

# show access-expression

To display the defined input and output access list expressions, use the **show access-expression** command in privileged EXEC mode.

**show access-expression** [**begin** | **include** | **exclude**]

Syntax Description		
<b>begin</b>	(Optional)	Begin with the access list expression that matches.
<b>include</b>	(Optional)	Include access list expressions that match.
<b>exclude</b>	(Optional)	Exclude access list expressions that match.

**Defaults** Displays all input and output access list expressions.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	11.3	This command was introduced.

**Examples** The following is sample output from the **show access-expression** command:

```
Router# show access-expression
Router# Interface TokenRing0/0:
      Input: (dmac(701) | ~lsap(202))
```

See the **access-expression** command for a description of the access expressions.

Related Commands	Command	Description
	<b>access-expression</b>	Defines an access expression.

# show bridge circuit-group

To display the interfaces configured in each circuit group and show whether they are currently participating in load distribution, use the **show bridge circuit-group** command in user EXEC or privileged EXEC mode.

```
show bridge [bridge-group] circuit-group [circuit-group] [src-mac-address] [dst-mac-address]
```

## Syntax Description

<i>bridge-group</i>	(Optional) Number that specifies a particular bridge group.
<i>circuit-group</i>	(Optional) Number that specifies a particular circuit group.
<i>src-mac-address</i>	(Optional) 48-bit canonical (Ethernet ordered) source MAC address.
<i>dst-mac-address</i>	(Optional) 48-bit canonical (Ethernet ordered) destination MAC address.

## Command Modes

User EXEC  
Privileged EXEC

## Command History

Release	Modification
10.3	This command was introduced.

## Examples

The following is sample output from various **show bridge circuit-group** command strings:

```
Router# show bridge circuit-group

Bridge group 1 Circuit group 1:
  Interface Serial0 : inserted, learning, forwarding
  Interface Serial3 : inserted, learning, forwarding
Bridge group 1 Circuit group 2:
  Interface Serial2 : inserted, learning, forwarding

Router# show bridge 1 circuit-group 1

Bridge group 1 Circuit group 1:
  Interface Serial0 : inserted, learning, forwarding
  Interface Serial3 : inserted, learning, forwarding

Router# show bridge 1 circuit-group 2

Bridge group 1 Circuit group 2:
  Interface Serial2 : inserted, learning, forwarding

Router# show bridge 1 circuit-group 1 0000.6502.23EA 0000.1234.4567

Output circuit group interface is Serial3

Router# show bridge 1 circuit-group 1 0000.6502.23EA

%Destination MAC address required
```

```
Router# show bridge 1 circuit-group 1
```

```
Bridge group 1 Circuit group 1:
  Transmission pause interval is 250ms
  Output interface selection is source-based
  Interface Serial0 : inserted, learning, forwarding
  Interface Serial3 : inserted, learning, forwarding
  Interface Serial2 is unavailable
```

```
Router# show bridge 1 circuit-group 1 0000.6502.23EA 0000.1234.4567
```

```
%Please enter source MAC address only
```

[Table 7](#) describes the significant fields shown in the display.

**Table 7** *show bridge circuit-group Field Descriptions*

Field	Description
inserted	Indicates whether this interface is included or not included in circuit-group operation. If the interface is administratively down, or if line protocol is not up, the interface is not included in the circuit-group operation.
learning	Indicates whether this interface is in Spanning Tree Protocol (IEEE or Digital) learning or not learning state.
forwarding	Indicates whether this port is in Spanning Tree Protocol (IEEE or Digital) forwarding or not forwarding state.

# show bridge group

To display the status of each bridge group, use the **show bridge group** command in privileged EXEC mode.

**show bridge group [verbose]**

Syntax Description	verbose	(Optional) Displays detailed information.
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Command Modes	Privileged EXEC
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Command History	Release	Modification
	10.3	This command was introduced.

**Examples** The following is sample output from the **show bridge group** command:

```
Router# show bridge group

Bridge Group 1 is running the DEC compatible Spanning Tree Protocol

    Port 7 (ATM0.1 LANE Ethernet) of bridge group 1 is down
    Port 4 (TokenRing0) of bridge group 1 is forwarding
```

“Forwarding” and “down” indicate the port state as determined by the spanning-tree algorithm or via configuration.

The following examples are for bridge group 30 and bridge group 40 of a PA-12E/2FE port adapter in slot 3:

```
Router# show bridge group

Bridge Group 30 is running the IEEE compatible Spanning Tree Protocol
    Port 19 (Fast Ethernet3/0) of bridge group 30 is forwarding
    Port 20 (Fast Ethernet3/1) of bridge group 30 is forwarding
    Port 21 (Ethernet3/2) of bridge group 30 is forwarding
    Port 22 (Ethernet3/3) of bridge group 30 is forwarding
    Port 23 (Ethernet3/4) of bridge group 30 is forwarding
    Port 24 (Ethernet3/5) of bridge group 30 is forwarding
    Port 25 (Ethernet3/6) of bridge group 30 is forwarding

Bridge Group 40 is running the IEEE compatible Spanning Tree Protocol

    Port 26 (Ethernet3/7) of bridge group 40 is down
    Port 27 (Ethernet3/8) of bridge group 40 is down
    Port 28 (Ethernet3/9) of bridge group 40 is down
    Port 29 (Ethernet3/10) of bridge group 40 is down
    Port 30 (Ethernet3/11) of bridge group 40 is down
    Port 31 (Ethernet3/12) of bridge group 40 is down
    Port 32 (Ethernet3/13) of bridge group 40 is down
```

# show bridge multicast

To display transparent bridging multicast state information, use the **show bridge multicast** command in user EXEC or privileged EXEC mode.

```
show bridge [bridge-group] multicast [router-ports | groups] [group-address]
```

Syntax Description		
<i>bridge-group</i>	(Optional)	Bridge group number specified in the <b>bridge protocol</b> command.
<b>router-ports</b>	(Optional)	Display information for multicast router ports.
<b>groups</b>	(Optional)	Display information for multicast groups.
<i>group-address</i>	(Optional)	Multicast IP address associated with a specific multicast group.

Command Modes	
	User EXEC Privileged EXEC

Command History	Release	Modification
	11.2	This command was introduced.

**Examples** The following is sample output from the **show bridge multicast** command:

```
Router# show bridge multicast

Multicast router ports for bridge group 1:

 2 multicast router ports
  Fddi2/0      R
  Ethernet0/4  R

Multicast groups for bridge group 1:

235.145.145.223      RX count  TX count
  Fddi2/0      R           0           2
  Ethernet0/4  R           0           3
  Ethernet0/3  G           1           0

235.5.5.5            RX count  TX count
  Fddi2/0      R           0           2
  Ethernet0/4  R           0           3
  Ethernet0/3  G           1           0

235.4.4.4            RX count  TX count
  Fddi2/0      R           0           2
  Ethernet0/4  R           0           3
  Ethernet0/3  G           1           0
```

Table 8 describes the significant fields shown in the display.

**Table 8** *show bridge multicast Field Descriptions*

<b>Field</b>	<b>Description</b>
Multicast router ports for...	List of the multicast router ports by bridge group. Within the bridge group cluster, the display lists the number of multicast router ports and then lists the ports by interface.
Multicast groups for...	List of the multicast groups by bridge group. Within each multicast group, identified by a unique address, the display lists each port by interface name and indicates whether that port is a group member ("G"), a multicast router port ("R"), or both. The receive (RX) and transmit (TX) counts show the number of multicast packets that have been constrained to the multicast group by the bridge.

# show bridge vlan

To display virtual LAN subinterfaces, use the **show bridge vlan** command in privileged EXEC mode.

## show bridge vlan

**Syntax Description** This command has no arguments or keywords.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	10.3	This command was introduced.

**Examples** The following is sample output from the **show bridge vlan** command:

```
Router# show bridge vlan

Bridge Group: 50

Virtual LAN Trunking Interface(s):  vLAN Protocol:      vLAN ID:  State
Fddi2/0.1000                        IEEE 802.10      1000      forwarding
Fast Ethernet4/0.500                 Inter Switch Link 500      listening

Virtual LAN Native Interface(s):    State
Ethernet0/1                          forwarding
Serial1/1                             down
```

[Table 9](#) describes the fields shown in the display.

