FSSRP Sample Configuration

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Introduction

To improve the ATM LAN Emulation (LANE) Simple Server Replication Protocol (SSRP), Cisco has introduced the ATM LANE Fast Simple Server Replication Protocol (FSSRP). FSSRP differs from LANE SSRP in that all configured LANE servers of an Emulated LAN (ELAN) are always active. FSSRP–enabled LANE clients have virtual circuits (VCs) established to a maximum of four LANE servers and broadcast and unknown servers (BUSes) at one time. If a single LANE server (LES) goes down, the LANE client quickly switches over to the next LES and BUS, resulting in no data or LANE Address Resolution Protocol (LE_ARP) table entry loss and no extraneous signaling. Refer to the documentation for more details.

Note: The locations of the various services shown in this document might not be optimal. Before implementing such a configuration in a live network, review the LANE Design Recommendations.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

All hardware components (LAN Emulation Client [LEC], LES, BUS, LANE Configuration Server [LECS]) can be FSSRP capable. If none of the FSSRP–enabled components are used, you cannot benefit from the features of FSSRP.

Below are the supported software versions for FSSRP:
Cisco IOS® Software Release 12.0(5)T and later
• Catalyst LANE Module version 12.0 and later
• Cisco LightStream1010 version 12.0(4a)W5(11a) and later

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Conventions

For more information on document conventions, refer to Cisco Technical Tips Conventions.

Configure

In this section, you are presented with the information to configure the features described in this document.

Note: To find additional information on the commands used in this document, use the Command Lookup Tool (registered customers only).

Network Diagram

This document uses this network setup:

![Network Diagram]

Configurations

You must configure `lane fssrp` in the interface configuration of the ATM port (the port to perform FSSRP).

Catalyst 5500 LANE Module (LEC Only)

Below is the current configuration:

```plaintext
5500

! hostname ATM
! interface Ethernet0
  !   interface ATM0
  atm preferred phy A
  atm pvc 1 0 5 qsaal
  atm pvc 2 0 16 ilmi
  no atm ilmi-keepalive
  lane fssrp
!
  interface ATM0.1 multipoint
    lane client ethernet 1 admin
!
end
```
### 7200 (Master LES/BUS + LEC)

Below is the current configuration:

```plaintext
7200

version 12.1
!
interface ATM4/0
  no ip address
  no ip route-cache cef
  atm pvc 1 0 5 qsaal
  atm pvc 2 0 16 ilmi
  no atm ilmi-keepalive

lane fssrp
!
interface ATM4/0.2 multipoint
  lane server-bus ethernet admin elan-id 1
!
interface ATM4/0.3 multipoint
  lane client ethernet admin
!
end
```

### LS1010 (LECS, LEC and Backup LES/BUS)

Below is the current configuration:

```plaintext
LS1010

version 12.0
!
hostname Casimir
!
!
atm lecs-address-default
47.0091.8100.0000.0060.3e5a.4501.0060.3e5a.4505.00 1
atm address 47.0091.8100.0000.0060.3e5a.4501.0060.3e5a.4501.00
atm router pnni
  no aesa embedded-number left-justified
  node 1 level 56 lowest
  redistribute atm-static 1
!
!
lane database FSSRPConfig
  name admin server-atm-address 47.0091810000000603E5A4501.0030199AB871.02
  name admin server-atm-address 47.0091810000000603E5A4501.00603E5A4503.02
  name admin elan-id 1
!
!
interface ATM2/0/0
  no ip address
  no ip directed-broadcast
  atm maxvp-number 0

lane config auto-config-atm-address
lane config database FSSRPConfig
lane fssrp
!
interface ATM2/0/0.1 multipoint
  no ip directed-broadcast
  lane client ethernet admin
!
interface ATM2/0/0.2 multipoint
```
Verify

This section provides information you can use to confirm your configuration is working properly.

LAN Emulation Client

You can verify that the LEC is running FSSRP and find out more about the LES/BUS pairs providing services for the ELAN by issuing the `show lane client detail` command.

