time.
<b>spanning-tree instance priority</b>	Specifies the spanning-tree priority in the DmSwitch.
<b>spanning-tree instance vlan-group</b>	Adds VLAN groups to a spanning-tree instance.
<b>spanning-tree link-type</b>	Specifies the type of link used with spanning-tree.
<b>spanning-tree mode</b>	Configures the spanning-tree mode.
<b>spanning-tree mode</b>	Defines parameters of Multiple Spanning-Tree configuration.
<b>show running-config</b>	Shows the current operating configuration.
<b>show spanning-tree</b>	Shows spanning-tree configuration and status.
<b>vlan group</b>	Create a VLAN group and manage its members.

# spanning-tree *instance* max-hops

**spanning-tree** *instance* **max-hops** { *max-hops-number* }

**no spanning-tree** *instance* **max-hops**

## Description

Configures the Spanning-Tree Algorithm maximum hops. This is the maximum number of hops in a MSTP region before a BPDU is discarded.

Inserting **no** as a prefix for this command, it will return the maximum hops to the default value.

## Syntax

Parameter	Description
<i>instance</i>	Specifies the spanning-tree instance. (Range: 0-15)
<i>max-hops-number</i>	Specifies the maximum number of hops. (Range: 1-40)

## Default

Maximum hops: 20.

## Command Modes

Global configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

This parameter only applies to MSTP mode of spanning-tree protocol.

## Example

This example shows how to configure the maximum hops.

```
DmSwitch(config)#spanning-tree 1 max-hops 25
DmSwitch(config)#
```

You can verify that the maximum hops was configured by entering the **show spanning-tree instance** privileged EXEC command.

## Related Commands

Command	Description
<b>spanning-tree</b>	Configure Spanning-Tree parameters.
<b>spanning-tree instance</b>	Enables a Spanning-tree instance.
<b>spanning-tree instance</b>	Configures an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree instance max-age</b>	Configures the Spanning-Tree Algorithm maximum age.
<b>show running-config</b>	Shows the current operating configuration.
<b>show spanning-tree</b>	Shows spanning-tree configuration and status.
<b>vlan group</b>	Create a VLAN group and manage its members.

# spanning-tree *instance* priority

**spanning-tree** *instance* **priority** { *priority-value* }

**no spanning-tree** *instance* **priority**

## Description

Specifies the spanning-tree priority in the DmSwitch.

Inserting **no** as a prefix for this command, it will return the priority value to the default value.

## Syntax

Parameter	Description
<i>instance</i>	Specifies the spanning-tree instance. (Range: 0-15)
<i>priority-value</i>	Specifies the priority value in steps of 4096. (Range: 0-61440)

## Default

Priority value: 32768.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.
4.0	The instance range was changed from 1-15 to 0-15.

## Usage Guidelines

The spanning-tree priority is used by Spanning-Tree Algorithm in order to elect the spanning-tree root bridge. Lower values represents higher priorities to become the root bridge. If all devices on the network use the same priority, the one with the lowest MAC address will be elected the root bridge.

## Example

This example shows how to configure the spanning-tree priority.

```
DmSwitch(config)#spanning-tree 1 priority 40960
DmSwitch(config)#
```

You can verify that the maximum age was configured by entering the **show spanning-tree instance** privileged EXEC command.

## Related Commands

Command	Description
<b>spanning-tree</b>	Configure Spanning-Tree parameters.
<b>spanning-tree</b> <i>instance</i>	Enables a Spanning-tree instance.
<b>spanning-tree (Interface configuration)</b>	Adds an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree bpduguard</b>	Enables the Bridge Protocol Data Unit (BPDU) guard.
<b>spanning-tree edge-port (Interface configuration)</b>	Defines the Ethernet interface as the spanning-tree edge port.
<b>spanning-tree instance</b>	Configures an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree instance forward-delay</b>	Configures the Spanning-Tree Algorithm forward delay time.
<b>spanning-tree instance hello-time</b>	Configures the Spanning-Tree Algorithm hello time.
<b>spanning-tree instance max-age</b>	Configures the Spanning-Tree Algorithm maximum age.
<b>spanning-tree instance vlan-group</b>	Adds VLAN groups to a spanning-tree instance.
<b>spanning-tree link-type</b>	Specifies the type of link used with spanning-tree.
<b>spanning-tree mode</b>	Configures the spanning-tree mode.
<b>spanning-tree mode</b>	Defines parameters of Multiple Spanning-Tree configuration.
<b>show running-config</b>	Shows the current operating configuration.
<b>show spanning-tree</b>	Shows spanning-tree configuration and status.
<b>vlan group</b>	Create a VLAN group and manage its members.

# spanning-tree *instance* root

```
spanning-tree instance root { primary | secondary }
```

## Description

Configures the spanning-tree priority so that the equipment becomes the root bridge or a backup for the root bridge.

## Syntax

Parameter	Description
<i>instance</i>	Specifies the spanning-tree instance. (Range: 0-15)
<b>primary</b>	Configures a new priority that would cause the equipment to become the root bridge.
<b>secondary</b>	Configures a new priority would cause the equipment to become the root bridge after a failure in the current root bridge.

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

This is a helper command to automatically set a lower spanning-tree priority in order to turn the equipment into the root bridge. This is not a configuration itself, but it changes the spanning-tree priority configuration instead.

Using **primary** as parameter, the command will set the priority to the minimum value between 24576 and the current root bridge priority minus 4096. After that, the spanning-tree protocol will elect this equipment as the new root bridge. This command will not change the priority value if this is already the root bridge for the spanning-tree instance.

Using **secondary** as parameter, the command will set the priority to 28762. After a failure in another equipment elected as the root bridge, it is likely that this equipment becomes the new root bridge. However this could not



be true depending on priority values manually configured on other equipments in the network.

## Example

This example shows how to force the equipment to be the root bridge for spanning-tree instance 1.

```
DmSwitch(config)#spanning-tree 1 root primary
DmSwitch(config)#
```

You can verify that the priority was configured by entering the **show spanning-tree instance** privileged EXEC command.

## Related Commands

Command	Description
<b>spanning-tree</b>	Configure Spanning-Tree parameters.
<b>spanning-tree</b> <i>instance</i>	Enables a Spanning-tree instance.
<b>spanning-tree instance</b>	Configures an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree instance priority</b>	Specifies the spanning-tree priority in the DmSwitch.
<b>show running-config</b>	Shows the current operating configuration.
<b>show spanning-tree</b>	Shows spanning-tree configuration and status.
<b>vlan group</b>	Create a VLAN group and manage its members.

# spanning-tree *instance* vlan-group

**spanning-tree** *instance* **vlan-group** { *index* | **all** | **range** *first-index last-index* }

**no spanning-tree** *instance* **vlan-group** { *index* | **all** | **range** *first-index last-index* }

## Description

Adds VLAN groups to a spanning-tree instance.

Inserting **no** as a prefix for this command, it will remove the specified VLAN groups from spanning-tree instance.

## Syntax

Parameter	Description
<i>instance</i>	Specifies the spanning-tree instance. (Range: 0-15)
<i>index</i>	Specifies a VLAN group ID. (Range: 0-31)
<b>all</b>	Specifies all VLAN groups.
<b>range</b> <i>first-index last-index</i>	Specifies a range of VLAN group IDs.

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
5.0	This command was introduced. It replaces the command <b>spanning-tree instance vlan</b> .

## Usage Guidelines

Not available.

## Example

This example shows how to add a range of VLAN groups to a spanning-tree instance.

```
DmSwitch(config)#spanning-tree 1 vlan-group range 1 10
DmSwitch(config)#
```

You can verify that the VLAN groups were added by entering the **show spanning-tree instance** privileged EXEC command.

## Related Commands

Command	Description
<b>spanning-tree</b>	Configure Spanning-Tree parameters.
<b>spanning-tree</b> <i>instance</i>	Enables a Spanning-tree instance.
<b>spanning-tree (Interface configuration)</b>	Adds an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree bpduguard</b>	Enables the Bridge Protocol Data Unit (BPDU) guard.
<b>spanning-tree edge-port (Interface configuration)</b>	Defines the Ethernet interface as the spanning-tree edge port.
<b>spanning-tree instance</b>	Configures an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree instance forward-delay</b>	Configures the Spanning-Tree Algorithm forward delay time.
<b>spanning-tree instance hello-time</b>	Configures the Spanning-Tree Algorithm hello time.
<b>spanning-tree instance max-age</b>	Configures the Spanning-Tree Algorithm maximum age.
<b>spanning-tree instance priority</b>	Specifies the spanning-tree priority in the DmSwitch.
<b>spanning-tree link-type</b>	Specifies the type of link used with spanning-tree.
<b>spanning-tree mode</b>	Configures the spanning-tree mode.
<b>spanning-tree mst</b>	Defines parameters of Multiple Spanning-Tree configuration.
<b>show running-config</b>	Shows the current operating configuration.
<b>show spanning-tree</b>	Shows spanning-tree configuration and status.
<b>vlan group</b>	Create a VLAN group and manage its members.

# spanning-tree mode

```
spanning-tree mode { mstp | rstp | stp }
```

```
no spanning-tree mode
```

## Description

Configures the spanning-tree mode.

Inserting **no** as a prefix for this command, it will return the spanning-tree mode to the default value.

## Syntax

Parameter	Description
<b>mstp</b>	Selects the Multiple Spanning-Tree Protocol mode.
<b>rstp</b>	Selects the Rapid Spanning-Tree Protocol mode.
<b>stp</b>	Selects the Spanning-Tree Protocol mode.

## Default

Spanning-tree mode: rstp.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to select the MSTP mode.

```
DmSwitch(config)#spanning-tree mode mstp
DmSwitch(config)#
```

You can verify that the information was deleted by entering the **show spanning-tree** privileged EXEC command.

## Related Commands

Command	Description
<b>spanning-tree</b>	Configure Spanning-Tree parameters.
<b>spanning-tree</b>	Enables a Spanning-tree instance.
<b>spanning-tree (Interface configuration)</b>	Adds an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree bpduguard</b>	Enables the Bridge Protocol Data Unit (BPDU) guard.
<b>spanning-tree edge-port (Interface configuration)</b>	Defines the Ethernet interface as the spanning-tree edge port.
<b>spanning-tree instance</b>	Configures an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree instance forward-delay</b>	Configures the Spanning-Tree Algorithm forward delay time.
<b>spanning-tree instance hello-time</b>	Configures the Spanning-Tree Algorithm hello time.
<b>spanning-tree instance max-age</b>	Configures the Spanning-Tree Algorithm maximum age.
<b>spanning-tree instance priority</b>	Specifies the spanning-tree priority in the DmSwitch.
<b>spanning-tree instance vlan-group</b>	Adds VLAN groups to a spanning-tree instance.
<b>spanning-tree link-type</b>	Specifies the type of link used with spanning-tree.
<b>spanning-tree mst</b>	Defines parameters of Multiple Spanning-Tree configuration.
<b>show running-config</b>	Shows the current operating configuration.
<b>show spanning-tree</b>	Shows spanning-tree configuration and status.
<b>vlan group</b>	Create a VLAN group and manage its members.

# spanning-tree mst

```
spanning-tree mst { name name | revision revision-number }
```

```
no spanning-tree mst { name | revision }
```

## Description

Defines parameters of Multiple Spanning-Tree (MST) configuration.

Inserting **no** as a prefix for this command, it will remove the records from the specified parameters.

## Syntax

Parameter	Description
<b>name</b> <i>name</i>	Specifies the MST configuration name.
<b>revision</b> <i>revision-number</i>	Specifies the MST configuration revision number.

## Default

Name is empty and revision is zero.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to specify a name to MST configuration.

```
DmSwitch(config)#spanning-tree mst name test
DmSwitch(config)#
```

You can verify that the name was saved by entering the **show spanning-tree** privileged EXEC command.

## Related Commands

Command	Description
<b>spanning-tree</b>	Configure Spanning-Tree parameters.
<b>spanning-tree</b>	Enables a Spanning-tree instance.
<b>spanning-tree (Interface configuration)</b>	Adds an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree bpduguard</b>	Enables the Bridge Protocol Data Unit (BPDU) guard.
<b>spanning-tree edge-port (Interface configuration)</b>	Defines the Ethernet interface as the spanning-tree edge port.
<b>spanning-tree instance</b>	Configures an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree instance forward-delay</b>	Configures the Spanning-Tree Algorithm forward delay time.
<b>spanning-tree instance hello-time</b>	Configures the Spanning-Tree Algorithm hello time.
<b>spanning-tree instance max-age</b>	Configures the Spanning-Tree Algorithm maximum age.
<b>spanning-tree instance priority</b>	Specifies the spanning-tree priority in the DmSwitch.
<b>spanning-tree instance vlan-group</b>	Adds VLAN groups to a spanning-tree instance.
<b>spanning-tree link-type</b>	Specifies the type of link used with spanning-tree.
<b>spanning-tree mode</b>	Configures the spanning-tree mode.
<b>show running-config</b>	Shows the current operating configuration.
<b>show spanning-tree</b>	Shows spanning-tree configuration and status.
<b>vlan group</b>	Create a VLAN group and manage its members.

# stacking

```
stacking { key-delay seconds-number | keys }
```

```
no stacking { key-delay | keys }
```

## Description

Enables stacking configuration.

## Syntax

Parameter	Description
<b>key-delay</b> <i>seconds-number</i>	Delay time for stacking keys state changes. (Range: 3-9).
<b>keys</b>	Enable stacking and stacking keys.

## Default

Stacking and stacking keys are enabled.

Delay: 5

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.
4.0	This command was renamed from <b>stacking</b> to <b>stacking keys</b> .

## Usage Guidelines

Use the **no stacking keys** command to disable stacking and the front panel keys functionality.

If one of the front panel keys are pressed (Stack/Uplink key when it is in uplink mode, or any key when it is in stacking mode), the DmSwitch starts the countdown from *delay* to restart.

## Example

This example shows how to disable stacking and the stacking keys.



```
DmSwitch(config)#no stacking keys
DmSwitch(config)#
```

This example shows how to change the key delay value.

```
DmSwitch(config)#stacking key-delay 9
DmSwitch(config)#
```

You can verify the stacking information by entering the **show stacking** privileged EXEC command.

## Related Commands

Command	Description
<b>show running-config</b>	Shows the current operating configuration.
<b>show stacking</b>	Shows the stacking configuration.

# tacacs-server host

```
tacacs-server host { ip-address }
```

```
no tacacs-server host
```

## Description

Configures the TACACS server IP address.

Inserting **no** as a prefix for this command, it will remove the configured host.

## Syntax

Parameter	Description
<i>ip-address</i>	Specifies the IP address.

## Default

No server IP address is configured.

## Command Modes

Global Configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

The authentication login by a TACACS server depends on this configuration.

## Example

This example shows how to define the TACACS server IP address.

```
DmSwitch(config)#tacacs-server host 10.10.11.20  
DmSwitch(config)#
```

The configuration can be verified by entering the **show tacacs-server** privileged EXEC command.

## Related Commands

Command	Description
<code>authentication login</code>	Defines the login authentication method and its precedence.
<code>show running-config</code>	Shows the current operating configuration.
<code>show tacacs-server</code>	Shows TACACS server information.
<code>tacacs-server key</code>	Configures the TACACS server key string.
<code>tacacs-server port</code>	Configures the TACACS server port.

# tacacs-server key

```
tacacs-server key { key-text }
```

```
no tacacs-server key
```

## Description

Configures the TACACS server key string.

Inserting **no** as a prefix for this command, it will remove the configured key.

## Syntax

Parameter	Description
<i>key-text</i>	Specifies the key string.

## Default

No key is configured.

## Command Modes

Global Configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

The authentication login by a TACACS server depends on this configuration.

## Example

This example shows how to define the TACACS key string.

```
DmSwitch(config)#tacacs-server key this_is_a_test
DmSwitch(config)#
```

The configuration can be verified by entering the **show tacacs-server** privileged EXEC command.

## Related Commands

Command	Description
<code>authentication login</code>	Defines the login authentication method and its precedence.
<code>show running-config</code>	Shows the current operating configuration.
<code>show tacacs-server</code>	Shows TACACS server information.
<code>tacacs-server host</code>	Configures the TACACS server IP address.
<code>tacacs-server port</code>	Configures the TACACS server port.

# tacacs-server port

**tacacs-server port** { *port-number* }

**no tacacs-server port**

## Description

Configures the TACACS server port.

Inserting **no** as a prefix for this command, it will return to the default port value.

## Syntax

Parameter	Description
<i>port-number</i>	Specifies the port number. (Range: 1-65535)

## Default

Port number: 49.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

The authentication login by a TACACS server depends on this configuration.

## Example

This example shows how to define a different TACACS server port.

```
DmSwitch(config)#tacacs-server port 8380
DmSwitch(config)#
```

The configuration can be verified by entering the **show tacacs-server** privileged EXEC command.

## Related Commands

Command	Description
<code>authentication login</code>	Defines the login authentication method and its precedence.
<code>show running-config</code>	Shows the current operating configuration.
<code>show tacacs-server</code>	Shows TACACS server information.
<code>tacacs-server host</code>	Configures the TACACS server IP address.
<code>tacacs-server key</code>	Configures the TACACS server key string.

# username

```
username { username } { access-level { 0 | 15 } | nopassword | password { 0 plain-text-  
password | 7 encrypted-password } }
```

```
no username { username }
```

## Description

Creates users and configures its access to the DmSwitch.

Inserting **no** as a prefix for this command, it will remove the specified username.

## Syntax

Parameter	Description
<i>username</i>	Specifies a user name. (Maximum: 32 characters)
<b>access-level</b>	Specifies the privilege level for the user.
<b>0</b>	Defines the normal user access.
<b>15</b>	Defines the privileged user access.
<b>nopassword</b>	Defines that the user do not have password.
<b>password</b>	Defines a user password.
<b>0</b> <i>plain-text-password</i>	Specifies a password in plain text.
<b>7</b> <i>encrypted-password</i>	Specifies a password in encrypted form.

## Default

Username: admin; access-level: 15.

Username: guest; access-level: 0.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Creating a **nopassword** user, it configures **access-level** 0. Use the **username** *username*



**access-level** command to change it.

## Example

This example shows how to create a new user with normal access.

```
DmSwitch(config)#username test access-level 0
DmSwitch(config)#
```

You can verify that the user was created by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>show managers</b>	Shows the connected managers using terminals.
<b>show running-config</b>	Shows the current operating configuration.
<b>show users</b>	Shows the users information.

# vlan-group

**vlan-group** *instance* [ **vlan** { *index* | **all** | **range** *first-index last-index* } ]

**no vlan-group** *instance* [ **vlan** { *index* | **all** | **range** *first-index last-index* } ]

## Description

Create a VLAN group and manage its members in case of VLAN group already exists.

Inserting **no** as a prefix for this command, it will remove the specified VLAN group or VLAN group member.

## Syntax

Parameter	Description
<i>instance</i>	Specifies the VLAN group instance. (Range: 0-31)
<b>vlan</b>	Adds VLANs to the specified VLAN group.
<i>index</i>	Specifies a VLAN ID. (Range: 1-4094)
<b>all</b>	Specifies all VLANs.
<b>range</b> <i>first-index last-index</i>	Specifies a range of VLAN IDs.

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
5.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to create a VLAN group, and add a range of VLANs to this group.

```
DmSwitch(config)#vlan-group 5
```

```
DmSwitch(config)#vlan-group 5 vlan range 1 100
DmSwitch(config)#
```

You can verify that the VLAN groups were added by entering the **show running-config** *instance* privileged EXEC command.

## Related Commands

Command	Description
<b>show running-config</b>	Shows the current operating configuration.

# vlan qinq

**vlan qinq**

**no vlan qinq**

## Description

Enables the QinQ VLAN mode, also known as "Double Tagging".

Inserting **no** as a prefix for this command, it will disable the QinQ VLAN.

## Syntax

No parameter accepted.

## Default

The QinQ mode is disabled.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Use the QinQ mode in order to implement a second level of VLAN tagging on a core or service provider network.

## Example

This example shows how to enable the QinQ VLAN.

```
DmSwitch(config)#vlan qinq
DmSwitch(config)#
```

You can verify that the information was deleted by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
---------	-------------

Command	Description
<code>show running-config</code>	Shows the current operating configuration.

# wred

**wred**

**no wred**

## Description

Enable Weighted Random Early Detection (WRED).

## Syntax

No parameter accepted.

## Default

The default configuration to wred is disabled.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to enable wred

```
DmSwitch#wred
DmSwitch#
```

You can verify that the configuration was created by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>wred averaging-time</b>	Configures the queue size averaging time for Ethernet interface
<b>wred cng-drop-start-point</b>	Configures the start point to drop CNG marked packets for Ethernet interface

Command	Description
<b>wred cng-slope</b>	Configures the slope of drop probability function for CNG marked packets for Ethernet interface
<b>wred drop-start-point</b>	Configures the start point to drop for Ethernet interface
<b>wred slope</b>	Configures the slope of drop probability function for Ethernet interface

# Chapter 4. Interface Ethernet/Port-channel Commands

## capabilities

```
capabilities { 10full | 10half | 100full | 100half | 1000full | flowcontrol [
transmit | receive ] }
```

```
no capabilities { 10full | 10half | 100full | 100half | 1000full | flowcontrol [
transmit | receive ] }
```

### Description

Configure interface port capabilities for autonegotiation.

Inserting **no** as a prefix for this command, it will disable the specified capability.

### Syntax

Parameter	Description
<b>10full</b>	Advertises 10Mbps full-duplex operation support.
<b>10half</b>	Advertises 10Mbps half-duplex operation support.
<b>100full</b>	Advertises 100Mbps full-duplex operation support.
<b>100half</b>	Advertises 100Mbps half-duplex operation support
<b>1000full</b>	Advertises 1000Mbps full-duplex operation support.
<b>flowcontrol</b>	Advertises flow control operation support.
<b>transmit</b>	(Optional) Advertises support of PAUSE frames for transmission.
<b>receive</b>	(Optional) Advertises support of PAUSE frames for reception.

### Default

All supported speed and duplex capabilities enabled.

Flow control capabilities disabled.

### Command Modes

Interface configuration.



## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

When enabling flow control advertisement without specifying transmit or receive, flow control will be advertised for both of them.

## Example

This example shows how to set interface capabilities for interface Ethernet 5.

```
DmSwitch(config-if-eth-1/5)#capabilities 100full
DmSwitch(config-if-eth-1/5)#no capabilities 10half
DmSwitch(config-if-eth-1/5)#no capabilities 10full
DmSwitch(config-if-eth-1/5)#
```

You can verify that the information was set by entering the **show interfaces status** privileged EXEC command.

## Related Commands

Command	Description
<b>flowcontrol</b>	Configures Flow Control for Ethernet interfaces.
<b>negotiation</b>	Controls autonegotiation status for an Ethernet interface.
<b>speed-duplex</b>	Configures speed and duplex operation.
<b>show interfaces status</b>	Shows interface configuration status.
<b>show interfaces table configuration</b>	Shows interface's configuration table.

# description

**description** { *string* }

**no description**

## Description

Use the description command to insert some descriptive text for Ethernet and Port-Channel interfaces.

Inserting **no** as a prefix for this command, it will remove the description.

## Syntax

Parameter	Description
<i>string</i>	Some description for the interface. (Size: 63 characters)

## Default

No default is defined.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to set a description for an Ethernet interface.

```
DmSwitch(config-if-eth-1/2)#description GatewayInterface
DmSwitch(config-if-eth-1/2)#
```

You can verify that the information was inserted by entering the **show interfaces status ethernet** user EXEC command.

## Related Commands

Command	Description
<code>show interfaces status</code>	Shows interface configuration status.

# dot1x guest-vlan

**dot1x guest-vlan** *id*

**no dot1x guest-vlan**

## Description

Specifies an active VLAN as an 802.1X guest VLAN.

The **no** form of this command removes the guest VLAN on the interface.

## Syntax

Parameter	Description
<i>id</i>	VLAN ID. (Range: 1-4094)

## Default

The 802.1X guest VLAN option is disabled.

## Command Modes

Interface configuration.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

When you configure a guest VLAN, clients that are not 802.1x-capable are put into the guest VLAN when the server does not receive a response to its EAPOL request/identity frame. The VLAN must be created to configure the 802.1X guest VLAN interface ethernet parameter. The **show vlan table** command shows whether the interface was put into the guest VLAN.

## Example

This example shows how to configure VLAN 3 as an 802.1X guest VLAN.

```
DmSwitch(config)#interface vlan 3
DmSwitch(config-if-vlan-3)#interface ethernet 5
DmSwitch(config-if-eth-1/5)#dot1x guest-vlan 3
```

```
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was made by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>dot1x</b>	Configures global options for 802.1X.
<b>dot1x restricted-vlan</b>	Specifies an active VLAN as an 802.1X restricted VLAN.
<b>show dot1x</b>	Shows 802.1X information.
<b>show running-config</b>	Shows the current operating configuration.

# dot1x max-req

**dot1x max-req** *value*

**no dot1x max-req**

## Description

Use the dot1x max-req command to set the maximum EAP request/identity packet retransmissions.

Inserting **no** as a prefix for this command, it will return the maximum EAP request/identity packet retransmissions to its default value.

## Syntax

Parameter	Description
<i>value</i>	Max request count. (Range: 1-10)

## Default

The default max-req value is 2.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to set the maximum EAP request/identity packet retransmissions for interface Ethernet 5.

```
DmSwitch(config-if-eth-1/5)#dot1x max-req 3
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was made by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>dot1x</b>	Configures global options for 802.1X.
<b>dot1x port-control</b>	Sets the dot1x mode on a port interface.
<b>dot1x re-authentication</b>	Enables or disables periodic re-authentication.
<b>dot1x timeout</b>	Defines dot1x timeout values.
<b>show dot1x</b>	Shows 802.1X information.
<b>show running-config</b>	Shows the current operating configuration.

# dot1x port-control

```
dot1x port-control { auto | force-auth | force-unauth }
```

```
no dot1x port-control
```

## Description

Use the dot1x port-control command to set the dot1x mode on a port interface.

Inserting **no** as a prefix for this command, it will return port-control mode to its default value.

## Syntax

Parameter	Description
<b>auto</b>	Requires dot1x-aware client RADIUS server authorization.
<b>force-auth</b>	Configures the port to grant access to all clients.
<b>force-unauth</b>	Configures the port to deny access to all clients.

## Default

The default mode is force-auth.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure the port to grant access to all clients.

```
DmSwitch(config-if-eth-1/5)#dot1x port-control force-auth  
DmSwitch(config-if-eth-1/5)#
```



You can verify that the configuration was made by entering the **show dot1x** privileged EXEC command.

