CHAPTER 32

APPN Configuration Commands

This chapter describes the commands to configure and monitor the Advanced Peer-to-Peer Networking (APPN) feature. For APPN configuration tasks and examples, refer to the "Configuring APPN" chapter of the *Router Products Configuration Guide*.

Note: This chapter introduces seven new command modes:

- APPN class of service configuration
- APPN connection network configuration
- APPN control point configuration
- APPN link station configuration
- APPN mode configuration
- APPN partner LU location configuration
- APPN port configuration

adjacent-cp-name

Use the **adjacent-cp-name** APPN link station configuration command to specify the name of the partner node for the link station. Use the **no** form of this command to delete the definition.

adjacent-cp-name *netid.cpname*
no adjacent-cp-name

Syntax Description

netid.cpname	Fully qualified network name of the remote control point. A fully qualified name is a string of 1 to 8 characters, followed by a period, followed by a string of 1 to 8 characters. The following characters are acceptable: A - Z, a - z 0 - 9 $ # @ The first character of either string must not be a number.

Default

The default state is **no adjacent-cp-name**.

Command Mode

APPN link station configuration

Usage Guidelines

If the name configured with this command does not match the remote node's CP name, the link will not come up. If the no form of the command is issues, or the command is not issued at all, no checking is done. This command must be specified if the adjacent node is LEN.

Example

The following example defines a link station that specifies the name of the partner node:

```
appn link-station APPN1
port TR0
lan-dest-address 1000.C4C1.E5C5
adjacent-cp-name CISCO.APPN1
complete
```

Related Commands

appn link-station
show appn link-station

appn class-of-service

Use the **appn class-of-service** global configuration command to define an APPN class of service that is not an IBM-supplied default. Use the **no** form of this command to delete the definition. This command begins the APPN class of service configuration command mode.

appn class-of-service *cosname*
no appn class-of-service *cosname*

Syntax Description

cosname	Class of service name not among IBM default names. Class of service names must be a Type A character string. A Type A character string is a string of 1 to 8 of the following characters: A - Z, a - z 0 - 9 $ # @

Default

There is no default class of service name.
If this command is not issued, an IBM default class of service can be used. The IBM supplied default classes of service are #CONNECT, #BATCH, #INTER, #BATCHSC, #INTERSC, CPSVCMG, and SNASVCMG.

Command Mode

Global configuration

Usage Guidelines

Class of Service (COS) is a definition of the transport network characteristics that should be used to establish a particular session. The COS definition assigns relative values to factors such as acceptable levels of security, cost per byte, cost per connect-time, propagation delay, and effective capacity. APPN network nodes use COS to select the best session routes between LUs.

If one of the IBM default classes of service does not meet the needs of a particular network, the **appn class-of-service** global configuration command can be used to create a user defined definition.

Example

The following example defines a COS with one node row and one tg row:

```
appn class-of-service #SECURE
node-row 1 weight 5 congestion no no route-additional-resistance 0 255
tg-row 1 weight 30 byte 0 255 time 0 255 capacity 0 255 delay 0 255 security 200 255 user1
0 255 user2 0 255 user3 0 255
complete
```

Related Commands

node-row
show appn class-of-service
tg-row
transmission-priority

appn connection-network

Use the **appn connection-network** global configuration command to specify the fully qualified network name for the connection network. Use the **no** form of this command to delete the definition. This command begins the APPN connection network configuration command mode.

appn connection-network *netid.cnname*
no appn connection-network *netid.cnname*

Syntax Description

netid.cnname	Fully qualified network name for the connection network. *cnname* is the name of the virtual network node in the connection network. A fully qualified name is a string of 1 to 8 characters, followed by a period, followed by a string of 1 to 8 characters. The following characters are acceptable: A - Z, a - z 0 - 9 $ # @ The first character of either string must not be a number.

Default

No default connection network name is assigned.

Command Mode

Global Configuration

Usage Guidelines

The connection network name must be the same on all nodes that define the connection network, and must be different from any other connection network, LU, or control point in the total network.

Example

The following example defines a connection network using APPN port TR0:

```
appn connection-network CISCO.CAPPN1
port TR0
complete
```

Related Commands

port (APPN connection network)
show appn connection-network

appn control-point

Use the **appn control-point** global configuration command to specify the fully qualified control point name for the node. Use the **no** form of this command to delete the name and clear all APPN definitions. This command begins the APPN control point configuration command mode.

appn control-point *netid.cpname*
no appn control point *netid.cpname*

Syntax Description

netid.cpname	Fully qualified control point name for the local node. A fully qualified name is a string of 1 to 8 characters, followed by a period, followed by a string of 1 to 8 characters. The following characters are acceptable: A - Z, a - z 0 - 9 $ # @ The first character of either string must not be a number.

Default

No default control point name is assigned.

Command Mode

Global configuration

Usage Guidelines

You must issue the appn control-point command to activate APPN routing. There can be only one control point definition in the system. The control point name must be unique in the network.

Example

The following example defines a control point named CISCO.APPN1:

```
appn control-point CISCO.APPN1
complete
```

Related Commands

appn routing
appn start
appn stop
backup-dlus (APPN control point)
buffer-percent
dlur
dlus (APPN control point)
interrupt-switched
max-cached-entries
max-cached-trees
maximum-memory

route-additional-resistance
safe-store-cycle
safe-store-host
safe-store-interval
show appn node
xid-block-number
xid-id-number

appn link-station

Use the **appn link-station** global configuration command to assign the name of an adjacent link station. Use the **no** form of this command to delete the link station name. This command begins the APPN link station configuration command mode.

appn link-station *linkname*
no appn link-station *linkname*

Syntax Description

linkname	Name that identifies the link station. The name must be a Type A string. A Type A character string is a string of 1 to 8 of the following characters: A - Z, a - z 0 - 9 $ # @

Default

No default link station name is assigned.

Command Mode

Global configuration

Usage Guidelines

A link represents a connection between a local link station and a link station in an adjacent node. The link can be considered a direct connection between two distinct Type 2.1 or Type 2.0 nodes. The link station provides a route over which local sessions or intermediate sessions can pass. Two link stations are required to build a link: one on each node.

A link station can be pre-defined with the **appn link-station** command, or dynamically defined. If you specify **service-any** in the associated **appn port** command, link-stations can be dynamically defined when a connect request is received. In this case, the **appn link-station** command would not be required. You must define an APPN link station if you intend this node to initiate the connection to the adjacent node.

Example

The following example defines a link station using port TR0:

```
appn link-station CISCO1
port TR0
lan-destination-address 0200.0000.0001
complete
```

Related Commands

adjacent-cp-name
backup-dlus (APPN link station)
connect-at-startup

cost-per-byte (APPN link station)
cost-per-connect-time (APPN link station)
cp-cp-sessions-supported
dlur-dspu-name
dlus (APPN link station)
effective-capacity (APPN link station)
fr-dest-address
lan-dest-address
limited-resource (APPN link station)
link-queuing
port (APPN link station)
propagation-delay (APPN link station)
pu-type-20
retry-limit (APPN link station)
role (APPN link station)
sdlc-dest-address
security (APPN link station)
show appn link-station
tg-number
user-defined-1 (APPN link station)
user-defined-2 (APPN link station)
user-defined-3 (APPN link station)
verify-adjacent-node-type
x25-dest-address

appn mode

Use the **appn mode** global configuration command to specify a new mode or to change an IBM defined mode and identify the class of service associated with the mode name. Use the **no** form of this command to delete the previous definition.This command begins the APPN mode configuration command mode.

appn mode [*modename*]
no appn mode [*modename*]

Syntax Description

modename	Name of the mode. A Type A character string. A Type A character string is a string of 1 to 8 of the following characters: A - Z, a - z 0 - 9 $ # @

Default

IBM defined [blank]

Command Mode

Global configuration

Usage Guidelines

The IBM defined modes are #BATCH, #BATCHSC, #INTER, #INTERSC, #CPSVCMG, #SNASVCMG, #CPSVRMG, and [blank]. These definitions can not be changed.

This command is required when LEN nodes are using this node for network services. The LEN node will issue a BIND containing this mode name; this command will be used to associate the mode name with a COS name.

Example

The following example changes the IBM defined mode #BATCH to use the #CONNECT class of service:

```
appn mode #BATCH
class-of-service #CONNECT
complete
```

Related Commands

class-of-service
show appn mode

appn partner-lu-location

Use the **appn partner-lu-location** global configuration command to specify an LU that would be the destination LU for an LU-LU session request from an LU using this node for network services. Use the **no** form of this command to delete the previous definition. This command begins the APPN partner LU configuration command mode.

appn partner-lu-location *netid.luname*
no appn partner-lu-location *netid.luname*

Syntax Description

NETID.LUNAME	Fully qualified name of the partner LU. A fully qualified name is a string of 1 to 8 characters, followed by a period, followed by a string of 1 to 8 characters. The following characters are acceptable: A - Z, a - z 0 - 9 $ # @ The first character of either string must not be a number.

Default

No default *NETID.LUNAME* is specified. You must supply a value; otherwise the configuration will fail.

Command Mode

Global configuration

Usage Guidelines

Use this command to define an entry in the directory database. This command improves network performance by allowing directed LOCATE (because the partner name is known), instead of a broadcast. The disadvantage is that definitions must be created. Alternatively, partner names can be discovered dynamically and added to the database as they are learned. This process, however, requires either prior sessions to the node or broadcast traffic (which causes additional network traffic) sent to locate the node.

Example

The following example defines the location of an LU named CISCO.LU21:

```
appn partner-lu-location CISCO.LU21
owning-cp CISCO.CP2
complete
```

Related Commands

owning-cp
serving-nn
show appn directory
wildcard

appn port

Use the **appn port** global configuration command to define an APPN port and relate it to a previously defined interface.

appn port *portname* {*type number* | **rsrb**}
no appn port *portname*

Syntax Description

portname	Port name to be associated with the interface.
type number	Previously defined interface type and number with which the port name is to be associated.
rsrb	Specify **rsrb** instead of an interface if this port will utilize RSRB as a transport protocol.

Default

No default port name is specified. No default interface is provide. Both must be provided or the configuration will fail.

Command Mode

Global configuration

Usage Guidelines

At least one APPN port must be defined for each interface that will participate in APPN routing. If more that one service access point (SAP) will be used over a particular port, then a port must be defined for each SAP.

Example

The following example associates an APPN port named FDDI0 with FDDI interface 0:

```
appn port FDDI0 fddi0
complete
```

Related Commands

A dagger (†) indicates that the command is documented in another chapter.

appn start port
appn stop port
cost-per-byte (APPN port)
cost-per-connect-time (APPN port)
desired-max-send-btu-size
effective-capacity (APPN port)
interface †
limited-resource (APPN port)
local-sap
max-link-stations

max-rcv-btu-size
propagation-delay (APPN port)
reserved-inbound
reserved-outbound
retry-limit (APPN port)
role (APPN port)
rsrb-virtual-station
security (APPN port)
service-any
sdlc-sec-addr
show appn port
user-defined-1 (APPN port)
user-defined-2 (APPN port)
user-defined-3 (APPN port)
x25-subaddress

appn routing

Use the **appn routing** global configuration command to indicate that APPN routing should be activated. Use the **no** form to deactivate APPN routing.

appn routing
no appn routing

Syntax Description

This command has no arguments or keywords.

Default

The default state is **no appn routing**.

Command Mode

Global configuration

Usage Guidelines

For **appn routing** to complete successfully, an APPN control point must be configured using the **appn control-point** global configuration command.

Example

The following example specifies that APPN routing should be started:

```
appn routing
```

Related Commands

appn control-point
appn start
appn stop

appn start

Use the **appn start** EXEC command to activate the APPN subsystem in this node.

appn start

Syntax Description

This command has no arguments or keywords.

Default

This command has no default state.

Command Mode

EXEC

Example

The following example activates APPN:

```
appn start
```

Related Commands

appn stop
appn routing

appn start link-station

Use **appn start link-station** to activate a logical APPN link.

appn start link-station *linkname*

Syntax Description

linkname	The name of the link-station. Must be a Type A character string. A Type A character string is a string of 1 to 8 of the following characters: A - Z, a - z 0 - 9 $ # @

Default

No default is provided for *linkname.*

Command Mode

EXEC

Example

The following example activates an APPN link station:

```
appn start link-station TR0
```

Related Commands

appn link-station
appn stop link-station
show appn link-station

appn start port

Use the **appn start port EXEC** command to activate APPN routing over a particular port.

appn start port *portname*

Syntax Description

portname	The name of the port. Must be a Type A character string. A Type A character string is a string of 1 to 8 of the following characters: A - Z, a - z 0 - 9 $ # @

Default

No default is provided for *portname.*

Command Mode

EXEC

Usage Guidelines

This command is also used when the APPN subsystem is already started and a port is added or a characteristic is changed by subcommand.