**Table 9** *show bridge vlan Field Descriptions*

Field	Description
Bridge Group	Bridge group to which these interfaces belong.
Virtual LAN Trunking Interface(s)	VLAN interface.
vLAN Protocol)	IEEE 802.10 or Cisco Inter-Switch Link (ISL) encapsulation.
vLAN ID	VLAN identifier that maintains VLAN identities between switches.
State	Spanning-tree port state of the interface.
Virtual LAN Native Interface(s):	Interfaces whose transparently bridged traffic will be propagated only to other LAN segments within the same virtual LAN.

# show bridge

To display classes of entries in the bridge forwarding database, use the **show bridge** command in privileged EXEC mode.

```
show bridge [bridge-group] [interface] [address [mask]] [verbose]
```

## Syntax Description

<i>bridge-group</i>	(Optional) Number that specifies a particular spanning tree.
<i>interface</i>	(Optional) Specific interface, such as Ethernet 0.
<i>address</i>	(Optional) 48-bit canonical (Ethernet ordered) MAC address. This may be entered with an optional mask of bits to be ignored in the address, which is specified with the <i>mask</i> argument.
<i>mask</i>	(Optional) Bits to be ignored in the address. You must specify the <i>address</i> argument if you want to specify a mask.
<b>verbose</b>	(Optional) Displays additional detail, including any Frame Relay data-link connection identifier (DLCI) associated with a station address.

## Command Modes

Privileged EXEC

## Command History

Release	Modification
10.0	This command was introduced.
11.0	The <b>verbose</b> keyword was added.

## Usage Guidelines

This command first appeared in Cisco IOS Release 10.0. The **verbose** keyword first appeared in Cisco IOS Release 11.0.

The following are possible variations of the **show bridge** command:

```
show bridge ethernet 0
show bridge 0000.0c00.0000 0000.00FF.FFFF
show bridge 0000.0c00.0e1a
show bridge
show bridge verbose
```

In the sample output, the first command would display all entries for hosts reachable via Ethernet interface 0, the second command would display all entries with the vendor code of 0000.0c00.0000, and the third command would display the entry for address 0000.0c00.0e1a. In the fourth command, all entries in the forwarding database would be displayed. The fifth command provides additional detail. In all five lines, the bridge group number has been omitted.

## Examples

The following is sample output from the **show bridge** command. The second display is output from the **show bridge** command with the **verbose** argument.

```
Router# show bridge

Total of 300 station blocks, 280 free
```

Codes: P - permanent, S - self

Bridge Group 32:Bridge Group 32:

Address	Action	Interface	Age	RX count	TX count
0180.c200.0000	receive	-	S	0	0
ffff.ffff.ffff	receive	-	S	0	0
0900.2b01.0001	receive	-	S	0	0
0300.0c00.0001	receive	-	S	0	0
0000.0c05.1000	forward	Ethernet0/1	4	1	0
0000.0c04.4b5b	receive	-	S	0	0
0000.0c04.4b5e	receive	-	S	0	0
0000.0c04.4b5d	receive	-	S	0	0
0000.0c04.4b5c	receive	-	S	0	0
0000.0c05.4a62	forward	Ethernet0/1	4	1	0
aa00.0400.2108	forward	Ethernet0/1	0	42	0
0000.0c12.b888	forward	Ethernet0/2	4	1	0
0000.0c12.b886	forward	Ethernet0/1	4	1	0
aa00.0400.4d09	forward	Ethernet0/1	4	1	0
0000.0c06.fb9a	forward	Ethernet0/1	4	1	0
0000.0c04.b039	forward	Ethernet0/1	4	1	0

Router# **show bridge verbose**

Total of 300 station blocks, 287 free

Codes: P - permanent, S - self

BG Hash	Address	Action	Interface	DLCI	Age	RX count	TX count
32 00/0	0180.c200.0000	receive	-	-	S	0	0
32 00/1	ffff.ffff.ffff	receive	-	-	S	0	0
32 01/0	0900.2b01.0001	receive	-	-	S	0	0
32 01/1	0300.0c00.0001	receive	-	-	S	0	0
32 10/0	0000.0c04.4b5b	receive	-	-	S	0	0
32 15/0	0000.0c04.4b5e	receive	-	-	S	0	0
32 16/0	0000.0c04.4b5d	receive	-	-	S	0	0
32 17/0	0000.0c04.4b5c	receive	-	-	S	0	0
32 29/0	aa00.0400.2108	forward	Ethernet0/1	-	0	48	0
32 30/0	0000.0c12.b888	forward	Ethernet0/2	-	0	1	0
32 A4/0	0800.2002.ff5b	forward	Ethernet0/1	-	0	6	0
32 E2/0	aa00.0400.e90b	forward	Ethernet0/1	-	0	65	0
32 F2/0	0000.0c04.b042	forward	Ethernet0/2	-	3	2	0

Table 10 describes the significant fields shown in the display.

**Table 10** show bridge Field Descriptions

Field	Description
Total of 300 station blocks	Total number of forwarding database elements in the system. The memory to hold bridge entries is allocated in blocks of memory sufficient to hold 300 individual entries. When the number of free entries falls below 25, another block of memory sufficient to hold another 300 entries is allocated. Therefore, the size of the bridge forwarding database is limited to the amount of free memory in the router.
295 free	Number in the free list of forwarding database elements in the system. The total number of forwarding elements is expanded dynamically, as needed.
BG	Bridging group to which the address belongs.

**Table 10** *show bridge Field Descriptions (continued)*

<b>Field</b>	<b>Description</b>
Hash	Hash key/relative position in the keyed list.
Address	Canonical (Ethernet ordered) MAC address.
Action	Action to be taken when that address is looked up; choices are to discard or forward the datagram.
Interface	Interface, if any, on which that address was seen.
Age	Number of minutes since a frame was received from or sent to that address. The letter "P" indicates a permanent entry. The letter "S" indicates the system as recorded by the router. On the modular systems, this is typically the broadcast address and the router's own hardware address; on the IGS, this field will also include certain multicast addresses.
RX count	Number of frames received from that address.
TX count	Number of frames forwarded to that address.

# show controllers token (IBM)

To display information about memory management, error counters, and the board itself, use the **show controllers token** command in privileged EXEC mode.

## show controllers token

### Syntax Description

This command has no arguments or keywords.

### Command Modes

Privileged EXEC

### Command History

Release	Modification
10.0	This command was introduced.

### Usage Guidelines

Depending on the board being used, the output from the **show controllers token** command can vary. The **show controllers token** command also displays proprietary information. Thus, the information that the **show controllers token** command displays is of primary use to Cisco Systems technical personnel. Information that is useful to users can be obtained with the **show interfaces tokenring** command, described later.

