



# THE ALCATEL-LUCENT ENTERPRISE OMNISWITCH PLATFORM ENHANCES NETWORK AVAILABILITY WITH ISSU

APPLICATION NOTE

# EXECUTIVE SUMMARY

Globalization has forced enterprises to be connected and available 24/7; a few hours of downtime can have business impact. Network infrastructure is the foundation for business applications and communications in any enterprise. Network infrastructure is controlled by dedicated software that is continuously changing, driven by innovation and evolution. Upgrades and maintenance are part of the network infrastructure lifecycle. To meet enterprises' high availability requirements, network architects are tasked with designing networks to be highly available and agnostic to both unplanned failures or planned upgrades.

The Alcatel-Lucent Enterprise OmniSwitch™ family of products is designed with high availability and resiliency as its core foundation, both in hardware and software. The In-service Software Upgrade (ISSU) technology component of the high availability architecture offers a seamless process to upgrade software on the OmniSwitch. During planned upgrades, ISSU ensures networks continue to be highly available in enterprise campus as well as in datacenter environments, leading to a higher quality user experience.

## ENHANCE HIGH AVAILABILITY WITH ISSU

The Alcatel-Lucent Enterprise Operating System (AOS) controls and is the heart of the OmniSwitch products. The OmniSwitch has field-proven resiliency, including support for:

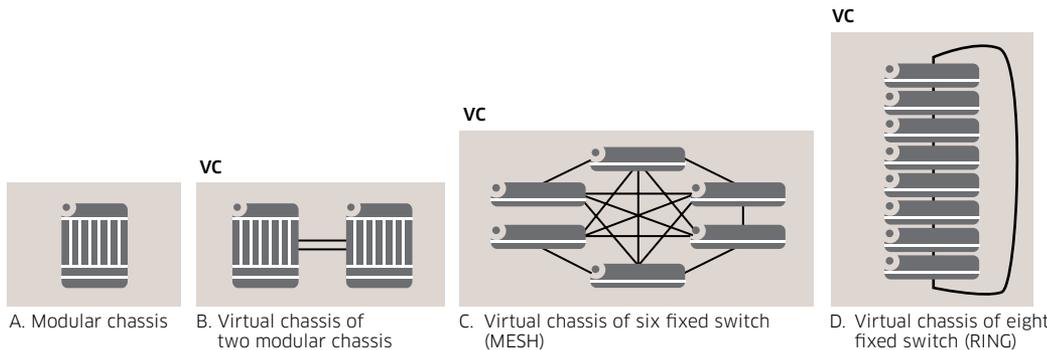
- Link resiliency with multi-homing
- Node resiliency with virtual chassis
- Power redundancy
- Highly available protocols (e.g., Open Shortest Path First (OSPF), Border Gateway Protocol (BGP), Protocol-Independent Multicast (PIM), and Intermediate System to Intermediate System (IS-IS))

The embedded ISSU technology now also enhances network high availability during software upgrades. ISSU technology supports true upgrades to a new software release, potentially including new features and functions that go beyond mere maintenance patches.

The ISSU upgrade is transparent to applications and users, providing high availability under most common network scenarios.

ISSU is supported on both modular OmniSwitch chassis and virtual chassis (Figure 1).

Figure 1. OmniSwitch topologies supporting ISSU



Technically, the ISSU process for a standalone modular chassis or a virtual chassis is the same. For a clearer understanding, however, they are described separately as follows:

### **Standalone chassis**

In a standalone modular chassis with two chassis management modules (CMMs), the ISSU process is initiated on either the master or primary CMM. It begins by upgrading the software of the secondary CMM first. Upon successfully upgrading the secondary CMM, it assumes primary role and performs the software upgrade on the other CMM. Finally, the network interface cards are upgraded sequentially.

### **Virtual chassis**

In a virtual chassis, the ISSU process is initiated on the master switch. It performs software upgrades to all slave switches sequentially, one by one. Upon successfully upgrading all the slaves, the master is upgraded, causing the secondary to assume primary role.

The ISSU upgrade process is resilient and avoids the need to plan maintenance windows during network downtime. In addition, the ISSU process provides thorough checks before performing and finalizing ISSU on critical network components to prevent network downtime, including:

- AOS automatically checks for hardware and software compatibility to ensure the ISSU upgrade will not result in downtime
- AOS automatically recovers if an unplanned event is encountered during the ISSU process by gracefully reverting back to the original state
- If any error condition occurs during the process, a message is logged and a trap is sent to the management station.

In summary ISSU technology provides:

- Enhanced availability of network infrastructure for continuous business processes
- Controlled upgrades of network infrastructure to be embedded in IT operations
- Reduced opening of maintenance windows for IT maintenance planning

To get more details about ISSU and other advanced capabilities on the OmniSwitch platform, please visit <http://enterprise.alcatel-lucent.com>