

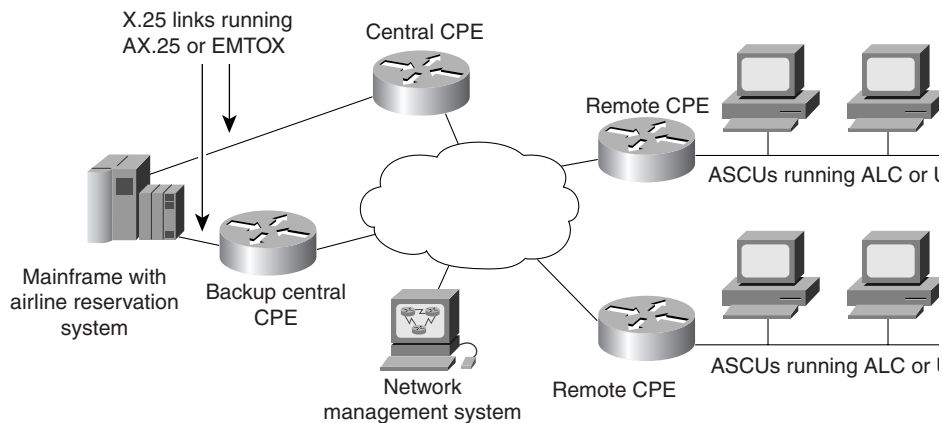
Configuring the Airline Product Set

This chapter describes how to configure the Airline Product Set (ALPS). For a complete description of the ALPS commands in this chapter, refer to the “Airline Product Set Configuration Commands” chapter in the *Bridging and IBM Networking Command Reference*. To locate documentation of other commands that appear in this chapter, use the command reference master index or search online.

ALPS is a tunneling mechanism that transports airline protocol data across a Cisco router-based TCP/IP network to an X.25-attached mainframe. This feature provides connectivity between agent set control units (ASCUs) and a mainframe host that runs the airline reservation system.

Figure 190 shows the basic ALPS topology and the protocols implemented in the feature. Three major components provide the end-to-end transportation of airline protocol traffic across the network: the Airline Control (ALC) protocol, the TCP-based transport protocol, and the access to the mainframe, Airline X.25 (AX.25) or exchange of mixed traffic over X.25 (EMTOX).

Figure 190 ALPS Architecture



CPE – customer premises equipment

10271

Cisco’s ALPS feature provides an end-to-end solution for airlines and central reservation systems.

The ALPS feature is integrated in the Cisco IOS software and allows airlines to replace their existing hardware and software with Cisco routers. For customers who already use Cisco routers, this feature allows them to consolidate networking overhead and functionality.

The ALPS feature is supported on the following platforms:

- Central customer premises equipment (CPE) routers:
 - Cisco 25xx series
 - Cisco 36xx series
 - Cisco 4500
 - Cisco 4700
 - Cisco 7200
 - Cisco 7500
- Remote CPE routers
 - Cisco 2520, 2521, 2522, and 2523
 - Cisco 2600 series
 - Cisco 3600 series
 - Cisco 4500
 - Cisco 4700

Note The Cisco 4500 and Cisco 4700 platforms must have a high-density, low-speed serial card installed. 16 low-speed ports are usable for performing the remote CPE functions.

ALPS Configuration Task List

Perform the tasks in the following sections to configure and maintain the ALPS feature.

- Configure the Remote CPE Routers
- Configure the Central CPE Router
- Monitor the ALPS Feature

See the end of this chapter for “ALPS Configuration Examples.”

Configure the Remote CPE Routers

Perform the tasks in the following sections to configure the ALPS feature on the remote CPE routers:

- Specify the ALPS Local Peer IP Address
- Specify the ALPS Remote Peer IP Address
- Customize the Service Messages
- Specify the ALPS Circuit
- Specify Each ASCU

Specify the ALPS Local Peer IP Address

You must identify an IP address as an ALPS local peer on the remote CPE. Only one ALPS local peer is permitted on a router.

To specify the ALPS local peer IP address, use the following commands in global configuration mode:

Step	Command	Purpose
1	alps local-peer <i>ipaddress</i>	Specify an IP address to use as the ALPS local peer on the remote CPE.
2	alps keepalive [<i>interval time</i>] [<i>retry count</i>]	Enable TCP keepalives for ALPS TCP peer connections.

