



## SIMPLIFY NETWORK CONTROL WITH AN ALCATEL-LUCENT ENTERPRISE INTELLIGENT FABRIC

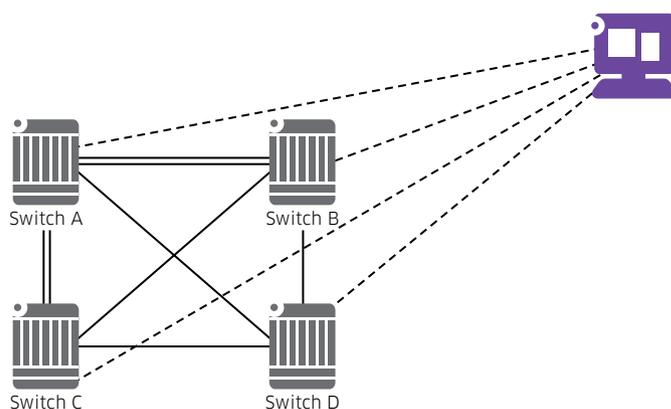
Network architects and managers are facing constant change in IT requirements due to the rapid rate at which smart devices are entering the work place, the trend towards Bring Your Own Device (BYOD) practices, the need to enable the coexistence of work and personal applications, and the speed of real-time content creation and sharing. All of this and more can only be supported with higher bandwidth in the core of the network, which requires constant expansion and evolution of available network resources. This increases operational complexity and leads to increased operating expenditure (OPEX). Despite this trend, IT network budgets remain tight and network managers are challenged to do more, faster.

The Alcatel-Lucent Enterprise Application Fluent Network is built on a resilient architecture that provides automatic control and streamlined operations to address the network challenges faced by network architects and managers worldwide. It is enabled by the OmniSwitch™ Virtual Chassis (VC), which offers a network solution that is sustainable while incorporating the essential capabilities for optimizing the end user experience, improving network manageability, increasing agility and reducing costs.

## MOVE FROM A FRAGILE NETWORK TO A RESILIENT NETWORK

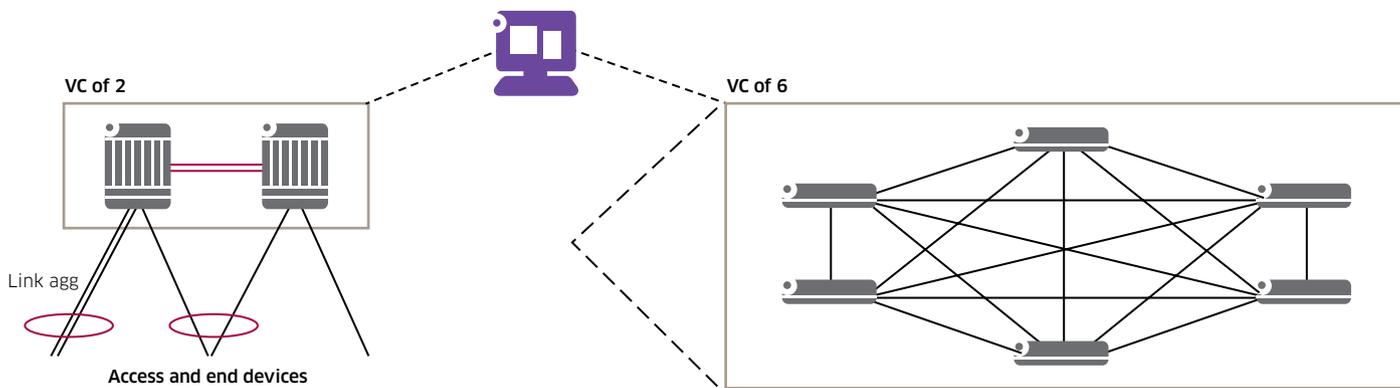
In today's network architecture there are more switches in the core to manage as the core expands to provide additional bandwidth. Every switch has a different configuration and protocols. This leads to sub-optimal network designs in which the resiliency of the network is easily compromised (Figure 1).

**Figure 1. Conventional network core (fragile and distributed control)**



The OmniSwitch Virtual Chassis (VC) transforms the network from being fragile to resilient. It addresses the need for the network to grow, while increasing network resiliency and lowering operational complexity. With the

Figure 2. Network core enabled by Alcatel-Lucent OmniSwitch VC (unified control with high resiliency)



OmniSwitch VC, network control is simplified because the number of switches that must be managed as the network expands is minimized. At the same time, the OmniSwitch VC delivers higher network bandwidth and resiliency, and brings greater flexibility in network inter-connectivity. As a result, IT teams can simplify network architectures with a single node, better manage increasing network agility, and completely eliminate configuration and protocol errors.

The OmniSwitch VC architecture allows for multiple switches to join the network and be managed as a single device (Figure 2). It facilitates the dual-homing of servers, storage and access devices with links distributed across VC peers, providing both link-level and node-level resiliency. This provides complete flexibility in how servers, storage and edge devices are connected via a single link or multiple links to achieve the required level of resiliency.

## OPERATIONAL CONSIDERATIONS

The OmniSwitch VC offers a single management point for Layer 2 and IP configuration. Multi-homed edge devices connect to the virtual chassis system over two or more ports using standard 802.3ad link aggregation (LinkAgg), increasing throughput and avoiding Spanning Tree Protocol (STP). In the absence of STP, users can enable the proprietary loop detection feature, which periodically transmits a multicast protocol data unit (PDU) on the primary port of 802.3ad LinkAgg group and VFL (virtual chassis system interconnection links).

The technology that enables the OmniSwitch VC facilitates Layer 2 and Layer 3 virtualization. For Layer 2 virtualization, hosts belonging to the same IP subnet communicate at Layer 2, independent of a Layer 3 lookup. Any edge device can be connected to one or more VC peers with transparent Layer 2 connectivity. While for Layer 3 virtualization the

VC peers, including the primary, synchronize all Layer 2 and Layer 3 information, facilitating local routing between hosts in different subnets connected to the VC system. The VC system provides instant failover and traffic convergence during element component failure. For reduced Layer 3 convergence MAC retention is required to prevent ARP flush resulting from a system MAC address change.

The OmniSwitch VC automates the creation of a virtual chassis using an auto-fabric feature, which speeds up network installation out of the box. As part of the auto-fabric capability, several OmniSwitch devices can collaborate to form a single virtual chassis automatically, further simplifying network operations and management, and reducing the required configuration steps.

## BENEFITS

- Enables a single point of management via a single IP address
- Provides a centralized control plane for routing and bridging
- Allows multi-node terminated LinkAgg to be created
- Creates a loop-free edge without STP
- Provides node and link-level resiliency
- Enables in-service software upgrade (ISSU) to operate across the virtual chassis
- Supports advanced routing and bridging protocols over a virtual chassis to enable seamless and scalable designs
- Enables network layer consolidation. Collapsing of EOR and TOR layers in the datacenter, or Core and Distribution layers in the converged campus

Alcatel-Lucent OmniSwitch Virtual Chassis technology together with other advanced capabilities of the OmniSwitch platform provides an intelligent fabric that is scalable, operationally efficient and simple. For additional details, please visit [enterprise.alcatel-lucent.com](http://enterprise.alcatel-lucent.com)