## Related Commands

Command	Description
<b>dot1x</b>	Configures global options for 802.1X.
<b>dot1x max-req</b>	Sets the maximum EAP request/identity packet retransmissions.
<b>dot1x re-authentication</b>	Enables or disables periodic re-authentication.
<b>dot1x timeout</b>	Defines dot1x timeout values.
<b>show dot1x</b>	Shows 802.1X information.
<b>show running-config</b>	Shows the current operating configuration.

# dot1x re-authentication

**dot1x re-authentication**

**no dot1x re-authentication**

## Description

Use the dot1x re-authentication command to enable/disable periodic re-authentication.

Inserting **no** as a prefix for this command, it will disable re-authentication.

## Syntax

No parameter accepted.

## Default

Disabled.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to enable periodic re-authentication for interface Ethernet 5.

```
DmSwitch(config-if-eth-1/5)#dot1x re-authentication
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was made by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
---------	-------------

Command	Description
<code>dot1x</code>	Configures global options for 802.1X.
<code>dot1x max-req</code>	Sets the maximum EAP request/identity packet retransmissions.
<code>dot1x port-control</code>	Sets the dot1x mode on a port interface.
<code>dot1x timeout</code>	Defines dot1x timeout values.
<code>show dot1x</code>	Shows 802.1X information.
<code>show running-config</code>	Shows the current operating configuration.

# dot1x restricted-vlan

**dot1x restricted-vlan** *id*

**no dot1x restricted-vlan**

## Description

Specifies an active VLAN as an 802.1X restricted VLAN.

The **no** form of this command removes the restricted VLAN on the interface.

## Syntax

Parameter	Description
<i>id</i>	VLAN ID. (Range: 1-4094)

## Default

The 802.1X restricted VLAN option is disabled.

## Command Modes

Interface configuration.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

When you configure a restricted VLAN, clients that are IEEE 802.1x-compliant and cannot access another VLAN because they fail the authentication process are put into the restricted VLAN. The VLAN must be created in order to configure the 802.1X restricted VLAN interface ethernet parameter. The **show vlan table** command shows whether the interface was put into the restricted VLAN.

## Example

This example shows how to configure VLAN 3 as an 802.1X restricted VLAN.

```
DmSwitch(config)#interface vlan 3
DmSwitch(config-if-vlan-3)#interface ethernet 5
DmSwitch(config-if-eth-1/5)#dot1x restricted-vlan 3
```

```
DmSwitch(config-if-eth-1/5) #
```

You can verify that the configuration was made by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>dot1x</b>	Configures global options for 802.1X.
<b>dot1x guest-vlan</b>	Specifies an active VLAN as an 802.1X guest VLAN.
<b>show dot1x</b>	Shows 802.1X information.
<b>show running-config</b>	Shows the current operating configuration.

# dot1x timeout

```
dot1x timeout { quiet-period timeout | re-authperiod timeout | tx-period timeout }
```

```
no dot1x timeout { quiet-period | re-authperiod | tx-period }
```

## Description

Use the dot1x timeout command to define dot1x timeout values for the Ethernet interface.

Inserting **no** as a prefix for this command, it will remove dot1x timeout for the specified configuration passed as parameter.

## Syntax

Parameter	Description
<b>quiet-period</b>	Time after Max Request Count before gets new client.
<b>re-authperiod</b>	Time after connected client must be re-authenticated.
<b>tx-period</b>	Time switch waits before re-transmitting EAP packet.
<i>timeout</i>	Timeout in seconds. (Range: 1-65535)

## Default

The default value for quiet-period is 60.

The default value for re-authperiod is 3600

The default value for tx-period is 30.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to set dot1x quiet-period, re-authperiod and tx-period for interface Ethernet 5.

```
DmSwitch(config-if-eth-1/5)#dot1x timeout quiet-period 600
DmSwitch(config-if-eth-1/5)#dot1x timeout re-authperiod 3600
DmSwitch(config-if-eth-1/5)#dot1x timeout tx-period 60
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was made by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>dot1x</b>	Configures global options for 802.1X.
<b>dot1x max-req</b>	Sets the maximum EAP request/identity packet retransmissions.
<b>dot1x port-control</b>	Sets the dot1x mode on a port interface.
<b>dot1x re-authentication</b>	Enables or disables periodic re-authentication.
<b>show dot1x</b>	Shows 802.1X information.
<b>show running-config</b>	Shows the current operating configuration.

# flowcontrol

```
flowcontrol [ transmit | receive ]
```

```
no flowcontrol [ transmit | receive ]
```

## Description

Configures flow control on interfaces.

Inserting **no** as a prefix for this command, it will disable flow control.

## Syntax

Parameter	Description
<b>transmit</b>	(Optional) Enables PAUSE frames transmission for flowcontrol.
<b>receive</b>	(Optional) Enables PAUSE frames reception for flowcontrol.

## Default

Flow control is disabled.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

When enabling flowcontrol without specifying transmit or receive, Flow Control will be enabled for both of them.

Fast Ethernet ports do not support asymmetric Flow Control. That is only supported by Gigabit ports.

## Example

This example shows how to enable Flow Control for interface Ethernet 5.



```
DmSwitch(config-if-eth-1/5)#flowcontrol
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was set by entering the **show interfaces status** privileged EXEC command.

## Related Commands

Command	Description
<b>flowcontrol</b>	Configures Flow Control for Ethernet interfaces.
<b>negotiation</b>	Controls autonegotiation status for an Ethernet interface.
<b>speed-duplex</b>	Configures speed and duplex operation.
<b>show interfaces status</b>	Shows interface configuration status.
<b>show interfaces table configuration</b>	Shows interface's configuration table.

# garp timer

```
garp timer { join join-timer | leave leave-timer | leaveall leaveall-timer }
```

```
no garp timer { join | leave | leaveall }
```

## Description

Use the garp timer command to set the values for the join, leave and leaveall timers.

Inserting **no** as a prefix for this command, it will reset the join, leave or leaveall timers to default value.

## Syntax

Parameter	Description
<b>join</b> <i>join-timer</i>	Specifies the join timer. The value to be entered in centiseconds. (Range: 20-1000)
<b>leave</b> <i>leave-timer</i>	Specifies the leave timer. The value to be entered in centiseconds. (Range: 60-3000)
<b>leaveall</b> <i>leaveall-timer</i>	Specifies the leaveall timer. The value to be entered in centiseconds. (Range: 500-18000)

## Default

Join timer: 20 centiseconds.

Leave timer: 60 centiseconds.

Leaveall timer: 1000 centiseconds.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to garp timers for interface Ethernet 5.

```
DmSwitch(config-if-eth-1/5)#garp timer join 30
DmSwitch(config-if-eth-1/5)#garp timer leave 600
DmSwitch(config-if-eth-1/5)#garp timer leaveall 5000
DmSwitch(config-if-eth-1/5)#
```

You can verify that the information was set by entering the **show garp timer** privileged EXEC command.

## Related Commands

Command	Description
<b>bridge-ext gvrp timer</b>	Enables GVRP globally for the switch.
<b>show garp timer</b>	Shows GARP properties.
<b>show gvrp timer</b>	Shows GVRP configuration.
<b>show running-config timer</b>	Shows the current operating configuration.
<b>switchport gvrp timer</b>	Enables GVRP for a specific port.

# l2protocol-tunnel

```
l2protocol-tunnel { cdp | lacp | pagp | pvst | stp | udld | vtp }
```

```
no l2protocol-tunnel { cdp | lacp | pagp | pvst | stp | udld | vtp }
```

## Description

Use the `l2protocol-tunnel` command to configure Layer 2 protocols tunneling for the Ethernet interface.

Inserting **no** as a prefix for this command, it will disable `l2protocol-tunnel` for the specified protocol.

## Syntax

Parameter	Description
<b>cdp</b>	Enable/disable CDP packets tunneling
<b>lacp</b>	Enable/disable LACP packets tunneling
<b>pagp</b>	Enable/disable PAgP packets tunneling
<b>pvst</b>	Enable/disable PVST packets tunneling
<b>stp</b>	Enable/disable STP packets tunneling
<b>udld</b>	Enable/disable UDLD packets tunneling
<b>vtp</b>	Enable/disable VTP packets tunneling

## Default

No default is defined.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.
3.2	The <b>pvst</b> parameter was added.
4.3	The <b>lacp</b> , <b>pagp</b> and <b>udld</b> parameters were added.

## Usage Guidelines

L2 protocol tunneling is based on destination MAC address modification for protocol packets. Protocol packets received on a port that has tunneling enabled will have their destination address changed to another address.

With that destination address the packets will be transparently forwarded (flooded) through the network until some other port with tunneling enabled is reached.

You must use this command on ports that will convert protocol packets into tunneled packets and/or convert tunneled packets into protocol packets. The intermediate ports on the tunneling path must not have this command enabled so that they will only forward tunneled packets without modifications.

## Example

This example shows how to enable STP packets tunneling for the interface Ethernet 5.

```
DmSwitch(config-if-eth-1/5)#l2protocol-tunnel stp
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was made by entering the **show l2protocol-tunnel** privileged EXEC command.

## Related Commands

Command	Description
<b>l2protocol-tunnel</b> ( <b>Global configuration</b> )	Configures a Layer 2 protocols tunneling.
<b>show l2protocol-tunnel</b>	Shows Layer 2 Protocols Tunneling information.
<b>show running-config</b>	Shows the current operating configuration.

# lacp

```
lacp [ actor { admin-key key | port-priority priority } ]
```

```
no lacp [ actor { admin-key | port-priority } ]
```

## Description

Enables and configures LACP status on an interface.

Inserting **no** as a prefix for this command, it will disable LACP, or unconfigure LACP actor on an interface.

## Syntax

Parameter	Description
<b>actor</b>	(Optional) The local side of an aggregate link
<b>admin-key</b> <i>key</i>	Specifies the LACP administration key Administration key value. (Range: 0-255)
<b>port-priority</b> <i>priority</i>	Specifies LACP port priority Port priority value. (Range: 0-65535)

## Default

LACP is disabled on interfaces.

Default value for key is 1.

Default value for priority is 32768.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to enable LACP for interface Ethernet 5 and set admin-key to 30 and port-priority to 20000.

```
DmSwitch(config-if-eth-1/5)#lacp
DmSwitch(config-if-eth-1/5)#lacp actor admin-key 30
DmSwitch(config-if-eth-1/5)#lacp actor port-priority 20000
DmSwitch(config-if-eth-1/5)#
```

You can verify that the information was deleted by entering the **show interfaces status** and **show lacp** privileged EXEC command.

## Related Commands

Command	Description
<b>debug</b>	Enables the printing of debug messages.
<b>show interfaces status</b>	Shows interface configuration status.
<b>show lacp counters</b>	Shows the LACP traffic counters.
<b>show lacp group</b>	Shows the LACP channel group information.
<b>show lacp internal</b>	Shows the LACP internal information.
<b>show lacp neighbors</b>	Shows the LACP neighbors information.
<b>show lacp sysid</b>	Shows the system identifier used by LACP.

# link-flap

```
link-flap [ detection { flaps time-window } | unblock-time { time } ]
```

```
no link-flap [ detection | unblock-time ]
```

## Description

Configures Link-Flap Detection.

## Syntax

Parameter	Description
<b>link-flap</b>	Enables link-flap detection
<b>detection</b>	Configures the detection conditions
<i>flaps</i>	Selects the maximum number of link status flaps
<i>time-window</i>	Selects the interval time to count link status flaps (seconds)
<b>unblock-time</b> <i>time</i>	Selects the time interval to wait before unblock the interface (seconds)

## Default

The default values to detection are 10 flaps in 20 seconds to Fast Ethernet interfaces and 10 flaps in 40 seconds to Giga Ethernet interfaces. The default unblock time is 30 seconds to all Ethernet interfaces.

## Command Modes

Interface configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure link-flap for interface Ethernet 5

```
DmSwitch(config-if-eth-1/5)#link-flap detection 3 15
DmSwitch(config-if-eth-1/5)#link-flap unblock-time 300
DmSwitch(config-if-eth-1/5)#
```



You can verify that the information was configured by entering the **show link-flap** privileged EXEC command.

## Related Commands

Command	Description
<b>show link-flap</b>	Shows link-flap status and configuration
<b>show running-config</b>	Shows the current operating configuration.

# lldp admin-status

```
lldp admin-status { disable | rx-only | tx-only | tx-and-rx }
```

## Description

Configures the administratively desired status of the local LLDP agent.

## Syntax

Parameter	Description
<b>disable</b>	Specifies that the transmit and receive mode are disabled.
<b>rx-only</b>	Specifies that only the receive mode is enabled.
<b>tx-only</b>	Specifies that only the transmit mode is enabled.
<b>tx-and-rx</b>	Specifies that the transmit and receive mode are enabled.

## Default

The default is tx-and-rx.

## Command Modes

Interface configuration.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to enable only the LLDP receive mode for interface Ethernet 5.

```
DmSwitch(config-if-eth-1/5)#lldp admin-status rx-only
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was made by entering the **show lldp** privileged EXEC command.

## Related Commands

Command	Description
<b>lldp</b>	Enables the LLDP operation in the DmSwitch.
<b>lldp notification</b>	Configure speed and duplex operation.
<b>lldp notification-interval</b>	Configures the allowed interval at which Simple Network Management Protocol (SNMP) notifications can be sent. If multiple neighbor information changes occur after the sent notification, no additional notifications are sent.
<b>lldp reinitialize-delay</b>	Configures the delay that applies to a re-initialization attempt after LLDP ports were disabled or the link went down.
<b>lldp tlvs-tx-enable</b>	Configures which optional TLVs are to be sent to neighbors.
<b>lldp transmit-delay</b>	Configures the delay time between successive frame transmissions initiated by a value change or status change in any of the LLDP local systems Management Information Base (MIB). The auto option uses the formula, $(0.25 * \text{transmit-interval})$ , to calculate the number of seconds.
<b>lldp transmit-hold</b>	Calculates the actual time-to-live (TTL) value used in the LLDP PDU packets. The formula is $\text{transmit-interval} * \text{transmit-hold}$ .
<b>lldp transmit-interval</b>	Configures the periodic transmit interval for LLDP protocol data units (PDUs).
<b>show lldp</b>	Shows LLDP configuration information.
<b>show lldp neighbor</b>	Shows LLDP neighbor information.

# lldp notification

`lldp notification`

`no lldp notification`

## Description

Enables the transmission of LLDP SNMP trap notifications.

Inserting **no** as a prefix for this command, it disables the transmission of LLDP SNMP trap notifications.

## Syntax

No parameter accepted.

## Default

By default notification sending is disable.

## Command Modes

Interface configuration.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to enable LLDP SNMP trap for interface Ethernet 5.

```
DmSwitch(config-if-eth-1/5)#lldp notification
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was made by entering the **show lldp** privileged EXEC command.

## Related Commands

Command	Description
<code>lldp</code>	Enables the LLDP operation in the DmSwitch.

Command	Description
<b>lldp admin-status</b>	Configures the administratively desired status of the local LLDP agent.
<b>lldp notification-interval</b>	Configures the allowed interval at which Simple Network Management Protocol (SNMP) notifications can be sent. If multiple neighbor information changes occur after the sent notification, no additional notifications are sent.
<b>lldp reinitialize-delay</b>	Configures the delay that applies to a re-initialization attempt after LLDP ports were disabled or the link went down.
<b>lldp tlvs-tx-enable</b>	Configures which optional TLVs are to be sent to neighbors.
<b>lldp transmit-delay</b>	Configures the delay time between successive frame transmissions initiated by a value change or status change in any of the LLDP local systems Management Information Base (MIB). The auto option uses the formula, $(0.25 * \text{transmit-interval})$ , to calculate the number of seconds.
<b>lldp transmit-hold</b>	Calculates the actual time-to-live (TTL) value used in the LLDP PDU packets. The formula is $\text{transmit-interval} * \text{transmit-hold}$ .
<b>lldp transmit-interval</b>	Configures the periodic transmit interval for LLDP protocol data units (PDUs).
<b>show lldp</b>	Shows LLDP configuration information.
<b>show lldp neighbor</b>	Shows LLDP neighbor information.

# lldp tlvs-tx-enable

```
lldp tlvs-tx-enable { all | management-address | port-description |  
system-capabilities | system-description | system-name }
```

```
no lldp tlvs-tx-enable { all | management-address | port-description |  
system-capabilities | system-description | system-name }
```

## Description

Configures which optional TLVs are to be sent to neighbors.

Inserting **no** as a prefix for this command, it disable the specified TLV sending.

## Syntax

Parameter	Description
<b>all</b>	Enables all TLVs sending.
<b>management-address</b>	Enables the Management Address TLV sending.
<b>port-description</b>	Enables the Port Description TLV sending.
<b>system-capabilities</b>	Enables the System Capabilities TLV sending.
<b>system-description</b>	Enables the System Description TLV sending.
<b>system-name</b>	Enables the System Name TLV sending.

## Default

All optional TLVS sending are enabled.

## Command Modes

Interface configuration.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to enable the System Name TLV sending for interface Ethernet 5.

```
DmSwitch(config-if-eth-1/5)#lldp tlvs-tx-enable system-name
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was made by entering the **show lldp** privileged EXEC command.

## Related Commands

Command	Description
<b>lldp</b>	Enables the LLDP operation in the DmSwitch.
<b>lldp admin-status</b>	Configures the administratively desired status of the local LLDP agent.
<b>lldp notification</b>	Configure speed and duplex operation.
<b>lldp notification-interval</b>	Configures the allowed interval at which Simple Network Management Protocol (SNMP) notifications can be sent. If multiple neighbor information changes occur after the sent notification, no additional notifications are sent.
<b>lldp reinitialize-delay</b>	Configures the delay that applies to a re-initialization attempt after LLDP ports were disabled or the link went down.
<b>lldp transmit-delay</b>	Configures the delay time between successive frame transmissions initiated by a value change or status change in any of the LLDP local systems Management Information Base (MIB). The auto option uses the formula, (0.25 * transmit-interval), to calculate the number of seconds.
<b>lldp transmit-hold</b>	Calculates the actual time-to-live (TTL) value used in the LLDP PDU packets. The formula is transmit-interval * transmit-hold.
<b>lldp transmit-interval</b>	Configures the periodic transmit interval for LLDP protocol data units (PDUs).
<b>show lldp</b>	Shows LLDP configuration information.
<b>show lldp neighbor</b>	Shows LLDP neighbor information.

# loopback-detection

```
loopback-detection [ unblock-time { unblock-time } ]
```

```
no loopback-detection [ unblock-time ]
```

## Description

Configures Loopback Detection.

## Syntax

Parameter	Description
<b>unblock-time</b> <i>unblock-time</i>	Selects the time interval to wait before unblock the interface (seconds)

## Default

The default values to unblock time is 30 seconds.

## Command Modes

Interface configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure loopback-detection for interface Ethernet 5

```
DmSwitch(config-if-eth-1/5)#loopback-detection unblock-time 300
DmSwitch(config-if-eth-1/5)#
```

You can verify that the information was configured by entering the **show loopback-detection** privileged EXEC command.

## Related Commands



Command	Description
<code>show loopback-detection</code>	Shows loopback-detection status and configuration
<code>show running-config</code>	Shows the current operating configuration.

# mdix

```
mdix { auto | force-auto | normal | xover }
```

```
no mdix
```

## Description

Use the `mdix` command to configure the Medium Dependent Interface Crossover mode.

Inserting **no** as a prefix for this command, it will disable MDIX.

## Syntax

Parameter	Description
<b>auto</b>	Enables auto-MDIX when autonegotiation is enabled
<b>force-auto</b>	Enables auto-MDIX
<b>normal</b>	Disables auto-MDIX and force mode to normal
<b>xover</b>	Disables auto-MDIX and force mode to crossed-over

## Default

No default is defined.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to disable auto-MDIX and force mode to cross-over on interface Ethernet 5.

```
DmSwitch(config-if-eth-1/5)#mdix xover
DmSwitch(config-if-eth-1/5)#
```

You can verify that the information was deleted by entering the **show interfaces status** privileged EXEC command.

## Related Commands

Command	Description
<b>show interfaces status</b>	Shows interface configuration status.

# monitor source

```
monitor source { rx | tx | all }
```

```
no monitor source
```

## Description

Sets the interface as a source of monitored traffic.

The **no** command form disables the interface as a monitor source.

## Syntax

Parameter	Description
<b>rx</b>	Monitor only received traffic
<b>tx</b>	Monitor only transmitted traffic
<b>all</b>	Monitor all traffic

## Default

By default, the interface is not a source of monitored traffic.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to set the interface Ethernet 5 as a monitoring source for the capture of its received traffic.

```
DmSwitch(config-if-eth-1/5)#monitor source rx
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was made by entering the **show monitor** privileged EXEC command.

## Related Commands

Command	Description
<b>monitor</b> (Global configuration)	Configures the traffic monitoring.
<b>show monitor</b>	Shows traffic monitoring configuration.
<b>show running-config</b>	Shows the current operating configuration.

# negotiation

**negotiation**

**no negotiation**

## Description

Use the negotiation command to enable or disable autonegotiation.

Inserting **no** as a prefix for this command, it will disable autonegotiation.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to disable autonegotiation for interface Ethernet 5.

```
DmSwitch(config-if-eth-1/5)#no negotiation
DmSwitch(config-if-eth-1/5)#
```

You can verify that the autonegotiation was disabled by entering the **show interfaces status** privileged EXEC command.

## Related Commands

Command	Description
---------	-------------

Command	Description
<b>flowcontrol</b>	Configures Flow Control for Ethernet interfaces.
<b>negotiation</b>	Controls autonegotiation status for an Ethernet interface.
<b>speed-duplex</b>	Configures speed and duplex operation.
<b>show interfaces status</b>	Shows interface configuration status.
<b>show interfaces table configuration</b>	Shows interface's configuration table.

# oam

**oam**

**no oam**

## Description

Configures OAM status.

## Syntax

No parameter accepted.

## Default

The OAM is disabled by default.

## Command Modes

Interface configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure OAM for interface Ethernet 5

```
DmSwitch(config-if-eth-1/5) #oam
DmSwitch(config-if-eth-1/5) #
```

You can verify that the information was configured by entering the **show oam** privileged EXEC command.

## Related Commands

Command	Description
<b>show oam</b>	Shows OAM information status and configuration
<b>show running-config</b>	Shows the current operating configuration.



# queue max-bw

```
queue max-bw { unlim-all | { { unlimited | bandwidth1 } { unlimited | bandwidth2 }  
{ unlimited | bandwidth3 } { unlimited | bandwidth4 } { unlimited | bandwidth5 } {  
unlimited | bandwidth6 } { unlimited | bandwidth7 } { unlimited | bandwidth8 } } }
```

no queue max-bw

## Description

Configure the maximum bandwidth allocation per queue.

## Syntax

Parameter	Description
<b>unlim-all</b>	Selects unlimited bandwidth for all queues.
<b>unlimited</b>	Selects unlimited bandwidth for a queue.
<i>bandwidth1 ... bandwidth8</i>	Maximum bandwidth for each queue (1 ... 8) in kbit/s (64 kbit/s granu
<b>all</b>	Adds all ports

## Default

The default is unlimited bandwidth for all queues of all Ethernet interfaces.

## Command Modes

Global configuration.

## Command History

Release	Modification
4.0	This command was introduced. Before this was called <b>qos max-bw</b> .
5.0	This command was moved from Configure menu to Interface Ethernet menu. The description of the old command can be consulted in the DmSwitch Command Reference in case of using an older than 5.0 version by clicking <a href="#">here</a> .

## Usage Guidelines

Not available.

## Example

This example shows how to configure maximum queue bandwiths to Ethernet interface 5.

```
DmSwitch(config)#queue max-bw 10048 unlimited 30016 unlimited 50048 60032 70016 8000 ethernet 5
DmSwitch(config)#
```

You can verify that the configuration was set by entering the **show queue max-bw** privileged EXEC command.

## Related Commands

Command	Description
<b>show queue config</b>	Shows queue configuration per port
<b>queue sched-mode sp</b>	Configures Ethernet interface queues in Strict Priority schedule mode.
<b>queue sched-mode wfq</b>	Configures Ethernet interface queues in Weighted Fair Queueing schedule mode
<b>queue sched-mode wrr</b>	Configures Ethernet interface queues in Weighted Round Robin schedule mode
<b>queue cos-map</b>	Maps CoS priorities to queues
<b>show running-config</b>	Shows the current operating configuration.

# queue sched-mode sp

**queue sched-mode sp**

**no queue sched-mode**

## Description

Configure Ethernet interface queues in the Strict Priority schedule mode.

## Syntax

No parameter accepted.

## Default

The default queue schedule mode is wrr for all Ethernet interfaces.

Queue	Weight
0	1
1	2
2	4
3	6
4	8
5	10
6	12
7	14

## Command Modes

Global configuration.

## Command History

### Release

---

4.0 This command was introduced. Before this was called **qos sched-mode sp**.

5.0 This command was moved from Configure menu to Interface Ethernet menu. The description of the old command can be consulted in the DmSwitch Command Reference in case of using an older than 5.0 version by clicking [here](#).

## Usage Guidelines

Not available.

## Example

This example shows how to configure sp schedule mode to Ethernet interfaces 9 to 16.

```
DmSwitch(config)#queue sched-mode sp unit 1 ethernet 9to16
DmSwitch(config)#
```

You can verify that the configuration was set by entering the **show queue config** privileged EXEC command.

## Related Commands

Command	Description
<b>show queue config</b>	Shows queue configuration per port
<b>queue sched-mode wfq</b>	Configures Ethernet interface queues in Weighted Fair Queueing schedule mode
<b>queue sched-mode wrr</b>	Configures Ethernet interface queues in Weighted Round Robin schedule mode
<b>queue cos-map</b>	Maps CoS priorities to queues
<b>queue max-bw</b>	Configures the maximum bandwidth allocation per queue
<b>show running-config</b>	Shows the current operating configuration.

# queue sched-mode wfq

```
queue sched-mode wfq { min-bw { bandwidth1 | sp } { bandwidth2 | sp } { bandwidth3 | sp }  
{ bandwidth4 | sp } { bandwidth5 | sp } { bandwidth6 | sp } { bandwidth7 | sp } { bandwidth8 | sp } }
```

```
no queue sched-mode
```

## Description

Configure Ethernet interface queues in the Weighted Fair Queueing schedule mode.

## Syntax

Parameter	Description
<b>min-bw</b>	Minimum bandwidth allocation per queue (for ports using WFQ mode)
<i>bandwidth1 ... bandwidth8</i>	Minimum bandwidth for each queue (1 ... 8) in kbit/s (64 kbit/s granularity)
<b>sp</b>	Configures queue in strict priority.

## Default

The default queue schedule mode is wrr for all Ethernet interfaces.