Specify the ALPS Remote Peer IP Address

You must also specify in the remote CPE configuration the IP addresses of ALPS peers that exist on the central CPE router. The peer connection may be either permanent or dynamic (established on demand).

To specify the IP addresses that exist on the central CPE, use the following commands in global configuration mode:

Command	Purpose
alps remote-peer <i>ip-addr</i> [dynamic [<i>inact-timer</i>]] [tcp-qlen [<i>num</i>]	Specify the IP addresses of ALPS peers that exist on partner CPE routers.

Customize the Service Messages

You can customize the contents of the service message list. To specify the service message number and the content of the message, use the following command in global configuration mode:

Command	Purpose
alps service-msg-list <i>list number number msg</i>	Specify service message numbers and content.

Specify the ALPS Circuit

An ALPS circuit is a communication path across a TCP connection for one or more ASCUs. The ALPS circuit must have a configured association with an ALPS remote peer to establish a connection to the host. Additionally, an ALPS circuit configuration may specify a different remote peer as a backup peer to the host. Configuration for an ALPS circuit also includes X.25 connection information to be passed to the central CPE router when the circuit is established. ALPS circuits may be multiplexed across a single TCP connection.

To specify an ALPS circuit, use the following commands, beginning in global configuration mode:

Step	Command	Purpose
1	alps circuit <i>name</i>	Specify an ALPS circuit at the remote CPE and enter ALPS circuit submode.
2	alps primary-peer <i>ip-addr</i> [backup-peer <i>ip-addr</i>]	Specify the primary TCP peer and an optional backup peer for this ALPS circuit.
3	alps local-hld <i>loc-hld</i> remote-hld <i>rem-hld</i>	Specify the local and remote HLDs for this ALPS circuit.
4	alps connection-type permanent <i>retry-timer</i>	Specify that this circuit should be established when the circuit is enabled.

Step	Command	Purpose
5	alps lifetime-timer <i>timer</i>	Specify how long messages can be queued in the ALPS circuit queue.
6	alps hostlink <i>number</i> { ax25 <i>lcn</i> emtox <i>x121-addr</i> } [winout <i>val1</i>] [winin <i>val2</i>] [ops <i>val3</i>] [ips <i>val4</i>]	Specify the information required to establish an X.25 virtual circuit at the central CPE.
7	alps service-msg-interval <i>seconds</i>	Specify the interval between the transmission of a service message to an ASCU and the transmission of a “PLEASE RETRY” message. The “PLEASE RETRY” message is transmitted only to ASCUs that use circuits with a dynamic connection type.
8	alps service-msg-list <i>list</i>	Define the service message list to be used for this circuit.
9	alps enable-circuit	Enable the circuit to be activated.

Specify Each ASCU

Each ASCU must be configured within the context of the serial interface configuration. ASCU addressing information and association with an ASCU circuit must be configured. Timers, maximum frame sizes, and retry values are optional configuration parameters for each ASCU. Appropriate default parameters are used for unspecified parameters.

To specify an ASCU, use the following commands, beginning in global configuration mode:

Step	Command	Purpose
1	interface <i>type number</i>	Configure an interface and enter interface configuration mode.
2	encapsulation alc	Specify that the ALC protocol will be used on the serial interface.
3	alps t1 <i>delay</i>	Specify the timeout delay between the transmission of an ALC poll message and the receipt of the first character of the poll message response.
4	alps t2 <i>delay</i>	Specify the timeout delay between receipt of the first character of the response to a poll message and the receipt of a Go Ahead message.
5	alps n1 <i>errors</i>	Specify the threshold of consecutive errors logged before an ASCU is declared to be down.
6	alps n2 <i>polls</i>	Specify the number of polls that must be correctly replied to before an ASCU is declared to be up.
7	alps servlim <i>polls</i>	Specify the number of polls of the ASCU UP list allowed between two successive polls of the ASCU DOWN list.
8	alps ascu <i>id</i>	Specify a physical ASCU identity (the ASCU interchange address value for ALC) and enter ALPS ASCU submode.