Example

The following example activates APPN routing over port TR0:

```
appn start port TR0
```

Related Commands

appn port
appn stop port
show appn port

appn stop

This command will deactivate APPN routing without affecting the current configuration.

appn stop

Syntax Description

This command has no arguments or keywords.

Default

This command has no default state.

Command Mode

EXEC

Example

The following command deactivates APPN routing:

```
appn stop
```

Related Commands

appn control-point
appn routing
appn start

appn stop link-station

Use the **appn stop link-station** EXEC command to deactivate an APPN connection between the local node and an adjacent node.

appn stop link-station *linkname*

Syntax Description

linkname	The name of the link station. The name must be a Type A character string. A Type A character string is a string of 1 to 8 of the following characters: A - Z, a - z 0 - 9 $ # @

Default

There is no default provided for *linkname.*

Command Mode

EXEC

Example

The following command deactivates an APPN link between the local node and an adjacent node:

```
appn stop link-station APPN1
```

Related Commands

appn link-station
appn start link-station

appn stop port

Use **appn stop port** to deactivate APPN routing over a specified port.

appn stop port *portname*

Syntax Description

portname	The name of the port. Must be a Type A character string A Type A character string is a string of 1 to 8 of the following characters: A - Z, a - z 0 - 9 $ # @.

Default

No default is provided for *portname.*

Command Mode

EXEC

Usage Guidelines

For a port deactivation to be successful, no APPN link station can be active on that port.

Example

The following example deactivates APPN routing over port TR0:

```
appn stop port TR0
```

Related Commands

appn port
appn start port

backup-dlus (APPN control point)

Use the **backup dlus** APPN control point configuration command to specify the name of the default backup DLUS, which performs SSCP services for downstream PUs if the default DLUS is unable to provide the services. Use the **no** form of this command to delete the definition.

backup-dlus *NETID.CPNAME*
no backup-dlus

Syntax Description

NETID.CPNAME	Fully qualified network name. A fully qualified name is a string of 1 to 8 characters, followed by a period, followed by a string of 1 to 8 characters. The following characters are acceptable: A - Z, a - z 0 - 9 $ # @ The first character of either string must not be a number.

Default

This default state is **no backup-dlus.**

Command Mode

APPN control point configuration

Usage Guidelines

You must specify **dlur** and **dlus (control-point)** before you can specify **backup-dlus**. You can use the **backup-dlus** link station configuration command to override this command for a particular link station.

Example

The following example defines an APPN control point with a backup DLUS:

```
appn control-point CISCO.ROUTER
dlur
dlus CISCO.APPN1
backup-dlus CISCO.APPN2
complete
```

Related Commands

appn control-point
backup-dlus (APPN link station)
backup-dlus (APPN control point)

backup-dlus (APPN link station)

Use the **backup-dlus** APPN link station configuration command to specify the default backup DLUS node that provides SSCP services to the downstream PUs of the link in the event that the DLUS is unable to provide the DLUR function. Use the **no** form of this command to delete the definition.

backup-dlus *NETID.CPNAME*
no backup-dlus

Syntax Description

NETID.CPNAME	Fully qualified network name. A fully qualified name is a string of 1 to 8 characters, followed by a period, followed by a string of 1 to 8 characters. The following characters are acceptable: A - Z, a - z 0 - 9 $ # @ The first character of either string must not be a number.

Default

The default state is **no backup-dlus.**

Command Mode

APPN link station configuration

Usage Guidelines

You must specify the **dlur** and **dlus** APPN control point commands before you can specify **backup-dlus**. You can use the **backup-dlus** link station configuration command on the link station to override this command for that particular link station.

Example

The following example specifies the backup DLUS node for a link station:

```
appn link-station CISCO.HOST
port FDDI0
lan-dest-address 0200.0000.1234
dlus CISCO.APPN1
backup-dlus CISCO.APPN3
complete
```

Related Commands

appn link-station
backup-dlus (APPN control point)
dlus (APPN control point)
dlus (APPN link station)

buffer-percent

Use the **buffer-percent** APPN control point configuration command to specify the percent of buffers that are reserved for use by APPN. Use the **no** form of this command to cancel the buffer reservation.

buffer-percent *number*
no buffer-percent

Syntax Description

number	The maximum percentage of I/O memory that APPN is allowed to allocate for buffers. The valid range is 1 to 100 percent.

Default

The default is 100 percent.

Command Mode

APPN control point configuration

Usage Guidelines

Use the **buffer-percent** command to ensure that APPN will not monopolize the router's buffers. If other protocols are to be routed through the local node, this command can be utilized to reserve buffers for protocols other than APPN.

Example

The following example limits APPN's buffer usage to 25% of the router's buffers:

```
appn control-point CISCO.ROUTER
buffer-percent 25
complete
```

Related Commands

A dagger (†) indicates that the command is documented in another chapter.

appn control-point
show buffers †
show memory †

class-of-service

Use the **class-of-service** APPN mode configuration command to specify the class of service that maps to a particular mode name. Use the **no** form of this command to delete the definition.

class-of-service *cosname*
no class-of-service

Syntax Description

cosname	The name of the class of service. Must be a Type A character string. A Type A character string is a string of 1 to 8 of the following characters: A - Z, a - z 0 - 9 $ # @

Default

The default class-of-service name is #CONNECT.

Command Mode

APPN mode configuration

Usage Guidelines

LEN nodes use this node for network services. The mode name is passed in the BIND and this command is used to correlate the mode name to a class-of-service name.

Example

The following example defines a mode with class of service #INTER:

```
appn mode MAPPN1
class-of-service #INTER
complete
```

Related Command

appn mode

connect-at-startup

Use the **connect-at-startup** APPN link station configuration command to specify that the link will call out to the partner and attempt to bring up the link when the link's definition is complete. Use the **no** form of this command to delete the definition.

connect-at-startup
no connect-at-startup

Syntax Description

This command has no arguments or keywords.

Default

The default state is **connect-at-startup.**

Command Mode

APPN link station configuration

Usage Guidelines

Example

The following example deactivates call out for APPN link station ETHER12:

```
appn link-station ETHER12
appn port ETHER1
lan-dest-address 0200.0000.4321
no connect-at-startup
complete
```

Related Command

appn link-station

cost-per-byte (APPN link station)

Use the **cost-per-byte** APPN link station configuration command to specify the cost-per-byte of transmitting a byte of data over this connection. Use the **no** form of this command to delete the definition.

cost-per-byte *cost*
no cost-per-byte

Syntax Description

cost	Number in the range 0 to 255.

Default

The default value specified in the **appn port** command.

Command Mode

APPN link station configuration

Usage Guidelines

Use this command to specify the relative cost to transmit a byte over the link. The relative cost per byte is used in route selection. Cost per byte may be specified at the port level, in which case it applies to all link stations that connect through the port. Cost per byte specified at the link station level overrides the cost per byte specified at the port level, and relates to the defined link station only. This value is compared to the values specified for a class of service to determine if this link can be used to support the class of service.

Example

The following example sets the cost per byte value to 10:

```
appn link-station CISCO1
port RSRB1
lan-dest-address 1000.2020.0211
cost-per-byte 10
complete
```

Related Commands

appn link-station
cost-per-byte (APPN port)
show appn link-station

cost-per-byte (APPN port)

Use the **cost-per-byte** APPN port configuration command to specify the cost per byte of transmitting a byte of data through this port. Use the **no** form of this command to delete the definition.

cost-per-byte *cost*
no cost-per-byte

Syntax Description

cost	Number in the range 0 to 255.

Default

The default cost is 0.

Command Mode

APPN port configuration

Usage Guidelines

Specifying **cost-per-byte** at the port level applies to all link stations accessed through this port, unless **cost-per-byte** is specified on an individual **appn link-station** command. Specifying this on the **appn link-station** command overrides the port value. The cost is used in route selection for a particular class of service. Cost per byte specified at the link station level overrides the cost per byte specified at the port level, and relates to the defined link station only. This value is compared to the values specified for a class of service to determine if this link can be used to support the class of service.

Example

The following example sets the cost per byte value to 10:

```
appn port FR0 Serial0
cost-per-byte 100
complete
```

Related Commands

appn port
cost-per-byte (APPN link station)
show appn port

cost-per-connect-time (APPN link station)

Use the **cost-per-connect-tine** APPN link station configuration command to specify the relative cost of the link. Use the **no** form of this command to delete the definition.

cost-per-connect-tine *cost*
no cost-per-connect-tine

Syntax Description

cost	Number in the range 0 to 255.

Default

The default value specified in the **appn port** command.

Command Mode

APPN link station configuration

Usage Guidelines

The relative cost of the link, which typically reflects the tariff of the transmission facility, is used in route selection. Cost per connect time may be specified at the port level, in which case it applies to all link stations that connect through the port. Cost per connect time specified at the link station level overrides the cost per connect time specified at the port level, and relates to the defined link station only. This value is compared to the values specified for a class of service to determine if this link can be used to support the class of service.

Example

The following example sets the cost per connect time to 100:

```
appn link-station CISCO4
port FDDI0
cost-per-connect-time 100
complete
```

Related Commands

appn link-station
cost-per-connect-time (APPN port)
show appn link-station

cost-per-connect-time (APPN port)

Use the **cost-per-connect-time** APPN port configuration command to specify the cost per connect time. Use the **no** form of this command to delete the definition.

cost-per-connect-time *cost*
no cost-per-connect-time

Syntax Description

cost	Number in the range 0 to 255.

Default

The default cost is 0.

Command Mode

APPN port configuration

Usage Guidelines

Specifying **cost-per-connect-time** at the port level applies to all link stations accessed through this port, unless **cost-per-connect-time** is specified on an individual **appn link-station** command. Specifying this on the **appn link-station** command overrides the port value. The cost is used in route selection for a particular class of service. Cost per connect time specified at the link station level overrides the cost per connect time specified at the port level, and relates to the defined link station only. This value is compared to the values specified for a class of service to determine if this link can be used to support the class of service.

Example

The following example sets the cost per connect time to 100:

```
appn port SDLC0 Serial1
cost-per-connect-time 100
complete
```

Related Commands

appn port
cost-per-connect-time (APPN link station)
show appn port

cp-cp-sessions-supported

Use the **cp-cp-sessions-supported** APPN link station configuration command to specify that a CP - CP session can be established over this connection. Use the **no** form of this command to specify that a CP - CP session can not be established over this link.

cp-cp-sessions-supported
no cp-cp-sessions-supported

Syntax Description

This command has no arguments or keywords.

Default

CP - CP sessions are supported.

Command Mode

APPN link station configuration

Usage Guidelines

The **no** form of this command must be specified for a link to a LEN node.

CP sessions to additional NNs are optional. Having fewer CP - CP sessions reduces the number of topology update messages and memory required, while increasing convergence time (the time required to update all network nodes).

Example

The following example specifies that no CP - CP sessions are supported:

```
appn link-station FDDI41
port FDDI1
lan-dest-address 0400.0000.2323
no cp-cp-sessions-supported
complete
```

Related Commands

appn link-station
show appn link-station
verify-adjacent-node-type

desired-max-send-btu-size

Use the **desired-max-send-btu-size** APPN port configuration command to specify the maximum BTU size on this link. Use the **no** form of this command to delete the definition.

desired-max-send-btu-size *size*
no desired-max-send-btu-size

Syntax Description

size	Number in the range 99 to 32767.

Default

The default size is 1024 bytes.

Command Mode

APPN port configuration

Usage Guidelines

The MTU size must be big enough to accommodate the configured size of the BTU.

Example

The following example sets the maximum BTU size to 4000:

```
appn port TR0 TokenRing0/0
desired-max-send-btu-size 4000
complete
```

Related Commands

A dagger (†) indicates the command is documented in another chapter.

appn port
mtu †
show appn port

dlur

Use the **dlur** APPN control point configuration command to specify that the Dependent LU Requestor (DLUR) function is supported on this CP. Use the **no** form of this command to delete the definition.

dlur
no dlur

Syntax Description

This command has no arguments or keywords.

Default

DLUR is not specified.