As shown below, all the LECs have joined both the active and the backup LES. Therefore, in case of a failure of the active LES, no new connection needs to be set up.

```
ATM# show lane client detail
LE Client ATM0.1 ELAN name: admin Admin: up State: operational
Client ID: 2 LEC up for 33 minutes 20 seconds
ELAN ID: 1 Join Attempt: 16
This LEC is running in Fast SSRP mode
Known LE Servers: 2 <-- LEC aware of both LESes
Last Fail Reason: Link went down
HW Address: 00e0.1410.d830 Type: ethernet Max Frame Size: 1516 ANID: 1
ATM Address: 47.0091810000170603E5A4501.00E01410D830.01
VCD rxFrames txFrames Type ATM Address
0 0 0 configure 47.0091810000000603E5A4501.00603E5A4505
LEC ID: 2, State: LESBUS_ACTIVE
44 1 1003 direct 47.0091810000000603E5A4501.00603E5A4503.02
46 1035 0 distribute 47.0091810000000603E5A4501.00603E5A4503.02
48 0 1057 send 47.0091810000000603E5A4501.00603E5A4504.02
50 99 0 forward 47.0091810000000603E5A4501.00603E5A4504.02
LEC ID: 3, State: LESBUS_ACTIVE <-- LEC joined the Backup LES
45 1 2 direct 47.0091810000000603E5A4501.0030199AB871.02
47 34 0 distribute 47.0091810000000603E5A4501.0030199AB871.02
49 0 0 send 47.0091810000000603E5A4501.0030199AB872.02
51 0 0 forward 47.0091810000000603E5A4501.0030199AB872.02
```

```
Ishia# show lane client detail
LE Client ATM4/0.3 ELAN name: admin Admin: up State: operational
Client ID: 3 LEC up for 34 minutes 13 seconds
ELAN ID: 1 Join Attempt: 7
This LEC is running in Fast SSRP mode
Known LE Servers: 2 <-- LEC aware of both LESes
Last Fail Reason: Locally deactivate
HW Address: 0030.199a.b870 Type: ethernet Max Frame Size: 1516
ATM Address: 47.0091810000170603E5A4501.0030199AB870.03
VCD rxFrames txFrames Type ATM Address
0 0 0 configure 47.0091810000000603E5A4501.00603E5A4505.00
LEC ID: 3, State: LESBUS_ACTIVE
66 1 2 direct 47.0091810000000603E5A4501.00603E5A4503.02
67 1059 0 distribute 47.0091810000000603E5A4501.00603E5A4503.02
68 0 74 send 47.0091810000000603E5A4501.00603E5A4504.02
69 1186 0 forward 47.0091810000000603E5A4501.00603E5A4504.02
LEC ID: 2, State: LESBUS_ACTIVE <-- LEC joined the Backup LES
70 1 2 direct 47.0091810000000603E5A4501.0030199AB871.02
74 36 0 distribute 47.0091810000000603E5A4501.0030199AB871.02
76 0 0 send 47.0091810000000603E5A4501.0030199AB872.02
79 0 0 forward 47.0091810000000603E5A4501.0030199AB872.02
```

```
Casimir# show lane client detail
```
LAN Emulation Server

You can issue the `show lane server` command to verify the status of the LES. As shown below, the LES on the 7200 platform is running in backup mode, and the LES on the LS1010 is active. Both the active and the backup have a connection to all three clients.

```plaintext
Ischia# show lane server
LE Server ATM4/0.2, Elan name: admin, Admin: up, State: operational
This LES is running in Fast SSRP mode
Master/Backup: Backup, Type: ethernet, Max Frame Size: 1516
locally set elan-id: 1
elan-id obtained from LECS: 1
ATM address: 47.0091810000000603E5A4501.00603E5A4502.01
ATM Address: 47.0091810000000603E5A4501.00603E5A4502.01

LEC ID: 1, State: LESBUS_ACTIVE --- LEC joined the Backup LES
```

LAN Emulation Configuration Server

The LECS status can be displayed by issuing the `show lane config` command. As shown below, the LECS is tracking both the LES and the backup LES/BUS, with LES as the active one.

```plaintext
Casimir# show lane config
Config table: FSSRPConfig
Admin: up State: operational
This LECS is running in Fast SSRP mode
LECS Mastership State: active master
list of global LECS addresses (23 seconds to update):
47.0091810000000603E5A4501.00603E5A4505.00 &alt--- me
ATM Address of this LECS: 47.0091810000000603E5A4501.00603E5A4502.01 (auto)
vcd rxCnt txCnt callingParty
138 1 47 47.0091810000000603E5A4501.00603E5A4503.02 LES admin 1 active, fssrp
174 1 46 47.0091810000000603E5A4501.0030199AB871.02 LES admin 0 backup, fssrp
```

The cumulative total number of unrecognized packets received so far: 0
The cumulative total number of config requests received so far: 26
The cumulative total number of config failures so far: 3
The cause of last failure: no configuration
The culprit for the last failure: 47.0091810000000603E5A4501.0030199AB870.03
With the command show lane config you can verify the Database indeed is being bound to the LECS.

Casimir# show lane database FSSRPConfig
LANE Config Server database table 'FSSRPConfig' bound to interface/s: ATM2/0/0
no default elan
elan 'admin': un-restricted, elan-id 1
    server 47.00918100000000603E5A4501.0030199AB871.02 (prio 0)
    server 47.00918100000000603E5A4501.0063E5A4503.02 (prio 1)

Conclusion

With FSSRP enabled on all the components in the LAN cloud, the LEC can join the backup LES/BUS. This reduces switchover times in case of a failure on the primary LES/BUS.

show and debug Commands

Certain show commands are supported by the Output Interpreter Tool (registered customers only), which allows you to view an analysis of show command output.

- show lane client detail
- show lane server
- show lane database
- show lane config
- debug lane client state
- debug lane server
- debug lane config events

Related Information

- ATM LANE Fast Simple Server Replication Protocol
- Advanced LANE Setup – SSRP with Dual Phy
- LANE Design Recommendations
- LANE Technology Support
- ATM Technology Support
- Technical Support & Documentation – Cisco Systems