### Examples

The following is sample output from the **show controllers token** command of a CSC-IR or CSC-2R card:

```
Router# show controllers token

TR Unit 0 is board 0 - ring 0

state 3, dev blk: 0x1D2EBC, mailbox: 0x2100010, sca: 0x2010000
  current address: 0000.3080.6f40, burned in address: 0000.3080.6f40
  current TX ptr: 0xBA8, current RX ptr: 0x800

Last Ring Status: none

Stats: soft:0/0, hard:0/0, sig loss:0/0
      tx beacon: 0/0, wire fault 0/0, recovery: 0/0
      only station: 0/0, remote removal: 0/0
Bridge: local 3330, bnum 1, target 3583
      max_hops 7, target idb: 0x0, not local
Interface failures: 0 -- BkgnD Ints: 0
TX shorts 0, TX giants 0

Monitor state: (active)
  flags 0xC0, state 0x0, test 0x0, code 0x0, reason 0x0
f/w ver: 1.0, chip f/w: '000000.ME31100', [bridge capable]
SMT form of this command s: 1.01 kernel, 4.02 fastmac
ring mode: F00, internal enables: SRB REM RPS CRS/NetMgr
internal functional: 0000011A (0000011A), group: 00000000 (00000000)
if_state: 1, ints: 0/0, ghosts: 0/0, bad_states: 0/0
t2m fifo purges: 0/0
t2m fifo current: 0, t2m fifo max: 0/0, proto_errs: 0/0
```

```

ring: 3330, bridge num: 1, target: 3583, max hops: 7

Packet counts:
  receive total: 298/6197, small: 298/6197, large 0/0
    runts: 0/0, giants: 0/0
    local: 298/6197, bridged: 0/0, promis: 0/0
    bad rif: 0/0, multiframe: 0/0
  ring num mismatch 0/0, spanning violations 0
  transmit total: 1/25, small: 1/25, large 0/0
    runts: 0/0, giants: 0/0, errors 0/0
bad fs: 0/0, bad ac: 0
congested: 0/0, not present: 0/0
  Unexpected interrupts: 0/0, last unexp. int: 0

Internal controller counts:
line errors: 0/0, internal errors: 0/0
burst errors: 0/0, ari/fci errors: 0/0
abort errors: 0/0, lost frame: 0/0
copy errors: 0/0, rcvr congestion: 0/0
token errors: 0/0, frequency errors: 0/0
dma bus errors: -/-, dma parity errors: -/-
  Internal controller smt state:
Adapter MAC: 0000.3080.6f40, Physical drop: 00000000
NAUN Address: 0000.a6e0.11a6, NAUN drop: 00000000
Last source: 0000.a6e0.11a6, Last poll: 0000.3080.6f40
Last MVID: 0006, Last attn code: 0006
Txmit priority: 0006, Auth Class: 7FFF
Monitor Error: 0000, Interface Errors: FFFF
Correlator: 0000, Soft Error Timer: 00C8
Local Ring: 0000, Ring Status: 0000
Beacon rcv type: 0000, Beacon txmit type: 0000
Beacon type: 0000, Beacon NAUN: 0000.a6e0.11a6

```

Table 11, Part 1 describes the fields shown in the first line of sample output.

**Table 11, Part 1** show controllers token Field Descriptions

Field	Description
TR Unit 0	Unit number assigned to the Token Ring interface associated with this output.
is board 0	Board number assigned to the Token Ring controller board associated with this interface.
ring 0	Number of the Token Ring associated with this board.

In the following line, state 3 indicates the state of the board. The rest of this output line displays memory mapping that is of primary use to Cisco engineers.

```
state 3, dev blk: 0x1D2EBC, mailbox: 0x2100010, sca: 0x2010000
```

The following line also appears in **show interface token** output as the address and burned-in address (bia), respectively:

```
current address: 0000.3080.6f40, burned in address: 0000.3080.6f40
```

The following line displays buffer management pointers that change by board:

```
current TX ptr: 0xBA8, current RX ptr: 0x800
```

The following line indicates the ring status from the controller chipset. This information is used by LAN Network Manager:

```
Last Ring Status: none
```

The following line displays Token Ring statistics. See the Token Ring specification for more information:

```
Stats: soft:0/0, hard:0/0, sig loss:0/0
       tx beacon: 0/0, wire fault 0/0, recovery: 0/0
       only station: 0/0, remote removal: 0/0
```

The following line indicates that Token Ring communication has been enabled on the interface. If this line of output appears, the message “Source Route Bridge capable” should appear in the **show interfaces tokenring** display.

```
Bridge: local 3330, bnum 1, target 3583
```

[Table 11, Part 2](#) describes the fields shown in the following line of sample output:

```
max_hops 7, target idb: 0x0, not local
```

**Table 11, Part 2** *show controllers token Field Descriptions*

Field	Description
max_hops 7	Maximum number of bridges.
target idb: 0x0	Destination interface definition.
not local	Interface has been defined as a remote bridge.

The following line is specific to the hardware:

```
Interface failures: 0 -- Bkgnd Ints: 0
```

In the following line, transmit (TX) shorts are the number of packets the interface sends that are discarded because they are smaller than the medium’s minimum packet size. TX giants are the number of packets the interface sends that are discarded because they exceed the medium’s maximum packet size.

```
TX shorts 0, TX giants 0
```

The following line indicates the state of the controller. Possible values are active, failure, inactive, and reset.

```
Monitor state: (active)
```

The following line displays detailed information relating to the monitor state shown in the previous line of output. This information relates to the firmware on the controller. This information is relevant to Cisco engineers only if the monitor state is something other than active.

```
flags 0xC0, state 0x0, test 0x0, code 0x0, reason 0x0
```

[Table 11, Part 3](#) describes the fields in the following line of output:

```
f/w ver: 1.0 expr 0, chip f/w: '000000.ME31100', [bridge capable]
```

**Table 11, Part 3** *show controllers token Field Descriptions*

Field	Description
f/w ver: 1.0	Version of Cisco firmware on the board.
chip f/w: '000000.ME31100'	Firmware on the chipset.
[bridge capable]	Interface has not been configured for bridging, but it has that capability.

The following line displays the version numbers for the kernel and the accelerator microcode of the Madge firmware on the board; this firmware is the Logical Link Control (LLC) interface to the chipset:

```
SMT form of this command s: 1.01 kernel, 4.02 fastmac
```

The following line displays LAN Network Manager information that relates to ring status:

```
ring mode: F00, internal enables: SRB REM RPS CRS/NetMgr
```

The following line corresponds to the functional address and the group address shown in **show interfaces tokenring** output:

```
internal functional: 0000011A (0000011A), group: 00000000 (00000000)
```

The following line displays interface board state information that is proprietary:

```
if_state: 1, ints: 0/0, ghosts: 0/0, bad_states: 0/0
```

The following lines display information that is proprietary. Our engineers use this information for debugging purposes:

```
t2m fifo purges: 0/0
t2m fifo current: 0, t2m fifo max: 0/0, proto_errs: 0/0
```

Each of the fields in the following line maps to a field in the **show source bridge** display, as follows: ring maps to srn; bridge num maps to bn; target maps to trn; and max hops maps to max:

```
ring: 3330, bridge num: 1, target: 3583, max hops: 7
```

In the following lines of output, the number preceding the slash (/) indicates the count since the value was last displayed; the number following the slash (/) indicates the count since the system was last booted:

```
Packet counts:
    receive total: 298/6197, small: 298/6197, large 0/0
```

In the following line, the number preceding the slash (/) indicates the count since the value was last displayed; the number following the slash (/) indicates the count since the system was last booted. The runts and giants values that appear here correspond to the runts and giants values that appear in **show interfaces tokenring** output:

```
runts: 0/0, giants: 0/0
```

The following lines are receiver-specific information that Cisco engineers can use for debugging purposes:

```
local: 298/6197, bridged: 0/0, promis: 0/0
bad rif: 0/0, multiframe: 0/0
ring num mismatch 0/0, spanning violations 0
transmit total: 1/25, small: 1/25, large 0/0
runts: 0/0, giants: 0/0, errors 0/0
```

The following lines include very specific statistics that are not relevant in most cases, but exist for historical purposes. In particular, the internal errors, burst errors, ari/fci, abort errors, copy errors, frequency errors, dma bus errors, and dma parity errors fields are not relevant.

```
Internal controller counts:
line errors: 0/0, internal errors: 0/0
burst errors: 0/0, ari/fci errors: 0/0
abort errors: 0/0, lost frame: 0/0
copy errors: 0/0, rcvr congestion: 0/0
token errors: 0/0, frequency errors: 0/0
dma bus errors: -/-, dma parity errors: -/-
```

The following lines are low-level Token Ring interface statistics relating to the state and status of the Token Ring with respect to all other Token Rings on the line:

```
Internal controller smt state:
Adapter MAC:      0000.3080.6f40, Physical drop:      00000000
NAUN Address:    0000.a6e0.11a6, NAUN drop:          00000000
Last source:     0000.a6e0.11a6, Last poll:          0000.3080.6f40
Last MVID:       0006, Last attn code:              0006
Txmit priority:  0006, Auth Class:                    7FFF
Monitor Error:   0000, Interface Errors:            FFFF
Correlator:      0000, Soft Error Timer:             00C8
Local Ring:      0000, Ring Status:                 0000
Beacon rcv type: 0000, Beacon txmit type:           0000
```

# show drip

To display the status of the duplicate ring protocol (DRiP) database for a router or an Route Switch Module (RSM), use the **show drip** command in privileged EXEC mode.