## Command Modes

Global configuration.

## Command History

Release	Modification
4.0	This command was introduced. Before this was called <b>qos sched-mode wfq</b> .
5.0	This command was moved from Configure menu to Interface Ethernet menu. The description of the old command can be consulted in the DmSwitch Command Reference in case of using an older than 5.0 version by <a href="#">clicking here</a> .

## Usage Guidelines

Not available.

## Example

This example shows how to configure wfq schedule mode to Ethernet interfaces 25 with different minimum bandwidth.

```
DmSwitch(config)#queue sched-mode wfq unit 1 ethernet 25 min-bw 1024 2048 sp sp sp sp 7040 sp
```

```
DmSwitch(config)#
```

You can verify that the configuration was set by entering the **show queue config** privileged EXEC command.

## Related Commands

Command	Description
<b>show queue config</b>	Shows queue configuration per port
<b>queue sched-mode sp</b>	Configures Ethernet interface queues in Strict Priority schedule mode.
<b>queue sched-mode wrr</b>	Configures Ethernet interface queues in Weighted Round Robin schedule mode
<b>queue cos-map</b>	Maps CoS priorities to queues
<b>queue max-bw</b>	Configures the maximum bandwidth allocation per queue
<b>show running-config</b>	Shows the current operating configuration.

# queue sched-mode wrr

```
queue sched-mode wrr [ queue-weights { weight1 | sp } { weight2 | sp } { weight3 | sp } {  
weight4 | sp } { weight5 | sp } { weight6 | sp } { weight7 | sp } { weight8 | sp } ]
```

```
no queue sched-mode
```

## Description

Configure Ethernet interface queues in the Weighted Round Robin schedule mode.

## Syntax

Parameter	Description
<i>queue-weights</i>	Enables the weight specification for each queue.
<i>weight1 ... weight8</i>	Weight for each queue (1 ... 8).
<b>sp</b>	Configures queue in strict priority.

## Default

The default queue schedule mode is wrr for all Ethernet interfaces.

Queue	Weight
0	1
1	2
2	4
3	6
4	8
5	10
6	12
7	14

## Command Modes

Global configuration.

## Command History

### Release Modification

4.0	This command was introduced. Before this was called <b>qos sched-mode wrr</b> .
-----	---

**Release Modification**

- 5.0 This command was moved from Configure menu to Interface Ethernet menu. The description of the old command can be consulted in the DmSwitch Command Reference in case of using an older than 5.0 version by clicking [here](#).

**Usage Guidelines**

Not available.

**Example**

This example shows how to configure wr schedule mode to Ethernet interfaces 25 with different weights.

```
DmSwitch(config)#queue sched-mode wr unit 1 ethernet 25 queue-weights 2 3 5 sp sp sp 8 15
DmSwitch(config)#
```

You can verify that the configuration was set by entering the **show queue config** privileged EXEC command.

**Related Commands**

Command	Description
<b>show queue config</b>	Shows queue configuration per port
<b>queue sched-mode sp</b>	Configures Ethernet interface queues in Strict Priority schedule mode.
<b>queue sched-mode wfq</b>	Configures Ethernet interface queues in Weighted Fair Queueing schedule mode
<b>queue cos-map</b>	Maps CoS priorities to queues
<b>queue max-bw</b>	Configures the maximum bandwidth allocation per queue
<b>show running-config</b>	Shows the current operating configuration.



# rate-limit

```
rate-limit { input | output } { rate rate-limit } { burst burst-size }
```

```
rate-limit input flowcontrol pause pause-limit resume resume-limit }
```

```
no rate-limit { input [ flowcontrol ] | output }
```

## Description

Configures a maximum data rate for interfaces.

The **no** command form disables the data rate limit.

## Syntax

Parameter	Description
<b>input</b>	Specifies the ingress rate-limit for a port.
<b>output</b>	Specifies the egress rate-limit for a port.
<b>rate</b>	Specifies the rate-limit.
<i>rate-limit</i>	Rate-limit in kilobits per second. (Range: 64-1000000. Must be multiple of 64.)
<b>burst</b>	Specifies the maximum burst size.
<i>burst-size</i>	Maximum burst size in kilobits. (Range: 32-4096. Must be power of 2.)
<b>flowcontrol</b>	Specifies pause/resume frames sending.
<b>pause</b>	Specifies pause-frames sending threshold.
<i>pause-limit</i>	Pause-frames sending threshold in kilobits. Possible values: 4, 6, 8, 16, 24, 32, 40 or 48
<b>resume</b>	Specifies resume-frames sending threshold.
<i>resume-limit</i>	Resume-frames sending threshold in kilobits. (Range: 4-512. Must be power of 2.)

## Default

By default, rate limit is disabled on interfaces.

## Command Modes

Interface configuration.

## Command History

Release	Modification
---------	--------------

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Rate-limit flowcontrol can only be applied to input rate-limited interfaces. Rate-limit flowcontrol is functional only when flowcontrol (forced or negotiated) is enabled.

## Example

This example shows how to configure rate-limits for interface Ethernet 5.

```
DmSwitch(config-if-eth-1/5)#rate-limit input rate 64000 burst 1024
DmSwitch(config-if-eth-1/5)#rate-limit output rate 64000 burst 1024
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was enabled by entering the **show interfaces switchport** privileged EXEC command.

## Related Commands

Command	Description
<b>show running-config</b>	Shows the current operating configuration.

# rmon collection history

```
rmon collection history { auto-index | index } [ buckets bucket-number ] [ interval seconds ] [ owner name ]
```

```
no rmon collection history index
```

## Description

Configures a RMON history group of statistics.

Inserting **no** as a prefix for this command, it will remove the specified RMON history group of statistics.

## Syntax

Parameter	Description
<b>auto-index</b>	Automatically identifies the RMON history group of statistics. (Range: 1-65535)
<i>index</i>	Identifies the RMON history group of statistics. (Range: 1-65535)
<b>buckets</b> <i>bucket-number</i>	Specifies the maximum number of buckets. (Range: 1-65535)
<b>interval</b> <i>seconds</i>	Specifies the number of seconds in each polling cycle.
<b>owner</b> <i>ownername</i>	Specifies the owner of the RMON group of statistics.

## Default

Buckets : 8

Interval: 1800

## Command Modes

Interface configuration.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure a RMON history group of statistics index 5 on interface Ethernet 5. In this configuration, the data is sampled every 30 seconds and are saved the maximum number of 8 samples.

```
DmSwitch(config-if-eth-1/5)#rmon collection history 5 buckets 8 interval 30 owner test
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was made by entering the **show rmon history** privileged EXEC command.

## Related Commands

Command	Description
<b>rmon</b>	Configures an RMON.
<b>rmon alarm</b>	Configures an RMON alarm.
<b>rmon collection stats</b>	Configures a RMON collection of statistics.
<b>rmon event</b>	Configures an RMON event.
<b>show rmon alarm</b>	Shows the RMON alarm table.
<b>show rmon event</b>	Shows the RMON event table.
<b>show rmon history</b>	Shows the RMON history table.
<b>show running-config</b>	Shows the current operating configuration.
<b>show rmon statistics</b>	Shows the RMON statistics table.

# rmon collection stats

```
rmon collection stats { auto-index | index } [ owner name ]
```

```
no rmon collection stats index
```

## Description

Configures a RMON collection of statistics.

Inserting **no** as a prefix for this command, it will remove the specified RMON statistics collection.

## Syntax

Parameter	Description
<b>auto-index</b>	Automatically identifies the RMON history group of statistics. (Range: 1-65535)
<i>index</i>	Identifies the RMON group of statistics. (Range: 1-65535)
<b>owner</b> <i>ownername</i>	Specifies the owner of the RMON group of statistics.

## Default

No default is defined.

## Command Modes

Interface configuration.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure a RMON collection of statistics index 5 on interface Ethernet 5.

```
DmSwitch(config-if-eth-1/5)#rmon collection stats 5 owner test
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was made by entering the **show rmon statistics** privileged EXEC command.

## Related Commands

Command	Description
<b>rmon</b>	Configures an RMON.
<b>rmon alarm</b>	Configures an RMON alarm.
<b>rmon collection history</b>	Configures a RMON history group of statistics.
<b>rmon event</b>	Configures an RMON event.
<b>show rmon alarm</b>	Shows the RMON alarm table.
<b>show rmon event</b>	Shows the RMON event table.
<b>show rmon history</b>	Shows the RMON history table.
<b>show running-config</b>	Shows the current operating configuration.
<b>show rmon statistics</b>	Shows the RMON statistics table.

# shutdown

**shutdown**

**no shutdown**

## Description

Use the shutdown command to disable an interface.

Inserting **no** as a prefix for this command, it will reenable the interface.

## Syntax

No parameter accepted.

## Default

Interface is enabled.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to shutdown an Ethernet interface.

```
DmSwitch(config)#interface ethernet 10
DmSwitch(config-if-eth-1/10)#shutdown
DmSwitch(config-if-eth-1/10)#
```

You can verify that the Ethernet interface is down by entering the **show interfaces status** privileged EXEC command.

## Related Commands

Command	Description
<code>show interfaces status</code>	Shows interface configuration status.
<code>show interfaces table configuration</code>	Shows interface's configuration table.



# slow-protocols

```
slow-protocols { destination-address { alternative | standard } }
```

```
no slow-protocols destination-address
```

## Description

Configures Slow Protocols destination address.

## Syntax

Parameter	Description
<b>alternative</b>	Selects a alternative destination address
<b>standard</b>	Selects the IEEE standard destination address

## Default

The default values to the Slow Protocols destination address is the standard.

## Command Modes

Interface configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure the alternative destination address to slow-protocols in interface Ethernet 5

```
DmSwitch(config-if-eth-1/5)#slow-protocols destination-address alternative
DmSwitch(config-if-eth-1/5)#
```

You can verify that the information was configured by entering the **show interfaces status** privileged EXEC command.

## Related Commands

Command	Description
<code>show interfaces status</code>	Shows interface configuration status.
<code>show running-config</code>	Shows the current operating configuration.

# spanning-tree

```
spanning-tree { instance instance-parameters | edge-port | link-type  
link-type-parameters | restricted-role | restricted-tcn }
```

```
no spanning-tree { instance instance-parameters | edge-port | link-type |  
restricted-role | restricted-tcn }
```

## Description

Adds an Ethernet interface in a Spanning-Tree.

Inserting **no** as a prefix for this command, it will remove the Ethernet interface from a Spanning-Tree.

## Syntax

Parameter	Description
<i>instance</i>	Specifies the spanning-tree instance. (Range: 0-15)
<b>instance-parameters</b>	<a href="#">Click here to see the <i>instance</i> parameters description.</a>
<b>edge-port</b>	Specifies spanning-tree edge port. <a href="#">Click here to see the <b>edge-port</b> parameter description.</a>
<b>link-type link-type-parameters</b>	Specifies spanning-tree link type. <a href="#">Click here to see the <b>link-type</b> parameter and parameters description.</a>
<b>restricted-role</b>	Disallows Root Role on interface. <a href="#">Click here to see the <b>restricted-role</b> parameter description.</a>
<b>restricted-tcn</b>	Disallows Topology Change Notification on interface. <a href="#">Click here to see the <b>restricted-tcn</b> command description.</a>

## Default

No default is defined.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.
4.0	The instance range was changed from 1-15 to 0-15.

## Usage Guidelines

Not available.

## Example

This example shows how to add the selected interface Ethernet 5 to spanning-tree instance 1.

```
DmSwitch(config-if-eth-1/5)#spanning-tree 1
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was done by entering the **show spanning-tree instance ethernet ethernet-instance** privileged EXEC command.

## Related Commands

Command	Description
<b>spanning-tree</b>	Configure Spanning-Tree parameters.
<b>spanning-tree instance</b>	Enables a Spanning-tree instance.
<b>spanning-tree bpduguard</b>	Enables the Bridge Protocol Data Unit (BPDU) guard.
<b>spanning-tree edge-port</b> (Interface configuration)	Defines the Ethernet interface as the spanning-tree edge port.
<b>spanning-tree instance</b>	Configures an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree instance</b> <b>forward-delay</b>	Configures the Spanning-Tree Algorithm forward delay time.
<b>spanning-tree instance</b> <b>hello-time</b>	Configures the Spanning-Tree Algorithm hello time.
<b>spanning-tree instance</b> <b>max-age</b>	Configures the Spanning-Tree Algorithm maximum age.
<b>spanning-tree instance</b> <b>priority</b>	Specifies the spanning-tree priority in the DmSwitch.
<b>spanning-tree instance</b> <b>vlan-group</b>	Adds VLAN groups to a spanning-tree instance.
<b>spanning-tree link-type</b>	Specifies the type of link used with spanning-tree.
<b>spanning-tree mode</b>	Configures the spanning-tree mode.
<b>spanning-tree mode</b>	Defines parameters of Multiple Spanning-Tree configuration.
<b>show running-config</b>	Shows the current operating configuration.
<b>show spanning-tree</b>	Shows spanning-tree configuration and status.

# spanning-tree edge-port

**spanning-tree edge-port**

**no spanning-tree edge-port**

## Description

Use the spanning-tree edge-port to define the Ethernet interface as a spanning-tree edge port.

Inserting **no** as a prefix for this command, it will undefine the Ethernet interface as a spanning-tree edge port.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Edge ports are directly moved to the forwarding state in the spanning-tree. However, after a BPDU is received on these ports, their state will be controlled by the STP execution.

Enable the edge-port parameter on interfaces directly connected to end stations.

## Example

This example shows how to define an Ethernet interface as a spanning-tree edge port.

```
DmSwitch(config-if-eth-1/5)#spanning-tree edge-port
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was done by entering the **show spanning-tree instance ethernet ethernet-instance** privileged EXEC command.

## Related Commands

Command	Description
<b>spanning-tree</b>	Configure Spanning-Tree parameters.
<b>spanning-tree</b> <i>instance</i>	Enables a Spanning-tree instance.
<b>spanning-tree</b> (Interface configuration)	Adds an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree bpduguard</b>	Enables the Bridge Protocol Data Unit (BPDU) guard.
<b>spanning-tree instance</b>	Configures an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree instance forward-delay</b>	Configures the Spanning-Tree Algorithm forward delay time.
<b>spanning-tree instance hello-time</b>	Configures the Spanning-Tree Algorithm hello time.
<b>spanning-tree instance max-age</b>	Configures the Spanning-Tree Algorithm maximum age.
<b>spanning-tree instance priority</b>	Specifies the spanning-tree priority in the DmSwitch.
<b>spanning-tree instance vlan-group</b>	Adds VLAN groups to a spanning-tree instance.
<b>spanning-tree link-type</b>	Specifies the type of link used with spanning-tree.
<b>spanning-tree mode</b>	Configures the spanning-tree mode.
<b>spanning-tree mode</b>	Defines parameters of Multiple Spanning-Tree configuration.
<b>show running-config</b>	Shows the current operating configuration.
<b>show spanning-tree</b>	Shows spanning-tree configuration and status.

# spanning-tree *instance*

**spanning-tree** *instance* [ **cost** *path-cost* | **port-priority** *priority* ]

**no spanning-tree** *instance* [ **cost** | **port-priority** ]

## Description

Configures an Ethernet interface in a Spanning-Tree instance.

Inserting **no** as a prefix for this command, it will remove the Ethernet interface from a Spanning-Tree instance, or will remove the cost and port-priority configurations of the interface in the Spanning-Tree instance.

## Syntax

Parameter	Description
<i>instance</i>	Specifies the spanning-tree instance. (Range: 0-15)
<b>cost</b>	(Optional) Specifies spanning-tree cost.
<i>path-cost</i>	Value of spanning-tree path cost. (Range: 1-200000000)
<b>port-priority</b>	(Optional) Specifies spanning-tree port priority.
<i>priority</i>	Values of spanning tree port priority in steps of 16. (Range: 0-240)

## Default

No default is defined.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.
4.0	The instance range was changed from 1-15 to 0-15.

## Usage Guidelines

Not available.

## Example

This example shows how to set spanning-tree cost and port-priority for interface Ethernet 5.

```
DmSwitch(config-if-eth-1/5)#spanning-tree 1
DmSwitch(config-if-eth-1/5)#

DmSwitch(config-if-eth-1/5)#spanning-tree 1 cost 1000000
DmSwitch(config-if-eth-1/5)#spanning-tree 1 port-priority 128
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was made by entering the **show spanning-tree instanceinstance ethernet ethernet-instance** privileged EXEC command.

## Related Commands

Command	Description
<b>spanning-tree</b>	Configure Spanning-Tree parameters.
<b>spanning-tree instance</b>	Enables a Spanning-tree instance.
<b>spanning-tree (Interface configuration)</b>	Adds an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree bpduguard</b>	Enables the Bridge Protocol Data Unit (BPDU) guard.
<b>spanning-tree edge-port (Interface configuration)</b>	Defines the Ethernet interface as the spanning-tree edge port.
<b>spanning-tree instance forward-delay</b>	Configures the Spanning-Tree Algorithm forward delay time.
<b>spanning-tree instance hello-time</b>	Configures the Spanning-Tree Algorithm hello time.
<b>spanning-tree instance max-age</b>	Configures the Spanning-Tree Algorithm maximum age.
<b>spanning-tree instance priority</b>	Specifies the spanning-tree priority in the DmSwitch.
<b>spanning-tree instance vlan-group</b>	Adds VLAN groups to a spanning-tree instance.
<b>spanning-tree link-type</b>	Specifies the type of link used with spanning-tree.
<b>spanning-tree mode</b>	Configures the spanning-tree mode.
<b>spanning-tree mode</b>	Defines parameters of Multiple Spanning-Tree configuration.
<b>show running-config</b>	Shows the current operating configuration.
<b>show spanning-tree</b>	Shows spanning-tree configuration and status.



# spanning-tree link-type

```
spanning-tree link-type { auto | point-to-point | shared }
```

```
no spanning-tree link-type
```

## Description

Use the spanning-tree link-type command to specify the type of link used with spanning-tree.

Inserting **no** as a prefix for this command, it will return the link-type configuration to its default value.

## Syntax

Parameter	Description
<b>auto</b>	Specifies spanning tree link-type as auto. The link type will be derived from the current duplex mode for this interface. If full-duplex is used, the link type will be point-to-point. If half-duplex is used, the link type will be shared.
<b>point-to-point</b>	Specifies spanning tree link-type as point-to-point
<b>shared</b>	Specifies spanning tree link-type as shared

## Default

Link type is configured as auto.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to define the spanning-tree link-type in interface Ethernet 5.

```
DmSwitch(config-if-eth-1/5)#spanning-tree link-type point-to-point
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was made by entering the **show spanning-tree instance ethernet ethernet-instance** privileged EXEC command.

## Related Commands

Command	Description
<b>spanning-tree</b>	Configure Spanning-Tree parameters.
<b>spanning-tree instance</b>	Enables a Spanning-tree instance.
<b>spanning-tree (Interface configuration)</b>	Adds an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree bpduguard</b>	Enables the Bridge Protocol Data Unit (BPDU) guard.
<b>spanning-tree edge-port (Interface configuration)</b>	Defines the Ethernet interface as the spanning-tree edge port.
<b>spanning-tree instance</b>	Configures an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree instance forward-delay</b>	Configures the Spanning-Tree Algorithm forward delay time.
<b>spanning-tree instance hello-time</b>	Configures the Spanning-Tree Algorithm hello time.
<b>spanning-tree instance max-age</b>	Configures the Spanning-Tree Algorithm maximum age.
<b>spanning-tree instance priority</b>	Specifies the spanning-tree priority in the DmSwitch.
<b>spanning-tree instance vlan-group</b>	Adds VLAN groups to a spanning-tree instance.
<b>spanning-tree mode</b>	Configures the spanning-tree mode.
<b>spanning-tree mode</b>	Defines parameters of Multiple Spanning-Tree configuration.
<b>show running-config</b>	Shows the current operating configuration.
<b>show spanning-tree</b>	Shows spanning-tree configuration and status.

# spanning-tree restricted-role

**spanning-tree restricted-role**

**no spanning-tree restricted-role**

## Description

Forbids the interface to become the root port on spanning-tree.

The **no** command form makes it possible for the interface to become the root port.

## Syntax

No parameter accepted.

## Default

By default, restricted-role is disabled.

## Command Modes

Interface configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

If restricted-role is enabled for an interface that would be chosen as the root port, the interface will become an alternate port instead.

Use this command to prevent bridges that are not under your control from becoming the root bridge or being in the path to the root bridge. Incorrectly using this command may cause lack of spanning-tree connectivity.

## Example

This example shows how to enable restricted-role on interface ethernet 1/5

```
DmSwitch(config-if-eth-1/5)#spanning-tree restricted-role
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was done by entering the **show spanning-tree instance ethernet ethernet-instance** privileged EXEC command.

## Related Commands

Command	Description
<b>spanning-tree</b>	Configure Spanning-Tree parameters.
<b>spanning-tree</b> <i>instance</i>	Enables a Spanning-tree instance.
<b>spanning-tree</b> (Interface configuration)	Adds an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree bpduguard</b>	Enables the Bridge Protocol Data Unit (BPDU) guard.
<b>spanning-tree instance priority</b>	Specifies the spanning-tree priority in the DmSwitch.
<b>spanning-tree edge-port</b>	Defines the Ethernet interface as the spanning-tree edge port.
<b>spanning-tree restricted-tcn</b>	Forbids the interface to propagate topology changes to other interfaces.
<b>show running-config</b>	Shows the current operating configuration.
<b>show spanning-tree</b>	Shows spanning-tree configuration and status.

# spanning-tree restricted-tcn

**spanning-tree restricted-tcn**

**no spanning-tree restricted-tcn**

## Description

Forbids the interface to propagate topology changes to other interfaces.

The **no** command form makes it possible for the interface to propagate topology changes.

## Syntax

No parameter accepted.

## Default

By default, restricted-tcn is disabled.

## Command Modes

Interface configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

If restricted-tcn is enabled for an interface it will not propagate topology changes due to received messages or port state changes.

Use this command to prevent bridges that are not under your control from causing address flushing in the network core. Incorrectly using this command may cause temporary loss of connectivity after topology changes.

## Example

This example shows how to enable restricted-tcn on interface ethernet 1/5

```
DmSwitch(config-if-eth-1/5)#spanning-tree restricted-tcn
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was done by entering the **show spanning-tree instance ethernet ethernet-instance** privileged EXEC command.

## Related Commands

Command	Description
<b>spanning-tree</b>	Configure Spanning-Tree parameters.
<b>spanning-tree</b> <i>instance</i>	Enables a Spanning-tree instance.
<b>spanning-tree</b> (Interface configuration)	Adds an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree bpduguard</b>	Enables the Bridge Protocol Data Unit (BPDU) guard.
<b>spanning-tree instance priority</b>	Specifies the spanning-tree priority in the DmSwitch.
<b>spanning-tree edge-port</b>	Defines the Ethernet interface as the spanning-tree edge port.
<b>spanning-tree restricted-role</b>	Forbids the interface to become the root port on spanning-tree.
<b>show running-config</b>	Shows the current operating configuration.
<b>show spanning-tree</b>	Shows spanning-tree configuration and status.

# speed-duplex

```
speed-duplex { 10full | 10half | 100full | 100half | 1000full }
```

```
no speed-duplex
```

## Description

Configures forced speed and duplex modes.

Inserting **no** as a prefix for this command, it will reset speed and duplex modes to the default values.

## Syntax

Parameter	Description
<b>10full</b>	Force 10Mbps full-duplex operation.
<b>10half</b>	Force 10Mbps half-duplex operation.
<b>100full</b>	Force 100Mbps full-duplex operation.
<b>100half</b>	Force 100Mbps half-duplex operation.
<b>1000full</b>	Force 1Gbit/s full-duplex operation.

## Default

100half for electrical Fast Ethernet ports.

100full for optical Fast Ethernet ports.

100half for Gigabit Ethernet ports.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

The forced mode configuration is only used when autonegotiation is disabled.

## Example

This example shows how to configure speed and duplex operation for interface Ethernet 5.

```
DmSwitch(config-if-eth-1/5)#speed-duplex 10full
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was made by entering the **show interfaces status** privileged EXEC command.

## Related Commands

Command	Description
<b>flowcontrol</b>	Configures Flow Control for Ethernet interfaces.
<b>negotiation</b>	Controls autonegotiation status for an Ethernet interface.
<b>speed-duplex</b>	Configures speed and duplex operation.
<b>show interfaces status</b>	Shows interface configuration status.
<b>show interfaces table configuration</b>	Shows interface's configuration table.



# switchport acceptable-frame-types

```
switchport acceptable-frame-types { all | tagged | untagged }
```

```
no switchport acceptable-frame-types
```

## Description

Use the switchport acceptable-frame-types command to configure the type of frames to be accepted by the interface.

Inserting **no** as a prefix for this command, it will return the configuration for acceptable-frame-types to its default value.

## Syntax

Parameter	Description
<b>all</b>	Accepts tagged and untagged frames.
<b>tagged</b>	Accepts tagged frames only.
<b>untagged</b>	Accepts untagged frames only.

## Default

All frame types are accepted.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.
3.2	The <b>untagged</b> parameter was added.

## Usage Guidelines

Not available.

## Example

This example shows how to set interface Ethernet 5 for accepting only tagged frames.

```
DmSwitch(config-if-eth-1/5)#switchport acceptable-frame-types tagged
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was made by entering the **show interfaces switchport** privileged EXEC command.

## Related Commands

Command	Description
<b>show interfaces switchport</b>	Shows switchport information.
<b>switchport ingress-filtering</b>	Enables ingress filtering

# switchport block multicast ethernet

```
switchport block multicast ethernet { [ unit-number/ ] port-number | range { [ first-unit-number/ ] first-port-number [ last-unit-number/ ] last-port-number } }
```

```
no switchport block multicast ethernet { [ unit-number/ ] port-number | range { [ first-unit-number/ ] first-port-number [ last-unit-number/ ] last-port-number } }
```

## Description

By default, packets with unknown destination MAC address are flooded out of all ports. You can block a port from flooding such packets to other ports.

Inserting **no** as a prefix for this command, it will unblock unknown multicast flooding.

## Syntax

Parameter	Description
[ unit-number/ ] port-number	Blocks unknown multicast flood to a specific unit and port.
range { [ first-unit-number/ ] first-port-number [ last-unit-number/ ] last-port-number }	Blocks unknown multicast flood to a range of units and ports.

## Default

Unknown multicast flooding block is disabled.

## Command Modes

Interface configuration.

## Command History

Release	Modification
5.0	This command was introduced.

## Usage Guidelines

This command is used to block unknown multicast flooding. .

## Example

This example shows how to block unknown flooding from a specific port to another.