Step	Command	Purpose
9	alps default-ckt <i>name</i>	Specify the ALPS circuit that this ASCU uses.
10	alps a1-map <i>a1-value</i> a2-map <i>a2-value</i>	Specify the A1 and A2 logical ASCU identification information.
11	alps retry-option [resend reenter]	Specify the retry option when an ALC message with a bad cyclic check character (CCC) is received.
12	alps max-msg-length <i>value</i>	Specify maximum input message length.
13	alps error-display <i>number1 number2</i>	Specify where error messages are displayed.
14	alps enable-ascu	Begin polling the ASCU.

Configure the Central CPE Router

Perform the tasks in the following sections to configure the ALPS feature on the central CPE router:

- Specify the ALPS Host Local Peer Address
- Specify AX.25
- Specify EMTOX

Specify the ALPS Host Local Peer Address

You must identify an IP address to use as the ALPS local peer IP address. Only one ALPS host local peer is permitted on a router. The promiscuous option, which allows any remote CPE to connect, is recommended at the remote CPE.

To specify the ALPS host local peer address, use the following command in global configuration mode:

Command	Purpose
alps local-peer <i>ip-address</i> [promiscuous]	Specify the IP address of the local peer.

Specify AX.25

For AX.25 to be enabled on an X.25 interface, the ALPS host high-level designator (HLD) and hostlink number must be configured and AX.25 must be specified on an X.25 serial interface. At circuit-establishment time, the remote CPE router forwards the host HLD, the logical channel number (LCN), and the hostlink number for the permanent virtual circuit (PVC), to be used for the ASCU group.

To configure AX.25 on an X.25 interface, use the following commands, beginning in global configuration mode:

Step	Command	Purpose
1	interface <i>type number</i>	Configure an interface and enter interface configuration mode.
2	encapsulation x25 ax25	Specify a serial interface as an X.25 device.
3	alps host-hld <i>num</i> host-link <i>num</i> ax25 [damp-tmr <i>value</i>] [life-tmr <i>value</i>]	Enable ALPS on the X.25 interface.

Specify EMTOX

For EMTOX to be enabled on an X.25 interface, the host HLD and the hostlink number must be configured and EMTOX must be specified on an X.25 serial interface. At circuit-establishment time, the remote CPE router forwards the X.121 address to be used as the calling address in the X.25 call and the host HLD and the hostlink number. If the host performs a call out, a correlation between the X.121 called address and a remote CPE peer IP address must be configured.

To configure EMTOX on an X.25 interface, use the following commands, beginning in global configuration mode:

Step	Command	Purpose
1	interface <i>type number</i>	Configure an interface and enter interface configuration mode.
2	encapsulation x25	Specify a serial interface as an X.25 device.
3	alps host-hld <i>num</i> host-link <i>num</i> emtox [life-tmr <i>value</i>]	Enable ALPS on the X.25 interface.
4	alps translate <i>x.121-addr</i> <i>ip-addr</i>	Map an X.121 address to an IP address on a remote peer.

Monitor the ALPS Feature

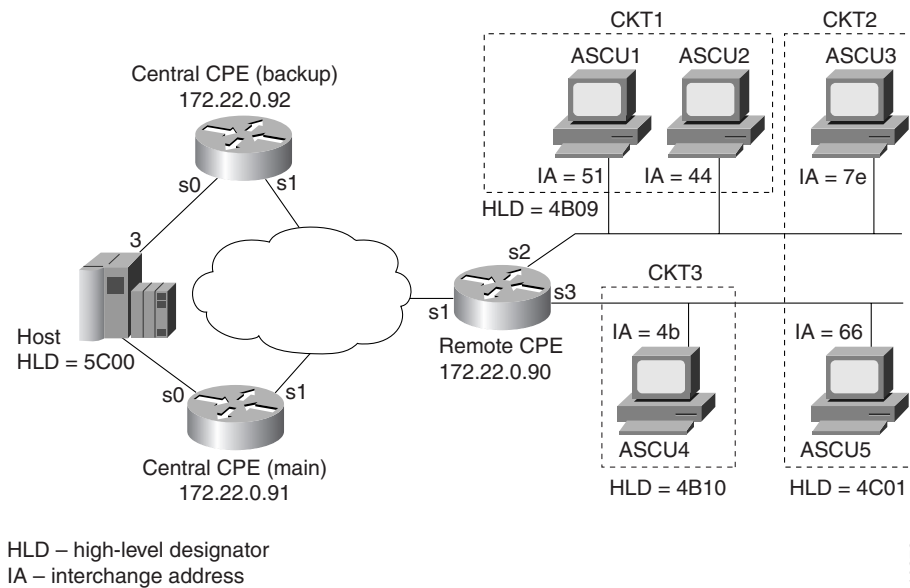
To monitor the status of the ALPS feature, use the following commands in EXEC mode:

