Multilink Commands

This module provides command line interface (CLI) commands for configuring multilink interfaces on the Cisco ASR 9000 Series Router.

To use commands of this module, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using any command, contact your AAA administrator for assistance.

bundle

To create a multilink interface bundle, use the **bundle** command in the interface configuration mode. To remove a multilink interface bundle, use the **no** form of this command.

bundle *bundleID*

Syntax Description

bundleID	ID number of the multilink interface bundle. The bundle ID can be a 9-digit number.

Command Default

No default behavior or values

Command Modes

Interface configuration

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

The **bundle** command is used in mgmtmultilink controller mode to dynamically create a multilink interface. This command is similar to the **channel-group** command on the T1 controller, which dynamically creates a serial interface.

Task ID

Task ID	Operations
sonet-sdh	read, write

Examples

The following example shows how to create a multilink interface with a bundle ID of 1:

```
RP/0/RSP0/CPU0:router# configure
RP/0/RSP0/CPU0:router(config)# controller mgmtmultilink 0/1/0/0
RP/0/RSP0/CPU0:router(config-mgmtmultilink)# bundle 1
RP/0/RSP0/CPU0:router(config-mgmtmultilink)# commit
```

Related Commands

Command	Description
multilink, on page 7	Enters the config-if-multilink submode.
multilink group, on page 9	Attaches a serial interface to a multilink interface bundle.

controller MgmtMultilink

To configure a controller for a generic multilink bundle and enter MgmtMultilink configuration mode, use the **controller MgmtMultilink** command in Global Configuration mode . To return to the default state, use the **no** form of this command.

controller MgmtMultilink *interface-path-id*

Syntax Description

interface-path-id	Virtual interface. **Note** Use the **show interfaces** command to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (**?**) online help function.

Command Default

No default behavior or values

Command Modes

Global Configuration mode

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

For the *interface-path-id* argument, use the following guidelines:

- If specifying a physical interface, the naming notation is *rack*/*slot*/*module*/*instance*. The slash between values is required as part of the notation. An explanation of each component of the naming notation is as follows:
  - *rack*: Chassis number of the rack.
  - *slot*: Physical slot number of the line card.
  - *module*: Module number.
  - *instance*: Number of the controller instance. The instance is always 0.
- If specifying a virtual interface, the number range varies, depending on interface type.

Task ID

Task ID	Operations
interface	read, write

Examples

The following example shows how to enter the MgmtMultilink configuration mode :

```
RP/0/RSP0/CPU0:router# config
RP/0/RSP0/CPU0:router(config)# controller MgmtMultilink 0/1/0/0
RP/0/RSP0/CPU0:router(config-mgmtmultilink)#
```

Related Commands

Command	Description
show controllers mgmtmultilink, on page 10	Displays information about the state and the number of bundles of a multilink controller.

interface multilink

To configure a multilink interface and enter multilink interface configuration mode, use the **interface multilink** command in Global Configuration mode. To delete the interface configuration, use the **no** form of this command. To return to the default state, use the **no** form of this command.

interface multilink *interface-path-id*[**.***subinterface* {**l2transport** | **point-to-point**}]

Syntax Description

interface-path-id [**.** *subinterface*]	Physical interface or virtual interface followed by the optional subinterface path ID. Naming notation is *interface-path-id***.***subinterface*.The period in front of the subinterface value is required as part of the notation. For more information about the syntax for the router, use the question mark (**?**) online help function.
l2transport	Configures interface to function as one endpoint on a Layer 2 link.
point-to-point	Configures interface to function as one endpoint on a point-to-point link.

Command Default

No interfaces are configured.

Command Modes

Global Configuration mode

Command History

Release	Modification
Release 3.9.0	This command was introduced.
Release 4.0.0	The *subinterface* argument and the keywords **l2transport** and **point-to-point** were introduced.

Usage Guidelines

The *subinterface* argument and keywords **l2transport** and **po in t-to-point** are only applicable if frame relay encapsulation is enabled using the **encapsulation frame-relay** command.

Task ID

Task ID	Operations
interface	read, write

Examples

The following example shows how to enable frame relay encapsulation for a multilink bundle, and enter subinterface configuration mode.

```
RP/0/RSP0/CPU0:routerRP/0/RSP0/CPU0:router#
RP/0/RSP0/CPU0:router# configure terminal
RP/0/RSP0/CPU0:router(config)# interface multilink 0/3/0/0/1
RP/0/RSP0/CPU0:router(config-if)# encapsulation frame-relay
RP/0/RSP0/CPU0:router(config-if)# exit
RP/0/RSP0/CPU0:router(config)# interface multilink 0/3/0/0/1.1 point-to-point
RP/0/RSP0/CPU0:router(config-subif)# ipv4 address 10.86.10.48/24
```

The following example shows how to enter interface configuration mode for a multilink bundle with ppp encapsulation. ppp encapsulation is the default encapsulation type:

```
RP/0/RSP0/CPU0:router# configure terminal
RP/0/RSP0/CPU0:router(config)# interface multilink 0/3/0/0/1
RP/0/RSP0/CPU0:router(config-if)#ipv4 address 10.86.10.48/24
```

Related Commands

Command	Description
show interfaces multilink, on page 13	Displays information about a multilink interface.

multilink

To enter the config-if-multilink submode, use the **multilink** command in the interface configuration mode.

multilink

Syntax Description

This command has no keywords or arguments.