Command Mode

APPN control point configuration

Example

The following example specifies the DLUR function on the CP:

```
appn control-point CISCO.ROUTER
dlur
dlus CISCO.HOST
complete
```

Related Commands

appn control-point
dlus (APPN control point)
show appn dlur-lu
show appn dlur-pu
show appn dlus

dlur-dspu-name

Use the **dlur-dspu-name** APPN link station configuration command to specify the name of the downstream PU connected by this link. Use the **no** form of this command to delete the definition.

dlur-dspu-name *puname*
no dlur-dspu-name

Syntax Description

puname	Type A character string. A Type A character string is a string of 1 to 8 of the following characters: A - Z, a - z 0 - 9 $ # @

Default

No default name is specified.

Command Mode

APPN link station configuration

Usage Guidelines

The DLUR function requires the specification of the DSPU name for a PU2.0 node. Specification is also required when the DLUR function must activate the link to a PU2.1 or PU2.0 node, when driven by a host-initiated PU activation, and when the link to the PU is not active.

Example

The following example specifies the DSPU name of a downstream node:

```
appn link-station LINK4
port TR1
lan-dest-address 1000.2020.0211
dlur-dspu-name PU003334
pu-type-20
complete
```

Related Commands

appn link-station
dlur
dlus (APPN link station)

dlus (APPN control point)

Use the **dlus** APPN control point configuration command to specify the name of the default Dependent LU Server (DLUS) that provides SSCP services to the downstream PUs. Use the **no** form of this command to delete the definition.

dlus *netid.cpname*
no dlus

Syntax Description

netid.cpname	Fully qualified CP name. A fully qualified name is a string of 1 to 8 characters, followed by a period, followed by a string of 1 to 8 characters. The following characters are acceptable: A - Z, a - z 0 - 9 $ # @ The first character of either string must not be a number

Default

No default DLUS is defined.

Command Mode

APPN control point configuration

Usage Guidelines

dlur must be specified in the CP command if **dlus** is specified. The name of the node-default DLUS should be specified when supporting downstream PUs that request or require ACTPUs, DLUR does not currently have an active session with the DLUS, and when no DLUS or back-up DLUS name has been provided on the APPN link station definition.

Example

The following example defines the DLUS:

```
appn control-point CISCO.ROUTER1
dlur
dlus CISCO.APPN1
complete
```

Related Commands

appn control-point
dlur
dlus (APPN link station))
show appn dlur-lu

dlus (APPN link station)

Use the **dlus** APPN link station configuration command to specify the name of the default Dependent LU Server (DLUS) node that provides SSCP services to the downstream PUs of this link station. Use the **no** form of this command to delete the definition.

dlus *netid.cpname*
no dlus

Syntax Description

netid.cpname	Fully qualified CP name. A fully qualified name is a string of 1 to 8 characters, followed by a period, followed by a string of 1 to 8 characters. The following characters are acceptable: A - Z, a - z 0 - 9 $ # @ The first character of either string must not be a number

Default

The default state is **no dlus.**

Command Mode

APPN link station configuration

Usage Guidelines

The **dlus** command is used to override the value of **dlus** specified in the control point definition.

Example

The following example specifies the DLUS for a specific APPN link station:

```
appn link-station LINK5
port TR1
lan-dest-address 0200.0000.5678
dlus CISCO.APPN1
complete
```

Related Commands

appn control-point
dlur
dlus (APPN control point)
show appn dlus

effective-capacity (APPN link station)

Use the **effective-capacity** APPN link station configuration command to specify the bit rate for the connection. Use the **no** form of this command to delete the definition.

effective-capacity *number*
no effective-capacity

Syntax Description

number	Number in the range 0 to 100000000, specifying bits per second.

Default

The value specified in the **appn port** command.

Command Mode

APPN link station configuration

Usage Guidelines

The bit rate is compared to the class of service requirements when selecting routes. This can be specified on the link station command to identify the bit rate for this link station only. This value overrides the value specified on the port command. Effective capacity is used by the node to determine the least cost route for APPN intermediate sessions.

Example

The following example defines the effective capacity:

```
appn link-station FRLINK44
port FR0
fr-dest-address 44
effective-capacity 4000000
complete
```

Related Commands

appn link-station
effective-capacity (APPN port)
show appn link-station

effective-capacity (APPN port)

Use the **effective-capacity** APPN port configuration command to specify the effective capacity of a link. Use the **no** form of this command to delete the definition.

effective-capacity *capacity*
no effective-capacity

Syntax Description

capacity	Number in the range 0 to 100000000 specifying bits per second (bps).

Default

The default is media dependent:

Ethernet	10,000,000 bps
FDDI	100,000,000 bps
Frame Relay	56,000 bps
QLLC	56,000 bps
RSRB	56,000 bps
SDLC	56,000 bps
Token Ring	16,000,000 bps

Command Mode

APPN port configuration

Usage Guidelines

Specifying this command at the port level identifies the capacity for all link stations accessed through this port. Specifying this command on the link station command overrides the port value. This command also specifies the value for dynamically created transmission groups. The cost is used in route selection for a particular class of service.

Example

The following example defines the effective capacity:

```
appn port FR0 Serial1/1
effective-capacity 2000000
complete
```

Related Commands

appn port
effective-capacity (APPN link station)
show appn port

fr-dest-address

Use the **fr-dest-address** APPN link station configuration command to specify the address of the partner node for Frame Relay links. Use the **no** form of this command to delete the definition.

fr-dest-address *dlci* [*sap*]
no fr-dest-address

Syntax Description

dlci	Number in the range 16 to 1007 that represents the DLCI, or virtual circuit, for a Frame Relay connection.
sap	1-byte hexadecimal number in the range 04 to ec, and divisible by 4.

Default

No default DLCI is provided.

The default SAP is 04 (hexadecimal)

Command Mode

APPN link station configuration

Usage Guidelines

The command should be specified only if the APPN port used by the link station is a Frame Relay port.

Example

The following example specifies DLCI 100:

```
appn link-station FRLNK100
port FR0
fr-dest-address 100
complete
```

Related Commands

appn link-station
lan-dest-address
sdlc-dest-address
show appn link-station

interrupt-switched

Use the interrupt-switched APPN control point configuration command to specify that ISR should be processed at the interrupt level.

interrupt-switched
no interrupt-switched

Syntax Description

This command has no arguments or keywords.

Default

The default state is **no interrupt-switched.**

Command Mode

APPN control point

Usage Guidelines

This command improves the performance of ISR routing. The command can be used only if segment size is the same on all nodes in the message path. Re-segmenting cannot be accomplished at the interrupt level. In addition, this command should only be used when routing between interfaces with similar speeds. This is because no pacing is done in the node when **interrupt-switched** is specified.

Example

The following example specifies that ISR should be processed at the interrupt level:

```
appn control-point CISCO.APPN1
interrupt-switched
complete
```

Related Commands

appn control-point
show appn intermediate-session

lan-dest-address

Use the **lan-dest-address** APPN link station configuration command to specify the MAC address of the partner node. Use the **no** form of this command to delete the definition.

lan-dest-address *lan-addr* [*sap*]
no lan-dest-address

Syntax Description

lan-addr	12-byte hexadecimal number in the form xxxx.xxxx.xxxx
sap	1-byte hexadecimal number in the range 04 to ec, and divisible by 4.

Defaults

No default lan-addr is specified.

The default SAP is 04 (hexadecimal).

Command Mode

APPN link station configuration

Usage Guidelines

This command is required for interface types Token Ring, Ethernet, or FDDI. It is not allowed for other interface types.

Example

The following example sets the MAC address and SAP for a link to a partner node:

```
appn link-station LINK0001
port ETHER1
lan-dest-address 1234.cfe0.9745 08
complete
```

Related Commands

appn link-station
fr-dest-address
sdlc-dest-address
show appn link-station

limited-resource (APPN link station)

Use the **limited-resource** APPN link station configuration command to specify that the connection is to be taken down when no sessions are using it. Use the **no** form of this command to specify that the connection will remain active when no sessions are using it.

limited-resource
no limited-resource

Syntax Description

This command has no arguments or keywords.

Default

The value specified in the **appn port** command.

Command Mode

APPN link station configuration

Usage Guidelines

This command identifies a link that has a higher cost or is a switched connection and should not remain active if no resource is using the link. The **limited-resource** command issued at the APPN link station level overrides the same command issued at the APPN port level.

Example

The following example specifies that the link be taken down when no sessions are active:

```
appn link-station FRLINK34
port FR1
fr-dest-address 34
limited-resource
complete
```

Related Commands

appn link-station
limited-resource (APPN port)
show appn link-station

limited-resource (APPN port)

Use the **limited-resource** APPN link station configuration command to specify that the link is to be taken down when no sessions are using the link. Use the **no** form of this command to specify that the link will remain active when no sessions are using the link.

limited resource
no limited resource

Syntax Description

This command has no arguments or keywords.

Default

The default is no limited resource.

Command Mode

APPN port configuration

Usage Guidelines

This command identifies a link that has a higher cost or is a switched connection and should not remain active if no resource is using the link. This command applies to all link stations accessed through this port. Specifying limited resource at the link station level overrides this command.

Example

The following example activate limited resource:

```
appn port FR0 Serial0/2
limited-resource
complete
```

Related Commands

appn port
limited-resource (APPN link station)
show appn port

link-queuing

Use the **link-queuing** command to specify queuing options and parameters for the link station. Use the **no** form of the command to cancel the option.

link-queuing {**priority** [**high** | **medium** | **normal** | **low**] | **custom** *queue-number*}
no link-queuing

Syntax Description

priority [high | medium | normal | low]	Priority level.
queue-number	Priority number used to specify custom queueing for the link station.

Default

No default priority number is assigned.

Command Mode

APPN link station configuration

Example

The following example specifies medium priority level queuing for the link station:

```
link-queuing medium
```

Related Command

show appn link-station

local-sap

Use the **local-sap** APPN port configuration command to specify the local SAP to activate on the interface. Use the **no** form of this command to delete the definition.

local-sap *sap*
no local-sap

Syntax Description

sap	Hexadecimal number in the range 04 to ec, and divisible by 4.

Default

The default local SAP (service access point) is 0x04.

Command Mode

APPN port configuration.

Example

The following example specifies the local SAP:

```
appn port TR0 TokenRing0
local-sap 44
complete
```

Related Commands

appn port
show appn port

max-cached-entries

Use the **max-cached-entries** APPN control point configuration command to specify the maximum number of cached directory entries. Use the **no** form of this command to delete the definition.

max-cached-entries *number*
no max-cached-entries

Syntax Description

number	The maximum number of cached directory entries. The valid range is 0 to 32767.

Default

255 cached directory entries

Command Mode

APPN control point configuration

Usage Guidelines

This command enables you to balance memory usage and performance. A large number requires more memory, but reduces the number of network broadcasts. Cached directory entries are created as nodes learn locations of other network resources. This command affects cached entries only. A value of zero still allows location of node, but broadcasts are required.

Example

The following example specifies the maximum number of cached directory entries:

```
appn control-point CISCO.ROUTER
max-cached-entries 100
complete
```

Related Commands

appn control-point
show appn node

max-cached-trees

Use the **max-cached-trees** APPN control point configuration command to specify the maximum number of cached class of service routing trees. Use the **no** form of this command to delete the definition.

max-cached-trees *number*
no max-cached-trees

Syntax Description

number	Maximum number of cached class of service routing trees. The valid range is 0 to 32767.

Default

20 trees

Command Mode

APPN control point configuration

Usage Guidelines

This command allows you to balance memory usage and performance. Each cached tree represents all paths through the network for a class of service. If you specify a lower number, fewer will be caches and longer processing time may be required to calculate the paths through the network and select a route.

Example

The following example specifies the maximum number of cached topology trees:

```
appn control-point CISCO.ROUTER
max-cached-trees 5
complete
```

Related Commands

appn control-point
show appn node

minimum-memory

Use the **minimum-memory** APPN control point configuration command to specify the minimum amount of memory available to APPN. Use the **no** form of the command to cancel the specification.

minimum-memory *memory*
no minimum-memory

Syntax Description

memory	The maximum amount of memory (in bytes) available to APPN. The valid range is 1,000,000 to 64,000,000

Default

The default is 1,000,000 bytes.

Command Mode

APPN control point configuration

Usage Guidelines

This command ensures that APPN will always have a specified amount of memory. Memory that is dedicated to APPN will not be available for other processing.

Example

The following example reserves 10,000,000 bytes of memory for APPN

```
appn control-point CISCO.APPN1
minimum-memory 10000000
complete
```

Related Commands

appn control-point
maximum-memory

maximum-memory

Use the **maximum-memory** APPN control point configuration command to specify the maximum amount of memory available to APPN. Use the **no** form of the command to cancel the specification.

maximum-memory *memory*
no maximum-memory

Syntax Description

memory	The maximum amount of memory (in bytes) available to APPN. The valid range is 3,000,000 to 64,000,000 bytes.