```
DmSwitch(config-if-eth-1/5)#switchport block multicast ethernet 3
```

You can verify that the configuration was made by entering the **show interface switchport ethernet 5** privileged EXEC command.

## Related Commands

Command	Description
<b>switchport storm-control</b>	Configures packet storm control.
<b>show interface switchport</b>	Shows switchport information.
<b>show running-config</b>	Shows the current operating configuration.

# switchport block broadcast ethernet

```
switchport block broadcast ethernet { [ unit-number/ ] port-number | range { [ first-unit-number/ ] first-port-number [ last-unit-number/ ] last-port-number } }
```

```
no switchport block broadcast ethernet { [ unit-number/ ] port-number | range { [ first-unit-number/ ] first-port-number [ last-unit-number/ ] last-port-number } }
```

## Description

By default, broadcast packets are flooded out of all ports. You can block a port from flooding such packets to other ports.

Inserting **no** as a prefix for this command, it will unblock broadcast flooding.

## Syntax

Parameter	Description
[ unit-number/ ] port-number	Blocks broadcast flooding to a specific unit and port.
range { [ first-unit-number/ ] first-port-number [ last-unit-number/ ] last-port-number }	Blocks broadcast flooding to a range of units and ports.

## Default

Broadcast flooding block is disabled.

## Command Modes

Interface configuration.

## Command History

Release	Modification
5.0	This command was introduced.

## Usage Guidelines

This command is used to block broadcast flooding. .

## Example

This example shows how to block broadcast flooding for a specific port.

```
DmSwitch(config-if-eth-1/5)#switchport block broadcast ethernet 3
```

You can verify that the configuration was made by entering the **show interface switchport ethernet 5** privileged EXEC command.

## Related Commands

Command	Description
<b>switchport storm-control</b>	Configures packet storm control.
<b>show interface switchport</b>	Shows switchport information.
<b>show running-config</b>	Shows the current operating configuration.

# switchport block unicast ethernet

```
switchport block unicast ethernet { [ unit-number/ ] port-number | range { [ first-unit-number/ ] first-port-number [ last-unit-number/ ] last-port-number } }
```

```
no switchport block unicast ethernet { [ unit-number/ ] port-number | range { [ first-unit-number/ ] first-port-number [ last-unit-number/ ] last-port-number } }
```

## Description

By default, packets with unknown destination MAC address are flooded out of all ports. You can block a port from flooding such packets to other ports.

Inserting **no** as a prefix for this command, it will unblock unknown unicast flooding.

## Syntax

Parameter	Description
<i>[ unit-number/ ] port-number</i>	Blocks unknown unicast flood to a specific unit and port.
<b>range</b> { <i>[ first-unit-number/ ] first-port-number [ last-unit-number/ ] last-port-number</i> }	Blocks unknown unicast flood to a range of units and ports.

## Default

Unknown unicast flooding block is disabled.

## Command Modes

Interface configuration.

## Command History

Release	Modification
5.0	This command was introduced.

## Usage Guidelines

This command is used to block unknown unicast flooding. .

## Example

This example shows how to block unknown unicast flooding from a specific port to another.

```
DmSwitch(config-if-eth-1/5)#switchport block unicast ethernet 3
```

You can verify that the configuration was made by entering the **show interface switchport ethernet 5** privileged EXEC command.

## Related Commands

Command	Description
<b>switchport storm-control</b>	Configures packet storm control.
<b>show interface switchport</b>	Shows switchport information.
<b>show running-config</b>	Shows the current operating configuration.



# switchport egress-block ethernet

```
switchport egress-block ethernet { [ unit-number/ ] port-number | range { [ first-unit-number/ ] first-port-number [ last-unit-number/ ] last-port-number } }
```

```
no switchport egress-block ethernet { [ unit-number/ ] port-number | range { [ first-unit-number/ ] first-port-number [ last-unit-number/ ] last-port-number } }
```

## Description

Blocks traffic from a specified interface to a set of interfaces. The traffic source interface is the interface being currently configured. The destination interfaces are specified on the command parameters.

Inserting **no** as a prefix for this command, it will remove the egress-block configuration.

## Syntax

Parameter	Description
<i>[ unit-number/ ] port-number</i>	Blocks traffic to a specific unit and port.
<b>range</b> { <i>[ first-unit-number/ ] first-port-number [ last-unit-number/ ] last-port-number</i> }	Blocks traffic to a range of units and ports.

## Default

Egress-block is disabled.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to set interface Ethernet 5 for blocking egress to Ethernet 6.

```
DmSwitch(config-if-eth-1/5)#switchport egress-block ethernet 6
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was made by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>show running-config</b>	Shows the current operating configuration.

# switchport gvrp

**switchport gvrp**

**no switchport gvrp**

## Description

Enables GVRP for a specific port.

Inserting **no** as a prefix for this command, it will disable the GVRP.

## Syntax

No parameter accepted.

## Default

GVRP is disabled.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

This command is used to enable specific ports to automatically learn VLANs from connected devices where GVRP is also enabled. You must also globally enable the GVRP operation.

## Example

This example shows how to enable the GVRP for a specific port.

```
DmSwitch(config-if-eth-1/1)#switchport gvrp
DmSwitch(config-if-eth-1/1)#
```

You can verify that the GVRP was enabled by entering the **show gvrp** privileged EXEC command.

## Related Commands

Command	Description
---------	-------------

Command	Description
<b>bridge-ext gvrp</b>	Enables GVRP globally for the switch.
<b>garp timer</b>	Set values for GARP timers.
<b>show garp timer</b>	Shows GARP properties.
<b>show gvrp</b>	Shows GVRP configuration.
<b>show running-config</b>	Shows the current operating configuration.

# switchport ingress-filtering

**switchport ingress-filtering**

**no switchport ingress-filtering**

## Description

Use the switchport ingress-filtering command to enable ingress filtering by VLAN.

Inserting **no** as a prefix for this command, it will disable ingress-filtering.

## Syntax

No parameters accepted.

## Default

Ingress filtering is disabled.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Use this command to discard received packets from VLANs which do not have this interface as a member.

## Example

This example shows how to enable ingress-filtering for interface Ethernet 5.

```
DmSwitch(config-if-eth-1/5)#switchport ingress-filtering
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was made by entering the **show interfaces switchport** privileged EXEC command.

## Related Commands

Command	Description
---------	-------------

Command	Description
<code>show interfaces switchport</code>	Shows switchport information.
<code>switchport acceptable-frame-types</code>	Configures the type of frames accepted by the switch.

# switchport multicast-flood

```
switchport multicast-flood
```

```
no switchport multicast-flood
```

## Description

By default, packets with unknown destination MAC address are flooded out of all ports. You can block a port from flooding such packets to other ports.

Inserting **no** as a prefix for this command, it will unblock unknown multicast flooding.

## Syntax

No parameter accepted.

## Default

Unknown multicast flooding block is disabled.

## Command Modes

Interface configuration.

## Command History

Release	Modification
5.0	This command was introduced.

## Usage Guidelines

This command is used to block unknown multicast flooding. .

## Example

This example shows how to block unknown multicast flooding for a specific port.

```
DmSwitch(config-if-eth-1/5)#no switchport multicast-flood
```

You can verify that the configuration was made by entering the **show interface switchport ethernet 5** privileged EXEC command.

## Related Commands

Command	Description
---------	-------------

<b>Command</b>	<b>Description</b>
<b>switchport storm-control</b>	Configures packet storm control.
<b>show interface switchport</b>	Shows switchport information.
<b>show running-config</b>	Shows the current operating configuration.



# switchport mtu

```
switchport mtu { value }
```

```
no switchport mtu
```

## Description

Use the switchport mtu command to configure maximum transmission unit for the specified interface.

Inserting **no** as a prefix for this command, it will return the maximum transmission unit to its default value.

## Syntax

Parameter	Description
<i>value</i>	Specifies the maximum transmission unit in bytes. (Range: 64-9198)

## Default

The default MTU is 9198 bytes.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to set the maximum transmission unit for interface Ethernet 5 to 1024 bytes.

```
DmSwitch(config-if-eth-1/5)#switchport mtu 1024  
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was done by entering the **show interfaces switchport** privileged EXEC command.

## Related Commands

Command	Description
<code>show interfaces switchport</code>	Shows switchport information.

# switchport native vlan

```
switchport native vlan { vlan-id }
```

```
no switchport native vlan
```

## Description

Use the switchport native vlan command to configure PVID, the default VLAN ID for untagged frames.

Inserting **no** as a prefix for this command, it will remove the configuration that specifies which is the native VLAN for the interface.

## Syntax

Parameter	Description
<i>vlan-id</i>	Specifies the Port VLAN ID. (Range: 1-4094)

## Default

PVID is 1, the default VLAN ID.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

The specified VLAN should exist, otherwise the command will return an error.

## Example

This example shows how to create a VLAN with ID 3 and set interface Ethernet 5 as native from VLAN 3.

```
DmSwitch(config)#interface vlan 3
DmSwitch(config-if-vlan-3)#interface ethernet 5
DmSwitch(config-if-eth-1/5)#switchport native vlan 3
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was made by entering the **show interfaces switchport** privileged EXEC command.

## Related Commands

Command	Description
<b>show interfaces switchport</b>	Shows switchport information.
<b>show running-config</b>	Shows the current operating configuration.

# switchport port-security

**switchport port-security** [ **maximum** *num-of-macs* ]

**no switchport port-security**

## Description

Use the switchport port-security to enable port security and configure the maximum number of MAC addresses per port.

Inserting **no** as a prefix for this command, it will disable port-security.

## Syntax

Parameter	Description
<b>maximum</b>	(Optional) Configures maximum number of MAC addresses.
<i>num-of-macs</i>	Specifies the maximum number of MAC addresses for this interface.

## Default

MAC address limit is disabled.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to enable port-security for interface Ethernet 5.

```
DmSwitch(config-if-eth-1/5)#switchport port-security
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was made by entering the **show interfaces switchport** privileged EXEC command.

## Related Commands

Command	Description
<b>show interfaces switchport</b>	Shows switchport information.

# switchport priority default

```
switchport priority default { value }
```

```
no switchport priority default
```

## Description

Use the switchport priority default command to configure 802.1p priorities for the specified interface.

Inserting **no** as a prefix for this command, it will disable the default priority.

## Syntax

Parameter	Description
<i>value</i>	Specifies the priority value for untagged frames. (Range: 0-7)

## Default

No default is defined.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to set the default priority for untagged frames to 3.

```
DmSwitch(config-if-eth-1/5)#switchport priority default 3
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was done by entering the **show interfaces switchport** privileged EXEC command.

## Related Commands

Command	Description
<code>show interfaces switchport</code>	Shows switchport information.



# switchport protocol

```
switchport protocol { vlan index frame-type { 802.3 | ethernet2 | llc }  
protocol-type { arp | ip | ipv6 | ipx | ether-type-field } }
```

```
no switchport protocol { vlan frame-type { 802.3 | ethernet2 | llc }  
protocol-type { arp | ip | ipv6 | ipx | ether-type-field } }
```

## Description

Use the switchport protocol command to configure VID through the specification of the protocol.

Inserting **no** as a prefix for this command, it will unconfigure the VID.

## Syntax

Parameter	Description
<b>vlan</b>	Configures VLAN ID.
<i>index</i>	Specifies protocol VLAN ID. (Range: 1-4094)
<b>frame-type</b>	Data link layer frame-type.
<b>802.3</b>	Ethernet 802.3 or SNAP.
<b>ethernet2</b>	Ethernet II.
<b>llc</b>	Logical Link Control.
<b>protocol-type</b>	Network protocol type.
<b>arp</b>	Address Resolution Protocol.
<b>ip</b>	Internet Protocol.
<b>ipv6</b>	Internet Protocol, version 6.
<b>ipx</b>	Internetwork Packet Exchange.
<i>ether-type-field</i>	Custom value for EtherType field.

## Default

No default is defined.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure VID for interface Ethernet 5 through the specification of the protocol.

```
DmSwitch(config-if-eth-1/5)#switchport protocol vlan 1 frame-type 802.3 protocol-type  
arp priority 1  
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was made by entering the **show interfaces switchport** privileged EXEC command.

## Related Commands

Command	Description
<b>show interfaces switchport</b>	Shows switchport information.

# switchport qinq

```
switchport qinq { external | internal }
```

```
no switchport qinq
```

## Description

Use the switchport qinq command to configure Double Tagging mode for the specified interface.

Inserting **no** as a prefix for this command, it will remove the Double Tagging mode configuration for the specified interface.

## Syntax

Parameter	Description
<b>external</b>	Configures Double Tagging external mode. A VLAN tag is always inserted on received packets.
<b>internal</b>	Configures Double Tagging internal mode. A VLAN tag is only inserted if the packet does not have a TPID which matches the TPID configured on this interface.

## Default

No default is defined.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Use this command to configure tagging behaviour for interfaces on service provider switches.

The external mode is recommended for client ports so that a provider tag is always inserted.

The internal mode is recommended for uplink ports so that duplicated tags are not inserted on these interfaces.

## Example

This example shows how to set Double Tagging external mode for interface Ethernet 5.

```
DmSwitch(config-if-eth-1/5)#switchport qinq external
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was made by entering the **show interfaces switchport** privileged EXEC command.

## Related Commands

Command	Description
<b>show interfaces switchport</b>	Shows switchport information.

# switchport storm-control

```
switchport storm-control { broadcast [ pps broadcast-maxvalue ] | multicast [ pps  
multicast-maxvalue ] | unicast [ pps unicast-maxvalue ] }
```

```
no switchport storm-control { broadcast [ pps ] | multicast [ pps ] | unicast [ pps ] }
```

## Description

Use the switchport storm-control to configure packet storm control for the specified interface.

Inserting **no** as a prefix for this command, it will remove a broadcast, multicast or unicast storm-control configuration.

## Syntax

Parameter	Description
<b>broadcast</b>	Configures broadcast storm-control.
<b>pps</b>	(Optional) Sets maximum packets per second.
<i>broadcast-maxvalue</i>	Specifies the maximum packets per second value for broadcast. (Range: 0-262143)
<b>multicast</b>	Configures multicast storm-control.
<i>multicast-maxvalue</i>	Specifies the maximum packets per second value for multicast. (Range: 0-262143)
<b>unicast</b>	Configures unknown unicast storm-control.
<i>unicast-maxvalue</i>	Specifies the maximum packets per second value for unknown unicast. (Range: 0-262143)

## Default

No default is defined.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to set broadcast storm-control to 1024 packets per second for interface Ethernet 5.

```
DmSwitch(config-if-eth-1/5)#switchport storm-control broadcast pps 1024
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was done by entering the **show interfaces switchport** privileged EXEC command.

## Related Commands

Command	Description
<b>show interfaces switchport</b>	Shows switchport information.

# switchport tpid

```
switchport tpid { ether-type-field }
```

```
no switchport tpid
```

## Description

Use the switchport tpid command to configure Tag Protocol ID for an interface. The TPID is the first two bytes in the VLAN tag which also corresponds to the Ethertype field on untagged packets.

Inserting **no** as a prefix for this command, it will remove a Tag Protocol ID configuration.

## Syntax

Parameter	Description
<i>ether-type-field</i>	Tag Protocol ID. (Range: 0x0000-0xFFFF)

## Default

No default is defined.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

You can use this command in double tagging (qinq) network setups in order to have distinct tag types for clients and service provider or in order to interoperate with switches that use different values of TPID.

## Example

This example shows how to set the tag protocol ID to 0x9100 on interface Ethernet 5.

```
DmSwitch(config-if-eth-1/5)#switchport tpid 0x9100
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was made by entering the **show interfaces switchport** privileged EXEC command.

## Related Commands

Command	Description
<b>show interfaces switchport</b>	Shows switchport information.



# wred averaging-time

```
wred averaging-time { time }
```

```
no wred averaging-time
```

## Description

Configure the queue size averaging time.

## Syntax

Parameter	Description
<i>time</i>	Specifies the first queue size averaging time in microseconds

## Default

The default value is 4 microseconds.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure wred averaging time for interface Ethernet 5

```
DmSwitch(config-if-eth-1/5)#wred averaging-time 20
DmSwitch(config-if-eth-1/5)#
```

You can verify that the information was configured by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<code>show running-config</code>	Shows the current operating configuration.
<code>wred cng-drop-start-point</code>	Configures the start point to drop CNG marked packets for Ethernet interface
<code>wred cng-slope</code>	Configures the slope of drop probability function for CNG marked packets for Ethernet interface
<code>wred drop-start-point</code>	Configures the start point to drop for Ethernet interface
<code>wred slope</code>	Configures the slope of drop probability function for Ethernet interface

# wred cng-drop-start-point

```
wred cng-drop-start-point { 1st_queue_start_point ... 8th_queue_start_point }
```

```
no wred cng-drop-start-point
```

## Description

Configures the queue size where WRED can start the drop on CNG marked packets

## Syntax

Parameter	Description
<i>1st_queue_start_point ... 8th_queue_start_point</i>	% of max queue size for each queue (1 ... 8).

## Default

The default value for each queue is 100%.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure different start points for each queue for interface Ethernet 5.

```
DmSwitch(config-if-eth-1/5)#wred cng-drop-start-point 10 20 30 40 50 60 70 80
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was enabled by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>show running-config</b>	Shows the current operating configuration.
<b>wred averaging-time</b>	Configures the queue size averaging time for Ethernet interface
<b>wred cng-slope</b>	Configures the slope of drop probability function for CNG marked packets for Ethernet interface
<b>wred drop-start-point</b>	Configures the start point to drop for Ethernet interface
<b>wred slope</b>	Configures the slope of drop probability function for Ethernet interface

# wred cng-slope

```
wred cng-slope { 1st_queue_slope ... 8th_queue_slope }
```

```
no wred cng-slope
```

## Description

Configures the slope of drop probability function for CNG marked packets.

## Syntax

Parameter	Description
<i>1st_queue_slope ... 8th_queue_slope</i>	Specifies the queue slope for each queue (1 ... 8) of drop probability function for CNG marked packets in degrees.

## Default

The default value for each queue is 15 degrees.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure different slopes for each queue for interface Ethernet 5.

```
DmSwitch(config-if-eth-1/5)#wred cng-slope 15 25 35 45 55 65 75 85
DmSwitch(config-if-eth-1/5)#
```

You can verify that the information was deleted by entering the **COMMAND** privileged EXEC command.

## Related Commands

Command	Description
<code>show running-config</code>	Shows the current operating configuration.
<code>wred averaging-time</code>	Configures the queue size averaging time for Ethernet interface
<code>wred cng-drop-start-point</code>	Configures the start point to drop CNG marked packets for Ethernet interface
<code>wred drop-start-point</code>	Configures the start point to drop for Ethernet interface
<code>wred slope</code>	Configures the slope of drop probability function for Ethernet interface

# wred drop-start-point

```
wred drop-start-point { 1st_queue_start_point ... 8th_queue_start_point }
```

```
no wred drop-start-point
```

## Description

Configures the queue size where WRED can start the drop

## Syntax

Parameter	Description
<i>1st_queue_start_point ... 8th_queue_start_point</i>	% of max queue size for each queue (1 ... 8).

## Default

The default value for each queue is 75%.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure different start points for each queue for interface Ethernet 5.

```
DmSwitch(config-if-eth-1/5)#wred drop-start-point 10 20 30 40 50 60 70 80
DmSwitch(config-if-eth-1/5)#
```

You can verify that the configuration was enabled by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>show running-config</b>	Shows the current operating configuration.
<b>wred averaging-time</b>	Configures the queue size averaging time for Ethernet interface
<b>wred cng-drop-start-point</b>	Configures the start point to drop CNG marked packets for Ethernet interface
<b>wred cng-slope</b>	Configures the slope of drop probability function for CNG marked packets for Ethernet interface
<b>wred slope</b>	Configures the slope of drop probability function for Ethernet interface



# wred slope

```
wred slope { 1st_queue_slope ... 8th_queue_slope }
```

```
no wred slope
```

## Description

Configures the slope of drop probability function.

## Syntax

Parameter	Description
<i>1st_queue_slope ... 8th_queue_slope</i>	Specifies the queue slope for each queue (1 ... 8) of drop probability function in degrees.

## Default

The default value for each queue is 15 degrees.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure different slopes for each queue for interface Ethernet 5.

```
DmSwitch(config-if-eth-1/5)#wred slope 15 25 35 45 55 65 75 85
DmSwitch(config-if-eth-1/5)#
```

You can verify that the information was deleted by entering the **COMMAND** privileged EXEC command.

## Related Commands

Command	Description
<code>show running-config</code>	Shows the current operating configuration.
<code>wred averaging-time</code>	Configures the queue size averaging time for Ethernet interface
<code>wred cng-drop-start-point</code>	Configures the start point to drop CNG marked packets for Ethernet interface
<code>wred cng-slope</code>	Configures the slope of drop probability function for CNG marked packets for Ethernet interface
<code>wred drop-start-point</code>	Configures the start point to drop for Ethernet interface

# Chapter 5. Interface Port-channel Commands

## load-balance

```
load-balance { dst-ip | dst-mac | src-dst-ip | src-dst-mac | src-ip | src-mac }
```

```
no load-balance
```

### Description

Configures load distribution method among the ports.

The **no** command resets the load balancing to its default value.

### Syntax

Parameter	Description
<b>dst-ip</b>	Destination IP address.
<b>dst-mac</b>	Destination MAC address.
<b>src-dst-ip</b>	Source and destination IP addresses.
<b>src-dst-mac</b>	Source and destination MAC addresses.
<b>src-ip</b>	Source IP address.
<b>src-mac</b>	Source MAC address.

### Default

Load-balance: source and destination MAC addresses.

### Command Modes

Interface configuration.

### Command History

Release	Modification
4.0	This command was introduced.

### Usage Guidelines

Not available.

## Example

This example shows how to change the load distribution method.

```
DmSwitch(config-if-port-ch-1)#load-balance src-ip  
DmSwitch(config-if-port-ch-1)#
```

You can verify that the configuration was made by entering the **show interfaces status** privileged EXEC command.

## Related Commands

Command	Description
<b>show interfaces status</b>	Shows interface configuration status.
<b>show running-config</b>	Shows the current operating configuration.

# set-member ethernet

```
set-member ethernet { all | [ unit-number/ ] port-number | range { [ first-unit-number/ ] first-  
port-number [ last-unit-number/ ] last-port-number }
```

```
no set-member ethernet { all | [ unit-number/ ] port-number | range { [ first-unit-number/ ]  
first-port-number [ last-unit-number/ ] last-port-number } }
```

## Description

Adds Ethernet ports to selected port-channel.

Entering with **no** command, it removes ports from selected port-channel.

## Syntax

Parameter	Description
<b>all</b>	Adds all ports.
[ unit-number/ ] port-number	Adds a specific unit and port.
<b>range</b> { [ first-unit-number/ ] first-port-number [ last-unit-number/ ] last-port-number }	Adds a range of units and ports.

## Default

No default is defined.

## Command Modes

Interface configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to add the Ethernet port 1 to selected port-channel.

```
DmSwitch(config-if-port-ch-1)#set-member ethernet 1
DmSwitch(config-if-port-ch-1)#
```

You can verify that the configuration was made by entering the **show interfaces status** privileged EXEC command.

## Related Commands

Command	Description
<b>show interfaces status</b>	Shows interface configuration status.
<b>show running-config</b>	Shows the current operating configuration.

# Chapter 6. Interface VLAN Commands

## ip address

```
ip address { ip-address/mask | dhcp [ release | renew ] }
```

```
no ip address
```

### Description

Sets an IP address for the selected VLAN.

Inserting **no** as a prefix for this command, it will delete the IP address from the selected VLAN.

### Syntax

Parameter	Description
<i>ip-address/mask</i>	Specifies the IP address and network mask to the selected VLAN.
<b>dhcp</b>	Gets an IP address from DHCP server to the selected VLAN.
<b>release</b>	(Optional) Releases the IP address leased from DHCP server to the selected VLAN.
<b>renew</b>	(Optional) Renews the IP address leased from DHCP server to the selected VLAN.

### Default

No default is defined.

### Command Modes

VLAN configuration.

### Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to specify a static IP address to the VLAN 1.

```
DmSwitch(config-if-vlan-1)#ip address 10.10.10.15/24
DmSwitch(config-if-vlan-1)#
```

You can verify that the IP address was specified by entering the **show ip** privileged EXEC command.

## Related Commands

Command	Description
<b>ip default-gateway</b>	Configures the default gateway for DmSwitch.
<b>ip dns-server</b>	Configures the DNS servers used by DmSwitch
<b>show ip</b>	Shows the IP configuration.
<b>show running-config</b>	Shows the current operating configuration.



# ip ospf authentication

```
ip ospf authentication [ message-digest | null ]
```

```
no ip ospf authentication
```

## Description

Configures authentication on a VLAN.

The **no** command disables authentication on the VLAN.

## Syntax

Parameter	Description
<b>message-digest</b>	(Optional) Uses message-digest authentication.
<b>null</b>	(Optional) Does not use authentication.

## Default

No authentication is enabled.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure authentication in OSPF packets on a VLAN.

```
DmSwitch(config-if-vlan-1)#ip ospf authentication
```

```
DmSwitch(config-if-vlan-1)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>ip ospf authentication</b>	Configures authentication on a VLAN.
<b>ip ospf message-digest-key</b>	Configures message digest key on a VLAN.
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# ip ospf authentication-key

```
ip ospf authentication-key { key }
```

```
no ip ospf authentication-key
```

## Description

Configures authentication key on a VLAN.

The **no** command removes the authentication key configured on the VLAN.

## Syntax

Parameter	Description
<i>key</i>	Specifies the authentication key (OSPF password).

## Default

No authentication key is configured.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Defines a password to be used by neighboring OSPF routers on a network segment that is using OSPF simple password authentication.

## Example

This example shows how to configure the authentication key on a VLAN.

```
DmSwitch(config-if-vlan-1)#ip ospf authentication-key key_test
```

```
DmSwitch(config-if-vlan-1)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>ip ospf authentication</b>	Configures authentication on a VLAN.
<b>ip ospf message-digest-key</b>	Configures message digest key on a VLAN.
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# ip ospf cost

```
ip ospf cost { value }
```

```
no ip ospf cost
```

## Description

Configures the cost of sending a packet on an OSPF interface.

The **no** command resets the cost to its default value.

## Syntax

Parameter	Description
<i>value</i>	Specifies the cost value. (Range: 1-65535)

## Default

Cost: 10.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure the cost on a VLAN.

```
DmSwitch(config-if-vlan-1)#ip ospf cost 5
DmSwitch(config-if-vlan-1)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# ip ospf dead-interval

```
ip ospf dead-interval { value }
```

```
no ip ospf dead-interval
```

## Description

Configures dead router detection time on a VLAN.

The **no** command resets the dead interval to its default value.

## Syntax

Parameter	Description
<i>value</i>	Specifies the dead interval (in seconds). (Range: 1-65535)

## Default

Dead interval: 40 seconds.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Defines the number of seconds that a device's hello packets must not have been seen before its neighbors declare the OSPF router down.

## Example

This example shows how to configure the dead router detection time on a VLAN.