## show drip

**Syntax Descriptions** This command has no arguments or keywords.

**Defaults** No default behavior or values.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	11.3(4)T	This command was introduced.

**Examples** The following is sample output from the **show drip** command:

```
Router# show drip

DRIP Database for Mgmt Domain Fast Ethernet4/0
-----
Mac Address 0010-A6AE-B440
Vlan      100      Status    30 : l-active, l-config,

Mac Address 0010-2F72-C800
Vlan      20       Status    0C : r-active, r-config,
Vlan     1003      Status    0C : r-active, r-config,

Statistics:
Advertisements received           126
Advertisements processed           1
Advertisements transmitted        131
Last revision transmitted          0x84
Last changed revision transmitted  0x2
```

Related Commands	Command	Description
	<b>clear drip counters</b>	Clears DRiP counters.
	<b>interface vlan</b>	Configures a Token Ring or Ethernet interface on the RSM.
	<b>show vlans</b>	Displays virtual LAN subinterfaces.

# show interfaces crb

To display the configuration for each interface that has been configured for routing or bridging, use the **show interfaces crb** command in privileged EXEC mode.

**show interfaces crb**

**Syntax Description** This command has no arguments or keywords.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	11.0	This command was introduced.

**Examples** The following is sample output from the **show interfaces crb** command:

```
Router# show interfaces crb

Ethernet0/0

Routed protocols on Ethernet0/0:
appletalk decnet ip novell

Ethernet0/1

Routed protocols on Ethernet0/1:
appletalk decnet ip novell

Ethernet0/2

Routed protocols on Ethernet0/2:
appletalk ip

Bridged protocols on Ethernet0/2:
clns decnet vines apollo
novell xns

Software MAC address filter on Ethernet0/2
Hash Len  Address          Matches  Act   Type
0x00: 0    ffff.ffff.ffff  0       RCV  Physical broadcast
0x00: 1    ffff.ffff.ffff  0       RCV  Appletalk zone
0x2A: 0    0900.2b01.0001  0       RCV  DEC spanning tree
0x49: 0    0000.0c36.7a45  0       RCV  Interface MAC address
0xc0: 0    0100.0ccc.cccc  20      RCV  CDP
0xc2: 0    0180.c200.0000  0       RCV  IEEE spanning tree
0xF8: 0    0900.07ff.ffff  0       RCV  Appletalk broadcast

Ethernet0/3

Routed protocols on Ethernet0/3:
appletalk ip
```

```
Bridged protocols on Ethernet0/3:
clns  decnet  vines  apollo
novell  xns
```

```
Software MAC address filter on Ethernet0/3
Hash Len   Address           Matches   Act   Type
0x00: 0    ffff.ffff.ffff   0         RCV   Physical broadcast
0x00: 1    ffff.ffff.ffff   0         RCV   Appletalk zone
0x2A: 0    0900.2b01.0001   0         RCV   DEC spanning tree
0x49: 0    0000.0c36.7a45   0         RCV   Interface MAC address
0xc0: 0    0100.0ccc.cccc   48        RCV   CDP
0xc2: 0    0180.c200.0000   0         RCV   IEEE spanning tree
0xF8: 0    0900.07ff.ffff   0         RCV   Appletalk broadcast
```

Table 12 describes the significant fields shown in the display.

**Table 12** show interfaces crb Field Descriptions

Field	Description
Routed protocols on...	List of the routed protocols configured for the specified interface.
Bridged protocols on...	List of the bridged protocols configured for the specified interface.
Software MAC address filter on...	Table of software MAC address filter information for the specified interface.
Hash	Hash key/relative position in the keyed list for this MAC-address entry.
Len	Length of this entry to the beginning element of this hash chain.
Address	Canonical (Ethernet ordered) MAC address.
Matches	Number of received packets matched to this MAC address.
Act	Action to be taken when that address is looked up; choices are to receive or discard the packet.
Type	MAC address type.

# show interfaces irb

To display the configuration for each interface that has been configured for integrated routing or bridging, use the **show interfaces irb** command in privileged EXEC mode.

**show interfaces {ethernet | fastethernet} [interface | slot/port] irb**

Syntax Description		
	<b>ethernet</b>	Specify Ethernet interface.
	<b>fastethernet</b>	Specify Fast Ethernet interface.
	<i>interface</i>	(Optional) Specific interface, such as Ethernet 0.
	<i>slot/port</i>	(Optional) Specific slot and port, such as Fast Ethernet 3/0.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	11.2	This command was introduced.

## Examples

The following is sample output from the **show interfaces irb** command:

```
Router# show interfaces ethernet 2 irb

Ethernet 2

Routed protocols on Ethernet 2:
appletalk ip

Bridged protocols on Ethernet 2:
appletalk  clns  decnet  vines
apollo    ipx    xns

Software MAC address filter on Ethernet 2
Hash Len  Address           Matches  Act   Type
0x00: 0    ffff.ffff.ffff  4886    RCV   Physical broadcast
0x1F: 0    0060.3e2b.a221  7521    RCV   Appletalk zone
0x1F: 1    0060.3e2b.a221  0       RCV   Bridge-group Virtual Interface
0x2A: 0    0900.2b01.0001  0       RCV   DEC spanning tree
0x05: 0    0900.0700.00a2  0       RCV   Appletalk zone
0xC2: 0    0180.c200.0000  0       RCV   IEEE spanning tree
0xF8: 0    0900.07ff.ffff  2110    RCV   Appletalk broadcast
```

The following example shows that IP is configured for the first PA-12E/2FE interface of the port adapter in slot 3:

```
Router# show interfaces fastethernet 3/0 irb

Fast Ethernet3/0

Routed protocols on Fast Ethernet3/0:
ip
```

```

Bridged protocols on Fast Ethernet3/0:
  appletalk  clns      decnet   ip
  vines      apollo    ipx     xns

Software MAC address filter on Ethernet3/0
Hash Len   Address           Matches  Act      Type
0x00:  0  ffff.ffff.ffff      0  RCV  Physical broadcast
0x2A:  0  0900.2b01.0001     0  RCV  DEC spanning tree
0xC2:  0  0180.c200.0000     0  RCV  IEEE spanning tree
0xC7:  0  00e0.f7a4.5130     0  RCV  Interface MAC address
0xC7:  1  00e0.f7a4.5130     0  RCV  Bridge-group Virtual Interface
  
```

Table 13 describes the significant fields shown in the displays.

**Table 13** *show interfaces irb Field Descriptions*

Field	Description
Routed protocols on...	List of the routed protocols configured for the specified interface.
Bridged protocols on...	List of the bridged protocols configured for the specified interface.
Software MAC address filter on...	Table of software MAC address filter information for the specified interface.
Hash	Hash key/relative position in the keyed list for this MAC-address entry.
Len	Length of this entry to the beginning element of this hash chain.
Address	Canonical (Ethernet ordered) MAC address.
Matches	Number of received packets matched to this MAC address.
Act	Action to be taken when that address is looked up; choices are to receive or discard the packet.
Type	MAC address type.

# show interfaces tokenring (IBM)

To display information about the Token Ring interface and the state of source-route bridging (SRB), use the **show interfaces tokenring** command in privileged EXEC mode.

**show interfaces tokenring** [*number*]

<b>Syntax Description</b>	<i>number</i>	(Optional) Interface number. If you do not provide a value, the command will display statistics for all Token Ring interfaces.
---------------------------	---------------	--

<b>Command Modes</b>	Privileged EXEC
----------------------	-----------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	10.0	This command was introduced.