Default

The default is that APPN has access to all memory in the router.

Command Mode

APPN control point configuration

Usage Guidelines

This command ensures that APPN will not monopolize the memory of the router. The ensures that other protocols being routed will have memory available.

Example

The following example specifies the maximum amount of memory available to APPN as 16 megabytes:

```
appn control-point CISCO.APPN1
maximum-memory 16000000
complete
```

Related Command

appn control-point

max-link-stations

Use the **max-link-stations** APPN port configuration command to specify the maximum number of active link stations allowed on this port. Use the **no** form of the command to delete the definition.

max-link-stations *max*
no max-link-stations

Syntax Description

max	Number in the range 1 to 255. Must be greater than or equal to the sum of reserved-inbound and reserved-outbound.

Default

The default is media dependent.

Ethernet	255
FDDI	255
Frame Relay	255
QLLC	1
RSRB	255
SDLC	1
Token Ring	255

Command Mode

APPN port configuration

Usage Guidelines

For leased negotiable lines, the maximum value is 1.

For leased primary lines, not multidrop, the maximum value is 1 and inbound is 0.

For leased secondary lines and switched lines the maximum value is 1.

Example

The following example sets the maximum link stations:

```
appn port TR01 TokenRing0/1
max-link-stations 10
complete
```

Related Commands

appn port
reserved-inbound
reserved-outbound
show appn port

max-rcv-btu-size

Use the **max-rcv-btu-size** APPN port configuration command to specify the desired maximum receive BTU. Use the **no** form of this command to delete the definition.

max-rcv-btu-size *size*
no max-rcv-btu-size

Syntax Description

size	Number in the range 99 to 32767.

Default

1024 bytes

Command Mode

APPN port configuration

Usage Guidelines

The Basic Transmission Unit (BTU) specifies a maximum message size at the physical layer, similar to the Maximum Transmission Unit (MTU) in TCP/IP. Don't confuse BTU with MAXRU, which is session related.

Example

The following example sets the maximum BTU value:

```
appn port TR11 TokenRing1/1
max-rcv-btu-size 500
complete
```

Related Commands

appn port
show appn port

node-row

Use the **node-row** APPN class-of service configuration command to specify a node description or node row, and associated weights defined for this class of service. Use the **no** form of this command to delete a previous node row description.

node-row *index* **weight** *weight* **congestion** [**yes** | **no**] [**yes** | **no**] **route-additional-resistance** *min max*
no node-row *index*

Syntax Description

index	Specifies which row is being entered. The valid range is 1 to 8.
weight *weight*	Weight assigned to a node, given the characteristics identified in the remainder of the row. The weight of row n must be less than the weight of row n+1. The valid range is 0 to 255.
congestion [**yes** | **no**] [**yes** | **no**]	Congestion tolerance.
yes yes	Only yes. Only congested transmission groups match this row.
no yes	Yes or no. Congestion does not affect class of service row.
no no	Only no. Only non-congested transmission groups match this row. The default is no no.
route-additional-resistance *min max*	The minimum and maximum router additional resistance value for the row. The value is compared to the same parameter defined in the CP for each network node and exchanged on the topology database updates. The valid range for minimum and maximum is 0 to 255. The default range for minimum and maximum is 0 and 0.

Default

No default node row is specified.

No default weight is specified.

The default congestion tolerance is no no.

The default route additional resistance is 0 0.

Command Mode

APPN class of service configuration

Usage Guidelines

You can define up to 8 rows. Each row represents the characteristics of a node that meets the requirements for this class of service and defines a weight for the node that will be used in calculating the cost of a total route.

Example

The following example defines the an APPN class of service with one node row:

```
appn class-of-service #SECURE
node-row 1 weight 5 congestion no no route-additional-resistance 0 255
tg-row 1 weight 30 byte 0 255 time 0 255 capacity 0 255 delay 0 255 security 200 255 user1
0 255 user2 0 255 user3 0 255
complete
```

Related Commands

appn class-of-service
show appn class-of-service

owning-cp

Use the **owning-cp** APPN partner-lu-location configuration command to specify the name of the CP owning the partner LU. Use the **no** form of this command to delete the definition.

owning-cp *netid.cpname*
no owning-cp

Syntax Description

netid.cpname	Fully qualified network name. A fully qualified name is a string of 1 to 8 characters, followed by a period, followed by a string of 1 to 8 characters. The following characters are acceptable: A - Z, a - z 0 - 9 $ # @ The first character of either string must not be a number

Default

No default name is assigned.

Command Mode

APPN partner LU location configuration

Usage Guidelines

The NETID.CPNAME must be unique in the network and must match the name specified as control point on the specific node.

Example

The following command sets the owning CP name:

```
appn partner-lu-location CISCO.LU000012
owning-cp CISCO.CP00001
complete
```

Related Commands

appn partner-lu-location
show appn directory

port (APPN connection network)

Use the **port** APPN connection network configuration command to specify the ports that have visibility to the connection network. Use the **no** form of this command to delete the definition.

port *portname*
no port *portname*

Syntax Description

portname	Type A name. A Type A character string is a string of 1 to 8 of the following characters: A - Z, a - z 0 - 9 $ # @

Default

No default port name is assigned.

Command Mode

APPN connection network configuration

Usage Guidelines

Up to 5 ports can be specified by repeating the command. portnames must be previously defined by the **appn port** command.

Example

The following example specifies an APPN connection network with one port.

```
appn connection-network CISCO.CN1
port TR0
complete
```

Related Commands

appn connection-network
appn port
show appn connection-network

port (APPN link station)

Use the **port** APPN link station configuration command to specify the port that can be used to access the link station. Use the **no** form of this command to delete the definition.

port *portname*
no port

Syntax Description

portname	Required when defining a new link station; optional on subsequent changes to the link station. Type A name. A Type A character string is a string of 1 to 8 of the following characters: A - Z, a - z 0 - 9 $ # @

Default

No default port is specified.

Command Mode

APPN link station configuration

Usage Guidelines

PORTNAME must be a value defined in a previous **appn port** command. The **port** command is required to define an APPN link station.

Example

The following example defines the port:

```
appn link-station FDDILINK
port FDDI0
lan-dest-address 0200.0000.cfbd
complete
```

Related Commands

appn link-station
appn port
show appn link-station

propagation-delay (APPN link station)

Use the **propagation-delay** APPN link station configuration command to specify the amount of inherent delay of the connection. Use the **no** form of this command to delete the definition.

propagation-delay {**minimum** | **lan** | **telephone** | **packet-switched** | **satellite** | **maximum**}
no propagation-delay

Syntax Description

minimum	No delay.
lan	Less than 480 microseconds delay.
telephone	Between 480 and 49152 microseconds delay.
packet-switched	Between 49152 and 245760 microseconds delay.
satellite	Over 245760 microseconds delay.
maximum	Maximum delay allowed.

Default

The value specified in the **appn port** command.

Command Mode

APPN link station configuration

Usage Guidelines

The inherent delay is used in route selection by comparing this to the value requested for a particular class of service. This value supersedes any value specified on the **appn port** command. Propagation delay is used by the node to determine the least cost route for APPN intermediate sessions.

Example

The following example specifies a delay of less than 480 microseconds:

```
appn link-station FRLINK12
port FR1
propagation-delay lan
complete
```

Related Commands

appn link-station
show appn link-station

propagation-delay (APPN port)

Use the **propagation-delay** APPN port configuration command to specify the propagation delay of the link. Use the **no** form of this command to delete the definition.

propagation-delay {**minimum** | **lan** | **telephone** | **packet-switched** | **satellite** | **maximum**}
no propagation-delay

Syntax Description

minimum	No delay.
lan	Less than 480 microseconds delay.
telephone	Between 480 and 49152 microseconds delay.
packet-switched	Between 49152 and 245760 microseconds delay.
satellite	Over 245760 microseconds delay.
maximum	Maximum delay allowed.

Default

Media dependent:

Ethernet	lan
FDDI	lan
Frame Relay	packet-switched
QLLC	packet-switched
RSRB	packet-switched
SDLC	telephone
Token Ring	lan

Command Mode

APPN port configuration

Usage Guidelines

This command applies to all link stations accessed through this port. Specifying propagation-delay at the link station level overrides this command. The value of propagation delay is used by the node to determine the least cost route for APPN intermediate sessions.

Example

The following example specifies a delay of less than 480 microseconds:

```
appn port FR1 Serial1/1
propagation-delay lan
complete
```

Related Commands

appn port
show appn port

pu-type-20

Use the **pu-type-20** APPN link station configuration command to indicate that the downstream PU whose dependent LU request is propagated through the link is a PU Type 2.0. Use the **no** form of this command, or omit this command to indicate that the downstream PU is a Type 2.1.

pu-type-20
no pu-type-20

Syntax Description

This command has no arguments or keywords.

Default

The downstream PU is defined as a PU Type 2.1.

Command Mode

APPN link station configuration

Usage Guidelines

This command is normally used in conjunction with the **dlur-dspu-name** link-station configuration command.

Example

The following example indicates that the downstream is a PU Type 2.0:

```
appn link-station LINK0001
port TR0
lan-dest-address 1000.4521.9812
pu-type-20
dlur-dspu-name PU009812
complete
```

Related Commands

appn link-station
show appn link-station

reserved-inbound

Use the **reserved-inbound** APPN port configuration command to specify the number of link stations (out of max-link-stations) to be reserved for inbound links (partner initiates). Use the **no** form of this command to delete a previous definition.

reserved-inbound *number*
no reserved-inbound

Syntax Description

number	Number in the range 0 to 255.

Default

Zero link stations.

Command Mode

APPN port configuration

Usage Guidelines

The total of r**eserved-inbound** plus **reserved-outbound** must be less than or equal to the maximum number of link station allowed on the port. This value is configured using the **max-link-stations** command.

Example

The following example sets the number of link stations reserved for inbound links to 50:

```
appn port TR0 TokenRing0
reserved-inbound 50
complete
```

Related Commands

appn port
max-link-stations
reserved-outbound
show appn port

reserved-outbound

Used the **reserved-outbound** APPN port configuration command to specify the number of link stations (of max-link-stations) to be reserved for outbound link stations where this node initiates the connection. Use the **no** form of this command to delete the definition.

reserved-outbound *number*
no reserved-outbound

Syntax Description

number	Number in the range 0 to 255.

Default

Zero link stations.

Command Mode

APPN port configuration

Usage Guidelines

The total of r**eserved-inbound** plus **reserved-outbound** must be less than or equal to the maximum number of link station allowed on the port. This value is configured using the **max-link-stations** command.

Example

The following example sets the number of link stations reserved for outbound links to 50:

```
appn port TR1 TokenRing1
reserved-outbound 50
complete
```

Related Commands

appn port
max-link-stations
reserved-inbound
show appn port

retry-limit (APPN link station)

Use the **retry-limit** APPN link station configuration command to specify the number of times a link station attempts reactivation after failure. Use the **no** form of this command to specify the default.

retry-limit {*retries* | **infinite** [*time*]}
no retry-limit

Syntax Description

retries	The number of reactivation attempts. The valid range is 0 to 255. (0 equals infinite retries.) The default number of retries is 5.
infinite	Infinite retries.
time	(Optional) The amount of time allowed between reactivation attempts (in seconds). The valid range is 0 - 32,767 seconds. The default amount of time is 30 seconds.

Default

The default is to use the values defined for the specified port.

Command Mode

APPN link station configuration

Usage Guidelines

This value supersedes any value specified in the **appn port** command.

Example

The following example specifies 25 retries for APPN link station LINK12:

```
appn link-station LINK12
port FDDI1
lan-dest-address 4000.0211.4567
retry-limit 25
complete
```

Related Commands

appn link-station
show appn link-station

retry-limit (APPN port)

Use the **retry-limit** APPN port configuration command to specify how many times a line will attempt reactivation after failure. Use the **no** form of this command to delete the previous definition.

retry-limit {*retries* | **infinite** [*time*]}
no retry-limit

Syntax Description

retries	The number of reactivation attempts. The valid range is 0to 255. (0 equals infinite retries.)
infinite	Infinite retries.
time	(Optional) The amount of time allowed between reactivation attempts (in seconds).

Default

The default number of retries is 5.

The default amount of time is 30 seconds.

Command Mode

APPN port configuration

Usage Guidelines

This command applies to all link stations accessed through this port. Specifying retry limit at the link station level overrides this command.

