



Simplifying Network Management with Enterasys

Reducing the complexity and cost of network management with OneFabric™

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Executive Summary

Traditional network architectures fail to meet the requirement of information technology to effectively and efficiently support the business. Maintaining multiple networks composed of varying architectures, each with their own unique tools and skillsets, increases operational expense and decreases the ability to adapt to dynamic business requirements. This paper will review the traditional architectures used in businesses today and define a new unified architecture to bring existing IT fabrics into a single end-to-end network fabric.

The term “fabric” is used in many different ways by many vendors. Some use fabric to describe a set of protocols that define the topology in a portion of the network. Gartner describes a fabric as the aggregation of components to form a system, to create pools of resources that enable applications or tasks to share the pooled resources. (Skarupa, Weiss, Scott, Butler p. 5) To ensure application availability, it is necessary to apply this definition of fabric to the network as a whole rather than treating the network as independent silos of fabric functionality.

Increased demand for application availability, quality of service, and time to market is not only changing how and where applications are hosted in the data center; it is also changing how they are delivered to the user. Cloud, virtualization, and the consumerization of IT have driven changes in the end-user consumption model. Initiatives such as “bring your own device” (BYOD) programs and the diversification of devices used in business are increasing complexity while forcing administrators to make hard choices between flexibility and control. Smartphones and tablets are changing how information is consumed and shared. This is also accompanied by growth in adoption and integration with social media platforms. To focus efforts on just data center fabrics is ignoring large evolutions in IT.

Operational expenses are top of mind for businesses. A recent survey conducted by the Enterprise Strategy Group showed that the number one consideration for justifying IT investments is reducing operational costs, followed by improvements in processes and workflows and reductions in capital costs.

OneFabric™ by Enterasys is a unified network fabric purpose-built to deliver business-critical applications. By offering a single data plane with a single management plane OneFabric delivers one network environment to manage versus multiple environments found in today’s networks. With OneFabric, businesses are able to collapse their wired and wireless edge, distribution and core networks and their data center into one fabric managed by a single management plane –OneFabric Control Center.

OneFabric from Enterasys was developed with the following objectives:

- Reduce operational expense associated with application delivery
- Simplify network operations
- Increase business agility
- Pervasive security for continued reduction of risk

OneFabric is architected for the new consumption model: mobile, virtualized and cloud-based. These transformative technologies allow businesses to improve agility and responsiveness yet keep costs inline. OneFabric is designed to help enterprises maintain an integrated end user experience while migrating towards public, hybrid, or private cloud-based services that leverage virtualization. This paper will look at how IT managers can improve operational expenses, capital expenses, security and time-to-market, while for delivering applications to their end users with OneFabric.



Figure 1: Justifications for IT Investments

¹ “Clearing the Confusion About a Fabric-Based Infrastructure: A Taxonomy” – Gartner Research Sept 2010
² “Network Convergence in the Data Center Makes Sense” – Enterprise Strategy Group White Paper 2010

Overview of OneFabric by Enterasys

This section provides an overview of OneFabric and how it fits together with your existing enterprise network. OneFabric is one network environment delivering one network experience to users, regardless of how they connect to the network.

Enterasys products are built with a single architectural approach, OneFabric, leveraging a set of shared components to provide a unified application delivery fabric. The components are designed to be modular and used interchangeably across the various network tiers and segments found in traditional network deployments. All OneFabric solutions implement the following attributes:

- Simplicity without compromise
- A single fabric management plane
- A modular and extensible fabric based on a common architecture
- Integrate and automate with IT workflows
- Embedded security

These attributes allow OneFabric to deliver on the business objectives of lowering operating expenses and improving business agility.

Simplicity

With the evolution of networks and attached systems and storage, managing application delivery has become more complex. IT workers are becoming more specialized, creating skill deficits when looking at the application delivery fabric as a contiguous system. Data center network architects, mobile edge service managers and virtualization teams lack an end-to-end view of application delivery, yet must be able to coordinate with multiple teams when deploying and managing applications within the company's fabric.

With OneFabric, the process of delivering applications is greatly simplified, thanks to workflow integration, standard APIs and network templates for application delivery. The process for adding a new virtual machine or configuring a mobile edge device is accomplished using a single set of tools rather than the often dozens of tools and procedures found in competitive networks.