```
DmSwitch(config-if-vlan-1)#ip ospf dead-interval 20
```

```
DmSwitch(config-if-vlan-1)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>ip ospf hello-interval</b>	Configures the hello packet interval on a VLAN.
<b>ip ospf retransmit-interval</b>	Configures the link state retransmit interval on a VLAN.
<b>ip ospf transmit-delay</b>	Configures the link state transmit delay on a VLAN.
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.



# ip ospf hello-interval

```
ip ospf hello-interval { value }
```

```
no ip ospf hello-interval
```

## Description

Configures the hello packet interval on a VLAN.

The **no** command resets the hello interval to its default value.

## Syntax

Parameter	Description
<i>value</i>	Specifies the hello interval value. (Range: 1-65535)

## Default

Hello interval: 10 seconds.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Defines the time between the hello packets that the DmSwitch sends on an OSPF interface.

## Example

This example shows how to configure the hello packet interval on a VLAN.

```
DmSwitch(config-if-vlan-1)#ip ospf hello-interval 20
DmSwitch(config-if-vlan-1)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>ip ospf dead-interval</b>	Configures dead router detection time on a VLAN.
<b>ip ospf retransmit-interval</b>	Configures the link state retransmit interval on a VLAN.
<b>ip ospf transmit-delay</b>	Configures the link state transmit delay on a VLAN.
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# ip ospf message-digest-key

```
ip ospf message-digest-key { key-id } md5 { key-text }
```

```
no ip ospf message-digest-key { key-id }
```

## Description

Configures message digest key on a VLAN.

The **no** command removes the specified message digest key configured on the VLAN.

## Syntax

Parameter	Description
<i>key-id</i>	Specifies the key ID. (Range: 1-255)
<b>md5</b>	Uses the MD5 algorithm.
<i>key-text</i>	Specifies the key string (OSPF password).

## Default

No message digest key is configured.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure a message digest key on a VLAN.

```
DmSwitch(config-if-vlan-1)#ip ospf message-digest-key 1 md5 test_key
DmSwitch(config-if-vlan-1)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>ip ospf authentication</b>	Configures authentication on a VLAN.
<b>ip ospf authentication-key</b>	Configures authentication key on a VLAN.
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# ip ospf network

```
ip ospf network { broadcast | non-broadcast | point-to-multipoint |  
point-to-point }
```

```
no ip ospf network
```

## Description

Configures the OSPF network type.

The **no** command resets the network to its default type.

## Syntax

Parameter	Description
<b>broadcast</b>	Specifies OSPF broadcast multi-access networks.
<b>non-broadcast</b>	Specifies OSPF NBMA networks.
<b>point-to-multipoint</b>	Specifies OSPF point-to-multipoint networks.
<b>point-to-point</b>	Specifies OSPF point-to-point networks.

## Default

Network: broadcast.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

An OSPF point-to-multipoint interface is defined as a numbered point-to-point interface having one or more neighbors. It creates multiple host routes.

## Example

This example shows how to configure the OSPF network type for a VLAN.

```
DmSwitch(config-if-vlan-1)#ip ospf network point-to-multipoint
DmSwitch(config-if-vlan-1)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# ip ospf priority

```
ip ospf priority { value }
```

```
no ip ospf priority
```

## Description

Configures the priority for a network.

The **no** command resets the priority to its default value.

## Syntax

Parameter	Description
<i>value</i>	Specifies the priority value. (Range: 0-255)

## Default

Priority: 1.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Defines the priority to help determine the OSPF designated router for a network.

## Example

This example shows how to configure the priority on a VLAN.

```
DmSwitch(config-if-vlan-1)#ip ospf priority 10
DmSwitch(config-if-vlan-1)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.



# ip ospf retransmit-interval

```
ip ospf retransmit-interval { value }
```

```
no ip ospf retransmit-interval
```

## Description

Configures the link state retransmit interval on a VLAN.

The **no** command resets the retransmit interval to its default value.

## Syntax

Parameter	Description
<i>value</i>	Specifies the retransmit interval (in seconds). (Range: 3-65535)

## Default

Retransmit interval: 5 seconds.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Defines the number of seconds between LSA (link state advertisement) retransmissions for adjacencies belonging to an OSPF interface.

## Example

This example shows how to configure the link state retransmit interval on a VLAN.

```
DmSwitch(config-if-vlan-1)#ip ospf retransmit-interval 8
DmSwitch(config-if-vlan-1)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>ip ospf dead-interval</b>	Configures dead router detection time on a VLAN.
<b>ip ospf hello-interval</b>	Configures the hello packet interval on a VLAN.
<b>ip ospf transmit-delay</b>	Configures the link state transmit delay on a VLAN.
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# ip ospf transmit-delay

```
ip ospf transmit-delay { value }
```

```
no ip ospf transmit-delay
```

## Description

Configures the link state transmit delay on a VLAN.

The **no** command resets the transmit delay to its default value.

## Syntax

Parameter	Description
<i>value</i>	Specifies the transmit delay (in seconds). (Range: 1-65535)

## Default

Transmit delay: 1 second.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Defines the estimated number of seconds it takes to transmit a link state update packet on an OSPF interface.

## Example

This example shows how to configure the link state transmit delay on a VLAN.

```
DmSwitch(config-if-vlan-1)#ip ospf transmit-delay 2
```

```
DmSwitch(config-if-vlan-1)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>ip ospf dead-interval</b>	Configures dead router detection time on a VLAN.
<b>ip ospf hello-interval</b>	Configures the hello packet interval on a VLAN.
<b>ip ospf retransmit-interval</b>	Configures the link state retransmit interval on a VLAN.
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# ip proxy-arp

**ip proxy-arp**

**no ip proxy-arp**

## Description

Enables proxy ARP on selected VLAN.

Inserting **no** as a prefix for this command will disable proxy ARP on selected VLAN.

## Syntax

No parameter accepted.

## Default

Disabled.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
4.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to activate proxy ARP on the selected VLAN.

```
DmSwitch(config-if-vlan-2)#ip proxy-arp
DmSwitch(config-if-vlan-2)#
```

You can verify that the proxy ARP was enabled by entering the **show vlan** privileged EXEC command.

## Related Commands

Command	Description
<b>show running-config</b>	Shows the current operating configuration.



# ip rip authentication key-chain

```
ip rip authentication key-chain { name }
```

```
no ip rip authentication key-chain
```

## Description

Configures RIP authentication key chain on a VLAN.

The **no** command removes the key chain configured.

## Syntax

Parameter	Description
<i>name</i>	Specifies the name of key chain.

## Default

No key chain is configured.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

Router RIP configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Authentication is only supported in RIP version 2.

## Example

This example shows how to specify the set of keys that can be used on a VLAN.

```
DmSwitch(config-if-vlan-1)#ip rip authentication key-chain key_test
DmSwitch(config-if-vlan-1)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>key chain name</b>	Configures a key chain.
<b>key id</b>	Specifies a key identifier.
<b>key-string</b>	Configures the text string for a key identifier.
<b>ip rip authentication mode</b>	Configures RIP authentication mode on a VLAN.
<b>show running-config</b>	Shows the current operating configuration.



# ip rip authentication mode

```
ip rip authentication mode { md5 [ auth-length { old-ripd | rfc } ] | text }
```

```
no ip rip authentication mode
```

## Description

Configures RIP authentication mode on a VLAN.

The **no** command disables RIP authentication.

## Syntax

Parameter	Description
<b>md5</b>	Uses MD5 digest authentication.
<b>auth-length</b>	(Optional) Specifies MD5 authentication data length.
<b>old-ripd</b>	Uses the old ripd compatible MD5 authentication data length.
<b>rfc</b>	Uses the RFC compatible MD5 authentication data length.
<b>text</b>	Uses plain text authentication.

## Default

Plain text authentication.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

Router RIP configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Authentication is only supported in RIP version 2. If a key chain is not configured, no authentication is performed

on that VLAN.

By selecting the MD5 digest authentication, the default authentication data length is **old-ripd**.

## Example

This example shows how to enable MD5 RIP authentication on a VLAN.

```
DmSwitch(config-if-vlan-1)#ip rip authentication mode md5
DmSwitch(config-if-vlan-1)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>key chain name</b>	Configures a key chain.
<b>key id</b>	Specifies a key identifier.
<b>key-string</b>	Configures the text string for a key identifier.
<b>ip rip authentication key-chain</b>	Configures authentication key chain for RIP.
<b>show running-config</b>	Shows the current operating configuration.

# ip rip receive version

```
ip rip receive version { 1 [ 2 ] | 2 [ 1 ] }
```

```
no ip rip receive version
```

## Description

Defines the reception packets version of RIP protocol by VLAN.

The **no** command form removes the configuration.

## Syntax

Parameter	Description
1	RIP version 1.
2	RIP version 2.

## Default

No default is defined.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

RIP must be enabled to configure **receive version**.

## Example

This example shows how to define that only received messages of the version 2 of RIP protocol will be accepted by VLAN 1.

```
DmSwitch(config-if-vlan-1)#ip rip receive version 2
DmSwitch(config-if-vlan-1)#
```

You can verify that the configuration was made by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>ip rip send version</b>	Defines the RIP version of the sent messages.
<b>version</b>	Defines the RIP protocol version to be used.
<b>show ip rip</b>	Shows the RIP process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# ip rip send version

```
ip rip send version { 1 [ 2 ] | 2 [ 1 ] }
```

```
no ip rip send version
```

## Description

Defines the version of RIP protocol for the sending of messages by a specified VLAN.

The **no** command form removes the configuration.

## Syntax

Parameter	Description
1	RIP version 1.
2	RIP version 2.

## Default

No default is defined.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

RIP must be enabled to configure **send version**.

## Example

This example shows how to define that only messages of RIP protocol version 2 will be sent by VLAN 1

```
DmSwitch(config-if-vlan-1)#ip rip send version 2
```

```
DmSwitch(config-if-vlan-1)#
```

You can verify that the configuration was made by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>ip rip receive version</b>	Defines the RIP version of the accepted messages.
<b>version</b>	Defines the RIP protocol version to be used.
<b>show ip rip</b>	Shows the RIP process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# ip rip split-horizon

```
ip rip split-horizon [ poisoned-reverse ]
```

```
no ip rip split-horizon
```

## Description

Enables the split-horizon function.

The **no** command form disables split-horizon.

## Syntax

Parameter	Description
<b>poisoned-reverse</b>	(Optional) Enables the poisoned-reverse functionality.

## Default

No default is defined.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Enabling the split-horizon algorithm, the DmSwitch does not send the routes to the same network that it learned. The poisoned-reverse functionality sends the routes to the same network that it learned, but it set the metric value to 16 (unreachable route).

## Example

This example shows how to enable the split horizon with poisoned-reverse functionality.

```
DmSwitch(config-if-vlan-1)#ip rip split-horizon poisoned-reverse
DmSwitch(config-if-vlan-1)#
```

You can verify that the function was enabled by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>default-metric</b>	Defines the default metric of RIP protocol.
<b>show ip rip</b>	Shows the RIP process parameters.
<b>show running-config</b>	Shows the current operating configuration.



# mac-address-table aging-time

```
mac-address-table aging-time { aging-time | 0 }
```

```
no mac-address-table aging-time
```

## Description

Sets the length of time before removing unused dynamic entries in the MAC address table.

The **no** command form returns the aging time to the default value.

## Syntax

Parameter	Description
<i>aging-time</i>	Defines the aging time for the selected VLAN in seconds. (Range: 10-1000000)
0	Disables the aging time for the selected VLAN.

## Default

300 seconds.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

If you disable the MAC address table aging time, MAC addresses are learned and never removed from the table. When the table is full, packets with unknown source MAC addresses do not cause learning and packets with unknown destination MAC addresses are flooded.

When a specific port change its status to down, all entries on that port are removed from the MAC address table. This is independent of the aging time set to MAC address table entries.

## Example

This example shows how to change the aging time to 1000 seconds for VLAN 1.

```
DmSwitch(config-if-vlan-1)#mac-address-table aging-time 1000
DmSwitch(config-if-vlan-1)#
```

You can verify that the VLAN 1 aging time was changed by entering the **show vlan** privileged EXEC command.

## Related Commands

Command	Description
<b>clear mac-address-table</b>	Erases entries stored in the MAC address table.
<b>mac-address-table aging-time</b>	Sets the aging time for MAC address table entries.
<b>mac-address-table learn-copy</b>	Configures the learn of MAC addresses by copying existing entries.
<b>mac-address-table port-maximum</b>	Sets the VLAN MAC address table maximum number of entries per port.
<b>mac-address-table static (Global configuration)</b>	Adds a static address to MAC address table.
<b>show mac-address-table</b>	Shows the MAC address table.
<b>show running-config</b>	Shows the current operating configuration.

# mac-address-table learn-copy

```
mac-address-table learn-copy { vlan index }
```

```
no mac-address-table learn-copy
```

## Description

Configures an automatic copying of learned MAC addresses from a VLAN to another one.

The **no** command form disables the copying of MAC addresses on learning.

## Syntax

Parameter	Description
<b>vlan index</b>	The destination VLAN for MAC addresses copying (Range: 1-4094). The source VLAN is the VLAN interface being configured.

## Default

No default is defined.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

The MAC address copying can help on implementing asymmetrical VLANs.

## Example

This example shows how to configure the copying of learned MAC address from VLAN 1 to VLAN 2.

```
DmSwitch(config-if-vlan-1)#mac-address-table learn-copy vlan 2
DmSwitch(config-if-vlan-1)#
```

You can verify that the configuration was done by entering the **show vlan** privileged EXEC command.

## Related Commands

Command	Description
<code>clear mac-address-table</code>	Erases entries stored in the MAC address table.
<code>mac-address-table aging-time</code>	Sets the aging time for MAC address table entries.
<code>mac-address-table aging-time (Global configuration)</code>	Sets the aging time for MAC address table entries for the specified VLAN.
<code>mac-address-table port-maximum</code>	Sets the VLAN MAC address table maximum number of entries per port.
<code>mac-address-table static (Global configuration)</code>	Adds a static address to MAC address table.
<code>show mac-address-table</code>	Shows the MAC address table.
<code>show running-config</code>	Shows the current operating configuration.

# mac-address-table port-maximum

```
mac-address-table port-maximum { maximum-number }
```

```
no mac-address-table port-maximum
```

## Description

Sets the maximum limit for MAC address table entries per VLAN per port.

The **no** command form removes the configured limit.

## Syntax

Parameter	Description
<i>maximum-number</i>	The maximum number of MAC addresses that each port can learn on this VLAN.

## Default

No limit is configured.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to set the limit of MAC address table entries on the selected VLAN.

```
DmSwitch(config-if-vlan-1)#mac-address-table port-maximum 200
DmSwitch(config-if-vlan-1)#
```

You can verify that the configuration was made by entering the **show vlan** privileged EXEC command.

## Related Commands

Command	Description
<code>clear mac-address-table</code>	Erases entries stored in the MAC address table.
<code>mac-address-table aging-time</code>	Sets the aging time for MAC address table entries.
<code>mac-address-table aging-time (Global configuration)</code>	Sets the aging time for MAC address table entries for the specified VLAN.
<code>mac-address-table learn-copy</code>	Configures the learn of MAC addresses by copying existing entries.
<code>mac-address-table static (Global configuration)</code>	Adds a static address to MAC address table.
<code>show mac-address-table</code>	Shows the MAC address table.
<code>show running-config</code>	Shows the current operating configuration.
<code>switchport port-security</code>	Configures port security.

# management-mtu

**management-mtu** { *mtu* }

**no management-mtu**

## Description

Sets the MTU (maximum transmission unit) used for management issues.

The **no** command form returns the management MTU to the default value.

## Syntax

Parameter	Description
<i>mtu</i>	Defines the management mtu in bytes for the selected VLAN. (Range: 1500-9000)

## Default

1500 bytes.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
5.1	This command was introduced.

## Usage Guidelines

Changing the management MTU of a VLAN interface will only affect packets to and from the CPU, such as SNMP, Telnet, routing protocols and other management issues. This will not affect switched or routed packets. To change the MTU of an interface (ethernet or port-channel), please see the related commands below.

## Example

This example shows how ping another switch with a 1900 bytes packet. Since the sent packet is smaller than the VLAN MTU, it will not be fragmented.

```
DmSwitch(config-if-vlan-1)#ip address 192.168.21.1/24
DmSwitch(config-if-vlan-1)#management-mtu 2500
```

```
DmSwitch(config-if-vlan-1)#end
DmSwitch#ping 192.168.21.2/24 size 1900
```

You can verify that the VLAN 1 MTU was changed by entering the **show vlan** privileged EXEC command.

## Related Commands

Command	Description
<b>show vlan</b>	Shows the Virtual LAN settings.
<b>switchport mtu</b>	Configures maximum transmission unit.
<b>show running-config</b>	Shows the current operating configuration.



# name

**name** { *name* }

**no name**

## Description

Specifies the VLAN name.

Inserting **no** as a prefix for this command, it will remove the VLAN name.

## Syntax

Parameter	Description
<i>name</i>	Specifies a VLAN name.

## Default

No default is defined.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to specify a VLAN name.

```
DmSwitch(config-if-vlan-1)#name test
DmSwitch(config-if-vlan-1)#
```

You can verify that the name was saved by entering the **show vlan** privileged EXEC command.

## Related Commands

Command	Description
<code>show running-config</code>	Shows the current operating configuration.

# set-member forbidden

```
set-member forbidden { ethernet { all | [ unit-number/ ] port-number | range { [ first-unit-number/ ] first-port-number [ last-unit-number/ ] last-port-number } } }
```

```
set-member forbidden { port-channel channel-group-number }
```

```
no set-member [ ethernet { all | [ unit-number/ ] port-number | range { [ first-unit-number/ ] first-port-number [ last-unit-number/ ] last-port-number } } ]
```

```
no set-member [ port-channel channel-group-number ]
```

## Description

Forbids an interface to be dynamically added to a VLAN by the GVRP protocol.

## Syntax

Parameter	Description
<b>all</b>	Forbids all ports.
[ <i>unit-number/</i> ] <i>port-number</i>	Forbids a specific unit and port.
<b>range</b> { [ <i>first-unit-number/</i> ] <i>first-port-number</i> [ <i>last-unit-number/</i> ] <i>last-port-number</i> }	Forbids a range of specific units and ports.
<b>port-channel</b> <i>channel-group-number</i>	Forbids a specific port channel. The port channel must be specified in accordance with the port channel configured in the switch. (Range: 1-32)

## Default

No default is defined.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to forbid adding members to selected VLAN 1 on a ethernet port range.

```
DmSwitch(config-if-vlan-1)#set-member forbidden ethernet range 1 10
DmSwitch(config-if-vlan-1)#
```

You can verify that the configuration was done by entering the **show vlan table** privileged EXEC command.

## Related Commands

Command	Description
<b>set-member tagged</b>	Adds tagged members to selected VLAN.
<b>set-member untagged</b>	Adds untagged members to selected VLAN.
<b>show running-config</b>	Shows the current operating configuration.
<b>show vlan</b>	Shows the Virtual LAN settings.

# set-member tagged

```
set-member tagged { ethernet { all | [ unit-number/ ] port-number | range { [ first-unit-number/ ] first-port-number [ last-unit-number/ ] last-port-number } } }
```

```
set-member tagged { port-channel channel-group-number }
```

```
no set-member [ ethernet { all | [ unit-number/ ] port-number | range { [ first-unit-number/ ] first-port-number [ last-unit-number/ ] last-port-number } } ]
```

```
no set-member [ port-channel channel-group-number ]
```

## Description

Adds tagged members to selected VLAN.

Entering with **no** command, it removes tagged members from selected VLAN.

## Syntax

Parameter	Description
<b>all</b>	Adds all ports.
[ unit-number/ ] port-number	Adds a specific unit and port.
<b>range</b> { [ first-unit-number/ ] first-port-number [ last-unit-number/ ] last-port-number }	Adds a range of specific units and ports.
<b>port-channel</b> channel-group-number	Adds a specific port channel. The port channel must be specified in accordance with the port channel configured in the switch. (Range: 1-32)

## Default

No default is defined.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to add a ethernet port range with tagged members to selected VLAN 1.

```
DmSwitch(config-if-vlan-1)#set-member tagged ethernet range 1/25 1/28
DmSwitch(config-if-vlan-1)#
```

You can verify that the members was added by entering the **show vlan table** privileged EXEC command.

## Related Commands

Command	Description
<b>set-member forbidden</b>	Adds via GVRP forbidden members to a selected VLAN.
<b>set-member untagged</b>	Adds untagged members to selected VLAN.
<b>show running-config</b>	Shows the current operating configuration.
<b>show vlan</b>	Shows the Virtual LAN settings.

# set-member untagged

```
set-member untagged { ethernet { all | [ unit-number/ ] port-number | range { [ first-unit-number/ ] first-port-number [ last-unit-number/ ] last-port-number } } }
```

```
set-member untagged { port-channel channel-group-number }
```

```
no set-member [ ethernet { all | [ unit-number/ ] port-number | range { [ first-unit-number/ ] first-port-number [ last-unit-number/ ] last-port-number } } ]
```

```
no set-member [ port-channel channel-group-number ]
```

## Description

Adds untagged members to selected VLAN.

Entering with **no** command, it removes untagged members from selected VLAN.

## Syntax

Parameter	Description
<b>all</b>	Adds all ports.
[ unit-number/ ] port-number	Adds a specific unit and port.
<b>range</b> { [ first-unit-number/ ] first-port-number [ last-unit-number/ ] last-port-number }	Adds a range of specific units and ports.
<b>port-channel</b> channel-group-number	Adds a specific port channel. The port channel must be specified in accordance with the port channel configured in the switch. (Range: 1-32)

## Default

No default is defined.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to add a ethernet port range with untagged members to selected VLAN 1.

```
DmSwitch(config-if-vlan-1)#set-member untagged ethernet range 1 10
DmSwitch(config-if-vlan-1)#
```

You can verify that the members was added by entering the **show vlan table** privileged EXEC command.

## Related Commands

Command	Description
<b>set-member forbidden</b>	Adds via GVRP forbidden members to a selected VLAN.
<b>set-member tagged</b>	Adds tagged members to selected VLAN.
<b>show running-config</b>	Shows the current operating configuration.
<b>show vlan</b>	Shows the Virtual LAN settings.



# shutdown

**shutdown**

**no shutdown**

## Description

Deactivates the selected VLAN.

Inserting **no** as a prefix for this command, it will reactivate the selected VLAN.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

You can not deactivate the VLAN 1 since it is the default VLAN.

## Example

This example shows how to deactivate the selected VLAN.

```
DmSwitch(config-if-vlan-2)#shutdown
DmSwitch(config-if-vlan-2)#
```

You can verify that the VLAN was deactivated by entering the **show vlan** privileged EXEC command.

## Related Commands

Command	Description
<b>show running-config</b>	Shows the current operating configuration.

Command	Description
<code>show vlan</code>	Shows the Virtual LAN settings.

# vrrp *group* authentication

```
vrrp group authentication { text-string | ah key-string }
```

```
no vrrp group [ authentication ]
```

## Description

Configures an authentication string for VRRP group.

The **no** command disables VRRP authentication on the router group.

## Syntax

Parameter	Description
<i>group</i>	Selects VRRP group for configuration apply.
<i>text-string</i>	Uses plaint text authentication.
<b>ah</b>	Uses Authentication Header.
<i>key-string</i>	Hexkey authentication.

## Default

No authentication is enabled.

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
5.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure authentication in VRRP group.

```
DmSwitch(config-if-vlan-1)#vrrp 7 authentication secreta
DmSwitch(config-if-vlan-1)#
```

You can verify the configuration by entering the **show vrrp** privileged EXEC command.

## Related Commands

Command	Description
<b>vrrp ip</b>	Configures VRRP IP on a VLAN.
<b>vrrp priority</b>	Configures the priority for a VRRP group.
<b>vrrp shutdown</b>	Configures the VRRP group status.
<b>show running-config</b>	Shows the current operating configuration.
<b>show vrrp</b>	Shows Virtual Router Redundancy Protocol information.

# vrrp group ip

**vrrp group ip** *ip-address*

## Description

Configures the IP address for a VRRP group.

## Syntax

Parameter	Description
<i>group</i>	Selects VRRP group for configuration apply.
<i>ip-address</i>	Specifies the IP address to the selected router group.

## Default

No default is defined.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
5.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to specify a IP address to the VRRP group.

```
DmSwitch(config-if-vlan-1)#vrrp 7 ip 10.10.10.254
DmSwitch(config-if-vlan-1)#
```

You can verify that the IP address was specified by entering the **show vrrp** privileged EXEC command.

## Related Commands

Command	Description
<b>vrrp authentication</b>	Configures authentication on a VRRP group.

Command	Description
<b>vrrp priority</b>	Configures the priority for a VRRP group.
<b>vrrp shutdown</b>	Configures the VRRP group status.
<b>show running-config</b>	Shows the current operating configuration.
<b>show vrrp</b>	Shows Virtual Router Redundancy Protocol information.

# vrrp group priority

**vrrp group priority** { *value* }

## Description

Configures the priority for a VRRP.

## Syntax

Parameter	Description
<i>group</i>	Selects VRRP group for configuration apply.
<i>value</i>	Specifies the priority value. (Range: 1-254)

## Default

Priority: 150

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
5.0	This command was introduced.

## Usage Guidelines

Defines the priority to help determine the VRRP master router for a group.

## Example

This example shows how to configure the priority on a VRRP group.

```
DmSwitch(config-if-vlan-1)#vrrp 2 priority 175
DmSwitch(config-if-vlan-1)#
```

You can verify the configuration by entering the **show vrrp** privileged EXEC command.

## Related Commands

Command	Description
<code>vrrp authentication</code>	Configures authentication on a VRRP group.
<code>vrrp ip</code>	Configures VRRP IP on a VLAN.
<code>vrrp shutdown</code>	Configures the VRRP group status.
<code>show running-config</code>	Shows the current operating configuration.
<code>show vrrp</code>	Shows Virtual Router Redundancy Protocol information.



# vrrp group shutdown

**vrrp group shutdown**

**no vrrp group [ shutdown ]**

## Description

Configures the VRRP group status.

The **no** command starts the VRRP group.

## Syntax

Parameter	Description
<i>group</i>	Selects VRRP group for configuration apply.