Command Default

No default behavior or values

Command Modes

Interface configuration

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

For multilink interfaces, the **multilink** command provides access to the config-if-multilink submode to use the **multilink fragment-size** command.

Task ID

Task ID	Operations
hdlc	read, write

Examples

The following example shows how to enter the config-if-multilink submode:

```
RP/0/RSP0/CPU0:router# config
RP/0/RSP0/CPU0:router(config)# interface serial 0/1/0/1/1/1:0
RP/0/RSP0/CPU0:router(config-if)# multilink
RP/0/RSP0/CPU0:router(config-if-multilink)# group 1
RP/0/RSP0/CPU0:router(config-if-multilink)# commit
```

Related Commands

Command	Description
multilink group, on page 9	Attaches a serial interface to a multilink interface bundle.

multilink fragment

To set the fragmentation size or the fragmentation delay on a multilink interface, use the **multilink fragment** command in interface configuration mode. To remove the fragment size or fragment delay, use the **no** form of this command.

multilink fragment {**size** *size* | **delay** *delay-ms*}

Syntax Description

size *size*	Specifies the fragment size (in bytes) on a multilink interface. The range is 64 to 9216.
delay *delay-ms*	Specifies the fragment delay (in milliseconds) on a multilink interface. The range is 1 to 1000.

Command Default

No multilink fragment size or fragment delay is set.

Command Modes

Interface configuration

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

Multilink fragmentation is only supported for ppp encapsulation, not for frame-relay enacapsulation.

Task ID

Task ID	Operations
hdlc	read, write

Examples

The following example shows how to set the multilink fragment size:

```
RP/0/RSP0/CPU0:router# configure
RP/0/RSP0/CPU0:router(config)# interface multilink 0/1/0/0/1
RP/0/RSP0/CPU0:router(config-if)# multilink fragment size 128
RP/0/RSP0/CPU0:router(config-if)#
```

The following example shows how to set the multilink fragment delay:

```
RP/0/RSP0/CPU0:router# configure
RP/0/RSP0/CPU0:router(config)# interface multilink 0/1/0/0/1
RP/0/RSP0/CPU0:router(config-if)# multilink fragment delay 2
RP/0/RSP0/CPU0:router(config-if)#
```

Related Commands

Command	Description
interface multilink, on page 5	Configures a multilink interface and enters multilink interface configuration mode.

multilink group

To attach a serial interface to a multilink interface bundle, use the **multilink group** command in interface configuration mode. To remove a serial interface from a multilink interface bundle, use the **no** form of this command.

multilink group *bundleID*

Syntax Description

bundleID	Bundle ID number of the multilink interface, in the format *rack/slot/bay/controllerID/bundleID*)

Command Default

No default behavior or values

Command Modes

Interface configuration

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
hdlc	read, write

Examples

The following examples show how to attach a serial interface to a multilink interface bundle:

```
RP/0/RSP0/CPU0:router# configure
RP/0/RSP0/CPU0:router(config)# interface serial 0/1/0/1/1/1:0
RP/0/RSP0/CPU0:router(config-if)# multilink group 1
RP/0/RSP0/CPU0:router(config-if)# commit
```

or

```
RP/0/RSP0/CPU0:router# configure
RP/0/RSP0/CPU0:router(config)# interface serial 0/1/0/1/1/1:0
RP/0/RSP0/CPU0:router(config-if)# multilink
RP/0/RSP0/CPU0:router(config-if-multilink)# group 1
(config-if-multilink)# commit
```

Related Commands

Command	Description
multilink, on page 7	Enters the config-if-multilink submode.

show controllers mgmtmultilink

To display information about the state and the number of bundles of a multilink controller, use the **show controller mgmtmultilink** command in EXEC mode.

show controllers mgmtmultilink *interface-path-id* [**all** | **brief** | **internal-state** | **tabular**]

Syntax Description

interface-path-id	Virtual interface. **Note** Use the **show interfaces** command to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (**?**) online help function.
all	Displays all multilink management information.
brief	Displays brief multilink management information.
internal-state	Displays internal multilink management state.
tabular	Displays multilink management information in tabular format.

Command Default

No default behavior or values

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

For the *interface-path-id* argument, use the following guidelines:

- If specifying a physical interface, the naming notation is *rack*/*slot*/*module*/*instance*. The slash between values is required as part of the notation. An explanation of each component of the naming notation is as follows:
  - *rack*: Chassis number of the rack.
  - *slot*: Physical slot number of the line card.
  - *module*: Module number. A physical layer interface module (PLIM) is always 0.
  - *instance*: Number of the controller instance. The instance is always 0.
- If specifying a virtual interface, the number range varies, depending on interface type.

