Cisco In-Service Software Upgrade (ISSU)

Customer Need: Reduced Planned Downtime from Maintenance

Today's business requires a highly available campus network (for example, a hospital needs uninterrupted operation 24 hours a day, 365 days a year) with close to zero downtime. IT spends considerably on resilient network design, per-device power redundancy, and other high-availability maintenance technologies. The last thing needed is downtime during software upgrades.

Technology Postcard

Feature Description: In-Service Software Upgrade (ISSU)

Cisco® Catalyst® Series switches minimize traffic interruptions during software upgrades through Cisco In-Service Software Upgrade (ISSU) functionality, available on modular (chassis-based) switches. Cisco ISSU accomplishes this by taking advantage of the high-availability functions present on the switch.

The main component of a modular switch is the supervisor engine, which orchestrates all the functions of the switch. It can be thought of as the brain of the switch. The supervisor engine is where the software is installed, and a switch needs just one supervisor engine to operate normally. However, a second supervisor engine can be added as a backup to increase the availability of the switch. If the primary supervisor engine goes down because of failure, the backup supervisor engine becomes active and starts orchestrating switch functions, minimizing the traffic outage. Cisco ISSU makes use of these dual supervisor engines to increase availability during software upgrades. Here is a use case that shows the benefits of ISSU.

Use Case

- **Without Cisco ISSU:** An IT team discovers through internal testing that an urgent software upgrade is required on the production modular switch. The team would then have to either schedule a change control for the weekend (the typical time for minimal traffic) or roll out the upgrade during the workweek, risking business disruption.
- **With Cisco ISSU:** When the IT team discovers that an urgent software upgrade is required, the team initiates the Cisco ISSU procedure on the switch. It starts with upgrading the backup supervisor engine with the new software while the primary supervisor engine operates normally. After the upgrade completes, the Cisco ISSU initiates a switchover, the process by which the backup supervisor engine becomes active and the active supervisor engine becomes the backup. At this point, the active supervisor engine is running the new software image, and the backup is running the old image. Now, ISSU upgrades the backup with the new software image. After the upgrade is complete, both supervisor engines run the same new software images. The entire process has minimal effect, less than 200 milliseconds, on data/voice/video traffic that is being sent through the switch. As an example, IP phone calls that are being transferred by this switch do not drop even as the switch gets upgraded.

Benefits

Cisco ISSU allows IT to upgrade the software in modular Cisco Catalyst switches at any time with minimum business interruption.

Supported Cisco Catalyst Platforms

- Cisco Catalyst 4500E (ISSU)
- Cisco Catalyst 6500 (enhanced Fast Software Upgrade [eFSU], which has functionality similar to that of ISSU)
- Cisco Catalyst 4500-X (in VSS configuration)

For More Information

http://www.cisco.com/en/US/products/ps7149/products_ios_protocol_group_home.html

http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/ios/12.2SX/configuration/guide/issu_efsu.html

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