



Show Fabric Status

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Understanding Fabric Hardware Architecture

The fabric hardware is made up of Fabric Access Processor (FAP) devices on the MIO/DPC/DPC2 cards, and Forwarding Engine (FE) devices on the Fabric and Storage Cards (FCS). Each FAP has three Serializer/Deserializer (SERDES) links to each FE device.

A separate process named ARES Fabric IO (AFIO) configures and manages each individual fabric device. The AFIO process is a standalone executable and not a boxer procllet. This is primarily because the Control plane must be initialized and configured before Boxer is started. The FE devices are managed by AFIO processes running on the Active MIO, one for each FE device. This is because the AFIO process or processes, which run on the local CPU of the MIO/DPC/DPC2 card and the FSC cards do not have a local CPU.

Within Boxer, running on the CPU of the Active MIO, there is a fabric-related controlling procllet named Ares Fabric Controller (AFCtrl). Also within Boxer, on the CPU on each card, there is a process named Ares Fabric Manager (AFMgr). Each AFMgr has an IPC connection to all AFIO processes on the same CPU.

All CLI requests are sent to the AFCtrl procllet on the Active MIO. Depending on the command, AFCtrl forwards the request to one or more AFMgr(s). AFMgr in turn forwards the request to one or more appropriate afios. The AFIO process receives and processes the request, then sends a reply to AFMgr. AFMgr coordinates the individual afio responses by aggregating them into a single reply, which is then sent to AFCtrl. AFCtrl waits for all AFMgr responses, and displays the results.

Terminology

This section defines important terms:

- Ares Fabric IO (AFIO) – Name of process that controls a FAP or FE device.
- Fabric Access Device (FAP) – Hardware device found on MIO, DPC and DPC2 cards on which packets enter and exit the fabric. It performs segmentation/reassembly, queuing and traffic engineering.

- Forwarding Entity (FE) – Hardware device found on FSC card which receives a fabric cell from the source FAP and forwards it to the destination FAP.
- Fabric and Storage Card (FSC) – FSC is a front-mounted card. The FE devices on the FSC provide a crossbar switch architecture. The ASR 5500 supports up to 6 FSC cards.
- Serializer/Deserializer (SERDES) – SERDES converts parallel data from multiple interfaces into serial data, in both directions, that is sent over a link.

Support for show fabric-status Command at Operator Level

Currently, the “show fabric status” command is a debug level show command, which allows the Cisco TAC personnel to check and verify the high-level summary of the SERDES lanes in all fabric devices. This high-level summary includes fabric links between the FSC, DPC/DPC2 and MIO cards, and serdes links to an NPU or FPGA. The "show fabric status" checks and displays the current state of all SERDES lanes. In this StarOS 21.21 and later releases, the network operators or anyone with higher login access can run this show fabric status command without Cisco TAC assistance.

The CLI command is sent from the CLI proctlet to the AFCtrl proctlet. It essentially probes all SERDES lanes on each FAP an FE device by sending the request to all AFMgrs and all AFIOs. Determining the SERDES status of each lane requires reading multiple registers in the FAP and FE devices, because each FAP has up to 60 active SERDES lanes, and each FE has up to 96 SERDES lanes. This results in many device access operations, which can be CPU intensive. To prevent unnecessary CPU load by executing this command at a high frequency, it probes the device no more than once every 30 seconds. If the command is run at an interval less than 30 seconds, it returns the previous results. Once 30 seconds has passed, the next request will probe the devices.

Verify Fabric Device Status

Use the **show fabric status** command to verify the fabric device status.

Field	Description
Total number of FAPs	The Fabric status report displays the total number of FAP devices in the chassis.
Total number of FEs	The Fabric status report displays the total number of FE devices in the chassis..
Total number of SERDES links	Displays total number of SERDES lanes, broken down into Network Interface (NIF) and Fabric. Note NIF serdes lanes are between the FAP and another device, such as the NPU or FPGA. Fabric lanes are between FAP and FE devices.
Total number of active SERDES links	Displays total number of active SERDES links.
Total number of Fabric SERDES with errors	Displays total number of fabric SERDES with errors.

Field	Description
Total number of NIF SERDES with errors	Displays total number of NIF SERDES with errors.
Devices last Probed	Displayed only if cached values are returned because it has been less than 30 seconds since the command was last run.