## Examples

The following is sample output from the **show interfaces tokenring** command:

```
Router# show interfaces tokenring

TokenRing 0 is up, line protocol is up
Hardware is 16/4 Token Ring, address is 5500.2000.dc27 (bia 0000.3000.072b)
  Internet address is 10.136.230.203, subnet mask is 255.255.255.0
  MTU 8136 bytes, BW 16000 Kb, DLY 630 usec, rely 255/255, load 1/255
  Encapsulation SNAP, loopback not set, keepalive set (10 sec)
  ARP type: SNAP, ARP Timeout 4:00:00
  Ring speed: 16 Mbps
  Single ring node, Source Route Bridge capable
  Group Address: 0x00000000, Functional Address: 0x60840000
  Last input 0:00:01, output 0:00:01, output hang never
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops
  Five minute input rate 0 bits/sec, 0 packets/sec
  Five minute output rate 0 bits/sec, 0 packets/sec
  16339 packets input, 1496515 bytes, 0 no buffer
    Received 9895 broadcasts, 0 runts, 0 giants
      0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    32648 packets output, 9738303 bytes, 0 underruns
  0 output errors, 0 collisions, 2 interface resets, 0 restarts
    5 transitions
```

[Table 14](#) describes the significant fields shown in the display.

**Table 14** *show interfaces tokenring* Field Descriptions

Field	Description
Token Ring is up	Interface is currently active and inserted into ring (up) or inactive and not inserted (down).
Token Ring is Reset	Hardware error has occurred. This is not in the sample output; it is informational only.

**Table 14** *show interfaces tokenring Field Descriptions (continued)*

<b>Field</b>	<b>Description</b>
Token Ring is Initializing	Hardware is up, in the process of inserting the ring. This is not in the sample output; it is informational only.
Token Ring is Administratively Down	Hardware has been taken down by an administrator. This is not in the sample output; it is informational only. “Disabled” indicates the Cisco IOS software has received over 5000 errors in a keepalive interval, which is 10 seconds by default.
line protocol is up	Indicates whether the software processes that handle the line protocol believe the interface is usable (that is, whether keepalives are successful).
Hardware	Specifies the hardware type. “Hardware is ciscoBus Token Ring” indicates that the board is a CSC-C2CTR board. “Hardware is 16/4 Token Ring” indicates that the board is a CSC-1R, CSC-2R, or a CSC-R16M board. Also shows the address of the interface.
Internet address	Lists the Internet address followed by the subnet mask.
MTU	Maximum transmission unit of the interface.
BW	Bandwidth of the interface in kilobits per second.
DLY	Delay of the interface in microseconds.
rely	Reliability of the interface as a fraction of 255 (255/255 is 100 percent reliability), calculated as an exponential average over 5 minutes.
load	Load on the interface as a fraction of 255 (255/255 is completely saturated), calculated as an exponential average over 5 minutes.
Encapsulation	Encapsulation method assigned to interface.
loopback	Indicates whether loopback is set.
keepalive	Indicates whether keepalives are set.
ARP type	Type of Address Resolution Protocol assigned.
Ring speed	Speed of Token Ring—4 or 16 Mbps.
Single ring node	Indicates whether a node is enabled to collect and use source RIF for routable Token Ring protocols.
Group Address	Interface’s group address, if any. The group address is a multicast address; any number of interfaces on the ring may share the same group address. Each interface may have at most one group address.
Functional Address	Bit-significant group address. Each “on” bit represents a function performed by the station.
Last input	Number of hours, minutes, and seconds since the last packet was received by an interface. Useful for knowing when a dead interface failed.

**Table 14** show interfaces tokenring Field Descriptions (continued)

Field	Description
output hang	Number of hours, minutes, and seconds (or never) since the interface was last reset because the data took too long to send. When the number of hours in any of the “last” fields exceeds 24 hours, the number of days and hours is printed. If that field overflows, asterisks are printed.
Output queue, drops input queue, drops	Number of packets in output and input queues. Each number is followed by a slash, the maximum size of the queue, and the number of packets dropped due to a full queue.
Five minute input rate, Five minute output rate	Average number of bits and packets sent per second in the last 5 minutes.
packets input	Total number of error-free packets received by the system.
broadcasts	Total number of broadcast or multicast packets received by the interface.
runts	Number of packets that are discarded because they are smaller than the medium’s minimum packet size.
giants	Number of packets that are discarded because they exceed the medium’s maximum packet size.
CRC	Cyclic redundancy check (CRC) generated by the originating LAN station or far-end device does not match the checksum calculated from the data received. On a LAN, this usually indicates noise or problems sending data on the LAN interface or the LAN bus itself. A high number of CRCs is usually the result of a station sending bad data.
frame	Number of packets received incorrectly having a CRC error and a noninteger number of octets.
overrun	Number of times the serial receiver hardware was unable to hand received data to a hardware buffer because the input rate exceeded the receiver’s ability to handle the data.
ignored	Number of received packets ignored by the interface because the interface hardware ran low on internal buffers. These buffers are different than the system buffers mentioned previously in the buffer description. Broadcast storms and bursts of noise can cause the ignored count to be increased.
packets output	Total number of messages sent by the system.
bytes	Total number of bytes, including data and MAC encapsulation, sent by the system.
underruns	Number of times that the far-end sender has been running faster than the near-end router’s receiver can handle. This may never be reported on some interfaces.

**Table 14** *show interfaces tokenring Field Descriptions (continued)*

<b>Field</b>	<b>Description</b>
output errors	Sum of all errors that prevented the final sending of datagrams out of the interface being examined. Note that this may not balance with the sum of the enumerated output errors, because some datagrams may have more than one error, and others may have errors that do not fall into any of the specifically tabulated categories.
collisions	Because a Token Ring cannot have collisions, this statistic is nonzero only if an unusual event occurred when frames were being queued or dequeued by the system software.
interface resets	Number of times an interface has been reset. The interface may be reset by the administrator or automatically when an internal error occurs.
restarts	Should always be zero for Token Ring interfaces.
transitions	Number of times the ring made a transition from up to down, or vice versa. A large number of transitions indicates a problem with the ring or the interface.

# show lnm bridge

To display all currently configured bridges and all parameters that are related to the bridge as a whole, not to one of its interfaces, use the **show lnm bridge** command in privileged EXEC mode.

**show lnm bridge**

**Syntax Description** This command has no arguments or keywords.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	10.0	This command was introduced.

**Examples** The following is sample output from the **show lnm bridge** command:

```
Router# show lnm bridge

Bridge 001-2-003, Ports 0000.3000.abc4, 0000.0028.abcd
Active Links: 0000.0000.0000 0000.0000.0000 0000.0000.0000 0000.0000.0000
Notification: 0 min, Threshold 00.10%
```

[Table 15](#) describes the significant fields shown in the display.

**Table 15** *show lnm bridge Field Descriptions*

Field	Description
Bridge 001-2-003	Ring and bridge numbers of this bridge.
Ports 0000.3000.abc4....	MAC addresses of the two interfaces of this bridge.
Active Links:	Any LAN Network Manager (LNM) stations that are connected to this bridge. An entry preceded by an asterisk is the controlling LNM.
Notification: 0 min	Current counter notification interval in minutes.
Threshold 00.10%	Current loss threshold (in percent) that will trigger a message to the LNM.

# show lnm config

To display the logical configuration of all bridges configured in a router, use the **show lnm config** command in privileged EXEC mode. This information is needed to configure an LAN Network Manager (LNM) Management Station to communicate with a router. This is especially important when the router is configured as a multiport bridge, thus employing the concept of a virtual ring.

## show lnm config

**Syntax Description** This command has no arguments or keywords.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	10.0	This command was introduced.

**Examples** The following is sample output from the **show lnm config** command for a simple two-port bridge:

```
Router# show lnm config

Bridge(s) currently configured:

      From    ring 001, address 0000.3000.abc4
      Across bridge 002
      To      ring 003, address 0000.0028.abcd
```

The following is sample output from the **show lnm config** command for a multiport bridge:

```
Router# show lnm config

Bridge(s) currently configured:

      From    ring 001, address 0000.0028.abc4
      Across bridge 001
      To      ring 008, address 4000.0028.abcd

      From    ring 002, address 0000.3000.abc4
      Across bridge 002
      To      ring 008, address 4000.3000.abcd

      From    ring 003, address 0000.3000.5735
      Across bridge 003
      To      ring 008, address 4000.3000.5735
```

Table 16 describes the significant fields shown in the display.

**Table 16** *show Inm config Field Descriptions*

<b>Field</b>	<b>Description</b>
From ring 001	Ring number of the first interface in the two-port bridge.
address 0000.3000.abc4	MAC address of the first interface in the two-port bridge.
Across bridge 002	Bridge number assigned to this bridge.
To ring 003	Ring number of the second interface in the two-port bridge.
address 0000.0028.abcd	MAC address of the second interface in the two-port bridge.