Example

The following example specifies 25 retries:

```
appn port ETHER0 Ethernet0
retry-limit 25
complete
```

Related Commands

appn port
show appn port

role (APPN link station)

Use the **role** APPN link station configuration command to specify the link station role used in XID negotiations. Use the **no** form of this command to delete a previous definition.

role {**negotiable** | **primary** | **secondary**}
no role

Syntax Description

negotiable	The link station can be the primary or secondary end of the link station connection.
primary	The link station is the primary end of the link station connection.
secondary	The link station is the secondary end of the link station connection.

Default

The value specified in the **appn port** command.

Command Mode

APPN link station configuration

Usage Guidelines

This command overrides the value specified on the port definition.

Example

The following example sets the role to primary:

```
appn link-station LINK44
port ETHER1
lan-dest-address 0200.98ab.de23
role primary
complete
```

Related Commands

appn link-station
show appn link-station

role (APPN port)

Use the **role** APPN port configuration command to specify the link station role used in XID negotiations for all link stations defined through this port. Use the **no** form of this command to delete a previous definition.

role {**negotiable** | **primary** | **secondary**}
no role

Syntax Description

negotiable	The link station can be the primary or secondary end of the link station connection.
primary	The link station is the primary end of the link station connection.
secondary	The link station is the secondary end of the link station connection.

Default

The default role is **negotiable**

Command Mode

APPN port configuration

Usage Guidelines

This command applies to all link stations accessed through this port. Specifying role at the link station overrides this command.

Example

The following example sets the role to primary:

```
appn port FDDI0 Fddi0
role primary
complete
```

Related Commands

appn port
show appn port

route-additional-resistance

Use the **route-additional-resistance** APPN control point configuration command to specify an arbitrary value for the local node. Use the **no** form of this command to delete the definition.

route-additional-resistance *number*
no route-additional-resistance

Syntax Description

number	Arbitrary value in the range of 0 to 255.

Default

The default resistance value is 128.

Command Mode

APPN control point configuration

Usage Guidelines

The route additional resistance value is included in topology updates and is used by network nodes to select a least-cost path associated with a particular class of service. You use this command to assign an arbitrary value and to indicate preference or non-preference for particular nodes in route paths.

Example

The following example specifies a route additional resistance value of 200:

```
appn control-point CISCO.ROUTER
route-additional-resistance 200
complete
```

Related Commands

appn control-point
show appn node

rsrb-virtual-station

Use the **rsrb-virtual-station** APPN port configuration command to configure APPN for remote source-route bridging. Use the no form of this command to delete the configuration.

rsrb-virtual-station *virtual-mac-addr local-ring-num target-ring-num*
no rsrb-virtual-station

Syntax Description

virtual-mac-addr	The virtual MAC address on which APPN resides.
local-ring-num	The virtual ring number on which the APPN station resides. The valid range is 1 - 255.
target-ring-num	The target ring through which the local ring bridges data. The valid range is 1 - 255.

Default

No defaults are defined.

Command Mode

APPN port configuration

Example

The following example defines an APPN port that uses RSRB as a transport protocol:

```
appn port rsrb
rsrb-virtual-station 1234.1234.1234 50 60
complete
```

Related Commands

appn port
show appn port

safe-store-cycle

Use the **safe-store-cycle** APPN control point configuration command to specify the number of cache instances to be saved. Use the **no** form of this command to delete the previous definition.

safe-store-cycle *number*
no safe-store-cycle

Syntax Description

number	Number of cache instances to be saved.

Default

The default is 2.

Command Mode

APPN control point configuration

Example

The following example specifies that 5 cache instances will be saved:

```
appn control-point CISCO.APPN1
safe-store-host ip-address 171.69.44.1 directory appnsafe
safe-store-cycle 5
complete
```

Related Command

appn control-point

safe-store-host

Use the **safe-store-host** APPN control point configuration command to specify the IP host address and the file path for safe store. Use the **no** form of this command to delete the previous definition.

safe-store-host ip-address *address* **directory** *path*
no safe-store-host

Syntax Description

ip-address *address*	Host IP address.
directory *path*	File path for safe store.

Default

No defaults are assigned.

Command Mode

APPN control point configuration

Example

The following example specifies that the IP host address and the file path where the database will be stored:

```
appn control-point CISCO.APPN1
safe-store-host ip-address 171.69.44.1 directory appnsafe
safe-store-cycle 5
complete
```

Related Command

appn control-point

safe-store-interval

Use the **safe-store-interval** APPN control point configuration command to specify how often the directory database is stored to permanent media. Use the **no** form of this command to delete the previous definition.

safe-store-interval *interval*
no safe-store-interval

Syntax Description

interval	Interval in minutes between storage of the directory database to permanent media. The valid range is 0 to 32767 minutes.

Default

20 minutes

Command Mode

APPN control point configuration

Usage Guidelines

This command allows you to balance processor usage with potential performance savings. A longer interval reduces the processor cycles used to save data, but potentially reduces the validity of the data due to less frequent updates.

Example

The following example specifies that the database will be stored to permanent media every 30 minutes:

```
appn control-point CISCO.APPN1
safe-store-host ip-address 171.69.44.1 directory appnsafe
safe-store-interval 30
complete
```

Related Command

appn control-point

sdlc-dest-address

Use the **sdlc-dest-address** APPN link station configuration command to specify the local address of the partner node for non-switched SDLC. Use the **no** form of this command to delete the definition.

sdlc-dest-address *address*
no sdlc-dest-address *address*

Syntax Description

address	A 2-digit hexadecimal number in the range of 00 to fe.

Default

No default address is assigned.

Command Mode

APPN link station configuration

Usage Guidelines

This command is optional if the interface type is switched SDLC. It is not allowed for other interface types.

Example

The following example assigns address f1:

```
appn link-station LINK12
port SDLC1
sdlc-dest-address f1
complete
```

Related Commands

appn link-station
show appn link-station

sdlc-sec-addr

Use the sdlc-sec-addr command to configure APPN for SDLC. Use the no form of this command to delete the configuration.

sdlc-sec-addr *sdlc-addr*
no sdlc-sec-addr

Syntax Description

sdlc-addr	SDLC secondary address. The valid range is 0 to fe (hexadecimal).

Default

The default address is 0.

Command Mode

APPN port configuration

Example

The following example defines a port with a local SDLC address of 2.

```
appn port Serial1
sdlc-sec-address 2
complete
```

Related Commands

appn port
show appn port

security (APPN link station)

Use the **security** APPN link station configuration command to specify the security level of the connection. Use the **no** form of this command to delete the previous definition.

security {*security-level*}
no security

Syntax Description

security-level	One of the following keywords: **nonsecure**, **public-switched**, **underground-cable**, **secure-conduit**, **guarded-conduit**, **encrypted**, **guarded-radiation**

Default

The default value specified in the **appn port** command.

Command Mode

APPN link station configuration

Usage Guidelines

The security level is used in route selection.

Example

The following example sets the security level to encrypted:

```
appn link-station LINK12
security encrypted
complete
```

Related Commands

appn link-station
show appn link-station

security (APPN port)

Use the **security** APPN port configuration command to specify security level. Use the **no** form of this command to delete the previous definition.

security {*security-level*}
no security

Syntax Description

security-level	One of the following keywords: **nonsecure**, **public-switched**, **underground-cable**, **secure-conduit**, **guarded-conduit**, **encrypted**, **guarded-radiation**

Default

The default security is nonsecure.

Command Mode

APPN port configuration

Usage Guidelines

This command applies to all link stations accessed through this port. Specifying security at the link station level overrides this command.

Example

The following command sets the security level to encrypted:

```
appn port TR0 TokenRing0
security encrypted
complete
```

Related Commands

appn port
show appn port

service-any

Use the **service-any** APPN port configuration command to specify that this port will create dynamic transmission groups for outbound or inbound links. Use the **no** form of this command to specify that the link station must be defined through configuration commands.

service-any
no service-any

Syntax Description

This command has no arguments or keywords.

Default

The default state is **service-any**.

Command Mode

APPN port configuration

Usage Guidelines

Specifying no service-any serves as a security mechanism to control who may or may not connect to the local node.

Example

The following example activate service any:

```
appn port FDDI0 Fddi0
no service-any
complete
```

Related Commands

appn port
show appn port

serving-nn

Use the **serving-nn** APPN partner-lu-location configuration command to specify the name of the network node server servicing the partner LU. Use the **no** form of this command to delete the definition.

serving-nn *netid.cpname*
no serving-nn

Syntax Description

netid.cpname	Fully qualified network name. A fully qualified name is a string of 1 to 8 characters, followed by a period, followed by a string of 1 to 8 characters. The following characters are acceptable: A - Z, a - z 0 - 9 $ # @ The first character of either string must not be a number

Default

The CP name of the local network node.

Command Mode

APPN partner LU location configuration

Usage Guidelines

The **serving-nn** may be specified as null if the LU name is specified as null. This specification indicates a wildcard definition for all LUs.

Example

The following example sets **serving-nn**:

```
appn partner-lu-location CISCO.LU000012
serving-nn CISCO.APPN1
complete
```

Related Commands

appn partner-lu-location
show appn directory

show appn class-of-service

Use the **show appn class-of-service** EXEC command to display the APPN classes of service defined to the local node.

show appn class-of-service [**brief** | **detail**]

Syntax Description

brief	(Optional) A short display of APPN classes of service.
detail	(Optional) A long display of APPN classes of service.

Default

Brief display

Command Mode

EXEC

Sample Display

- Brief:

```
Number of class of service definitions        7
    APPN Classes of Service
        Name    Trans. Pri.  Node Rows  TG Rows
       --------  -----------  ---------  -------
   1> #CONNECT  Medium            8         8
   2> CPSVCMG   Network           8         8
   3> SNASVCMG  Network           8         8
   4> #INTER    High              8         8
   5> #INTERSC  High              8         8
   6> #BATCH    Low               8         8
   7> #BATCHSC  Low               8         8
```

- Detail:

This example shows just one part of one table. There could be up to 8 node rows and 8 TGs and multiple tables. This shows, however, the correspondence between the configuration commands and SHOW commands.

```
Number of class of service definitions        8
1> Class of service name                      #connect
    Transmission priority                     Medium
    Number of node rows                       8
    Number of TG rows                         8
1.1> Node row weight                          5
        Congestion min                        no
        Congestion max                        no
        Route additional resistance min       0
        Route additional resistance max       31
.                                             .
1.1>TG row weight                             30
        Cost per connect time min             0
        Cost per connect time max             0
```

```
Cost per byte min                    0
Cost per byte max                    0
Security min                         Nonsecure
Security max                         Maximum security
Propagation delay min                0 microseconds (minimum)
Propagation delay max                384 microseconds (local area network)
Effective capacity min               4 megabits per second
Effective capacity max               604 gigabits per second
User defined parameter 1 min         0
User defined parameter 1 max         255
User defined parameter 2 min         0
User defined parameter 2 max         255
User defined parameter 3 min         0
User defined parameter 3 max         255
```

Table 32-1 Show APPN Class-of-Service Field Descriptions

Field	Description
Class of Service Name	Administratively-assigned name for this COS
transmission priority	The relative priority this COS will receive when transmitting out of this node.
Number of node rows	The number of node rows associated with this COS
Node of TG Rows	The number of TG rows associated with this COS.
Node Row Weight	The weight assigned to this node given the characteristics identified in the remainder this row.
Congestion Min	
Congestion Max	
Route additional resistance min	The minimum route additional resistance for this node row.
Route additional resistance max	The maximum route additional resistance for this node row.
TG Row Weight	The weight associated with this TG given the characteristics identified in the remainder of this row.
Cost per connect time min	The minimum acceptable value for cost per connect time for this TG row.
Cost per connect time max	The maximum acceptable value for cost per connect time for this TG row.
Cost per byte min	The minimum acceptable value for cost per byte for this TG row.
Cost per byte max	The maximum acceptable value for cost per byte for this TG row.
Security min	The minimum acceptable value for security for this TG row.
Security max	The maximum acceptable value for security for this TG row.
Propagation delay min	The minimum acceptable value for propagation delay for this TG row.
Propagation delay max	The maximum acceptable value for propagation delay for this TG row.
Effective capacity min	The minimum acceptable value for effective capacity for this TG row.
Effective capacity max	The maximum acceptable value for effective capacity for this TG row.
User defined parameter 1 min	The minimum value for a network-unique TG characteristic - parameter 1.
User defined parameter 1 max	The maximum value for a network-unique TG characteristic - parameter 1.

User defined parameter 2 min	The minimum value for a network-unique TG characteristic - parameter 2.
User defined parameter 2 max	The maximum value for a network-unique TG characteristic - parameter 2.
User defined parameter 3 min	The minimum value for a network-unique TG characteristic - parameter 3.
User defined parameter 3 max	The maximum value for a network-unique TG characteristic - parameter 3.