## Default

Status: Enable

## Command Availability

Only on models with Layer 3 functionality.

## Command Modes

VLAN configuration.

## Command History

Release	Modification
5.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure the OSPF network type for a VLAN.

```
DmSwitch(config-if-vlan-1)#vrrp 7 shutdown
DmSwitch(config-if-vlan-1)#
```

You can verify the configuration by entering the **show vrrp** privileged EXEC command.

## Related Commands

Command	Description
<b>vrrp authentication</b>	Configures authentication on a VRRP group.
<b>vrrp ip</b>	Configures VRRP IP on a VLAN.
<b>vrrp priority</b>	Configures the priority for a VRRP group.
<b>show running-config</b>	Shows the current operating configuration.
<b>show vrrp</b>	Shows Virtual Router Redundancy Protocol information.

# Chapter 7. Keychain Commands

## key *id*

**key** { *id* }

**no key** { *id* }

### Description

Specifies a key identifier.

The **no** command removes the configured key identifier.

### Syntax

Parameter	Description
<i>id</i>	Specifies the key identifier.

### Default

No key identifier is configured.

### Command Availability

Only on models with Layer 3 functionality.

### Command Modes

Keychain configuration.

### Command History

Release	Modification
4.0	This command was introduced.

### Usage Guidelines

Not available.

## Example

This example shows how to create a key for the keychain.

```
DmSwitch(config-keychain)#key 1
DmSwitch(config-keychain-key)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>key chain name</b>	Configures a key chain.
<b>key-string</b>	Configures the text string for a key identifier.
<b>show running-config</b>	Shows the current operating configuration.

# Chapter 8. Key Commands

## key-string

```
key-string { text }
```

```
no key-string
```

### Description

Configures the text string for a key identifier.

The **no** command removes the configured key string.

### Syntax

Parameter	Description
<i>text</i>	Specifies the text string for the key.

### Default

No key string is configured.

### Command Availability

Only on models with Layer 3 functionality.

### Command Modes

Key configuration.

### Command History

Release	Modification
4.0	This command was introduced.

### Usage Guidelines

Not available.

## Example

This example shows how to specify the text string for the key.

```
DmSwitch(config-keychain-key) #key-string string_test
DmSwitch(config-keychain-key) #
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>key chain name</b>	Configures a key chain.
<b>key id</b>	Specifies a key identifier.
<b>show running-config</b>	Shows the current operating configuration.

# Chapter 9. Router OSPF Commands

## abr-type

```
abr-type { cisco | ibm | shortcut | standard }
```

```
no abr-type
```

### Description

Configures OSPF ABR type.

The **no** command resets the ABR type to the default value.

### Syntax

Parameter	Description
<b>cisco</b>	Alternative ABR, cisco implementation.
<b>ibm</b>	Alternative ABR, ibm implementation.
<b>shortcut</b>	Shortcut ABR.
<b>standard</b>	Standard behavior (RFC2328).

### Default

Standard ABR type.

### Command Modes

Router OSPF configuration.

### Command History

Release	Modification
4.0	This command was introduced.

### Usage Guidelines

Not available.

## Example

This example shows how to change the OSPF ABR type.

```
DmSwitch(config-router-ospf) #abr-type shortcut
DmSwitch(config-router-ospf) #
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.



## area *id*/*ip-address\_id* authentication

```
area { id | ip-address_id } authentication [ message-digest ]
```

```
no area { id | ip-address_id } authentication
```

### Description

Configures authentication for the specified OSPF area ID.

The **no** command disables authentication for the area.

### Syntax

Parameter	Description
<i>id</i>	Specifies the OSPF area ID as a decimal value. (Range: 0-4294967295)
<i>ip-address_id</i>	Specifies the OSPF area ID in IP address format.
<b>message-digest</b>	(Optional) Uses message-digest authentication.

### Default

Authentication is disabled.

### Command Modes

Router OSPF configuration.

### Command History

Release	Modification
4.0	This command was introduced.

### Usage Guidelines

Do not specify the **message-digest** option to use simple authentication (plain text).

### Example

This example shows how to enable simple authentication for area 0.

```
DmSwitch(config-router-ospf)#area 0 authentication
DmSwitch(config-router-ospf)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.

## area *id*/*ip-address\_id* default-cost

```
area { id | ip-address_id } default-cost { default-cost-value }
```

```
no area { id | ip-address_id } default-cost
```

### Description

Configures the default cost of a NSSA or a stub area ID.

The **no** command resets the cost to its default value.

### Syntax

Parameter	Description
<i>id</i>	Specifies the OSPF area ID as a decimal value. (Range: 0-4294967295)
<i>ip-address_id</i>	Specifies the OSPF area ID in IP address format.
<b>default-cost</b> <i>default-cost-value</i>	Specifies stub's advertised default summary cost. (Range: 0-16777215)

### Default

Default cost: 1.

### Command Modes

Router OSPF configuration.

### Command History

Release	Modification
4.0	This command was introduced.

### Usage Guidelines

It is not possible to configure default cost for area ID 0 (IP 0.0.0.0). To configure a default cost, it is necessary to define a NSSA or a stub configuration in the same area (except area ID 0). If a NSSA or a stub configuration is removed in an area, the default cost returns to its default value.

### Example

This example shows how to change the default cost for area 1.

```
DmSwitch(config-router-ospf)#area 1 default-cost 200
DmSwitch(config-router-ospf)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>area id nssa</b>	Configures an area as NSSA.
<b>area id stub</b>	Configures an area as stub.
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.

## area *id*/*ip-address\_id* nssa

```
area { id | ip-address_id } nssa { translate-always | translate-candidate |  
translate-never } [ no-summary ]
```

```
no area { id | ip-address_id } nssa [ no-summary ]
```

### Description

Configures an area as NSSA.

The **no** command removes the NSSA configuration in the area, or removes the **no-summary** option.

### Syntax

Parameter	Description
<i>id</i>	Specifies the OSPF area ID as a decimal value. (Range: 0-4294967295)
<i>ip-address_id</i>	Specifies the OSPF area ID in IP address format.
<b>translate-always</b>	Configures NSSA-ABR to always translate.
<b>translate-candidate</b>	Configures NSSA-ABR for translate election.
<b>translate-never</b>	Configures NSSA-ABR to never translate.
<b>no-summary</b>	(Optional) Configures an NSSA totally stub area.

### Default

NSSA area is not configured.

### Command Modes

Router OSPF configuration.

### Command History

Release	Modification
4.0	This command was introduced.

### Usage Guidelines

Configures an OSPF not-so-stubby area (NSSA). Use the **no-summary** option to configure an NSSA totally stub area.

It is not possible to configure the area ID 0 (IP 0.0.0.0) as NSSA. It is not allowed to set an area as NSSA if it has a virtual link configured in it.

If a NSSA configuration is removed in an area, the default cost returns to its default value.

## Example

This example shows how to configure an area as NSSA.

```
DmSwitch(config-router-ospf)#area 1 nssa translate-candidate
DmSwitch(config-router-ospf)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>area id default-cost</b>	Configures the default cost of a NSSA or stub area.
<b>area id stub</b>	Configures an area as stub.
<b>area id virtual-link ip-address</b>	Configures a virtual link.
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.

## area *id*/*ip-address\_id* range

```
area { id | ip-address_id } range { ip-address/mask } [ cost { cost-value } | not-advertise ]
```

```
no area { id | ip-address_id } range { ip-address/mask }
```

### Description

Summarizes routes matching IP address/mask.

The **no** command removes the range configuration in the area.

### Syntax

Parameter	Description
<i>id</i>	Specifies the OSPF area ID as a decimal value. (Range: 0-4294967295)
<i>ip-address_id</i>	Specifies the OSPF area ID in IP address format.
<i>ip-address/mask</i>	Area range IP address to match.
<b>cost</b>	(Optional) Specifies a metric for the range.
<i>cost-value</i>	Advertised metric for this range. (Range: 0-16777215)
<b>not-advertise</b>	(Optional) Does not advertise the range.

### Default

Area range is not configured.

### Command Modes

Router OSPF configuration.

### Command History

Release	Modification
4.0	This command was introduced.

### Usage Guidelines

The default action is to advertise the range. Area range configuration is available for border routers only.

## Example

This example shows how to summarize a route matching address/mask.

```
DmSwitch(config-router-ospf)#area 0 range 10.10.20.1/24
DmSwitch(config-router-ospf)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.



## area *id*/*ip-address\_id* shortcut

```
area { id | ip-address_id } shortcut { default | disable | enable }
```

```
no area { id | ip-address_id } shortcut
```

### Description

Configures the area's shortcutting mode.

The **no** command removes the shortcut configuration.

### Syntax

Parameter	Description
<i>id</i>	Specifies the OSPF area ID as a decimal value. (Range: 0-4294967295)
<i>ip-address_id</i>	Specifies the OSPF area ID in IP address format.
<b>default</b>	Configures the default shortcutting behavior.
<b>disable</b>	Disables shortcutting through the area.
<b>enable</b>	Enables shortcutting through the area.

### Default

Area's shortcutting mode is not configured.

### Command Modes

Router OSPF configuration.

### Command History

Release	Modification
4.0	This command was introduced.

### Usage Guidelines

Not available.

### Example

This example shows how to enable shortcutting through an area.

```
DmSwitch(config-router-ospf)#area 0 shortcut enable
DmSwitch(config-router-ospf)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.

## area *id*/*ip-address\_id* stub

```
area { id | ip-address_id } stub [ no-summary ]
```

```
no area { id | ip-address_id } stub [ no-summary ]
```

### Description

Configures an area as stub.

The **no** command removes the stub configuration in the area, or removes the **no-summary** option.

### Syntax

Parameter	Description
<i>id</i>	Specifies the OSPF area ID as a decimal value. (Range: 0-4294967295)
<i>ip-address_id</i>	Specifies the OSPF area ID in IP address format.
<b>no-summary</b>	(Optional) Prevents from sending summary LSA into the stub area.

### Default

Stub area is not configured.

### Command Modes

Router OSPF configuration.

### Command History

Release	Modification
4.0	This command was introduced.

### Usage Guidelines

To further reduce the number of link state advertisements (LSAs) sent into a stub area, you can configure **no-summary** on the DmSwitch to prevent it from sending summary LSA into the stub area.

It is not possible to configure the area ID 0 (IP 0.0.0.0) as stub. It is not allowed to set an area as stub if it has a virtual link configured in it.

If a stub configuration is removed in an area, the default cost returns to its default value.

## Example

This example shows how to configure an area as stub.

```
DmSwitch(config-router-ospf)#area 1 stub
DmSwitch(config-router-ospf)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>area id default-cost</b>	Configures the default cost of a NSSA or stub area.
<b>area id nssa</b>	Configures an area as NSSA.
<b>area id virtual-link ip-address</b>	Configures a virtual link.
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.

## **area *id*/*ip-address\_id* virtual-link *ip-address***

```
area { id | ip-address_id } virtual-link { ip-address }
```

```
no area { id | ip-address_id } virtual-link { ip-address }
```

### **Description**

Configures a virtual link.

The **no** command removes the virtual link.

### **Syntax**

<b>Parameter</b>	<b>Description</b>
<i>id</i>	Specifies the OSPF area ID as a decimal value. (Range: 0-4294967295)
<i>ip-address_id</i>	Specifies the OSPF area ID in IP address format.
<i>ip-address</i>	Specifies the IP address associated with virtual link neighbor.

### **Default**

Virtual Link is not configured.

### **Command Modes**

Router OSPF configuration.

### **Command History**

<b>Release</b>	<b>Modification</b>
4.0	This command was introduced.

### **Usage Guidelines**

It is not possible to configure the area ID 0 (IP 0.0.0.0) on a virtual link. It is not allowed to set a virtual link in an area that is a NSSA or a stub area.

### **Example**

This example shows how to configure a virtual link.

```
DmSwitch(config-router-ospf)#area 1 virtual-link 100.10.10.10
DmSwitch(config-router-ospf)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>area id nssa</b>	Configures an area as NSSA.
<b>area id stub</b>	Configures an area as stub.
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# area *id*/*ip-address\_id* virtual-link *ip-address* authentication

```
area { id | ip-address_id } virtual-link { ip-address } authentication [ message-digest  
| null ]
```

```
no area { id | ip-address_id } virtual-link { ip-address } authentication
```

## Description

Configures authentication on a virtual link.

The **no** command disables authentication on the virtual link.

## Syntax

Parameter	Description
<i>id</i>	Specifies the OSPF area ID as a decimal value. (Range: 0-4294967295)
<i>ip-address_id</i>	Specifies the OSPF area ID in IP address format.
<i>ip-address</i>	Specifies the IP address associated with virtual link neighbor.
<b>message-digest</b>	(Optional) Uses message-digest authentication.
<b>null</b>	(Optional) Does not use authentication.

## Default

Virtual Link is not configured.

## Command Modes

Router OSPF configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure authentication on a virtual link.

```
DmSwitch(config-router-ospf)#area 1 virtual-link 2.2.2.2 authentication
DmSwitch(config-router-ospf)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>area id virtual-link ip-address authentication-key</b>	Configures authentication key on a virtual link.
<b>area id virtual-link ip-address message-digest-key</b>	Configures message digest key on a virtual link.
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.



# area *id*/*ip-address\_id* virtual-link *ip-address* authentication-key

```
area { id | ip-address_id } virtual-link { ip-address } authentication-key { key }
```

```
no area { id | ip-address_id } virtual-link { ip-address } authentication-key
```

## Description

Configures authentication key on a virtual link.

The **no** command removes the authentication key configured on the virtual link.

## Syntax

Parameter	Description
<i>id</i>	Specifies the OSPF area ID as a decimal value. (Range: 0-4294967295)
<i>ip-address_id</i>	Specifies the OSPF area ID in IP address format.
<i>ip-address</i>	Specifies the IP address associated with virtual link neighbor.
<i>key</i>	Specifies the authentication key.

## Default

Virtual Link is not configured.

## Command Modes

Router OSPF configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure the authentication key on a virtual link.

```
DmSwitch(config-router-ospf)#area 1 virtual-link 2.2.2.2 authentication-key key_test
DmSwitch(config-router-ospf)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>area id virtual-link ip-address authentication</b>	Configures authentication on a virtual link.
<b>area id virtual-link ip-address message-digest-key</b>	Configures message digest key on a virtual link.
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# area *id*/*ip-address\_id* virtual-link *ip-address* dead-interval

```
area { id | ip-address_id } virtual-link { ip-address } dead-interval { value }
```

```
no area { id | ip-address_id } virtual-link { ip-address } dead-interval
```

## Description

Configures dead router detection time on a virtual link.

The **no** command resets the dead interval to its default value.

## Syntax

Parameter	Description
<i>id</i>	Specifies the OSPF area ID as a decimal value. (Range: 0-4294967295)
<i>ip-address_id</i>	Specifies the OSPF area ID in IP address format.
<i>ip-address</i>	Specifies the IP address associated with virtual link neighbor.
<i>value</i>	Specifies the dead interval (in seconds). (Range: 1-65535)

## Default

Virtual Link is not configured.

## Command Modes

Router OSPF configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure the dead router detection time on a virtual link.

```
DmSwitch(config-router-ospf)#area 1 virtual-link 2.2.2.2 dead-interval 20
DmSwitch(config-router-ospf)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>area id virtual-link ip-address hello-interval</b>	Configures the hello packet interval on a virtual link.
<b>area id virtual-link ip-address retransmit-interval</b>	Configures the link state retransmit interval on a virtual link.
<b>area id virtual-link ip-address transmit-delay</b>	Configures the link state transmit delay on a virtual link.
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# area *id*/*ip-address\_id* virtual-link *ip-address* hello-interval

```
area { id | ip-address_id } virtual-link { ip-address } hello-interval { value }
```

```
no area { id | ip-address_id } virtual-link { ip-address } hello-interval
```

## Description

Configures the hello packet interval on a virtual link.

The **no** command resets the hello interval to its default value.

## Syntax

Parameter	Description
<i>id</i>	Specifies the OSPF area ID as a decimal value. (Range: 0-4294967295)
<i>ip-address_id</i>	Specifies the OSPF area ID in IP address format.
<i>ip-address</i>	Specifies the IP address associated with virtual link neighbor.
<i>value</i>	Specifies the hello interval (in seconds). (Range: 1-65535)

## Default

Virtual Link is not configured.

## Command Modes

Router OSPF configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure the hello packet interval on a virtual link.

```
DmSwitch(config-router-ospf)#area 1 virtual-link 2.2.2.2 hello-interval 20
DmSwitch(config-router-ospf)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>area id virtual-link ip-address dead-interval</b>	Configures dead router detection time on a virtual link.
<b>area id virtual-link ip-address retransmit-interval</b>	Configures the link state retransmit interval on a virtual link.
<b>area id virtual-link ip-address transmit-delay</b>	Configures the link state transmit delay on a virtual link.
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# area *id*/*ip-address\_id* virtual-link *ip-address* message-digest-key

```
area { id | ip-address_id } virtual-link { ip-address } message-digest-key { key-id } md5  
{ key-text }
```

```
no area { id | ip-address_id } virtual-link { ip-address } message-digest-key { key-id }
```

## Description

Configures message digest key on a virtual link.

The **no** command removes the specified message digest key configured on the virtual link.

## Syntax

Parameter	Description
<i>id</i>	Specifies the OSPF area ID as a decimal value. (Range: 0-4294967295)
<i>ip-address_id</i>	Specifies the OSPF area ID in IP address format.
<i>ip-address</i>	Specifies the IP address associated with virtual link neighbor.
<i>key-id</i>	Specifies the key ID. (Range: 1-255)
<b>md5</b>	Uses the MD5 algorithm.
<i>key-text</i>	Specifies the key string.

## Default

Virtual Link is not configured.

## Command Modes

Router OSPF configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure a message digest key on a virtual link.

```
DmSwitch(config-router-ospf)#area 1 virtual-link 2.2.2.2 message-digest-key 1 md5 test_key
DmSwitch(config-router-ospf)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>area id virtual-link ip-address authentication</b>	Configures authentication on a virtual link.
<b>area id virtual-link ip-address authentication-key</b>	Configures authentication key on a virtual link.
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.



# area *id*/*ip-address\_id* virtual-link *ip-address* retransmit-interval

```
area { id | ip-address_id } virtual-link { ip-address } retransmit-interval { value }
```

```
no area { id | ip-address_id } virtual-link { ip-address } retransmit-interval
```

## Description

Configures the link state retransmit interval on a virtual link.

The **no** command resets the retransmit interval to its default value.

## Syntax

Parameter	Description
<i>id</i>	Specifies the OSPF area ID as a decimal value. (Range: 0-4294967295)
<i>ip-address_id</i>	Specifies the OSPF area ID in IP address format.
<i>ip-address</i>	Specifies the IP address associated with virtual link neighbor.
<i>value</i>	Specifies the retransmit interval (in seconds). (Range: 1-65535)

## Default

Virtual Link is not configured.

## Command Modes

Router OSPF configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure the link state retransmit interval on a virtual link.

```
DmSwitch(config-router-ospf)#area 1 virtual-link 2.2.2.2 retransmit-interval 20
DmSwitch(config-router-ospf)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>area id virtual-link ip-address dead-interval</b>	Configures dead router detection time on a virtual link.
<b>area id virtual-link ip-address hello-interval</b>	Configures the hello packet interval on a virtual link.
<b>area id virtual-link ip-address transmit-delay</b>	Configures the link state transmit delay on a virtual link.
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# area *id*/*ip-address\_id* virtual-link *ip-address* transmit-delay

```
area { id | ip-address_id } virtual-link { ip-address } transmit-delay { value }
```

```
no area { id | ip-address_id } virtual-link { ip-address } transmit-delay
```

## Description

Configures the link state transmit delay on a virtual link.

The **no** command resets the transmit delay to its default value.

## Syntax

Parameter	Description
<i>id</i>	Specifies the OSPF area ID as a decimal value. (Range: 0-4294967295)
<i>ip-address_id</i>	Specifies the OSPF area ID in IP address format.
<i>ip-address</i>	Specifies the IP address associated with virtual link neighbor.
<i>value</i>	Specifies the transmit delay (in seconds). (Range: 1-65535)

## Default

Virtual Link is not configured.

## Command Modes

Router OSPF configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure the link state transmit delay on a virtual link.

```
DmSwitch(config-router-ospf)#area 1 virtual-link 2.2.2.2 transmit-delay 20
DmSwitch(config-router-ospf)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>area id virtual-link ip-address dead-interval</b>	Configures dead router detection time on a virtual link.
<b>area id virtual-link ip-address hello-interval</b>	Configures the hello packet interval on a virtual link.
<b>area id virtual-link ip-address retransmit-interval</b>	Configures the link state retransmit interval on a virtual link.
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# auto-cost reference-bandwidth

```
auto-cost reference-bandwidth { bandwidth }
```

```
no auto-cost reference-bandwidth
```

## Description

Configures OSPF interface cost according to bandwidth.

The **no** command resets the reference bandwidth to the default value.

## Syntax

Parameter	Description
<b>reference-bandwidth</b> <i>bandwidth</i>	Specifies reference bandwidth (in Mb/s) method to assign OSPF cost. Range (1-4294967)

## Default

Bandwidth: 100 Mb/s.

## Command Modes

Router OSPF configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to configure the reference bandwidth.

```
DmSwitch(config-router-ospf)#auto-cost reference-bandwidth 50
DmSwitch(config-router-ospf)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

**Related Commands**

<b>Command</b>	<b>Description</b>
<code>show ip ospf</code>	Shows the OSPF process parameters.
<code>show running-config</code>	Shows the current operating configuration.

# compatible rfc1583

`compatible rfc1583`

`no compatible rfc1583`

## Description

Defines the RFC1583 compatibility.

The **no** command disables the RFC1583 compatibility.

## Syntax

No parameter accepted.

## Default

RFC1583 compatibility is disabled.

## Command Modes

Router OSPF configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

The RFC2328, the successor to RFC1583, suggests a change to the path preference algorithm that prevents possible routing loops that were possible in the old version of OSPFv2. More specifically, it demands that inter-area paths and intra-area path are now of equal preference but still both preferred to external paths.

## Example

This example shows how to define the RFC1583 compatibility.

```
DmSwitch(config-router-ospf)#compatible rfc1583
DmSwitch(config-router-ospf)#
```

You can verify the configuration by entering the **show running-config** or the **show ip ospf** privileged EXEC commands.

## Related Commands

Command	Description
<code>show ip ospf</code>	Shows the OSPF process parameters.
<code>show running-config</code>	Shows the current operating configuration.



# default-information originate

```
default-information originate [ always { metric metric-value | metric-type metric-type-value } | { metric metric-value } | { metric-type metric-type-value } ]
```

```
no default-information originate
```

## Description

Configures default route information.

The **no** command disables the distribution of a default route.

## Syntax

Parameter	Description
<b>always</b>	(Optional) Always advertise default route.
<b>metric</b> <i>metric-value</i>	Specifies the metric for default route. (Range: 0-16777214)
<b>metric-type</b> <i>metric-type-value</i>	Specifies the External Type metric for default routes. (Range: 1-2)

## Default

Distribution of default route is not configured.

## Command Modes

Router OSPF configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Force the autonomous system boundary router to generate a default route into the OSPF routing domain.

## Example

This example shows how to distribute a default route.

```
DmSwitch(config-router-ospf)#default-information originate metric-type 2
DmSwitch(config-router-ospf)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# default-metric

**default-metric** *metric-value*

**no default-metric**

## Description

Defines a OSPF metric of redistribute routes.

The **no** command resets the metric to the default value.

## Syntax

Parameter	Description
<i>metric-value</i>	Specifies the default metric. (Range: 0-16777214)

## Default

Default metric is not configured.

## Command Modes

Router OSPF configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to define the default metric for redistribute.

```
DmSwitch(config-router-ospf)#default-metric 100
DmSwitch(config-router-ospf)#
```

You can verify that the default metric was defined by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<code>show ip ospf</code>	Shows the OSPF process parameters.
<code>show running-config</code>	Shows the current operating configuration.

# distance

```
distance { administrative-distance | ospf { external external-distance | inter-area inter-area-distance | intra-area intra-area-distance } }
```

```
no distance [ ospf ]
```

## Description

Defines an administrative distance for the OSPF protocol.

The no **no** command removes the global administrative distance or only for the specified routes area type.

## Syntax

Parameter	Description
<i>administrative-distance</i>	Specifies the default administrative distance. (Range: 1-255)
<b>ospf</b>	Administrative distance for external, inter-area and intra-area routes.
<b>external</b> <i>external-distance</i>	Administrative distance for external routes. Specifies the administrative distance for routes from another routing domain learned via redistribution. (Range: 1-255)
<b>inter-area</b> <i>inter-area-distance</i>	Administrative distance for inter-area routes. Specifies the administrative distance for routes to another area. (Range: 1-255)
<b>intra-area</b> <i>intra-area-distance</i>	Administrative distance for intra-area routes. Specifies the administrative distance for routes within an area. (Range: 1-255)

## Default

Administrative distance is not configured.

## Command Modes

Router OSPF configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

An administrative distance is a rating of the trustworthiness of a routing information source. In general, the higher the value, the lower the trust rating. An administrative distance of 255 means the routing information source cannot be trusted at all and should be ignored.

## Example

This example shows how to define the global administrative distance.

```
DmSwitch(config-router-ospf)#distance 100
DmSwitch(config-router-ospf)#
```

You can verify that the administrative distance was configured by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# neighbor

```
neighbor { ip-address } [ poll-interval polling ] [ priority priority-value ]
```

```
no neighbor { ip-address }
```

## Description

Defines a static neighbor router.

Entering with **no** command, it removes a configured neighbor router.

## Syntax

Parameter	Description
<i>ip-address</i>	Specifies the neighbor IP address.
<b>poll-interval</b> <i>polling</i>	(Optional) Specifies the dead-router polling interval. (Range: 1-65535)
<b>priority</b> <i>priority-value</i>	(Optional) Specifies the priority of non-broadcast neighbor. (Range: 0-255)

## Default

No neighbor is configured.

## Command Modes

Router OSPF configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

This command configures static neighbors routers attached to the network.

A neighbor with priority 0 is considered ineligible for DR (Designated Router) election.

The "poll-interval" is the amount of time an NBMA (Adjacencies on Non-Broadcast Multi-Access) interface waits before sending a Hello to a presumably dead neighbor.

## Example

This example shows how to define a neighbor router IP address.

