



# ALCATEL-LUCENT ENTERPRISE INTELLIGENT FABRIC TECHNOLOGY

REMOVING THE LAST BARRIER FOR IT TO SUPPORT AGILE BUSINESS

APPLICATION NOTE

# INTRODUCTION

This paper explains how Alcatel-Lucent Enterprise Intelligent Fabric (iFab) technology enables companies to remove the last barrier in IT to improve their business agility.

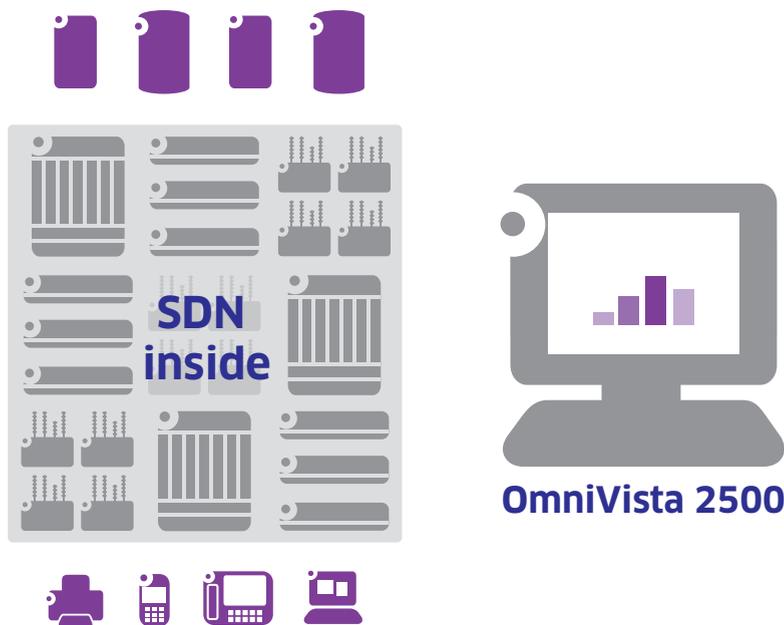
IT has taken strides in automating the computing and storage resources through virtualization. However, the current enterprise network infrastructure has been holding the companies back from achieving the much-desired operational agility.

Operational complexity with inflexible network infrastructure setup, lack of integrated workflow management, and inadequate reporting tools makes the deployment of new services and applications slow and costly. A study by Kerravala Research (2015) shows that four months is the average time for enterprises to provision new services. Up to 90 percent of IT projects are delivered late or cancelled, while 83 percent of enterprise IT budgets are spent on simply “keeping the lights on”. This leaves very little resources for innovation and development.

Alcatel-Lucent Enterprise’s Application Fluent Network (AFN) strategy highlights the need for simplification of IT through streamlining the operations along with resilient architecture and dynamic control of the infrastructure. AFN is based on a resilient architecture where the network adapts dynamically to the application, user, or device in real time to ensure the quality of the user experience. This dynamic adjustment of the infrastructure increases the operational efficiency, minimizing the maintenance cost while enhancing the user experience.

Intelligent Fabric is one of the key technologies of AFN. Intelligent Fabric speeds up network infrastructure deployments and simplifies network operations with game-changing automation, improving the agility of IT operations. Available on Alcatel-Lucent Enterprise’s network infrastructure equipment, the Intelligent Fabric technology enables simpler network design, comprehensive interoperability, plug-n-play deployment, and automation of moves, adds and changes.

Figure 1. Intelligent Fabric and OmniVista 2500



# FROM SIMPLE NETWORK DESIGN TO EASY MAINTENANCE

## NETWORK DESIGN MADE SIMPLE

The Intelligent Fabric technology simplifies the process of designing a network by eliminating the need to set many details. A simple input based on the locations of network equipment, the number and type of access ports as well as interconnection distance and bandwidth enables the designer to choose the appropriate Alcatel-Lucent Enterprise equipment for the design. Details of the conventional network protocols, such as Spanning Tree (STP), Link Aggregation Control Protocol (LACP), and Open Shortest Path First (OSPF) are not required. iFab recognizes the network protocols and self configures to provide the desired outcome.

iFab relies on standards-based protocols providing complete interoperability with third-party network components. This interoperability enables the infrastructure to automatically discover and join the existing network, providing flexible design and easy integration to legacy infrastructure.

## NETWORK DEPLOYMENT MADE STRAIGHTFORWARD

The Intelligent Fabric technology by default includes self-configuration of the network equipment through Auto-Fabric eliminating many manual tasks during the deployment process. The fabric is autonomously created just by unpacking, mounting, connecting and powering up the systems. Elimination of the manual setup processes shortens the time-to-production of the infrastructure and reduces the chances of errors in the deployment process.