Related Commands

appn class-of-service
class-of-service

show appn connection-network

Use **show appn connection-network** to display the APPN connection networks defined to the local node.

show appn connection-network [**brief** | **detail**]

Syntax Description

brief	(Optional) A short display of APPN connection networks.
detail	(Optional) A long display of APPN connection networks.

Default

Brief display

Command Mode

EXEC

Sample Display

- Brief:

```
Connection network definitions                2
      APPN Connection Networks
        Resource Name    Attached Ports  First Port Name
      -----------------  --------------  ---------------
   1> NETA.CN                    2       TR0
                                         ABCDEFGH
   2> NETADDDD.WWWWEEEE          1       TR0
```

- Detail:

```
Connection network definitions               1

1>Connection network name                    NETA.CONNECT
  Effective capacity                         15974400 bits per second
  Cost per connect time                      0
  Cost per byte                              0
  Propagation delay                          384 microseconds (local area network)
  User defined parameter 1                   128
  User defined parameter 2                   128
  User defined parameter 3                   128
  Security                                   Nonsecure
  Attached ports                             1

1.1>Port name                                TR0
```

Table 32-2 Show APPN Connection-Network Field Descriptions

Field	Description
Connection Network Name	The fully-qualified name of the connection network.
Effective capacity	The bit rate for the connection network.
Cost per connect time	The relative cost of this connection network's TG.

Cost per byte	The cost-per-byte of transmitting a byte over this TG.
Propagation delay	The inherent delay of the connection network
User defined parameter 1	The value for a network-unique TG characteristic - parameter 1.
User defined parameter 2	The value for a network-unique TG characteristic - parameter 2.
User defined parameter 3	The value for a network-unique TG characteristic - parameter 3.
Security	The security level for this connection network.
Attached ports	The number of ports associated with the connection network.
Port Name	The port supporting this connection network.

Related Command

appn connection-network

show appn directory

Use **show appn directory** to display the contents of the APPN directory database.

show appn directory [**brief** | **detail**]

Syntax Description

brief	(Optional) A short display of the APPN directory database.
detail	(Optional) A long display of the APPN directory database.

Default

Brief display

Syntax Description

This command has no arguments or keywords.

Command Mode

EXEC

Sample Display

- Brief:

```
Total directory entries                     5
      APPN Directory Entries
      Resource Name      Owning CP Name     NN Server          Entry Type
      -----------------  --------------     ---------           --------
   1> NETA.BART          NETA.BART
   2> NETA.DUMB          NETA.MARGE         NETA.BART          Register
   3> NETA.DUMBER        NETA.MARGE         NETA.BART          Register
   4> NETA.DUMBEST       NETA.MARGE         NETA.BART          Register
   5> NETA.MARGELU1      NETA.MARGE         NETA.BART          Register
```

- Detail:

This example shows a very small directory, but points out key characteristics of the displays.

The LU in this case was added to the directory through registration when resources were activated.

```
Total directory entries                   2
Network node entries                      1

1>Network node CP name                    CISCO.BARNEY
    Number of associated LUs              1

1.1>LU name                               CISCO.MARGELU1
       Owning CP name                     CISCO.MARGE
       LU entry typ                       Register

Local and adjacent node entries           0

Local and adjacent node entries           0
```

Table 32-3 Show APPN Directory Field Descriptions

Field	Description
Network Node CP name	The fully-qualified name of the resource entry
Number of associated LUs	The number of LUs associated with the above CP.
LU Name	The LU name belonging to the Network node above.
Owning CP Name	The control point owning this partner LU.
LU entry type	The type of entry this LU is in the directory database.

Related Command

appn partner-lu-location

show appn dlur-lu

Use **show appn dlur-lu** to display all active SSCP dependent LUs known to DLUR.

show appn dlur-lu *luname* [**brief** | **detail**]

Syntax Description

luname	8-character Type-A string of a specific LU.
brief	(Optional) A short display of the APPN directory database.
detail	(Optional) A long display of the APPN directory database.

Default

Brief display

Command Mode

EXEC

Sample Display

- Brief:

```
APPN DLUR-LU:
      LU Name   PU Name   DLUS Name   PLU Name
      -------   -------   ---------   ----------
   1> SJDRLU11  BEAGLE    NETA.CPAC   NETA.TSO0005
```

- Detail:

```
LU name                                SJDRLU11
PU name                                BEAGLE
Dependent LU Server Name               NETA.CPAC
LU location                            Remote
NAU address                            2
PLU name                               NETA.TSO0005
```

Table 32-4 Show APPN DLUR-LU Field Descriptions

Field	Description
LU Name	Logical Unit name of the active SSCP dependent LUs supported by DLUR.
PU Name	Physical Unit name of the active SSCP dependent LU.
DLUS Name	Fully-qualified name of the DLUS providing SSCP services for the SSCP dependent LU.
LU Location	Always identifies the LUs as remote LUs.
NAU Address	Network Addressable Unit of the LU.
PLU Name	When the SSCP dependent LU has an active session, the name of the Primary LU Name will be displayed.

Related Commands

backup-dlus (APPN control point)
dlur
dlus (APPN control point)
show appn dlur-pu
show appn dlus

show appn dlur-pu

Use **show appn dlur-pu** to display all active SSCP dependent PUs known to DLUR.

show appn dlur-pu *puname* [**brief** | **detail**]

Syntax Description

puname	8-character Type-A string of a specific PU.
brief	(Optional) A short display of the APPN directory database.
detail	(Optional) A long display of the APPN directory database.

Default

Brief display

Command Mode

EXEC

Sample Display

- Brief:

```
APPN DLUR-PU:
        PU NameR  Active DLUS  Defined DLUS  Backup DLUS
        --------  -----------  ------------  -----------
     1> BEAGLE    NETA.CPAC
```

- Detail:

```
PU name                                  BEAGLE
Defined DLUS name
Backup DLUS name
Physical unit (PU) Node ID               05D00010
PU location                              Downstream
Active DLUS name                         NETA.CPAC
ANS support                              Continue
PCID                                     D6DB11281AF90044
Fully qualified CP name                  NETA.WONDER
```

Table 32-5 Show APPN DLUR-PU Field Descriptions

Field	Description
PU Name	Physical Unit name of active SSCP dependent PUs
Defined DLUS Name	DLUS name specified with the **dlus** (APPN link station) configuration command
Backup DLUS Name	DLUS name specified with the **backup-dlus** (APPN link station) configuration command
PU Node ID	IDBLK and IDNUM of the PU
PU Location	Always identifies the PU as downstream
Active DLUS name	Fully qualified name of the DLUS providing SSCP services for the PU

ANS Support	Identifies whether DLUR will keep active LU-LU sessions (Continue) when the connection to the DLUS is lost or whether DLUR will tear down active LU-LU sessions (Stop).
PCID	Procedure Correlation Identifier used to distinguish encapsulated traffic associated with this PU
Fully Qualified CP Name	Fully qualified CP name of the CP which generated the PCID above.

Related Commands

backup-dlus (APPN control point)
dlur
dlus (APPN control point)
show appn dlur-lu
show appn dlus

show appn dlus

Use **show appn dlur** to display all LUs known to DLUR.

show appn dlus [**brief** | **detail**]

Syntax Description

brief	(Optional) A short display of the APPN directory database.
detail	(Optional) A long display of the APPN directory database.

Default

Brief display

Command Mode

EXEC

Sample Display

- Brief:

```
APPN DLUS:
      DLUS Name   State   # Active PUs
      ---------   -----   ----------
   1> NETA.CPAC   ACTIVE            1
```

- Detail:

```
Dependent LU Server Name                 NETA.CPAC
Is this default DLUS?                    Yes
Is this default backup DLUS?             No
Pipe State                               Active
Number of active PUs                     1
Pipe statistics
# of REQACTPU requests sent              1
# of REQACTPU responses received         1
# of ACTPU requests received             1
# of ACTPU responses sent                1
# of REQDACTPU requests sent             0
# of REQDACTPU responses received        0
# of DACTPU requests received            0
# of DACTPU responses sent               0
# of ACTLU requests received             1
# of ACTLU responses sent                1
# of DACTLU requests received            0
# of DACTLU responses sent               0
# of SSCP_PU MUs received                0
# of SSCP_PU MUs sent                    0
# of SSCP_LU MUs received                4
# of SSCP_LU MUs sent                    5
```

Table 32-6 Show APPN DLUS Field Descriptions

Field	Description
DLUS Name	Fully qualified DLUS name.
Default DLUS	Identifies the DLUS as the node default DLUS.
Default Backup DLUS	Identifies the DLUS as the node backup default DLUS.
Pipe State	Identifies the state of the DLUS-DLUR connection.
Number of Active PUs	Total number of active PUs.
REQACTPU sent/rcvd	The number of REQACTPU requests sent to the DLUS and the number of REQACTPU responses received from DLUS.
ACTPU sent/rcvd	The number of ACTPU responses sent to the DLUs and the number of ACTPU requests received from the DLUS.
REQDACTPU sent/rcvd	The number of REQDACTPU requests sent to the DLUS and the number of REQDACTPU responses received from the DLUS.
DACTPU sent/rcvd	The number of DACTPU responses sent to the DLUS and the number of DACTPU requests received from the DLUS.
ACTLU sent/rcvd	The number of ACTLU responses sent to the DLUS and the number of ACTLU requests received from the DLUS.
DACTLU sent/rcvd	The number of DACTLU responses sent to the DLUS and the number of DACTLU requests received from the DLUS.
SSCP PU MUs sent/rcvd	The number of SSCP PU MUs sent and received from the DLUS.
SSCP LU MUs sent/rcvd	The number of SSCP LU MUs sent and received from the DLUS.

Related Commands

backup-dlus (APPN control point)
dlur
dlus (APPN control point)

show appn intermediate-session

Use the **show appn intermediate-session** EXEC command to display information about the SNA sessions that are currently being routed through the local node.

show appn intermediate-session [**brief** | **detail**]

Syntax Description

brief	(Optional) A short display of APPN intermediate session information.
detail	(Optional) A long display of APPN intermediate session information.

Default

Brief display

Command Mode

EXEC

Sample Display

- Brief:

```
Number of intermediate sessions            1
      APPN Intermediate Sessions
         PCID (hex)     Primary LU Name    Secondary LU Name    Mode    COS
      ----------------  -----------------  -----------------  --------  --------
   1> C6D328B0922EE4FF  NETA.MARGE         NETA.APU           #INTER    #INTER
```

- Detail:

```
Number of intermediate sessions             2

1>Procedure correlator ID (PCID) X'SS3321E8934CF101'
Primary LU name NETA.LISA
Secondary LU name NETA.BART
Mode name #INTER
Class of service name #INTER
Primary side adjacent CP name              NETA.PATTY
  Secondary side adjacent CP name            CISCO.MARGE
  Primary side link name                     PATTY
  Secondary side link name                   MARGE
PCID generator CP name                     NETA.PATTY

2>Procedure correlator ID (PCID) X'DD3321E8944CF101'
Primary LU Name NETA.LISA
Secondary LU Name NETA.BART
Mode name SNASVCMG
Class of service name SNASVCMG
Primary side adjacent CP name              NETA.PATTY
  Secondary side adjacent CP name            CISCO.MARGE
  Primary side link name                     PATTY
  Secondary side link name                   MARGE
PCID generator CP name                     NETA.PATTY
```

Table 32-7 Show APPN Intermediate-Session Field Descriptions

Field	Description
Procedure Correlator ID (PCID)	The PCID for this session.
Primary LU Name	The primary LU name for this session.
Secondary LU Name	The secondary LU name for this session.
Mode Name	The mode used by this session.
Class of service name	The class of service used by this session.
Primary side adjacent CP name	The fully-qualified name of the adjacent CP on the primary side.
Secondary side adjacent CP name	The fully-qualified name of the adjacent CP on the secondary side.
Primary side link name	The link name used on the primary side.
Secondary side link name	The link name used on the secondary side.
PCID generator CP name	The fully-qualified CP name which generated the PCID.
Session interrupt switched	Specifies is this session is processed at interrupt-level.

Related Command

show appn connection-network

show appn link-station

Use the **show appn link-station** EXEC command to display information about the APPN link-stations active on or defined to the local node.

show appn link-station [**brief** | **detail**]

Syntax Description

brief	(Optional) A short display of active APPN links. Brief is the default display.
detail	(Optional) A long display of active APPN links with more information.