# show lnm interface

To display all LAN Network Manager (LNM)-related information about a specific interface or all interfaces, use the **show lnm interface** command in privileged EXEC mode.

**show lnm interface** [*type number*]

## Syntax Description

<i>type</i>	(Optional) Interface type.
<i>number</i>	(Optional) Interface number.

## Defaults

The *type* argument is not specified, information about all interface types is displayed.  
If *number* is not specified, information about all interface numbers is displayed.

## Command Modes

Privileged EXEC

## Command History

Release	Modification
10.0	This command was introduced.

## Usage Guidelines

This command is for all types of interfaces, including Token Ring interfaces. If you want information specific to Token Ring, use the **show lnm ring** command.

## Examples

The following is sample output from the **show lnm interface** command:

```
Router# show lnm interface

nonisolating error counts
interface ring Active Monitor SET dec lost cong. fc freq.token
TokenRing1 0001* 1000.5a98.23a0 00200 00001 00000 00000 00000 0000000002

Notification flags: FE00, Ring Intensive: FFFF, Auto Intensive: FFFF
Active Servers: LRM LBS REM RPS CRS
Last NNIN: never, from 0000.0000.0000.
Last Claim: never, from 0000.0000.0000.
Last Purge: never, from 0000.0000.0000.
Last Beacon: never, 'none' from 0000.0000.0000.
Last MonErr: never, 'none' from 0000.0000.0000.

isolating error counts
station int ring loc. weight line inter burst ac abort
1000.5a98.23a0 T1 0001 0000 00 - N00000 00000 00000 00000 00000
1000.5a98.239e T1 0001 0000 00 - N00000 00000 00000 00000 00000
1000.5a6f.bc15 T1 0001 0000 00 - N00000 00000 00000 00000 00000
0000.3000.abc4 T1 0001 0000 00 - N00000 00000 00000 00000 00000
1000.5a98.239f T1 0001 0000 00 - N00000 00000 00000 00000 00000
```

Table 17 describes the significant fields shown in the display. See the **show lnm station** command for a description of the fields that follow after the “isolating error counts” line in the sample output.

**Table 17** show lnm interface Field Descriptions

Field	Description
interface	Interface about which information was requested.
ring	Number assigned to that Token Ring. An asterisk following the ring number indicates that stations with nonzero error counters are present on that ring.
Active Monitor	Address of the station that is providing “Active Monitor” functions to the ring. The description of this server can be found in the <i>IBM Token Ring Architecture Reference Manual</i> .
SET	Current soft error reporting time for the ring in units of tens of milliseconds.
dec	Rate at which the various counters of nonisolating errors are being decreased. This number is in errors per 30 seconds.
lost, cong., fc, freq.token	Current values of the five nonisolating error counters specified in the 802.5 specification. These are Lost Frame errors, Receiver Congestion errors, FC errors, Frequency errors, and Token errors.
Notification flags:	Representation of which types of ring errors are being reported to LNM. The description of this number can be found in the <i>IBM Token Ring Architecture Reference Manual</i> .
Ring Intensive:	Representation of which specific ring error messages are being reported to LNM when in the “Ring Intensive” reporting mode. The description of this number can be found in the <i>IBM Token Ring Architecture Reference Manual</i> .
Auto Intensive:	Representation of which specific ring error messages are being reported to LNM when in the “Auto Intensive” reporting mode. The description of this number can be found in the <i>IBM Token Ring Architecture Reference Manual</i> .
Active Servers:	A list of which servers are active on this Token Ring. The acronyms and their meanings are as follows: <ul style="list-style-type: none"> <li>• CRS—Configuration Report Server</li> <li>• LRM—LAN Reporting Manager</li> <li>• LBS—LAN Bridge Server</li> <li>• REM—Ring Error Monitor</li> <li>• RPS—Ring Parameter Server</li> </ul> The description of these servers can be found in the <i>IBM Token Ring Architecture Reference Manual</i> .
Last NNIN:	Time since the last “Neighbor Notification Incomplete” frame was received, and the station that sent this message.
Last Claim:	Time since the last “Claim Token” frame was received, and the station that sent this message.

**Table 17** *show lnm interface Field Descriptions (continued)*

<b>Field</b>	<b>Description</b>
Last Purge:	Time since the last “Purge Ring” frame was received, and the station that sent this message.
Last Beacon:	Time since the last “Beacon” frame was received, the type of the last beacon frame, and the station that sent this message.
Last Mon Err:	Time since the last “Report Active Monitor Error” frame was received, the type of the last monitor error frame, and the station that sent this message.

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>show lnm ring</b>	Displays all LNM information about a specific Token Ring or all Token Rings.
<b>show lnm station</b>	Displays LNM-related information about a specific station or all known stations on all rings.

# show lnm ring

To display all LAN Network Manager (LNM) information about a specific Token Ring or all Token Rings, use the **show lnm ring** command in privileged EXEC mode.

```
show lnm ring [ring-number]
```

<b>Syntax Description</b>	<i>ring-number</i>	(Optional) Number of a specific Token Ring. It can be a value in the range from 1 to 4095.
---------------------------	--------------------	--

<b>Defaults</b>	If the <i>ring-number</i> argument is not specified, information about all Token Rings is displayed.
-----------------	--

<b>Command Modes</b>	Privileged EXEC
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	10.0	This command was introduced.

<b>Usage Guidelines</b>	<p>If a specific interface is requested, it also displays a list of all active stations on that interface.</p> <p>The output of this command is the same as the output of the <b>show lnm interface</b> command. See the <b>show lnm interface</b> and <b>show lnm station</b> commands for sample output and a description of the fields. The same information can be obtained by using the <b>show lnm interface</b> command, but instead of specifying an interface number, you specify a ring number as an argument.</p>
-------------------------	--

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show lnm interface</b>	Displays all LNM-related information about a specific interface or all interfaces.
	<b>show lnm station</b>	Displays LNM-related information about a specific station or all known stations on all rings.

# show lnm station

To display LAN Network Manager (LNM)-related information about a specific station or all known stations on all rings, use the **show lnm station** command in privileged EXEC mode

**show lnm station** [*address*]

<b>Syntax Description</b>	<i>address</i> (Optional) Address of a specific LNM station.
---------------------------	--

<b>Command Modes</b>	Privileged EXEC
----------------------	-----------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.0	This command was introduced.

<b>Usage Guidelines</b>	If a specific station is requested, it also displays a detailed list of that station’s current MAC-level parameters.
-------------------------	--

**Examples** The following is sample output from the **show lnm station** command when a particular address has been specified:

```
Router# show lnm station 1000.5a6f.bc15

station          int  ring  loc.  weight  isolating error counts
1000.5a6f.bc15   T1   0001  0000  00 - N  line inter burst  ac  abort

Unique ID: 0000.0000.0000      NAUN: 0000.3000.abc4
Functional: C000.0000.0000      Group: C000.0000.0000
Physical Location: 00000        Enabled Classes: 0000
Allowed Priority: 00000         Address Modifier: 0000
Product ID: 00000000.00000000.00000000.00000000.0000
Ucode Level: 00000000.00000000.0000
Station Status: 00000000.0000
Last transmit status: 00
```

Table 18 describes the significant fields shown in the display.

**Table 18 show lnm station Field Descriptions**

Field	Description
station	MAC address of the given station on the Token Ring.
int	Interface used to reach the given station.
ring	Number of the Token Ring where the given station is located.
loc.	Physical location number of the given station.