```
DmSwitch(config-router-ospf)#neighbor 10.11.12.1
DmSwitch(config-router-ospf)#
```

You can verify that the neighbor was defined by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>passive-interface</b>	Suppresses OSPF routing updates on specified VLAN interfaces.
<b>network</b>	Associates a network with a OSPF routing process.
<b>show ip ospf</b>	Shows the OSPF process parameters.



# network

**network** { *ip-address/mask* } **area** { *area-id* | *ip-address\_id* }

**no network** { *ip-address/mask* } **area** { *area-id* | *ip-address\_id* }

## Description

Enables OSPF routing on an IP network.

The **no** command disables OSPF routing on the specified network.

## Syntax

Parameter	Description
<i>ip-address/mask</i>	Specifies the network.
<b>area</b>	OSPF area ID.
<i>area-id</i>	Specifies the OSPF area ID as a decimal value. (Range: 0-4294967295)
<i>ip-address_id</i>	Specifies the OSPF area ID in IP address format.

## Default

No network is configured.

## Command Modes

Router OSPF configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

The OSPF process will act only over associated networks.

## Example

This example shows how to associate a network with the OSPF routing.

```
DmSwitch(config-router-ospf)#network 10.11.12.0/24
```

```
DmSwitch(config-router-ospf)#
```

You can verify that the network was associated by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# passive-interface

```
passive-interface { all | index | range first-index last-index }
```

```
no passive-interface { all | index | range first-index last-index }
```

## Description

Disables routing updates on specified VLAN interfaces.

Entering with **no** command, it reenables the sending of routing updates on the specified VLAN interfaces.

## Syntax

Parameter	Description
<b>all</b>	Suppresses for all VLANs.
<i>index</i>	Suppresses for a specific VLAN index. (Range: 1-4094)
<b>range</b> <i>first-index last-index</i>	Suppresses for a range of VLANs. (Range: 1-4094)

## Default

Routing updates are sent on the VLANs.

## Command Modes

Router OSPF configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

If you disable the sending of routing updates on a VLAN, the particular subnet will continue to be advertised to other VLANs (if these are created), and updates from other routers on that VLAN continue to be received and processed.

OSPF routing information is neither sent nor received through the specified VLAN. The specified VLAN address appears as a stub network in the OSPF domain.

## Example

This example shows how to suppress routing updates on a specific VLAN interface.

```
DmSwitch(config-router-ospf) #passive-interface 1
DmSwitch(config-router-ospf) #
```

You can verify that the configuration was made by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>neighbor</b>	Defines a neighbor router.
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# redistribute

```
redistribute { bgp | connected | rip | static } [ { metric metric-value } | { metric-type  
metric-type-value } ]
```

```
no redistribute { connected | rip | static }
```

## Description

Redistributes bgp, connected, RIP or static routes, with a specific metric and metric type.

Entering with **no** command, it stops the redistribution of the specified routes types.

## Syntax

Parameter	Description
<b>bgp</b>	Redistributes Border Gateway Protocol (BGP) routes.
<b>connected</b>	Redistributes connected routes.
<b>rip</b>	Redistributes RIP routes.
<b>static</b>	Redistributes configured static routes.
<b>metric</b> <i>metric-value</i>	(Optional) Defines a metric for a specified redistribute route. (Range: 0-16777214)
<b>metric-type</b> <i>metric-type-value</i>	(Optional) Defines OSPF exterior metric type for a specified redistribute route. (Range: 1-2)

## Default

No redistribution routes are defined.

## Command Modes

Router OSPF configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to redistribute connected routes configured with a specific metric.

```
DmSwitch(config-router-ospf)#redistribute connected metric 5
DmSwitch(config-router-ospf)#
```

You can verify the configuration by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# refresh timer

```
refresh timer { refresh-value }
```

```
no refresh timer
```

## Description

Configures OSPF refresh timer.

Entering with the **no** command, it returns to the default refresh timer value.

## Syntax

Parameter	Description
<i>refresh-value</i>	Specifies the refresh timer value (in seconds). Must be multiple of 10. (Range: 10-1800)

## Default

Refresh value: 10 seconds.

## Command Modes

Router OSPF configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to change the refresh timer.

```
DmSwitch(config-router-ospf)#refresh timer 30
DmSwitch(config-router-ospf)#
```

You can verify this configuration by entering the **show running-config** or the **show ip ospf** privileged EXEC commands.

## Related Commands

Command	Description
<code>show ip ospf</code>	Shows the OSPF process parameters.
<code>show running-config</code>	Shows the current operating configuration.
<code>timers spf</code>	Configures the SPF timers.



# router-id

```
router-id { ip-address }
```

```
no router-id
```

## Description

Defines a router ID for the OSPF process.

The **no** command removes the router ID configured.

## Syntax

Parameter	Description
<i>ip-address</i>	Specifies the OSPF router ID in IP address format.

## Default

No router ID is configured.

## Command Modes

Router OSPF configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

The router ID is the highest IP address on the box, calculated at boot time or whenever the OSPF process is restarted. This command defines a static router ID.

## Example

This example shows how to configure a static router ID.

```
DmSwitch(config-router-ospf)#router-id 10.10.20.30
DmSwitch(config-router-ospf)#
```

You can verify the router ID configured by entering the **show running-config** or the **show ip ospf** privileged EXEC command.

## Related Commands

Command	Description
<code>show ip ospf</code>	Shows the OSPF process parameters.
<code>show running-config</code>	Shows the current operating configuration.

# timers spf

```
timers spf { delay-time } { hold-time }
```

```
no timers spf
```

## Description

Configures the delay and holddown SPF timers.

The **no** command resets the SPF timers to its default values.

## Syntax

Parameter	Description
<i>delay-time</i>	Specifies the amount of time to wait before running an SPF after receiving a database change (in seconds). (Range: 1-600000)
<i>hold-time</i>	Specifies the amount of time to wait between consecutive SPF runs (in seconds). (Range: 1-600000)

## Default

Delay time: 1 second.

Hold time: 1 second.

## Command Modes

Router OSPF configuration.

## Command History

Release	Modification
4.0	This command was introduced.

## Usage Guidelines

Not available.

## Example

This example shows how to change the SPF timers.

```
DmSwitch(config-router-ospf)#timers spf 2 10
DmSwitch(config-router-ospf)#
```

You can verify this configuration by entering the **show running-config** or the **show ip ospf** privileged EXEC commands.

## Related Commands

Command	Description
<b>refresh timer</b>	Configures OSPF refresh timer.
<b>show ip ospf</b>	Shows the OSPF process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# Chapter 10. Router RIP Commands

## default-metric

**default-metric** *metric-value*

**no default-metric**

### Description

Defines the default metric of RIP protocol.

Entering with **no** command, it resets the default metric to default value.

### Syntax

Parameter	Description
<i>metric-value</i>	Specifies the default metric. (Range: 1-16)

### Default

Default metric: 1.

### Command Modes

Router RIP configuration.

### Command History

Release	Modification
3.1	This command was introduced.

### Usage Guidelines

Not available.

### Example

This example shows how to define the default metric.

```
DmSwitch(config-router-rip)#default-metric 10
```

```
DmSwitch(config-router-rip)#
```

You can verify that the default metric was defined by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>distance</b>	Defines the administrative distance of RIP protocol.
<b>ip rip split-horizon</b>	Enables the split horizon function.
<b>redistribute</b>	Redistributes routes with a metric of RIP protocol.
<b>show ip rip</b>	Shows the RIP process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# distance

**distance** { *administrative-distance* } [ *ip-address/mask* ]

**no distance** [ *administrative-distance* { *ip-address/mask* } ]

## Description

Defines the administrative distance to reach a network whose route was discovered by RIP protocol.

Entering with **no** command, it resets the administrative distance to default value.

## Syntax

Parameter	Description
<i>administrative-distance</i>	Specifies the administrative distance. (Range: 1-255)
<i>ip-address/mask</i>	(Optional) Specifies the route's source IP address.

## Default

Administrative distance: 120.

## Command Modes

Router RIP configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

If the router have two routes to reach the same network, given by two different routing protocols, the packets to this network will be sent by the lowest administrative distance route. Administrative distance is necessary because there aren't how to compare different metrics of two routing protocols to define the best route.

## Example

This example shows how to define the administrative distance to all networks whose route was discovered by RIP protocol.

```
DmSwitch(config-router-rip)#distance 100
DmSwitch(config-router-rip)#
```

You can verify that the administrative distance was defined by entering the **show running-config** or the **show ip rip** privileged EXEC commands.

## Related Commands

Command	Description
<b>show ip rip</b>	Shows the RIP process parameters.
<b>show running-config</b>	Shows the current operating configuration.



# neighbor

**neighbor** { *ip-address* }

**no neighbor** { *ip-address* }

## Description

Defines a neighbor router to exchange routing information.

Entering with **no** command, it deletes a neighbor router.

## Syntax

Parameter	Description
<i>ip-address</i>	Specifies the neighbor IP address.

## Default

Not default is defined.

## Command Modes

Router RIP configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

The DmSwitch send RIP updates by unicast packets with the neighbor routers specified. This feature may be necessary in networks where there are not support to multicast and broadcast packets.

## Example

This example shows how to define a neighbor router IP address.

```
DmSwitch(config-router-rip)#neighbor 10.11.12.1
DmSwitch(config-router-rip)#
```

You can verify that the neighbor was defined by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<code>network</code>	Associates a network with a RIP routing process.
<code>passive-interface</code>	Suppresses RIP routing updates on specified VLAN interfaces.
<code>show ip rip</code>	Shows the RIP process parameters.
<code>show running-config</code>	Shows the current operating configuration.

# network

**network** { *ip-address/mask* }

**no network** { *ip-address/mask* }

## Description

Associates a network with a RIP routing process.

Entering with **no** command, it dissociates a network of a RIP routing process.

## Syntax

Parameter	Description
<i>ip-address/mask</i>	Specifies the network.

## Default

Not default is defined.

## Command Modes

Router RIP configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

The RIP process will act only over associated networks, where they will advertise and listen for RIP updates.

## Example

This example shows how to associate a network with the RIP protocol.

```
DmSwitch(config-router-rip)#network 10.11.12.0/24
DmSwitch(config-router-rip)#
```

You can verify that the network was associated by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>neighbor</b>	Defines a neighbor router.
<b>passive-interface</b>	Suppresses RIP routing updates on specified VLAN interfaces.
<b>redistribute</b>	Redistributes routes with a metric of RIP protocol.
<b>show ip rip</b>	Shows the RIP process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# passive-interface

```
passive-interface { all | index | range first-index last-index }
```

```
no passive-interface { all | index | range first-index last-index }
```

## Description

Suppresses routing updates on specified VLAN interfaces.

Entering with **no** command, it enables routing updates on the specified VLAN interfaces.

## Syntax

Parameter	Description
<b>all</b>	Suppresses for all VLANs.
<i>index</i>	Suppresses for a specific VLAN index. (Range: 1-4094)
<b>range</b> <i>first-index last-index</i>	Suppresses for a range of specific VLANs index. (Range: 1-4094)

## Default

Routing updates are sent on the VLANs.

## Command Modes

Router RIP configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

This command suppresses the sending of RIP messages by broadcast (RIP version 1) and multicast (RIP version 2) packets. However, it is possible to exchange RIP messages by unicast packets with the neighbor routes, specified by the **neighbor** router RIP command.

## Example

This example shows how to suppress routing updates on a specific VLAN interface.

```
DmSwitch(config-router-rip)#passive-interface 1
DmSwitch(config-router-rip)#
```

You can verify that the configuration was made by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>neighbor</b>	Defines a neighbor router.
<b>show ip rip</b>	Shows the RIP process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# redistribute

```
redistribute { bgp | connected | ospf | static } [ metric metric-value ]
```

```
no redistribute { connected | ospf | static }
```

## Description

Redistributes connected, OSPF or static routes, with a specific or default metric of RIP protocol.

Entering with **no** command, it stops the redistribution of the specified routes types.

## Syntax

Parameter	Description
<b>bgp</b>	Redistributes Border Gateway Protocol (BGP) routes.
<b>connected</b>	Redistributes connected routes.
<b>ospf</b>	Redistributes OSPF routes.
<b>static</b>	Redistributes configured static routes.
<b>metric</b> <i>metric-value</i>	(Optional) Specifies a metric. (Range: 1-16)

## Default

No redistribution routes are defined.

## Command Modes

Router RIP configuration.

## Command History

Release	Modification
3.1	This command was introduced.
4.0	Redistribution of OSPF routes has been included. The minimum value for metric has been changed to 0.

## Usage Guidelines

Not available.

## Example

This example shows how to redistribute connected routes configured with a specific metric.

```
DmSwitch(config-router-rip)#redistribute connected metric 5
DmSwitch(config-router-rip)#
```

You can verify that the configuration was made by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>default-metric</b>	Defines the default metric of RIP protocol.
<b>network</b>	Associates a network with a RIP routing process.
<b>show ip rip</b>	Shows the RIP process parameters.
<b>show running-config</b>	Shows the current operating configuration.



# timers\_basic

```
timers basic { update-time } { timeout-time } { garbage-time }
```

```
no timers basic
```

## Description

Defines the basic timers of RIP protocol.

Entering with **no** command, it resets the basic timers to default value.

## Syntax

Parameter	Description
<i>update-time</i>	Specifies the time that de RIP router send your complete routing table to all neighbor RIP router. (Range: 5-2000000000)
<i>timeout-time</i>	Specifies the timeout of entries in the routing table. After this time, the entries without a update are marked as invalid. (Range: 5-2000000000)
<i>garbage-time</i>	Specifies the time where the entries are removed from the routing table after its timeout. (Range: 5-2000000000)

## Default

Update time: 30.

Timeout time: 180.

Garbage time: 120.

## Command Modes

Router RIP configuration.

## Command History

Release	Modification
3.1	This command was introduced.

## Usage Guidelines

If the basic timers are configured as default value, they are not shown with the **show running-config** privileged EXEC command.

## Example

This example shows how to define the basic timers.

```
DmSwitch(config-router-rip)#timers basic 40 190 130
DmSwitch(config-router-rip)#
```

You can verify that the basic timers was defined by entering the **show running-config** privileged EXEC command.

## Related Commands

Command	Description
<b>show ip rip</b>	Shows the RIP process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# version

```
version { 1 | 2 }
```

```
no version
```

## Description

Defines the RIP protocol version to be used.

The **no** command form resets the version.

## Syntax

Parameter	Description
1	RIP version 1.
2	RIP version 2.

## Default

Default is to send RIP version 2 packets and receive versions 1 and 2 messages.

## Command Modes

Router RIP configuration.

## Command History

Release	Modification
3.1	This command was introduced.
4.0	Default version has been changed.

## Usage Guidelines

Not available.

## Example

This example shows how to change the RIP protocol version.

```
DmSwitch(config-router-rip)#version 1
DmSwitch(config-router-rip)#
```

You can verify that the version was changed by entering the **show running-config** or the **show ip rip** privileged EXEC commands.

## Related Commands

Command	Description
<b>ip rip receive version</b>	Defines the RIP version of the accepted messages.
<b>ip rip send version</b>	Defines the RIP version of the sent messages.
<b>show ip rip</b>	Shows the RIP process parameters.
<b>show running-config</b>	Shows the current operating configuration.

# Chapter 11. Obsolete Commands

## Root Commands

### clear arp-table

`clear arp-table [ ip-address ]`

#### Description

Deletes entries from the ARP table.

#### Syntax

Parameter	Description
<i>ip-address</i>	(Optional) Clears only the entry that contains the specified IP address.

#### Default

No default is defined.

#### Command Modes

Privileged EXEC.

#### Command History

Release	Modification
3.1	This command was introduced.
4.0	This command was renamed to <code>clear cpu arp-table</code> .

#### Usage Guidelines

Not available.

#### Example

This example shows how to delete the entry that contains the specified IP address.

```
DmSwitch#clear arp-table 192.168.0.1
DmSwitch#
```

You can verify that the information was deleted by entering the **show arp-table** privileged EXEC command.

## Related Commands

Command	Description
<b>show cpu</b>	Shows CPU information.

## clear counters

**clear counters** [ **ethernet** [ *unit-number/* ] *port-number* | **port-channel** *channel-group-number* ]

### Description

Deletes transmit and receive statistics from all ports, or from an specific port or port-channel.

### Syntax

Parameter	Description
<b>ethernet</b> [ <i>unit-number/</i> ] <i>port-number</i>	(Optional) Clears the entries from the specified unit and port.
<b>port-channel</b> <i>channel-group-number</i>	(Optional) Clears the entries from the specified port channel. The port channel must be specified in accordance with the port channel configured in the switch. (Range: 1-32)

### Default

No default is defined.

### Command Modes

Privileged EXEC.

### Command History

Release	Modification
3.1	This command was introduced.
5.0	The command was replaced by the <b>clear statistics</b> command.

### Usage Guidelines

Not available.

### Example

This example shows how to delete transmit and receive statistics from a specific port.

```
DmSwitch#clear counters ethernet 1
DmSwitch#
```

You can verify that the information was deleted by entering the **show interface counters** privileged EXEC command.

## Related Commands

Command	Description
<b>show interfaces counters</b>	Shows the interface counters information.



## clear cpu-arp-table

**clear cpu-arp-table** [ *ip-address* ]

### Description

Deletes entries from the CPU ARP table.

### Syntax

Parameter	Description
<i>ip-address</i>	(Optional) Clears only the entry that contains the specified IP address.

### Default

No default is defined.

### Command Modes

Privileged EXEC.

### Command History

Release	Modification
4.0	This command was introduced. Before this was called <b>clear arp-table</b> .
4.1	This command was renamed to <b>clear cpu arp-table</b> .

### Usage Guidelines

Not available.

### Example

This example shows how to delete the entry that contains the specified IP address.

```
DmSwitch#clear cpu-arp-table 192.168.0.1
DmSwitch#
```

You can verify that the information was deleted by entering the **show arp-table** privileged EXEC command.

### Related Commands

Command	Description
---------	-------------

Command	Description
<code>show cpu</code>	Shows CPU information.

# clear ffpcounters

**clear ffpcounters** [*filter-counter-id* ]

## Description

Clears filter counters.

## Syntax

Parameter	Description
<i>filter-counter-id</i>	(Optional) Clears only the counter with the specified ID. (Range: 1-32)

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.
5.0	The command was replaced by the <b>clear counter</b> command.

## Usage Guidelines

Not available.

## Example

This example shows how to clear all filter counters.

```
DmSwitch#clear ffpcounters
DmSwitch#
```

You can verify that the information was deleted by entering the **show counter** privileged EXEC command.

## Related Commands

No related command.

## clear meters

**clear meters** [ *meter-number* ]

### Description

Clears the packet counters of the meters.

### Syntax

Parameter	Description
<i>meter-number</i>	(Optional) Clears the packet counters of a specified meter. (Range: 1-63)

### Default

No default is defined.

### Command Modes

Privileged EXEC.

### Command History

Release	Modification
3.1	This command was introduced.
4.0	This command was renamed to <b>clear meter</b> .

### Usage Guidelines

Not available.

### Example

This example shows how to clear the counters of meter 3.

```
DmSwitch#clear meters 3
DmSwitch#
```

### Related Commands

No related command.

# show arp-table

`show arp-table`

## Description

Shows the ARP table from CPU.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.
4.1	This command was renamed to <code>show cpu arp-table</code> .

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the ARP table.

```
DmSwitch#show arp-table
IP Address          MAC address          VLAN
-----
10.11.12.13         00:15:F2:59:B1:07    1
DmSwitch#
```

## Related Commands

Command	Description
<code>clear arp-table</code>	Deletes entries from the ARP table.

# show cpu-usage

**show** **cpu-usage**[ | { **begin** | **exclude** | **include** } *expression* ]

## Description

Shows CPU utilization.

## Syntax

Parameter	Description
<b>begin</b>	(Optional) Print lines which begin matches a pattern.
<b>exclude</b>	(Optional) Print lines unmatching a pattern.
<b>include</b>	(Optional) Print lines matching a pattern.
<i>expression</i>	Regular expression to be used as a pattern. The following metacharacters must be backslashed:  , (, ), {, } and +.

## Default

No default is defined.

## Command Modes

User EXEC.

## Command History

Release	Modification
3.1	This command was introduced.
4.0	This command was renamed to <b>show cpu usage</b> .

## Usage Guidelines

This command shows the main CPU processes and their status, sorting by the highest execution percentage in the last 5 seconds.

## Example

This example illustrates how to show the CPU utilization.

```
DmSwitch#show cpu-usage
```

```
(STATUS: S=sleeping R=running W=waiting)
```

	%CPU		
	5Sec	1Min	5Min
CPU TOTAL USAGE:	12.52	11.02	10.86

```

PID      PROCESS      STATUS      3.13    0.54    0.53
 75      traps        S
 90      l2_shadow     S          2.94    4.13    4.19
 91      counter      S          2.35    1.97    1.98
109      cpu_monitor   R          1.96    2.07    2.04
101      dot1xd        S          0.98    0.99    1.01
102      rmon          S          0.98    0.73    0.74
 99      xstp          S          0.20    0.10    0.07
 98      RX            S          0.00    0.21    0.14
 88      interrupt     S          0.00    0.11    0.06
111      rx_pkt        S          0.00    0.05    0.03
 97      TX            S          0.00    0.02    0.02

...

DmSwitch#

```

## Related Commands

Command	Description
<b>cpu-dos-protect</b>	Limits the packet rate that is processed by CPU.
<b>show memory</b>	Shows the processor memory utilization.
<b>show uptime</b>	Shows the system clock, system uptime and load average.

# show memory

**show memory**

## Description

Shows the processor memory utilization.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.
4.0	This command was renamed to <b>show cpu memory</b> .

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the CPU memory utilization.

```
DmSwitch#show memory
Processor Memory Information:

Total: 62848 kB
Free : 26588 kB

DmSwitch#
```

## Related Commands

Command	Description
<b>cpu-dos-protect</b>	Limits the packet rate that is processed by CPU.



Command	Description
<code>show cpu-usage</code>	Shows CPU utilization.
<code>show uptime</code>	Shows the system clock, system uptime and load average.

## show qos config

**show qos config** [ **ethernet** { **range** { [ *first-unit-number/* ] *first-port-number* [ *last-unit-number/* ] *last-port-number* } | [ *unit-number/* ] *port-number* } ]

### Description

Use to show the qos configuration.

### Syntax

Parameter	Description
[ <i>unit-number/</i> ] <i>port-number</i>	Shows a specific unit and port queue configuration
<b>range</b> [ <i>first-unit-number/</i> ] <i>first-port-number</i> [ <i>last-unit-number/</i> ] <i>last-port-number</i>	Shows a range of specific units and ports queue configuration

### Default

No default is defined.

### Command Modes

Privileged EXEC.

### Command History

Release	Modification
3.1	This command was introduced.
4.0	This command was renamed to <b>show queue config</b> .

### Usage Guidelines

Not available.

### Example

This example illustrates how to show the queue configuration.

```
DmSwitch#show qos config ethernet 2
```

Port	Queue	Mode	Max-Bw	Min-Bw	Weight	SP-Queue
1/ 2	0	WRR	unlimit	-----	1	NO
1/ 2	1	WRR	unlimit	-----	2	NO
1/ 2	2	WRR	unlimit	-----	4	NO
1/ 2	3	WRR	unlimit	-----	6	NO

```
1/ 2    4    WRR    unlimit    -----    8    NO
1/ 2    5    WRR    unlimit    -----    10   NO
1/ 2    6    WRR    unlimit    -----    12   NO
1/ 2    7    WRR    unlimit    -----    14   NO
-----
DmSwitch#
```

Related Commands

Command	Description
<code>qos max-bw</code>	Configures the maximum bandwidth allocation per queue
<code>qos sched-mode sp</code>	Configures Ethernet interface queues in Strict Priority schedule mode.
<code>qos sched-mode wfq</code>	Configures Ethernet interface queues in Weighted Fair Queueing schedule mode
<code>qos sched-mode wrr</code>	Configures Ethernet interface queues in Weighted Round Robin schedule mode
<code>qos cos-map</code>	Maps CoS priorities to queues

# show qos cos-map

**show qos cos-map**

## Description

Use to show map of CoS priorities to queues.

## Syntax

No parameter accepted.

## Default

No default is defined.

## Command Modes

Privileged EXEC.

## Command History

Release	Modification
3.1	This command was introduced.
4.0	This command was renamed to <b>show queue cos-map</b> .

## Usage Guidelines

Not available.

## Example

This example illustrates how to show the CoS mappings.

```
DmSwitch#show qos cos-map
-----+-----+
Queue | 802.1P Priority |
-----+-----+
  0   | 0               |
  1   | 1               |
  2   | 2               |
  3   | 3               |
  4   | 4               |
  5   | 5               |
  6   | 6               |
  7   | 7               |
-----+-----+
DmSwitch#
```

## Related Commands

Command	Description
<code>qos cos-map</code>	Maps CoS priorities to queues
<code>qos max-bw</code>	Configures the maximum bandwidth allocation per queue
<code>qos sched-mode sp</code>	Configures Ethernet interface queues in Strict Priority schedule mode.
<code>qos sched-mode wfq</code>	Configures Ethernet interface queues in Weighted Fair Queueing schedule mode
<code>qos sched-mode wrr</code>	Configures Ethernet interface queues in Weighted Round Robin schedule mode

# Configure Commands

## eaps

**eaps**

**no eaps**

## Description

Enables the EAPS operation in the DmSwitch.

Inserting **no** as a prefix for this command, it will disable the EAPS operation.

## Syntax

No parameter accepted.

## Default

EAPS is disabled.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.
5.0	This command was obsoleted, since EAPS domain is always globally enabled.

## Usage Guidelines

You must disable the spanning-tree protocol in order to use EAPS.

## Example

This example shows how to enable eaps operation.

```
DmSwitch(config)#eaps
DmSwitch(config)#
```

You can verify that EAPS operation was enabled by entering the **show eaps** privileged EXEC command.

## Related Commands

Command	Description
<b>eaps domain</b>	Creates a new EAPS domain.
<b>eaps domain control-vlan</b>	Configures the control VLAN for the EAPS domain.
<b>eaps domain disable</b>	Disables the EAPS domain operation.
<b>eaps domain enable</b>	Enables the EAPS domain operation.
<b>eaps domain failtime</b>	Defines the interval time that the secondary port of DmSwitch master in a EAPS ring waits without receiving the two hello packets before changing the status of EAPS ring to fail.
<b>eaps domain hellotime</b>	Defines the interval between the sending of two hello packets.
<b>eaps domain mode</b>	Configures the mode of DmSwitch in EAPS domain.
<b>eaps domain name</b>	Renames the domain.
<b>eaps domain port</b>	Defines both primary and secondary ports of DmSwitch in EAPS ring.
<b>eaps domain protected-vlans</b>	Defines the VLAN groups that will be protected by EAPS ring.
<b>show eaps</b>	Shows EAPS settings.
<b>show running-config</b>	Shows the current operating configuration.

## **eaps domain disable**

**eaps domain disable**

### **Description**

Disables the EAPS domain operation.

### **Syntax**

Parameter	Description
<i>domain</i>	Specifies a domain name.

### **Default**

No default is defined.

### **Command Modes**

Global configuration.

### **Command History**

Release	Modification
3.1	This command was introduced.
5.0	This command was obsoleted, since every existent EAPS domain is always enabled.

### **Usage Guidelines**

Not available.

### **Example**

This example shows how to disable a EAPS domain.