API integration allows many of the processes and functions required by the network, server and security admins to be accomplished in workflows and applications that they are already familiar with. This capability enables OneFabric customers to bridge skills deficits and provide their customers with an network fabric that responds automatically to the needs of the business without years of training and multiple network degrees.

Single fabric management

A key differentiator of OneFabric is that it accomplishes management of the data center, virtualized networks and systems, core and distribution fabrics and the wired and wireless mobile edge within a single management system. This is in stark contrast to competitors that have multiple applications that are focused on solving a single problem, and require extensive training to integrate into your workflow.

OneFabric Control Center is a comprehensive management system that provides a single management plane for OneFabric, with extensive API integration to enable external workflows that simplify the day-to-day management responsibilities of IT personnel. Adding a virtual machine to the network doesn't require a console access to OneFabric Control Center, rather that workflow is enabled natively within the hypervisor management system or made available via external workflows such as SharePoint. This capability to work within existing consoles and workflows lowers the learning curve for IT managers and greatly reduces the time to deploy applications and systems as well as enrolling users and troubleshooting problems as they arise.

It is critical for managers to consolidate management systems. With the complexity of virtualization, converging data with storage in the data center and enrolling consumer devices to the network, a single management fabric will increase productivity and decrease downtime. OneFabric Control Center uniquely provides for console consolidation within the network teams and provides task-specific console integration to third party consoles; improving IT operations.

Modular fabric

Enterasys OneFabric employs a modular architecture, allowing the fabric to be implemented within reasonable customer budget cycles, providing added benefit to existing systems while enabling a path to a single unified fabric. Each of the components within the OneFabric family shares a common management architecture and a common architectural approach to application delivery products, including our switches, routers and wireless access devices.

One example is found in the custom CoreFlow2 ASIC design found in the S-Series and K-Series modular switches. CoreFlow2 ASICs provide the Enterasys modular switching systems with the ability to isolate application traffic by type and priority to the business. The visibility into application usage across the fabric enables unparalleled control and reporting for application traffic to ensure each application has the services it requires from the virtual machine to the consumer at the mobile edge. Combined with OneFabric Control Center, this application delivery fabric is centrally provisioned while providing a distributed forwarding fabric that scales with the capacity of the system.

Workflow integration

Application delivery has evolved with the data center, and the data center has evolved quite rapidly in recent years. Cloud and virtualization are quickly changing IT workflows. The complexity of this new environment has left traditional network architectures and management systems behind, leaving network architects, systems and server teams, and CIOs with a patchwork of management systems that simply adds to the complexity of application delivery.

Critical to the success of any IT solution is the impact it has upon the administrators that will work within it to accomplish tasks. Many solutions today burden IT organizations with yet another management console. Enterasys OneFabric Control Center leverages APIs from leading virtualization vendors, standards such as Trusted Computing Group IF-MAP and native APIs to unify systems management across multiple disciplines and participate in external workflows.

Embedded security

By embedding intelligence into every layer of the network, OneFabric creates an environment where security and policy is enforced at every network device, from the virtual switch to the mobile edge, without sacrificing performance or flexibility. Unlike other vendors, our policy function is tightly integrated with the identity of a particular application, end user, or device. OneFabric provides a rich set of controls for rate limiting, prioritization and filtering, based on centralized identity and authentication, from the network layer to the application layer.

Business Benefits of OneFabric by Enterasys

Consolidation

Today every network is divided up into different segments; data center, core, distribution and edge. Edge is further divided into wired and wireless access. While it is easy to think of a network as segmented into these unique layers, the way they have been implemented over time is with different components and different management tools. For each different hardware component there is time dedicated to training personnel on the unique qualities of that product and training on the often-unique management software required to operate that component. If we look at all the various components required to build today's networks, it takes a fair number of personnel to operate the large diversity of single-purpose components.

Enterasys has taken a different approach to building networks. We are enabling our customers to drive towards a strategy of having a unified network fabric delivering; simplicity, cost savings and effective application delivery in a complex, mobile technology environment. Our modular approach allows companies to move towards this strategic goal in a manner that protects their current investments and aligns with existing budget cycles.