Task ID

Task ID	Operations
interface	read

Examples

The following example shows how to display information for a management multilink controller:

```
RP/0/RSP0/CPU0:router# show controllers mgmtmultilink 0/3/0/0 all

Controller MgmtMultilink0/3/0/0
  State is up
  Number of bundles: 2
    Bundle 1 - Multilink0/3/0/0/1 (0x06186240)
      Type:  Full Framed T1s
      Bandwidth: 3072 kbps
      Encapsulation: Frame Relay
      Fragment size: 0
      Number of members: 2
      Ancestor name: SONET0/3/0/0
      Member(s):
           Serial0/3/0/0/1/1:0  (0x0619b640)    Active
           Serial0/3/0/0/1/2:0  (0x06176980)    Active

    Bundle 2 - Multilink0/3/0/0/2 (0x06176840)
      Type:  Full Framed T1s
      Bandwidth: 3072 kbps
      Encapsulation: Frame Relay
      Fragment size: 0
      Number of members: 2
      Ancestor name: SONET0/3/0/0
      Member(s):
           Serial0/3/0/0/1/3:0  (0x0619b3c0)    Active
           Serial0/3/0/0/1/4:0  (0x0618b9c0)    Active

RP/0/RSP0/CPU0:router# show controllers mgmtmultilink 0/3/0/0 brief

  MgmtMultilink0/3/0/0 is up

RP/0/RSP0/CPU0:router# show controllers mgmtmultilink 0/3/0/0 tabular

  MgmtMultilink0/3/0/0 is up

RP/0/RSP0/CPU0:router# show controllers mgmtmultilink 0/3/0/0 internal-state

Interface(layer)      admin_up if_state
--------------------- -------- --------
MgmtMultilink0/3/0/0  up       up

RP/0/RSP0/CPU0:router# show controllers mgmtmultilink 0/2/0/0

Controller MgmtMultilink0/2/0/0
   State is up
   Number of bundles: 1
     Bundle 1 - Multilink0/2/0/0/1 (0x0802e400)
       Type:  Full Framed T1s
       Bandwidth: 1536 kbps
       Encapsulation: PPP
       Fragment size: 0
       Number of members: 1
       Ancestor name: SONET0/2/0/0
```

```
Member(s):
     Serial0/2/0/0/1/1:0   (0x08023c00)    Active
```

Related Commands

Command	Description
show interfaces multilink, on page 13	Displays information about a multilink interface.

show interfaces multilink

To display information about a multilink interface, use the **show interfaces multilink** command in EXEC mode mode.

show interfaces multilink *interface-path-id*

Syntax Description

interface-path-id	Physical interface or virtual interface. **Note** Use the **show interfaces** command to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (**?**) online help function.

Command Default

No default behavior or values

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

For the *interface-path-id* argument, use the following guidelines:

- If specifying a physical interface, the naming notation is *rack*/*slot*/*module*/*port*. The slash between values is required as part of the notation. An explanation of each component of the naming notation is as follows:
  - *rack*: Chassis number of the rack.
  - *slot*: Physical slot number of the line card.
  - *module*: Module number. A physical layer interface module (PLIM) is always 0.
  - *port*: Physical port number of the interface.
- If specifying a virtual interface, the number range varies, depending on interface type.

Task ID

Task ID	Operations
interface	read

Examples

The following example shows how to display information about a multilink interface:

```
RP/0/RSP0/CPU0:router# show interfaces multilink 0/1/0/0/1
 Multilink0/1/0/0/1 is up, line protocol is up
   Interface state transitions: 1
```

```
   Hardware is Multilink network interface(s)
   Internet address is 10.1.1.1/24
   MTU 1504 bytes, BW 1536 Kbit
      reliability 255/255, txload 3/255, rxload 3/255
   Encapsulation PPP,  loopback not set, keepalive set (10 sec)
   LCP Open
   Open: IPCP
   Last input 00:00:00, output 00:00:00
   Last clearing of "show interface" counters 02:06:24
   5 minute input rate 19000 bits/sec, 5 packets/sec
   5 minute output rate 19000 bits/sec, 5 packets/sec
      48769 packets input, 12425740 bytes, 0 total input drops
      0 drops for unrecognized upper-level protocol
      Received 0 runts, 0 giants, 0 throttles, 0 parity
      0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
      67905 packets output, 17400050 bytes, 0 total output drops
      0 output errors, 0 underruns, 0 applique, 0 resets
      0 output buffer failures, 0 output buffers swapped out
Fragmentation Statistics
   Input Fragmented packets 0            Input Fragmented bytes 0
   Output Fragmented packets 0           Output Fragmented bytes 0
   Input Unfragmented packets 0          Input Unfragmented bytes 0
   Output Unfragmented packets 0         Output Unfragmented bytes 0
   Input Reassembled packets 0           Input Reassembled bytes 0
```