Default

Brief display

Command Mode

EXEC

Sample Display

- Brief:

```
Number of active links 3
APPN Logical Links
      Link Name  State     Port Name  Adjacent CP Name   Node Type
      ---------  --------  ---------  ----------------   ------------
   1> HOST       Inactive  FDDI0                         Learn
   2> DOWNSTR    Inactive  RSRB                          Learn
   3> HOMER      Inactive  FDDI0                         Learn
```

- Detail:

```
Number of active links                  3

1>Link name                             FHOMER
    Port name                           FDDI0
    Link activated                      Locally
    Link state                          Active
    Deactivating link                   No
    Max frame data (BTU) size           521
    Adjacent node CP name               CISCO.HOMER
    Adjacent node type                  Network node
    CP-CP session support               Yes
    Link station role                   Primary
    Line type                           Shared access transport facility
    Transmission group number           21
    Effective capacity                  100000000 bits per second
    Cost per connect time               0
    Cost per byte                       0
    Propagation delay                   384 microseconds (local area network)
    User defined parameter 1            0
    User defined parameter 2            0
    User defined parameter 3            0
    Security                            Nonsecure
```

Table 32-8 Show APPN Link-Station Field Descriptions

Field	Description
Link name	The name of the link station.
Port name	The port this link station is using.
Interface name	The interface used by this link.
Destination DLC address (remote SAP)	The DLC address of the partner node and its SAP.
Link Activated	Specifies with node activated this link.
Link state	The state of the link.
Deactivating link	Is the link currently deactivating?
Max frame data (BTU) size	The maximum BTU size this link can support.
Adjacent node CP name	Name of the partner node for the link station.
Adjacent node type	The node type of the partner node of this link.
CP-CP session support	Specifies whether CP-CP sessions can be supported.
Link station role	Specifies the role the link uses in XID negotiation.
Line type	
Transmission group number	The TG assigned to this link.
Effective capacity	The bit rate of this link.
Cost per connect time	The relative cost of this link.
Cost per byte	The cost-per-byte of tramsmitting a byte over this link.
Propagation delay	Specifies the inherent delay of the link.
User defined parameter 1	The value for a network-unique TG characteristic - parameter 1.
User defined parameter 2	The value for a network-unique TG characteristic - parameter 2.
User defined parameter 3	The value for a network-unique TG characteristic - parameter 3.
Security	The security level of the link.

Related Command

appn link-station

show appn mode

Use the **show appn mode** EXEC command to display information about the APPN modes defined to the local node.

show appn mode [**brief** | **detail**]

Syntax Description

brief	(Optional) A short display of APPN mode definitions.
detail	(Optional) A long display of APPN mode definitions.

Default

Brief display

Command Mode

EXEC

Sample Display

```
Number of modes                    8
      APPN Modes
      Name      Associated COS
      --------  --------------
   1>           #CONNECT
   2> #BATCH    #BATCH
   3> #BATCHSC  #BATCHSC
   4> #INTER    #INTER
   5> #INTERSC  #INTERSC
   6> CPSVCMG   CPSVCMG
   7> SNASVCMG  SNASVCMG
   8> CPSVRMGR  SNASVCMG
```

Table 32-9 Show APPN Mode Field Descriptions

Field	Description
Mode name	The mode name
Class of service name	The class of service this mode maps to

Related Command

appn mode

show appn node

Use the **show appn node** EXEC command to display information about the local APPN control point.

show appn node

Syntax Description

This command has no arguments or keywords.

Command Mode

EXEC

Sample Display

```
Network name                                CISCO
  Control point (CP) name                    BARNEY
  Node ID (for XID)                          X'07700000'
  Route additional resistance                128
  Maximum directory cache entries            255
  Current directory cache entries            0
  Directory save interval                    20
```

Table 32-10 Show APPN Node Field Descriptions

Field	Description
Network name	The network name for this node.
Control point (CP) name	The control point name for this node.
Node ID (for XID)	The 8-digit hexadecimal node ID value for this node.
Route additional resistance	An arbitrary value associated with the cost of sessions passing through this node.
Maximum directory cache entries	The maximum number of cached directory entires.
Current directory cache entries	The current number of cached directory entries
Directory save interval	Time (in minutes) between directory safe stores.

Related Command

appn control-point

show appn port

Use the **show appn port** EXEC command to display information about the APPN ports active on the local node.

show appn port [**brief** | **detail**]

Syntax Description

brief	(Optionam) A short display of APPN port definitions.
detail	(Optionam) A long display of APPN port definitions.

Default

Brief display

Command Mode

EXEC

Sample Display

- Brief:

```
Number of ports                             2
      APPN Ports
      Name      State     SAP  Interface
      --------  --------  ---  --------------------
   1> TR0       Active    x04  TokenRing0
   2> ABCDEFGH  Active    x04  Ethernet0
```

- Detail:

```
Number of ports                             2

1>Port name                   FDDI0
Interface name Fddi0
Port State Active
SAP X'04'
  Link station role                         Negotiable
  Line type                                 Shared access transport facility
  Limited resource                          No
  Limited resource timeout                  0
  Max frame data (BTU) size                 521
  Maximum link stations                     0
  Asynchronous balanced mode                No
  Effective capacity                        100000000 bits per second
  Cost per connect time                     0
  Cost per byte                             0
  Propagation delay                         384 microseconds (local area network)
  User defined parameter 1                  0
  User defined parameter 2                  0
  User defined parameter 3                  0
  Security                                  Nonsecure
```

Table 32-11 Show APPN Port Field Descriptions

Field	Description
Port name	The name of this port.
Interface name	The interface used by this port
Port State	The current state of this port.
SAP	The default service access point for links on this port.
Link station role	Specifies the role link stations use in XID negotiation.
Line type	
Limited resource	Specifies if links on this port should be taken down when no sessions are using the link.
Limited resource timeout	The time (in seconds) before the links on this port will be taken down if there are no sessions.
Max frame data (BTU) size	The maximum BTU size for links on this port.
Maximum link stations	The maximum number of link stations allowed on this port.
Asynchronous balanced mode	Is asynchronous balanced mode supported?
Effective capacity	The bit rate of this port.
Cost per connect time	The relative cost of the links on this port.
Cost per byte	The cost-per-byte of transmitting a byte over the links on this port.
Propagation delay	Specifies the inherent delay of the port.
User defined parameter 1	The value for a network-unique TG characteristic - parameter 1.
User defined parameter 2	The value for a network-unique TG characteristic - parameter 2.
User defined parameter 3	The value for a network-unique TG characteristic - parameter 3.
Security	The security level of this port.

Related Command

appn port

show appn session

Use the **show appn session** EXEC command to display information about the SNA LU6.2 sessions, such as CP-CP sessions, that originate from the local node.

show appn session [**brief** | **detail**]

Syntax Description

brief	(Optionam) A short display of APPN session information.
detail	(Optionam) A long display of APPN session information.

Default

Brief display

Command Mode

EXEC

Sample Display

- Brief:

```
Number of sessions                          4
      APPN Endpoint Sessions
       PCID (hex)       Local LU Name      Partner LU Name    Mode      COS
       ---------------  ---------          ---------------    -------   --------
   1> C6D328B0912EE4FF  NETA.BART          NETA.MARGE         CPSVCMG   CPSVCMG
   2> F1DBABC818AB53AC  NETA.BART          NETA.APU           CPSVCMG   CPSVCMG
   3> F37F3BE237DE7242  NETA.BART          NETA.MARGE         CPSVCMG   CPSVCMG
   4> F37F3BE237DE7243  NETA.BART          NETA.APU           CPSVCMG   CPSVCMG
```

- Detail:

```
Number of sessions                          6

1>LU name                                   CISCO.BARNEY
  Partner LU name                           NETA.HOMER
  Mode name                                 CPSVCMG
Class of service name CPSVCMG
  Link name                                 FHOMER
  Send maximum RU size                      512
  Receive maximum RU size                   512
  Send pacing window                        2
  Receive pacing window                     9
  Pacing type                               Adaptive
  Outbound destination address (DAF)        X'00'
  Outbound origin address (OAF)             X'02'
  OAF-DAF assignor indicator (ODAI)         B'1'
  Procedure correlator ID (PCID)            X'E48712C9077C03C3'
  PCID generator CP name                    NETA.HOMER
  Session ID                                X'00000000007ED384'
  Conversation group ID                     X'00000022'

2>LU name                                   CISCO.BARNEY
  Partner LU name                           NETA.HOMER
  Mode name                                 CPSVCMG
```

```
Class of service name CPSVCMG
  Link name                                FHOMER
Send maximum RU size 512
  Receive maximum RU size                  512
  Send pacing window                       2
  Receive pacing window                    8
  Pacing type                              Adaptive
  Outbound destination address (DAF)       X'02'
  Outbound origin address (OAF)            X'00'
  OAF-DAF assignor indicator (ODAI)        B'0'
  Procedure correlator ID (PCID)           X'CDEFA1343053A784'
  PCID generator CP name                   CISCO.BARNEY
  Session ID                               X'00000000007ED368'
  Conversation group ID                    X'00000023'
```

Table 32-12 Show APPN Session Field Descriptions

Field	Description
LU Name	The fully-qualified name of the local LU.
Partner LU Name	The fully-qualified name of the partner LU.
Mode name	The mode used by this session.
Class of service name	The class of service used by this session.
Link name	The link this session traverses.
Send maximum RU size	The maximum RU size that can be sent on this sessions.
Receive maximum RU size	The maximum RU size that can be received on this session.
Send pacing window	The current send pacing window size.
Receive pacing window	The current receive pacing window size.
Pacing type	The type of pacing used by this session.
Outbound destination address (DAF)	
Outbound origin address (OAF)	
OAF-DAF assignor indiator (ODAI)	
Procedure correlator ID (PCID)	The PCId used by this session.
PCID generator CP name	The fully-qualified CP name which generated this PCID.
Session ID	The local session ID.
Conversation group ID	The conversation group ID for this session.

show appn topology

Use the **show appn topology** EXEC command to display the contents of the APPN topology database.

show appn topology [**brief | detail**]

Syntax Description

brief	(Optional) A short display of APPN topology information
detail	(Optional) A long display of APPN topology information.

Default

Brief display

Command Mode

EXEC

Sample Display

This shows the information contained in the topology databases. Note that CISCO.BARNEY has 2 TGs connected--one to CISCO.HOMER, which is a network node and stored in the network topology, and one to CISCO.PATTY, which is stored in the local topology. There would be additional entries for other network nodes and TGs in the network to provide the complete network topology.

- Brief:

```
Number of network nodes                   3
      APPN Topology Entries
      Resource Name      Type           TG#  Dest. Node          TG Type   TG Status
      -------------      ------------   ---  --------------      --------  ---------
   1> NETA.BARNEY        Network Node
       1>                                 0  NETA.CN             Intermed  Active
       2>                                 0  NETA.CN1            Intermed  Active
       3>                                21  NETA.R2CP0389       Intermed  Active
       4>                                21  NETA.BART           Intermed  Active
```

- Detail:

```
Number of network nodes                   2

1>Network node CP name                    CISCO.BARNEY
Node type Network Node
    Route additional resistance           128
    Congested?                            No
    Quiescing?                            No
    ISR depleted?                         No
    Number of TGs                         2

1.1>TG partner CP name                    CISCO.HOMER
       Transmission group number          21
       TG partner node type               real
Tg Type Intermediate Routing
TG Status Active
       Quiescing?                         No
       Topology                           Network
```

```
Effective capacity                98 megabits per second
Cost per connect time             0
Cost per byte                     0
Propagation delay                 384 microseconds
User defined parameter 1          128
User defined parameter 2          128
User defined parameter 3          128
Security                          Nonsecure
```

Table 32-13 Show APPN Topology Field Descriptions

Field	Description
Network node CP name	The fully-qualified name of the resource.
Node type	Resource type of this node.
Route additional resistance	An arbitrary number associated with the cost of using this node.
Congested?	Is this node able to current/future requests?
Quiescing?	Is this node in the process of stopping?
ISR depleted?	If this node able to process additional ISR requests?
Number of TGs	The number of TGs associated with the network node
TG partner CP name	Partner node's fully-qualified name.
Transmission group number	The transmission group number
TG partner node type	Resources type for the partner of this TG.
TG Type	The type of TG: Intermediate or Endpoint
TG Status	The status of the transmission group.
Quiescing?	Is this TG in the process of stopping?
Topology	Topology type: local or network
Effective capacity	The bit rate of the TG.
Cost per connect time	The relative cost of the TG.
Cost per byte	The cost-per-byte of transmitting a byte over the TG.
Propagation delay	Specifies the inherent delay of the TG.
User defined parameter 1	The value for a network-unique TG characteristic - parameter 1.
User defined parameter 2	The value for a network-unique TG characteristic - parameter 2.
User defined parameter 3	The value for a network-unique TG characteristic - parameter 3.
Security	The security level of the TG.