With one network environment to manage, Enterasys greatly reduces the variety of components that an IT shop needs to train their staff on. Accompanied by a single management system, IT shops that have implemented Enterasys products are supporting larger network environments with fewer staff than shops using competing solutions. For example, a large university customer has implemented a network supporting the academic needs of 80,000 students and supports that implementation with a staff of four. They are able to do this because of the enhanced visibility offered by Enterasys OneFabric and the simplicity in managing a single fabric from the virtual machine to the wireless user with Enterasys OneFabric Control Center.

While a unified fabric from end to end yields the greatest benefit, consumers will still receive exceptional benefit from OneFabric through a building block approach to deployment. Each component of the solution is designed to integrate with existing solutions, leveraging the modularity of the Enterasys OneFabric architecture to enable companies to incorporate the components for solutions they are currently investing in.

Operation

If we consider that the focus of today's enterprise is to increase business, IT needs time to strategize and focus on initiatives to deliver the applications and data that the business expects. In a recent survey conducted by VMWare ; nearly half of management's time is spent on routine tasks, distracting them the strategic initiatives critical to the success of the business. It is quite easily observed that a majority of the businesses surveyed are spending more time on routine tasks and less time on strategic initiatives.

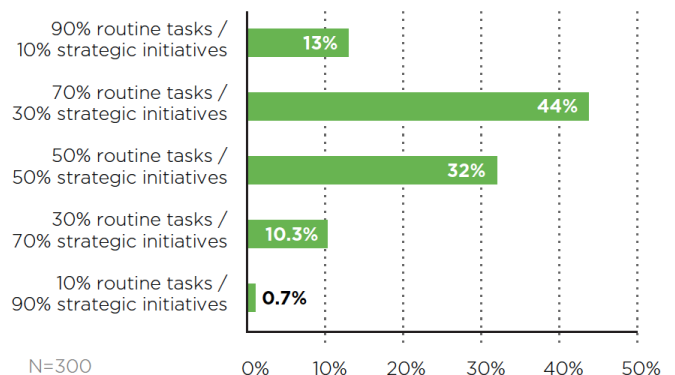


Figure 2: Time Spent on Routine Tasks

This is often caused by the burden of a large set of diverse systems that need to be routinely managed to ensure that the users have access to the data and applications that drive the business. Since many of these systems do not share a common architecture, they often have their own management applications and dedicated staff to operate them. This diversity creates a challenge; significant changes often require collaboration among the different teams to accomplish small changes. This makes automation of routine tasks even more difficult.

An example of how OneFabric enables customers to accomplish this shift is Wardlaw Claims. Prior to implementing a OneFabric architecture, staff spent 60% of their time managing the network, now they spend just 5% of their time managing and maintaining their fabric. A key benefit realized by Wardlaw Claims is that OneFabric interoperates with their pre-existing 3rd party products.

Business Process Improvement

OneFabric by Enterasys is developed to integrate with existing IT systems to enable workflows that reduce the time to deploy service or respond to events. A key component is the high degree of automation that OneFabric offers companies by integrating and augmenting existing workflows within your IT organization. Let's look at two examples of leveraging OneFabric to improve IT operations; virtualization and consumerization of IT.

Enterasys customers using OneFabric have seen efficiencies in managing their data center networks. One such customer integrated OneFabric with Microsoft's SharePoint to create an IT workflow to manage equipment lifecycles in the data center. Adopting a single management app that they had used for physical server lifecycle management, they modified it to start managing virtual machine deployments.

All the resources a server needs, physical or virtual, are managed in this workflow. What network is the machine going to reside in, which ACLs are required, network storage requirements, etc. Once all the forms have been filled out and approved by necessary managers, OneFabric automates the provisioning of both the physical and virtual network for the server. This level of automation reduces the following to deploy a machine in the data center:

- Time to deploy services
- Number of tools
- Number of personnel

The same techniques and tools are used to address the requirements associated with the consumerization of IT, new devices such as smartphones and tablets introduced by the organization's user community. With OneFabric, the same workflows and tools used to manage data center system lifecycles can also be applied to onboarding new users, new user machines and enable the onboarding of "Bring Your Own Device" (BYOD) gear.