**Table 18** show lnm station Field Descriptions (continued)

Field	Description
weight	Weighted accumulation of the errors of the given station, and of its nearest active upstream neighbor (NAUN). The three possible letters and their meanings are as follows: <sup>1</sup> <ul style="list-style-type: none"> <li>• N—not in a reported error condition.</li> <li>• P—in a “preweight” error condition.</li> <li>• W—in a “preweight” error condition.</li> </ul>
isolating error counts	Current values of the five isolating error counters specified in the 802.5 specification. These are Line errors, Internal errors, Burst errors, AC errors, and Abort errors.
<b>Values below this point will be zero unless the LNM has previously requested this information.</b>	
Unique ID:	Uniquely assigned value for this station.
NAUN:	MAC address of this station’s “upstream” neighbor.
Functional:	MAC-level functional address currently in use by this station.
Group:	MAC-level group address currently in use by this station.
Physical Location:	Number assigned to this station as its “Physical Location” identifier.
Enabled Classes:	Functional classes that the station is allowed to send.
Allowed Priority:	Maximum access priority that the station may use when sending onto the Token Ring.
Address Modifier:	Reserved field.
Product ID:	Encoded 18-byte string used to identify what hardware and software combination is running on this station.
Ucode Level:	10-byte extended binary coded decimal interchange code (EBCDIC) string indicating the microcode level of the station.
Station Status:	Implementation-dependent vector that is not specified anywhere.
Last transmit status:	Contains the strip status of the last “Report Transmit Forward” MAC frame forwarded by this interface.

1. The description of these error conditions can be found in the *IBM Architecture Reference Manual*.

# show netbios-cache

To display a list of NetBIOS cache entries, use the **show netbios-cache** command in privileged EXEC mode.

## show netbios cache

**Syntax Description** This command has no arguments or keywords.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	10.0	This command was introduced.

**Examples** The following is sample output from the **show netbios-cache** command:

```
Router# show netbios-cache

  HW Addr          Name           How      Idle    NetBIOS Packet Savings
1000.5a89.449a    IC6W06_B      TR1      6       0
1000.5a8b.14e5    IC_9Q07A      TR1      2       0
1000.5a25.1b12    IC9Q19_A      TR1      7       0
1000.5a25.1b12    IC9Q19_A      TR1     10       0
1000.5a8c.7bb1    BKELSA1       TR1      4       0
1000.5a8b.6c7c    ICELSB1       TR1      -       0
1000.5a31.df39    ICASC_01      TR1      -       0
1000.5ada.47af    BKELSA2       TR1     10       0
1000.5a8f.018a    ICELSC1       TR1      1       0
```

[Table 19](#) describes the significant fields shown in the display.

**Table 19** *show netbios-cache Field Descriptions*

Field	Description
HW Addr	MAC address mapped to the NetBIOS name in this entry.
Name	NetBIOS name mapped to the MAC address in this entry.
How	Interface through which this information was learned.
Idle	Period of time (in seconds) since this entry was last accessed. A hyphen in this column indicates it is a static entry in the NetBIOS name cache.
NetBIOS Packet Savings	Number of packets to which local replies were made (thus preventing sending of these packets over the network).

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>netbios name-cache</b>	Defines a static NetBIOS name cache entry, tying the server with the name netbios-name to the mac-address, and specifying that the server is accessible either locally through the interface-name specified, or remotely through the ring-group group-number specified.
<b>netbios name-cache timeout</b>	Enables NetBIOS name caching and sets the time that entries can remain in the NetBIOS name cache.

# show rif

To display the current contents of the Routing Information Field (RIF) cache, use the **show rif** command in privileged EXEC mode.

## show rif

**Syntax Description** This command has no arguments or keywords.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	10.0	This command was introduced.

**Examples** The following is sample output from the **show rif** command:

```
Router# show rif

Codes: * interface, - static, + remote
Hardware Addr  How  Idle (min)  Routing Information Field
5C02.0001.4322  rg5      -          0630.0053.00B0
5A00.0000.2333  TR0      3          08B0.0101.2201.0FF0
5B01.0000.4444  -        -          -
0000.1403.4800  TR1      0          -
0000.2805.4C00  TR0      *          -
0000.2807.4C00  TR1      *          -
0000.28A8.4800  TR0      0          -
0077.2201.0001  rg5     10         0830.0052.2201.0FF0
```

In the display, entries marked with an asterisk (\*) are the router's interface addresses. Entries marked with a dash (-) are static entries. Entries with a number denote cached entries. If the RIF timeout is set to something other than the default of 15 minutes, the timeout is displayed at the top of the display. [Table 20](#) describes the significant fields shown in the display.

**Table 20** *show rif* Field Descriptions

Field	Description
Hardware Addr	Lists the MAC-level addresses.
How	Describes how the RIF has been learned. Values are ring group (rg) or interface (TR).
Idle (min)	Indicates how long, in minutes, since the last response was received directly from this node.
Routing Information Field	Lists the RIF.

Related Commands	Command	Description
	<b>multiring</b>	Enables collection and use of RIF information.

# show source-bridge

To display the current source bridge configuration and miscellaneous statistics, use the **show source-bridge** command in privileged EXEC mode.

**show source-bridge [interface]**

Syntax Description	interface	(Optional) Displays the current source bridge configuration over all interfaces and a summary of all packets sent and received over each interface, not just the number of packets forwarded through the bridge.
--------------------	-----------	--

**Command Modes** Privileged EXEC

Command History	Release	Modification
	10.0	This command was introduced.
	12.2	The <b>interface</b> keyword was added.

## Examples

The following is sample output from the **show source-bridge** command:

```
Router# show source-bridge

Local Interfaces:
          srn bn  trn r p s n  max hops  receive  transmit  drops
          5  1   10 *  b      7   39:1002   23:62923

Ring Group 10:
  This peer: TCP 10.136.92.92
  Maximum output TCP queue length, per peer: 100
  Peers:
    TCP 10.136.92.92  -   2   0   0   0   0   0
    TCP 10.136.93.93  open 2*  18  18  3   0   0
  Rings:
    bn: 1 rn: 5   local ma: 4000.3080.844b TokenRing0      fwd: 18
    bn: 1 rn: 2   remote ma: 4000.3080.8473 TCP 10.136.93.93  fwd: 36

Explorers: ----- input -----
          spanning all-rings  total  spanning all-rings  total
TR0      0          3          3          3          5          8
```

The following is sample output from the **show source-bridge** command when Token Ring LAN emulation (LANE) is configured.

```
Router# show source-bridge

Local Interfaces:
          srn bn  trn r p s n  max hops  receive  transmit  drops
AT2/0.1  2048 5  256 *  f   7  7  7   5073   5072     0
To3/0/0  1    1  256 *  f   7  7  7   4719   4720     0
```

```

Global RSRB Parameters:
  TCP Queue Length maximum: 100

Ring Group 256:
  No TCP peername set, TCP transport disabled
  Maximum output TCP queue length, per peer: 100
Rings:
  bn: 5  rn: 2048 local  ma: 4000.0ca0.5b40 ATM2/0.1          fwd: 5181
  bn: 1  rn: 1      local  ma: 4000.3005.da06 TokenRing3/0/0      fwd: 5180

Explorers: ----- input -----          ----- output -----
           spanning all-rings  total      spanning all-rings  total
AT2/0.1   9          1         10        10         0         10
To3/0/0   10         0         10        9          1         10

Local: fastswitched 20          flushed 0          max Bps 38400

           rings      inputs      bursts      throttles      output drops
To3/0/0   10          10          0           0              0
    
```

The following is sample output from the **show source-bridge** command with the **interface** keyword specified:

```

Router# show source-bridge interface

Interface  St  MAC-Address      srn bn  trn r  x  p  b  c  IP-Address      Packets
                                     v  p  s  n  r
                                     In  Out
To0/0      up  0000.300a.7c06   1  1  2009 *  b  F  10.2.0.9      63836 75413
To0/1      up  0000.300a.7c86   2  1  2009 *  b  F  10.1.1.0.9    75423 63835
To0/2      up  0000.300a.7c46 1001 1 2009 *  b  F
    
```

Table 21 describes the significant fields shown in the displays.

**Table 21 show source-bridge Field Descriptions**

Field	Description
Local Interfaces:	Description of local interfaces.
srn	Ring number configured on the Token Ring.
bn	Bridge number configured on the Token Ring.
trn	Group in which the interface is configured. Can be the target ring number or virtual ring group.
r	Ring group is assigned. An asterisk (*) in this field indicates that a ring group has been assigned for this interface.
p	Interface can respond with proxy explorers. An asterisk (*) in this field indicates that the interface can respond to proxy explorers.
s	Spanning-tree explorers enabled on the interface. An asterisk (*) indicates that this interface will forward spanning-tree explorers.
n	Interface has NetBIOS name caching enabled. An asterisk (*) in this field indicates that the interface has NetBIOS name caching enabled.
max hops	Maximum number of hops.
receive cnt	Bytes received on the interface for source bridging.