The Intelligent Fabric technology makes the network components aware of their physical and logical topologies through self-attachment. The fabric can attach itself to the existing adjacent systems including infrastructure, Wi-Fi® or LAN, servers, and the user's devices, and to automatically configure the appropriate connectivity settings. The iFab technology provides network profiles to authenticate, recognize and classify those devices automatically regardless of location.

With iFab, network deployment is simplified to allow highly-skilled engineers to focus on meeting the business needs in an effective manner, while eliminating the infrastructure as the bottleneck in achieving business agility.

## MAINTENANCE MADE EASY

The Intelligent Fabric technology enables seamless operation due to the intrinsic self-healing capabilities. Self-healing enables continued operation for critical enterprise networks even in the case of failure. Any component failure, link or node, is detected in real time with automated re-routing of the traffic. The network can be upgraded while in service, significantly reducing or eliminating the need for disruptive maintenance windows.

OmniVista® 2500 enables managing and maintaining the fabric through comprehensive support of fault, configuration, accounting, performance and security (FCAPS). The ease of maintenance enhances business agility and promotes operational and cost efficiency.

## **MOVES, ADDS AND CHANGES MADE AUTOMATIC**

Manual moves, adds and changes (MAC) are an important part of the day-to-day burdensome activities holding the IT back from achieving their full potential of operational effectiveness. The Intelligent Fabric technology relieves the IT organizations from this manual process through built-in intelligence.

Movement of the users, devices and applications becomes non-intrusive through network profiles. The network follows the users, devices and applications to automatically adapt the correct profile for classification, security, bandwidth and priority, without requiring IT involvement. Introducing, moving and deleting Virtual Machines is automatically detected and adapted across the Intelligent Fabric.

Adding new components to expand the infrastructure transforms into the plug-n-play workflow. The Auto Fabric feature within iFab enables the new components to be detected and self-configured based on the physical and logical topology.

Changes are the only constant thing within an enterprise network. The Intelligent Fabric technology enables detecting these changes in real time to accommodate the rippling effect across the infrastructure. Adding a new user, device or application is detected and provisioned across the fabric without requiring manual intervention.

iFab brings corporate IT organizations to a new level of operational effectiveness through built-in automated capabilities. The network infrastructure no longer holds the organizations back from reaching their business objectives.

## **INTEGRATED WORKFLOW MANAGEMENT**

Programmability of networks (Software Defined Networking, SDN) enhances the capabilities of a company to support business agility. Modern networks must be programmable to interact with applications, fit into workflow management, and support special customization. The Intelligent Fabric technology promotes three major features to support IT operations:

- iFab supports OpenFlow, a standard protocol defined by the Open Network Foundation. iFab allows the network behavior to be programmed by a standard OpenFlow controller, which can in turn get requests from business applications for bandwidth or Quality of Service. The openness and standardization allows companies to take full advantage through any standards-based controller to increase their business agility.
- iFab supports OpenStack, a free and open source data center workflow software platform. The OpenStack technology consists of a series of interrelated projects that control pools of processing, storage and networking resources throughout a data center. The OpenStack technology made available for iFab is through open source OpenStack OmniSwitch Network Plugin (OONP) plugins. OpenStack workflow management enables agile management of data centers when compared to distributed management of servers, network and storage.
- iFab supports onboard Python scripting. To customize workflows in a network, iFab enables per-network-component scripting using as well as a set of RESTful APIs to communicate between network components. Scripting of components provides autonomous adaptation of workflows in the network and by the network in real time.

## COMPREHENSIVE NETWORK ANALYTICS

Visibility, monitoring and reporting are the key ingredients for company infrastructure management. The Intelligent Fabric technology both automates the workflows across the infrastructure, and ensures that all the aspects are visible to the IT organization through a single pane of glass: OmniVista 2500.

The Intelligent Fabric technology enables complete visibility of the infrastructure. Together with logical and physical topologies, any component of the fabric, applications and the workflows can be examined both in general and in detail. Overlay technologies, such as VXLAN, that are typically invisible to the infrastructure teams, are made completely observable through OmniVista 2500. The correlation of overlay technologies and physical components allows the IT teams to better understand application workflows and proactively plan infrastructure requirements.

The Alcatel-Lucent Enterprise Network Analytics technology built in iFab enables companies to analyze the infrastructure information in a meaningful manner. The vast information available from the infrastructure is summarized by OmniVista 2500 in a dashboard that provides a quick snapshot of the top-N applications, users, devices, warnings and key statistics. Built-in predictive analysis provides visibility into potential future bottlenecks, enabling proactive planning of the network capacity and expansion.

## CONCLUSION

With Alcatel-Lucent Enterprise's Intelligent Fabric technology, companies can increase their operational efficiency by more than 30 percent when compared to the traditional mode of operations. Network infrastructure is no longer a barrier in achieving the desired business agility. iFab allows companies to focus on their revenue-generating applications without compromising the speed of delivery or the quality of user experience.