```
DmSwitch(config)#eaps test disable
DmSwitch(config)#
```

You can verify that the EAPS domain was disabled by entering the **show eaps** privileged EXEC command.

### **Related Commands**

Command	Description
<b>eaps</b>	Enables the EAPS operation in the DmSwitch.
<b>eaps domain</b>	Creates a new EAPS domain.



Command	Description
<b>eaps domain control-vlan</b>	Configures the control VLAN for the EAPS domain.
<b>eaps domain enable</b>	Enables the EAPS domain operation.
<b>eaps domain failtime</b>	Defines the interval time that the secondary port of DmSwitch master in a EAPS ring waits without receiving the two hello packets before changing the status of EAPS ring to fail.
<b>eaps domain hellotime</b>	Defines the interval between the sending of two hello packets.
<b>eaps domain mode</b>	Configures the mode of DmSwitch in EAPS domain.
<b>eaps domain name</b>	Renames the domain.
<b>eaps domain port</b>	Defines both primary and secondary ports of DmSwitch in EAPS ring.
<b>eaps domain protected-vlans</b>	Defines the VLAN groups that will be protected by EAPS ring.
<b>show eaps</b>	Shows EAPS settings.
<b>show running-config</b>	Shows the current operating configuration.

# eaps domain enable

**eaps domain enable**

## Description

Enables the EAPS domain operation.

## Syntax

Parameter	Description
<i>domain</i>	Specifies a domain name.

## Default

No default is defined.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.
5.0	This command was obsoleted, since every existent EAPS domain is always enabled.

## Usage Guidelines

Not available.

## Example

This example shows how to enable a EAPS domain.

```
DmSwitch(config)#eaps test enable
DmSwitch(config)#
```

You can verify that the EAPS domain was enabled by entering the **show eaps** privileged EXEC command.

## Related Commands

Command	Description
<b>eaps</b>	Enables the EAPS operation in the DmSwitch.
<b>eaps domain</b>	Creates a new EAPS domain.

Command	Description
<b>eaps domain control-vlan</b>	Configures the control VLAN for the EAPS domain.
<b>eaps domain disable</b>	Disables the EAPS domain operation.
<b>eaps domain failtime</b>	Defines the interval time that the secondary port of DmSwitch master in a EAPS ring waits without receiving the two hello packets before changing the status of EAPS ring to fail.
<b>eaps domain hellotime</b>	Defines the interval between the sending of two hello packets.
<b>eaps domain mode</b>	Configures the mode of DmSwitch in EAPS domain.
<b>eaps domain name</b>	Renames the domain.
<b>eaps domain port</b>	Defines both primary and secondary ports of DmSwitch in EAPS ring.
<b>eaps domain protected-vlans</b>	Defines the VLAN groups that will be protected by EAPS ring.
<b>show eaps</b>	Shows EAPS settings.
<b>show running-config</b>	Shows the current operating configuration.

## qos cos-map

```
qos cos-map { queue-id priority 1st_queue_prio } [ 2nd_queue_prio ... 8th_queue_prio ]
```

```
no qos cos-map
```

### Description

Configure the map of CoS priorities to queues.

### Syntax

Parameter	Description
<i>queue-id</i>	Selects a meter to edit by ID
<b>priority</b>	Select CoS priorities mapped to this queue.
<i>1st_queue_prio</i>	1st CoS Priority of 8 possible.
<i>2nd_queue_prio</i>	(Optional) 2nd CoS Priority of 8 possible.
...	...
<i>8th_queue_prio</i>	(Optional) 8th CoS Priority of 8 possible.

### Default

Queue	802.1P Priority
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7

### Command Modes

Global configuration.

### Command History

Release	Modification
3.1	This command was introduced.
4.0	This command was renamed to <b>queue cos-map</b> .

## Usage Guidelines

Not available.

## Example

This example shows how to map CoS priorities 0, 3 and 6 to queue 5.

```
DmSwitch(config)#qos cos-map 5 priority 0 3 6
DmSwitch(config)#
```

You can verify that the configuration was set by entering the **show qos cos-map** privileged EXEC command.

## Related Commands

Command	Description
<b>show qos cos-map</b>	Shows priority mappings
<b>qos max-bw</b>	Configures the maximum bandwidth allocation per queue
<b>qos sched-mode sp</b>	Configures Ethernet interface queues in Strict Priority schedule mode.
<b>qos sched-mode wfq</b>	Configures Ethernet interface queues in Weighted Fair Queueing schedule mode
<b>qos sched-mode wrr</b>	Configures Ethernet interface queues in Weighted Round Robin schedule mode
<b>show running-config</b>	Shows the current operating configuration.

## qos max-bw

```
qos max-bw { unlim-all | { { unlimited | bandwidth } { unlimited | bandwidth } {  
unlimited | bandwidth } { unlimited | bandwidth } { unlimited | bandwidth } { unlimited |  
bandwidth } { unlimited | bandwidth } { unlimited | bandwidth } } } { ethernet { all | [  
unit-number/ ] port-number | range { [ first-unit-number/ ] first-port-number [ last-unit-number/ ]  
last-port-number } } }
```

**no qos max-bw**

## Description

Configure the maximum bandwidth allocation per queue.

## Syntax

Parameter	Description
<b>unlim-all</b>	Selects unlimited bandwidth for all queues
<b>unlimited</b>	Selects unlimited bandwidth for queue 1
<i>bandwidth</i>	Max bw for queue 1 in kbit/s (64 kbit/s granularity)
...	...
<b>unlimited</b>	Selects unlimited bandwidth for queue 8
<i>bandwidth</i>	Max bw for queue 8 in kbit/s (64 kbit/s granularity)
<b>all</b>	Adds all ports
[ <i>unit-number/</i> ] <i>port-number</i>	Adds a specific unit and port
<b>range</b> [ <i>first-unit-number/</i> ] <i>first-port-number</i> [ <i>last-unit-number/</i> ] <i>last-port-number</i>	Adds a range of specific units and ports

## Default

The default is unlimited bandwidth for all queues of all Ethernet interfaces.

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.
4.0	This command was renamed to <b>queue max-bw</b> .

## Usage Guidelines

Not available.

## Example

This example shows how to configure maximum queue bandwidths to Ethernet interface 5.

```
DmSwitch(config)#qos max-bw 10048 unlimited 30016 unlimited 50048 60032 70016 8000 ethernet 5
DmSwitch(config)#
```

You can verify that the configuration was set by entering the **show qos max-bw** privileged EXEC command.

## Related Commands

Command	Description
<b>show qos config</b>	Shows queue configuration per port
<b>qos sched-mode sp</b>	Configures Ethernet interface queues in Strict Priority schedule mode.
<b>qos sched-mode wfq</b>	Configures Ethernet interface queues in Weighted Fair Queueing schedule mode
<b>qos sched-mode wrr</b>	Configures Ethernet interface queues in Weighted Round Robin schedule mode
<b>qos cos-map</b>	Maps CoS priorities to queues
<b>show running-config</b>	Shows the current operating configuration.

## qos sched-mode sp

```
qos sched-mode sp { unit unit-number ethernet { all | [ 1to8 9to16 17to24 25 26 27 28 ] } }
```

```
no qos sched-mode
```

### Description

Configure Ethernet interface queues in the Strict Priority schedule mode.

### Syntax

Parameter	Description
<b>unit</b> <i>unit-number</i>	Stack unit
<b>all</b>	Adds all Ethernet interfaces
<b>1to8</b>	Adds ports 1 to 8
<b>9to16</b>	Adds ports 9 to 16
<b>17to24</b>	Adds ports 17 to 24
<b>25</b>	Adds port 25
<b>26</b>	Adds port 26
<b>27</b>	Adds port 27
<b>28</b>	Adds port 28

### Default

The default queue schedule mode is wrr for all Ethernet interfaces.

Queue	Weight
0	1
1	2
2	4
3	6
4	8
5	10
6	12
7	14

### Command Modes

Global configuration.



## Command History

Release	Modification
3.1	This command was introduced.
4.0	This command was renamed to <b>queue sched-mode sp</b> .

## Usage Guidelines

Not available.

## Example

This example shows how to configure sp schedule mode to Ethernet interfaces 9 to 16.

```
DmSwitch(config)#qos sched-mode sp unit 1 ethernet 9to16
DmSwitch(config)#
```

You can verify that the configuration was set by entering the **show qos config** privileged EXEC command.

## Related Commands

Command	Description
<b>show qos config</b>	Shows queue configuration per port
<b>qos sched-mode wfq</b>	Configures Ethernet interface queues in Weighted Fair Queueing schedule mode
<b>qos sched-mode wrr</b>	Configures Ethernet interface queues in Weighted Round Robin schedule mode
<b>qos cos-map</b>	Maps CoS priorities to queues
<b>qos max-bw</b>	Configures the maximum bandwidth allocation per queue
<b>show running-config</b>	Shows the current operating configuration.

## qos sched-mode wfq

```
qos sched-mode wfq { unit unit-number ethernet { all | [ 1to8 9to16 17to24 25 26  
27 28 ] } [ min-bw { bandwidth | sp } { bandwidth | sp } { bandwidth | sp } { bandwidth | sp } {  
bandwidth | sp } { bandwidth | sp } { bandwidth | sp } { bandwidth | sp } ] }
```

**no qos sched-mode**

### Description

Configure Ethernet interface queues in the Weighted Fair Queueing schedule mode.

### Syntax

Parameter	Description
<i>unit-number</i>	Stack unit
<b>all</b>	Adds all Ethernet interfaces
<b>1to8</b>	Adds ports 1 to 8
<b>9to16</b>	Adds ports 9 to 16
<b>17to24</b>	Adds ports 17 to 24
<b>25</b>	Adds port 25
<b>26</b>	Adds port 26
<b>27</b>	Adds port 27
<b>28</b>	Adds port 28
<i>bandwidth</i>	Minimum bandwidth for queue in kbit/s (64 kbit/s granularity)
<b>sp</b>	Configures queue in strict priority

### Default

The default queue schedule mode is wrr for all Ethernet interfaces.

### Command Modes

Global configuration.

### Command History

Release	Modification
3.1	This command was introduced.
4.0	This command was renamed to <b>queue sched-mode wfq</b> .

## Usage Guidelines

Not available.

## Example

This example shows how to configure wfq schedule mode to Ethernet interfaces 25 with different minimum bandwidth.

```
DmSwitch(config)#qos sched-mode wfq unit 1 ethernet 25 min-bw 1024 2048 sp sp sp sp 7040 sp
DmSwitch(config)#
```

You can verify that the configuration was set by entering the **show qos config** privileged EXEC command.

## Related Commands

Command	Description
<b>show qos config</b>	Shows queue configuration per port
<b>qos sched-mode sp</b>	Configures Ethernet interface queues in Strict Priority schedule mode.
<b>qos sched-mode wrr</b>	Configures Ethernet interface queues in Weighted Round Robin schedule mode
<b>qos cos-map</b>	Maps CoS priorities to queues
<b>qos max-bw</b>	Configures the maximum bandwidth allocation per queue
<b>show running-config</b>	Shows the current operating configuration.

## qos sched-mode wrr

```
qos sched-mode wrr { unit unit-number ethernet { all | [ 1to8 9to16 17to24 25 26 27 28 ] } [ queue-weights { weight | sp } { weight | sp } { weight | sp } { weight | sp } { weight | sp } { weight | sp } { weight | sp } { weight | sp } ] }
```

no qos sched-mode

### Description

Configure Ethernet interface queues in the Weighted Round Robin schedule mode.

### Syntax

Parameter	Description
<i>unit-number</i>	Stack unit
<b>all</b>	Adds all Ethernet interfaces
<b>1to8</b>	Adds ports 1 to 8
<b>9to16</b>	Adds ports 9 to 16
<b>17to24</b>	Adds ports 17 to 24
<b>25</b>	Adds port 25
<b>26</b>	Adds port 26
<b>27</b>	Adds port 27
<b>28</b>	Adds port 28
<i>weight</i>	Weight for queue
<b>sp</b>	Queue in Strict Priority

### Default

The default queue schedule mode is wrr for all Ethernet interfaces.

Queue	Weight
0	1
1	2
2	4
3	6
4	8
5	10
6	12
7	14

## Command Modes

Global configuration.

## Command History

Release	Modification
3.1	This command was introduced.
4.0	This command was renamed to <b>queue sched-mode wrr</b> .

## Usage Guidelines

Not available.

## Example

This example shows how to configure wrr schedule mode to Ethernet interfaces 25 with different weights.

```
DmSwitch(config)#qos sched-mode wrr unit 1 ethernet 25 queue-weights 2 3 5 sp sp sp 8 15
DmSwitch(config)#
```

You can verify that the configuration was set by entering the **show qos config** privileged EXEC command.

## Related Commands

Command	Description
<b>show qos config</b>	Shows queue configuration per port
<b>qos sched-mode sp</b>	Configures Ethernet interface queues in Strict Priority schedule mode.
<b>qos sched-mode wfq</b>	Configures Ethernet interface queues in Weighted Fair Queueing schedule mode
<b>qos cos-map</b>	Maps CoS priorities to queues
<b>qos max-bw</b>	Configures the maximum bandwidth allocation per queue
<b>show running-config</b>	Shows the current operating configuration.

## queue max-bw

```
queue max-bw { unlim-all | { { unlimited | bandwidth1 } { unlimited | bandwidth2 }  
{ unlimited | bandwidth3 } { unlimited | bandwidth4 } { unlimited | bandwidth5 } {  
unlimited | bandwidth6 } { unlimited | bandwidth7 } { unlimited | bandwidth8 } } } {  
ethernet { all | [ unit-number/ ] port-number | range { [ first-unit-number/ ] first-port-number [  
last-unit-number/ ] last-port-number } } }
```

no queue max-bw

## Description

Configure the maximum bandwidth allocation per queue.

## Syntax

Parameter	Description
<b>unlim-all</b>	Selects unlimited bandwidth for all queues.
<b>unlimited</b>	Selects unlimited bandwidth for a queue.
<i>bandwidth1 ... bandwidth8</i>	Maximum bandwidth for each queue in kbit/s (64 kbit/s granularity).
<b>all</b>	Adds all ports.
<i>[ unit-number/ ] port-number</i>	Adds a specific unit and port.
<b>range</b> <i>[ first-unit-number/ ] first-port-number [ last-unit-number/ ] last-last-port-number</i>	Adds a range of specific units and ports.

## Default

The default is unlimited bandwidth for all queues of all Ethernet interfaces.

## Command Modes

Global configuration.

## Command History

Release	Modification
4.0	This command was introduced. Before this was called <b>qos max-bw</b> .
5.0	This command was moved to Interface Ethernet menu.

## Usage Guidelines

Not available.

## Example

This example shows how to configure maximum queue bandwidths to Ethernet interface 5.

```
DmSwitch(config)#queue max-bw 10048 unlimited 30016 unlimited 50048 60032 70016 8000 ethernet 5
DmSwitch(config)#
```

You can verify that the configuration was set by entering the **show queue max-bw** privileged EXEC command.

## Related Commands

Command	Description
<b>show queue config</b>	Shows queue configuration per port
<b>queue sched-mode sp</b>	Configures Ethernet interface queues in Strict Priority schedule mode.
<b>queue sched-mode wfq</b>	Configures Ethernet interface queues in Weighted Fair Queueing schedule mode
<b>queue sched-mode wrr</b>	Configures Ethernet interface queues in Weighted Round Robin schedule mode
<b>queue cos-map</b>	Maps CoS priorities to queues
<b>show running-config</b>	Shows the current operating configuration.

## queue sched-mode sp

```
queue sched-mode sp { unit unit-number ethernet { all | [ 1to8 | 9to16 | 17to24 | 25 |  
26 | 27 | 28 ] } }
```

no queue sched-mode

### Description

Configure Ethernet interface queues in the Strict Priority schedule mode.

### Syntax

Parameter	Description
<b>unit</b> <i>unit-number</i>	Stack unit.
<b>all</b>	Adds all Ethernet interfaces.
<b>1to8</b> , <b>9to16</b> , <b>17to24</b> , <b>25</b> , <b>26</b> , <b>27</b> , <b>28</b>	Adds ports 1 to 8, 9 to 16, 17 to 24, 25, 26, 27 and 28 respectively. The command accepts any combination among all these parameters ( <b>1to8</b> , <b>9to16</b> , <b>17to24</b> , <b>25</b> , <b>26</b> , <b>27</b> and <b>28</b> ).

### Default

The default queue schedule mode is wrr for all Ethernet interfaces.

Queue	Weight
0	1
1	2
2	4
3	6
4	8
5	10
6	12
7	14

### Command Modes

Global configuration.

### Command History

Release



## Release

4.0 This command was introduced. Before this was called **qos sched-mode sp**.

5.0 This command was moved to Interface Ethernet menu.

## Usage Guidelines

Not available.

## Example

This example shows how to configure sp schedule mode to Ethernet interfaces 9 to 16.

```
DmSwitch(config)#queue sched-mode sp unit 1 ethernet 9 to 16
DmSwitch(config)#
```

You can verify that the configuration was set by entering the **show queue config** privileged EXEC command.

## Related Commands

Command	Description
<b>show queue config</b>	Shows queue configuration per port
<b>queue sched-mode wfq</b>	Configures Ethernet interface queues in Weighted Fair Queueing schedule mode
<b>queue sched-mode wrr</b>	Configures Ethernet interface queues in Weighted Round Robin schedule mode
<b>queue cos-map</b>	Maps CoS priorities to queues
<b>queue max-bw</b>	Configures the maximum bandwidth allocation per queue
<b>show running-config</b>	Shows the current operating configuration.

## queue sched-mode wfq

```
queue sched-mode wfq { unit unit-number ethernet { all | [ 1to8 | 9to16 | 17to24 | 25  
| 26 | 27 | 28 ] } [ min-bw { bandwidth1 | sp } { bandwidth2 | sp } { bandwidth3 | sp } { bandwidth4  
| sp } { bandwidth5 | sp } { bandwidth6 | sp } { bandwidth7 | sp } { bandwidth8 | sp } ] }
```

no queue sched-mode

### Description

Configure Ethernet interface queues in the Weighted Fair Queueing schedule mode.

### Syntax

Parameter	Description
<i>unit-number</i>	Stack unit.
<b>all</b>	Adds all Ethernet interfaces.
<b>1to8, 9to16, 17to24, 25, 26, 27, 28</b>	Adds ports 1 to 8, 9 to 16, 17 to 24, 25, 26, 27 and 28 respectively. The command accepts any combination among all these parameters ( <b>1to8, 9to16, 17to24, 25, 26, 27</b> and <b>28</b> ).
<i>bandwidth1 ... bandwidth8</i>	Minimum bandwidth for each queue in kbit/s (64 kbit/s granularity).
<b>sp</b>	Configures queue in strict priority.

### Default

The default queue schedule mode is wrr for all Ethernet interfaces.

### Command Modes

Global configuration.

### Command History

Release	Modification
4.0	This command was introduced. Before this was called <b>qos sched-mode wfq</b> .
5.0	This command was moved to Interface Ethernet menu.

### Usage Guidelines

Not available.

## Example

This example shows how to configure wfq schedule mode to Ethernet interfaces 25 with different minimum bandwidth.

```
DmSwitch(config)#queue sched-mode wfq unit 1 ethernet 25 min-bw 1024 2048 sp sp sp sp 7040 sp
DmSwitch(config)#
```

You can verify that the configuration was set by entering the **show queue config** privileged EXEC command.

## Related Commands

Command	Description
<b>show queue config</b>	Shows queue configuration per port
<b>queue sched-mode sp</b>	Configures Ethernet interface queues in Strict Priority schedule mode.
<b>queue sched-mode wrr</b>	Configures Ethernet interface queues in Weighted Round Robin schedule mode
<b>queue cos-map</b>	Maps CoS priorities to queues
<b>queue max-bw</b>	Configures the maximum bandwidth allocation per queue
<b>show running-config</b>	Shows the current operating configuration.

## queue sched-mode wrr

```
queue sched-mode wrr { unit unit-number ethernet { all | [ 1to8 | 9to16 | 17to24 | 25  
| 26 | 27 | 28 ] } [ queue-weights { weight1 | sp } { weight2 | sp } { weight3 | sp } { weight4 | sp  
} { weight5 | sp } { weight6 | sp } { weight7 | sp } { weight8 | sp } ] }
```

no queue sched-mode

## Description

Configure Ethernet interface queues in the Weighted Round Robin schedule mode.

## Syntax

Parameter	Description
<i>unit-number</i>	Stack unit
<b>all</b>	Adds all Ethernet interfaces.
<b>1to8, 9to16, 17to24, 25, 26, 27, 28</b>	Adds ports 1 to 8, 9 to 16, 17 to 24, 25, 26, 27 and 28 respectively. The <b>all</b> parameter accepts any combination among all these parameters ( <b>1to8, 9to16, 17to24, 25, 26, 27</b> and <b>28</b> ).
<i>weight1 ... weight8</i>	Weight for each queue.
<b>sp</b>	Configures queue in strict priority.

## Default

The default queue schedule mode is wrr for all Ethernet interfaces.

Queue	Weight
0	1
1	2
2	4
3	6
4	8
5	10
6	12
7	14

## Command Modes

Global configuration.

## Command History

### Release Modification

---

- |     |   |
|-----|---|
| 4.0 | This command was introduced. Before this was called <b>qos sched-mode wrr</b> . |
| 5.0 | This command was moved to Interface Ethernet menu.                              |

## Usage Guidelines

Not available.

## Example

This example shows how to configure wrr schedule mode to Ethernet interfaces 25 with different weights.

```
DmSwitch(config)#queue sched-mode wrr unit 1 ethernet 25 queue-weights 2 3 5 sp sp sp 8 15
DmSwitch(config)#
```

You can verify that the configuration was set by entering the **show queue config** privileged EXEC command.

## Related Commands

Command	Description
<b>show queue config</b>	Shows queue configuration per port
<b>queue sched-mode sp</b>	Configures Ethernet interface queues in Strict Priority schedule mode.
<b>queue sched-mode wfq</b>	Configures Ethernet interface queues in Weighted Fair Queueing schedule mode
<b>queue cos-map</b>	Maps CoS priorities to queues
<b>queue max-bw</b>	Configures the maximum bandwidth allocation per queue
<b>show running-config</b>	Shows the current operating configuration.

## radius-server port

**radius-server port** { *port-number* }

**no radius-server port**

### Description

Configures the default RADIUS server port.

Inserting **no** as a prefix for this command, it will return to the default port number.

### Syntax

Parameter	Description
<i>port-number</i>	Specifies the port number. (Range: 1-65535)

### Default

Port number: 1812.

### Command Modes

Global Configuration.

### Command History

Release	Modification
3.1	This command was introduced.
4.1	This command was renamed to <b>radius-server auth-port</b> .

### Usage Guidelines

The authentication login by a RADIUS server uses this default server port if no port is configured to a specific RADIUS host.

### Example

This example shows how to change the default RADIUS port number.

```
DmSwitch(config)#radius-server port 6500
DmSwitch(config)#
```

The configuration can be verified by entering the **show radius-server** privileged EXEC command.

## Related Commands

Command	Description
<code>authentication login</code>	Defines the login authentication method and its precedence.
<code>radius-server host</code>	Configures a specific RADIUS server.
<code>radius-server key</code>	Configures the default RADIUS server key string.
<code>radius-server retries</code>	Configures the RADIUS server retries.
<code>radius-server timeout</code>	Configures the RADIUS server timeout.
<code>show running-config</code>	Shows the current operating configuration.
<code>show radius-server</code>	Shows RADIUS server information.

## spanning-tree *instance* vlan

**spanning-tree** *instance* **vlan** { *index* | **all** | **range** *first-index last-index* }

**no spanning-tree** *instance* **vlan** { *index* | **all** | **range** *first-index last-index* }

### Description

Adds VLANs to a spanning-tree instance.

Inserting **no** as a prefix for this command, it will remove the specified VLANs from spanning-tree instance.

### Syntax

Parameter	Description
<i>instance</i>	Specifies the spanning-tree instance. (Range: 0-15)
<i>index</i>	Specifies a VLAN ID. (Range: 1-4094)
<b>all</b>	Specifies all VLANs.
<b>range</b> <i>first-index last-index</i>	Specifies a range of VLAN IDs.

### Default

No default is defined.

### Command Modes

Global configuration.

### Command History

Release	Modification
3.1	This command was introduced.
4.0	The instance range was changed from 1-15 to 0-15.
5.0	The command was replaced by <b>spanning-tree instance vlan-group</b> command.

### Usage Guidelines

Not available.

### Example

This example shows how to add a range of VLANs to a spanning-tree instance.



```
DmSwitch(config)#spanning-tree 1 vlan range 1 10
DmSwitch(config)#
```

You can verify that the VLANs was added by entering the **show spanning-tree instance** privileged EXEC command.

## Related Commands

Command	Description
<b>spanning-tree</b>	Configure Spanning-Tree parameters.
<b>spanning-tree</b>	Configure Spanning-Tree parameters.
<b>spanning-tree</b> <i>instance</i>	Enables a Spanning-tree instance.
<b>spanning-tree</b> ( <b>Interface configuration</b> )	Adds an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree bpduguard</b>	Enables the Bridge Protocol Data Unit (BPDU) guard.
<b>spanning-tree edge-port</b> ( <b>Interface configuration</b> )	Defines the Ethernet interface as the spanning-tree edge port.
<b>spanning-tree instance</b>	Configures an Ethernet interface in a Spanning-Tree instance.
<b>spanning-tree instance forward-delay</b>	Configures the Spanning-Tree Algorithm forward delay time.
<b>spanning-tree instance hello-time</b>	Configures the Spanning-Tree Algorithm hello time.
<b>spanning-tree instance max-age</b>	Configures the Spanning-Tree Algorithm maximum age.
<b>spanning-tree instance priority</b>	Specifies the spanning-tree priority in the DmSwitch.
<b>spanning-tree link-type</b>	Specifies the type of link used with spanning-tree.
<b>spanning-tree mode</b>	Configures the spanning-tree mode.
<b>spanning-tree mst</b>	Defines parameters of Multiple Spanning-Tree configuration.
<b>show running-config</b>	Shows the current operating configuration.
<b>show spanning-tree</b>	Shows spanning-tree configuration and status.
<b>vlan group</b>	Create a VLAN group and manage its members.