**Table 21** *show source-bridge Field Descriptions (continued)*

Field	Description
transmit cnt	Bytes sent on the interface for source bridging.
drops	Number of dropped packets.
Ring Group <i>n</i> :	The number of the ring group.
This peer:	Address and address type of this peer.
Maximum output TCP queue length, per peer:	Maximum number of packets queued on this peer before the Cisco IOS software starts dropping packets.
Peers:	Addresses and address types of the ring group peers.
state	Current state of the peer, open or closed. A hyphen indicates this router.
lv	Indicates local acknowledgment.
pkts_rx	Number of packets received.
pkts_tx	Number of packets sent.
expl_gn	Explorers generated.
drops	Number of packets dropped.
TCP	Lists the current TCP backup queue length.
Rings:	Describes the ring groups. Information displayed is the bridge groups, ring groups, whether each group is local or remote, the MAC address, the network address or interface type, and the number of packets forwarded. A type shown as “locvrt” indicates a local virtual ring used by SDLLC or SR/TLB; a type shown as “remvrt” indicates a remote virtual ring used by SDLC Logical Link Control (SDLLC) or source-route translational bridging (SR/TLB).
Explorers:	This section describes the explorer packets that the Cisco IOS software has sent and received.
input	Explorers received by Cisco IOS software.
output	Explorers generated by Cisco IOS software.
TR0	Interface on which explorers were received.
spanning	Spanning-tree explorers.
all-rings	All-rings explored.
total	Summation of spanning and all-rings.
fastswitched	Number of fast-switched packets.
flushed	Number of flushed packets.
max Bps	Maximum bytes per second.
rings	Interface for the particular ring.
inputs	Number of inputs.
bursts	Number of bursts.
throttles	Number of throttles.
output drops	Number of output drops.
Interface	An interface (Token-Ring) capable of doing source bridging.

**Table 21** *show source-bridge Field Descriptions (continued)*

<b>Field</b>	<b>Description</b>
St	Status of the interface. Possible values: <ul style="list-style-type: none"> <li>• up = Interface is up.</li> <li>• down = Interface is down.</li> </ul>
MAC Address	The physical MAC address of the interface.
srn	Source ring number configured on the source bridge.
bn	Bridge number configured on the source bridge.
trn	Target ring configured on the source bridge.
v r	Ring group configured on the source bridge. An asterisk (*) in this field indicates a ring group configured on the source bridge and not a physical ring.
p x	Proxy-explorer configured on the source-bridge. An asterisk (*) in this field indicates that a proxy-explorer has been configured on the source bridge interface.
s p	Status of the IBM spanning tree related to the source bridge. Possible values: <ul style="list-style-type: none"> <li>• f = forwarding.</li> <li>• b = blocking.</li> </ul>
n b	Netbios enable-name-cache configured on the source bridge. An asterisk (*) in this field indicates netbios enable-name-cache is configured on the source bridge.
r c	Indicates whether the source bridge route cache is active or not. Possible values: <ul style="list-style-type: none"> <li>• C = cbus route cache is active.</li> <li>• S = SSE route cache is active.</li> <li>• F = srb fast cache is active.</li> </ul> <p>If there is no output, srb cache is not active.</p>
IP Address	IP address configured on the source bridge. If there is no output, it means IP address has not been configured.
Packets	Packets In = Number of packets received on the source bridge. Packets Out = Number of packets transmitted through the source bridge.

# show span

To display the spanning-tree topology known to the router, use the **show span** command in user EXEC or privileged EXEC mode.

## show span

### Syntax Description

This command has no arguments or keywords.

### Command Modes

User EXEC  
Privileged EXEC

### Command History

Release	Modification
10.3	This command was introduced.

### Examples

The following is sample output from the **show span** command:

```
Router# show span

Bridge Group 1 is executing the IBM compatible Spanning Tree Protocol
  Bridge Identifier has priority 32768, address 0000.0c0c.f68b
  Configured hello time 2, max age 6, forward delay 4
  Current root has priority 32768, address 0000.0c0c.f573
  Root port is 001A (TokenRing0/0), cost of root path is 16
  Topology change flag not set, detected flag not set
  Times: hold 1, topology change 30, notification 30
         hello 2, max age 6, forward delay 4, aging 300
  Timers: hello 0, topology change 0, notification 0
Port 001A (TokenRing0/0) of bridge group 1 is forwarding. Path cost 16
  Designated root has priority 32768, address 0000.0c0c.f573
  Designated bridge has priority 32768, address 0000.0c0c.f573
  Designated port is 001B, path cost 0, peer 0
  Timers: message age 1, forward delay 0, hold 0
Port 002A (TokenRing0/1) of bridge group 1 is blocking. Path cost 16
  Designated root has priority 32768, address 0000.0c0c.f573
  Designated bridge has priority 32768, address 0000.0c0c.f573
  Designated port is 002B, path cost 0, peer 0
  Timers: message age 0, forward delay 0, hold 0
Port 064A (spanRSRB) of bridge group 1 is disabled. Path cost 250
  Designated root has priority 32768, address 0000.0c0c.f573
  Designated bridge has priority 32768, address 0000.0c0c.f68b
  Designated port is 064A, path cost 16, peer 0
  Timers: message age 0, forward delay 0, hold 0
```

A port (spanRSRB) is created with each virtual ring group. The port will be disabled until one or more peers go into open state in the ring group.

# show spanning-tree

To display information regarding which Spanning Tree Protocol is running, use the **show spanning-tree** command in user EXEC or privileged EXEC mode.

**show spanning-tree** *bridge-group*

<b>Syntax Description</b>	<i>bridge-group</i>	Bridge group number, in the range from 1 to 256, specified in the <b>bridge protocol</b> command.
---------------------------	---------------------	---

<b>Command Modes</b>	User EXEC Privileged EXEC
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	12.0(1)T	This command was introduced.

**Examples** The following example shows that bridge group 1 is running the VLAN Bridge Spanning Tree Protocol.

```
Router# show spanning-tree 1

Bridge group 1 is executing the VLAN Bridge compatible Spanning Tree Protocol
Bridge Identifier has priority 32768, address 0000.0c37.b055
Configured hello time 2, max age 30, forward delay 20
We are the root of the spanning tree
Port Number size is 10 bits
Topology change flag not set, detected flag not set
Times: hold 1, topology change 35, notification 2
      hello 2, max age 30, forward delay 20
Timers: hello 0, topology change 0, notification 0
      bridge aging time 300

Port 8 (Ethernet1) of Bridge group 1 is forwarding
  Port path cost 100, Port priority 128
  Designated root has priority 32768, address 0000.0c37.b055
  Designated bridge has priority 32768, address 0000.0c37.b055
  Designated port is 8, path cost 0
  Timers: message age 0, forward delay 0, hold 0
  BPDU: sent 184, received 0
```

# show subscriber-policy

To display the details of a subscriber policy, use the **show subscriber-policy** command in user EXEC or privileged EXEC mode.

**show subscriber-policy** *range*

## Syntax Description

<i>range</i>	Range of subscriber policy numbers (range 1 to 100).
--------------	--

## Command Modes

User EXEC  
Privileged EXEC

## Command History

Release	Modification
11.3	This command was introduced.

## Examples

The following is sample output from the **show subscriber-policy** command:

```
Router# show subscriber-policy 1
```

```
ARP: Permit
Broadcast: Deny
Multicast: Permit
Unknown: Deny
STP: Disable
CDP: Disable
```

## Related Commands

Command	Description
<b>bridge protocol</b>	Defines the type of Spanning Tree Protocol.
<b>bridge subscriber-policy</b>	Binds a bridge group with a subscriber policy.
<b>show bridge</b>	Displays classes of entries in the bridge forwarding database.
<b>subscriber-policy</b>	Defines or modifies the forward and filter decisions of the subscriber policy.