Command	Purpose
show alps ascu [<i>interface id</i>] [detail]	Display the status of the ALPS ASCU.
show alps circuits [name <i>name</i>] [detail]	Display the status of the ALPS circuits.
show alps peers [ipaddress <i>addr</i>] [detail]	Display the status of the ALPS remote peers.
show interfaces <i>type number</i>	Display P1024B information.

ALPS Configuration Examples

Figure 191 shows a simple router topology for the ALPS feature. The configuration for this topology follows.

Figure 191 Router Topology for ALPS



Remote CPE Configuration Example

```
alps local-peer 172.22.0.90
alps keepalive interval 60
alps remote-peer 172.22.0.91
alps remote-peer 172.22.0.92 dynamic 60
alps service-msg-list 1 number 2 NETWORK DOWN
!
alps circuit CKT1
alps primary-peer 172.22.0.91 backup-peer 172.22.0.92
alps local-hld 4B10 remote-hld 5C00
alps connection-type permanent 30
alps lifetime-timer 3
alps hostlink 3 ax25 120 winout 3 winin 3
alps service-msg-interval 3
alps service-msg-list 1
alps enable-circuit
!
alps circuit CKT2
alps primary-peer 172.22.0.91 backup-peer 172.22.0.92
alps local-hld 4B10 remote-hld 5C00
alps hostlink 3 ax25 1500 winout 4 winin 5
alps enable-circuit
!
alps circuit CKT3
alps primary-peer 172.22.0.91
alps local-hld 4B10 remote-hld 5C00
alps connection-type permanent 30
alps lifetime-timer 6
alps hostlink 3 ax25 905
alps enable-circuit
!
interface serial 1
ip address 172.22.0.90 255.255.255.0
!
interface serial 2
encapsulation alc
alps t1 3
alps t2 6
alps n1 3
alps n2 2
alps servlim 20
!
alps ascu 51
alps default-ckt CKT1
alps a1-map 40 a2-map 2D
alps retry-option resend
alps max-msg-length 1950
alps error-display 6d 78
alps enable-ascu
!
alps ascu 44
alps default-ckt CKT1
alps a1-map 40 a2-map 2E
alps max-msg-length 590
alps error-display 6d 78
alps enable-ascu
!
alps ascu 7E
alps default-ckt CKT2
alps a1-map 40 a2-map 2F
alps retry-option re-send
alps max-msg-length 2000
alps error-display 6d 78
alps enable-ascu
```

```
interface serial 3
encapsulation alc
alps t1 5
alps t2 6
alps n1 1
alps n2 2
alps servlim 20
!
alps ascu 4B
alps default-ckt CKT3
alps a1-map 63 a2-map 41
alps retry-option re-send
alps max-msg-length 1960
alps error-display 6d 78
alps enable-ascu

alps ascu 66
alps default-ckt CKT2
alps a1-map 40 a2-map 21
alps max-msg-length 3800
alps error-display 6d 78
alps enable-ascu
```

Central CPE Configuration (Main) Example

AX.25 Host

```
alps local-peer 172.22.0.91 promiscuous
interface serial 0
encapsulation x25 ax25
x25 ltc 1600
alps host-hld 4B10 host-link 3 ax25
```

EMTOX Host

```
alps local-peer 172.22.0.91 promiscuous
interface serial 0
encapsulation x25
alps host-hld 4B20 host-link 3 emtox 1114235
alps translate 88845* 172.22.0.90
```

Central CPE Configuration (Backup) Example

AX.25 Host

```
alps local-peer 172.22.0.92 promiscuous
interface serial 0
encapsulation x25 ax25
x25 ltc 1600
alps host-hld 4B10 host-link 3 ax25 nonstd-ps 240
```

EMTOX Host

```
alps local-peer 172.22.0.92 promiscuous
interface serial 0
encapsulation x25
alps host-hld 4B20 host-link 3 emtox 1114235
```