Related Command

show appn connection-network

tg-number

Use the **tg-number** APPN link station configuration command to specify the transmission group number for the connection. Use the **no** form of this command to delete the previous definition.

tg-number *number*
no tg-number

Syntax Description

number	Number in the range 0 to 255.

Default

Transmission group number 0.

Command Mode

APPN link station configuration

Usage Guidelines

If zero, the transmission group number is negotiable.

Example

The following example sets the transmission group number to 10:

```
appn link-station LINK4
port ETHER1
lan-dest-address 0200.6f8e.1a3b
tg-number 10
complete
```

Related Commands

appn link-station
show appn link-station

tg-row

Use the **tg-row** APPN class of service configuration command to specify a transmission group description, or tg row, and associated weight for the row. Use the no form of this command to delete the previous definition.

tg-row *index* **weight** *weight* **byte** *min max* **time** *min max* **capacity** *min max* **delay** *value value* **security** *value value* **user1** *number number* **user2** *number number* **user3** *number number*
no tg-row *index*

Syntax Description

index	Specifies which row is being entered. The valid range is 1 to 8.
weight *weight*	The weight assigned to a transmission group, given the characteristics defined in the remainder of the row.
byte *min max*	The minimum and maximum cost-per-byte values, compared with the **cost-per-byte** command on the port or link station command.
capacity *min max*	The minimum and maximum capacity values, compared with the **effective-capacity** command on the port or link station command.
time *min max*	The minimum and maximum cost-per-connect-time values, compared with the **cost-per-connect-time** command on the port or link station command.
delay *value value*	The two values compared with the propagation-delay command.
security *value value*	The value compared with the security command. The minimum and maximum are specified with one the defined values, in ascending order:
user1 *number number*	Number in the range 1 to 255.
user2 *number number*	Number in the range 1 to 255.
user3 *number number*	Number in the range 1 to 255.

Default

There is no default provided. A minimum of one transmission group row must be provided or the configuration will fail.

Command Mode

APPN class of service configuration

Usage Guidelines

The characteristics of transmission groups in the topology database are compared to the characteristics in each row. A weight is assigned which determines a low-cost route for a session. You can define from one to eight tg rows.

Example

The following example defines an APPN class of service with one tg-row:

```
appn class-of-service #SECURE
node-row 1 weight 5 congestion no no route-additional-resistance 0 255
tg-row 1 weight 30 byte 0 255 time 0 255 capacity 0 255 delay 0 255 security 200 255 user1
0 255 user2 0 255 user3 0 255
complete
```

Related Commands

appn class-of-service
show appn class-of-service

transmission-priority

Use the **transmission-priority** APPN class of service configuration command to specify the transmission priority for the class of service. Use the **no** form of this command to delete the previous definition.

transmission priority {*priority*}
no transmission priority

Syntax Description

network	One of the following keywords: **network**, **high**, **medium**, **low**

Default

The default priority is medium.

Command Mode

APPN class of service configuration

Usage Guidelines

The value **network** is reserved for control traffic and cannot be specified for LU-LU sessions. High, medium, and low reflect the priority that traffic for an individual application should receive when congestion begins to build and queues form.

Example

The following example defines an APPN class of service with a transmission priority of high:

```
appn class-of-service #SECURE
transmission-priority high
node-row 1 weight 5 congestion no no route-additional-resistance 0 255
tg-row 1 weight 30 byte 0 255 time 0 255 capacity 0 255 delay 0 255 security 200 255 user1
0 255 user2 0 255 user3 0 255
complete
```

Related Commands

appn class-of-service
show appn class-of-service

user-defined-1 (APPN link station)

Use the **user-defined**-1 APPN link station configuration command to specify the relative value for a network-unique transmission group characteristic. Use the **no** form of this command to delete the definition.

user-defined-1 *value*
no user-defined-1

Syntax Description

value	Number in the range 0 to 255 used to specify the relative value.

Default

The value specified in the **appn port** command.

Command Mode

APPN link station configuration

Usage Guidelines

This command can be used to specify a user defined characteristic of this link. The value of a network unique transmission group characteristic is used in route selection.

Example

The following example defines an APPN link station with a user defined 1 value of 200.

```
appn link-station LINK17
port TOKEN1
lan-dest-address 1000.4455.abcd
user-defined-1 200
complete
```

Related Commands

appn link-station
show appn link-station

user-defined-2 (APPN link station)

Use the **user-defined-2** APPN link station configuration command to specify the relative value for a network-unique transmission group characteristic. Use the **no** form of this command to delete the definition.

user-defined-2 *value*
no user-defined-2

Syntax Description

value	Number in the range 0 to 255 used to specify the relative value.

Default

The value specified in the **appn port** command.

Command Mode

APPN link station configuration

Usage Guidelines

This command can be used to specify a user defined characteristic of this link. The value of a network unique transmission group characteristic is used in route selection.

Example

The following example defines an APPN link station with a user defined 2 value of 200.

```
appn link-station LINK17
port TOKEN1
lan-dest-address 1000.4455.abcd
user-defined-2 200
complete
```

Related Commands

appn link-station
show appn link-station

user-defined-3 (APPN link station)

Use the **user-defined-3** APPN link station configuration command to specify the relative value for a network-unique transmission group characteristic. Use the **no** form of this command to delete the definition.

user-defined-3 *value*
no user-defined-3

Syntax Description

value	Number in the range 0 to 255 used to specify the relative value.

Default

The value specified in the **appn port** command.

Command Mode

APPN link station configuration

Usage Guidelines

This command can be used to specify a user defined characteristic of this link. The value of a network unique transmission group characteristic is used in route selection.

Example

The following example defines an APPN link station with a user defined 3value of 200.

```
appn link-station LINK17
port TOKEN1
lan-dest-address 1000.4455.abcd
user-defined-3 200
complete
```

Related Commands

appn link-station
show appn link-station

user-defined-1 (APPN port)

Use the **user-defined-1** APPN port configuration command to specify the relative value for a network-unique transmission group characteristic. Use the **no** form of this command to delete the definition.

user-defined-1 *value*
no user-defined-1

Syntax Description

value	Number in the range 0 to 255 used to specify the relative value.

Default

128

Command Mode

APPN port configuration

Usage Guidelines

This command is specified for defined transmission groups (with the **appn link-station** command) if the command has not been specified at that level. This command also specifies the value for dynamically created transmission groups. The cost is used in route selection for a particular class of service.

Example

The following example defines a port with a user-defined-1 value of 50.

```
appn port ETHER1
user-defined-1 50
complete
```

Related Commands

appn port
show appn port

user-defined-2 (APPN port)

Use the **user-defined-1** APPN port configuration command to specify the relative value for a network-unique transmission group characteristic. Use the **no** form of this command to delete the definition.

user-defined-2 *value*
no user-defined-2

Syntax Description

value	Number in the range 0 to 255 used to specify the relative value.

Default

128

Command Mode

APPN port configuration

Usage Guidelines

This command is specified for defined transmission groups (with the **appn link-station** command) if the command has not been specified at that level. This command also specifies the value for dynamically created transmission groups. The cost is used in route selection for a particular class of service.

Example

The following example defines a port with a user-defined-2 value of 50.

```
appn port ETHER1
user-defined-2 50
complete
```

Related Commands

appn port
show appn port

user-defined-3 (APPN port)

Use the **user-defined-3** APPN port configuration command to specify the relative value for a network-unique transmission group characteristic. Use the **no** form of this command to delete the definition.

user-defined-3 *value*
no user-defined-3

Syntax Description

value	Number in the range 0 to 255 used to specify the relative value.

Default

128

Command Mode

APPN port configuration

Usage Guidelines

This command is specified for defined transmission groups (with the **appn link-station** command) if the command has not been specified at that level. This command also specifies the value for dynamically created transmission groups. The cost is used in route selection for a particular class of service.

Example

The following example defines a port with a user-defined-3 value of 50.

```
appn port ETHER1
user-defined-3 50
complete
```

Related Commands

appn port
show appn port

verify-adjacent-node-type

Use the **verify-adjacent-node-type** APPN link station configuration command to specify that the adjacent node type must be verified as a requirement of link activation. Use the **no** form of this command to delete the definition.

verify-adjacent-node-type {**learn** | **len** | **nn**}
no verify-adjacent-node-type

Syntax Description

learn	Any adjacent node type is accepted.
len	Only LEN adjacent node type is accepted.
nn	Only NN adjacent node type is accepted.

Default

The default node type is **learn**.

Command Mode

APPN link station configuration

Usage Guidelines

If the adjacent node type is LEN, the cp-cp-sessions-supported command must specify no.

If the adjacent node type is LEN, the adjacent-cp-name must be specified.

There is no verification for type EN

Example

The following example specifies that any adjacent node type is accepted:

```
appn link-station NN4
port ETHER1
lan-dest-address 0200.5672.3212
verify-adjacent-node-type nn
complete
```

Related Command

appn link-station
show appn link-station

wildcard

Use the **wildcard** APPN partner-lu-location configuration command to specify this entry as a "wildcard." Use the **no** form of this command to delete the previous definition.

wildcard
no wildcard

Syntax Description

This command has no arguments or keywords.

Default

The default state is **no wildcard**.

Command Mode

APPN partner LU location configuration

Usage Guidelines

A wildcard entry serves any LU whose name matches the configured name up to the length of the configured name. Without an LU name and wildcard specified, the entry services all LUs.

Example

The following example defines a wildcard that represents any LU that starts with LU2, such as LU21, LULU21, LU234, and so on:

```
appn partner-lu-location LU2
owning-cp CISCO.CP2
wildcard
complete
```

Related Commands

appn partner-lu-location
show appn directory

x25-dest-address

Use the **x25-dest-address** to configure APPN over QLLC. Use the **no** form of this command to delete the configuration.

x25-dest-address [**pvc** | **svc**] *x25-addr*
no x25-dest-address

Syntax Description

pvc	(Optional) Use x25 permanent virtual circuit.
svc	(Optional) Use x.25 switch virtual circuit.
x25-addr	The x.25 destination link station address.

Default

No default address is specified.

Command Mode

APPN link station configuration

Usage Guidelines

x25-addr must be a valid X.121 address. This address must match that assigned by the X.25 network service provider.

Example

The following example configures the X.25 destination address:

```
appn link-station QLLC
port QLLC1
x25-dest-address 170090
complete
```

Related Commands

appn link-station
show appn link-station

x25-subaddress

Use the **x25-subaddress** command to configure APPN over QLLC. Use the **no** form of this command to delete the configuration.

x25-subaddress [**pvc** | **svc**] *x25-addr*
no x25-subaddress

Syntax Description

pvc	(Optional) Use x25 permanent virtual circuit.
svc	(Optional) Use x.25 switch virtual circuit.
x25-addr	The x.25 sub-address from which data is received.

Default

No default address is assigned.

Command Mode

APPN port configuration

Usage Guidelines

x25-addr must be a valid X.121 address. This address must match that assigned by the X.25 network service provider.

Example

The following example configures the X.25 subaddress from which data is received:

```
appn port QLLC1 Serial0/1
x25-subaddress svc 0001121
complete
```

Related Commands

appn port
show appn port

xid-block-number

Use the **xid-block-number** APPN control point configuration command to specify the first 3 digits of the node identifier for the local node. Use the **no** form of this command to delete the definition.

xid-block-number *number*
no xid-block-number

Syntax Description

number	A 3 digit hexadecimal number in the range 000 to fff.

Default

077 (hexadecimal)

Command Mode

APPN control point configuration

Usage Guidelines

A unique ID is required for links to older versions of VTAM.

Example

The following example specifies XID block number 456:

```
appn control-point CISCO.ROUTER
xid-block-number 456
complete
```

Related Commands

appn control-point
show appn node

xid-id-number

Use the **xid-id-number** APPN control point configuration command to specify the last five digits of the node ID for the local node. Use the **no** form of this command to delete the previous definition.

xid-id-number *number*
no xid-id-number

Syntax Description

number	A 5 digit hexadecimal number in the range 00000 to fffff.

Default

00000 (hexadecimal)

Command Mode

APPN control point configuration

Usage Guidelines

The XID ID and block numbers are included in XID exchanges and alert information, and are required for communicating with older versions of VTAM.

Example

The following example specifies XID ID number 0cab7:

```
appn control-point CISCO.ROUTER
xid-id-number 0cab7
complete
```

Related Commands

appn control-point
show appn node