For both solutions, OneView workflows enables device:

- Registration whether it's a new virtual machine or a new tablet
- Audits for compliance with security standards
- To receive the services associated with its function

OneFabric Solutions

As an entry point into the OneFabric architecture, customers can identify their immediate infrastructure needs and implement OneFabric solutions which can coexist within their existing environment while providing incremental value. Over time customers can align technology projects with their budget cycles to deliver complimentary OneFabric solutions into their network. The OneFabric Control Center, deployed as part of the initial implementation becomes the centralized, unified management platform from which all OneFabric components will be managed as customers move down their strategic implementation paths. Enterasys OneFabric solutions include:

- OneFabric Data Center Solution
- OneFabric Edge Solution
- OneFabric Security Solution

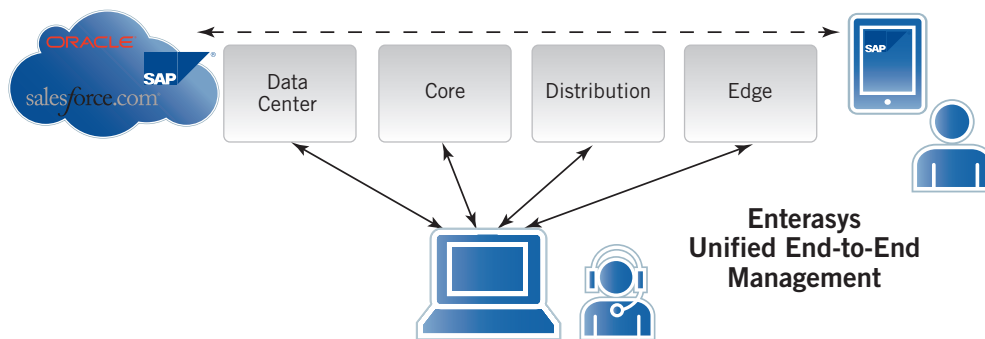


Figure 3: OneFabric by Enterasys

OneFabric Data Center Solutions

Enterasys OneFabric data center solutions drive down operational costs through a combination of management automation across both physical and virtual environments and a robust and highly resilient distributed architecture. Built-in compliance controls and an open, standards-based approach for interoperability with existing data center solutions ensure a solid foundation for virtualization.

With network intelligence that can easily and dynamically provision resources across both virtual and physical environments, Enterasys data center solutions are leveraged by enterprises around the world to:

- Ensure the highest availability for mission-critical data center applications
- Offer interoperability with leading virtualization platforms from VMWare, Citrix and Microsoft
- Reduce the work load and increase the efficiency of the IT organization
- Provide secure mobility of virtual machines across geographies
- Ready for the tablet explosion that will drive VDI

Enterasys OneFabric empowers network architects to “flatten” their layer 2 and layer 3 network topologies with technologies such as shortest path bridging (SPB), data center bridging (DCB) and fabric routing. The OneFabric data center solution flattens your data center network and provides:

- Significantly faster route set-up and packet throughput for cross-VLAN or cross-subnet communications
- More deterministic latency across your entire network fabric
- Greater scalability as traffic no longer needs to follow traditional routing topologies, causing greater core and aggregation-layer congestion

Fabric routing from Enterasys delivers additional architectural advantage and simplicity for the data center. With mobility options such as vMotion, systems may be physically in the same area of the network, but logically separated. In this too common scenario, traffic is sent across multiple tiers of a traditional data center network, consuming uplink bandwidth as traffic is sent across the data center fabric twice.

Processing packets closer to where the routing decision needs to be made, and making fewer overall routing decisions throughout the network enables more efficient network transactions to be made and greatly reduces the impact of unnecessary usage of network uplink bandwidth. Fabric routing leverages existing routing standards for assured interoperability with deployed third party routers.

Data center architects want solutions that reduce application latency and unnecessary data center fabric congestion. Enterasys Fabric Routing solves this problem by distributing routing intelligence to the edge switch enabling local traffic to remain local which lowers latency and ensures the most efficient use of the data center fabric capacity.

OneFabric Edge Solutions

What differentiates the Enterasys OneFabric solution from other fabrics is that it spans from the datacenter to the network edge, providing a consistent application delivery experience and leveraging a single management plane to accomplish this. Incorporating the unified edge allows OneFabric to enable business trends such as Bring Your Own Device (BYOD) programs at a lower operational cost than other solutions.

OneFabric integrates both the wired and wireless access networks into a single access edge fabric and unifies them with the rest of the network fabric. Purpose-built on a single network management architecture, services are consistently delivered regardless of the user's access method or the device type they are using. Trends towards virtualized desktops (VDI) are placing more demand on the network to act as a single entity to provision application delivery at the edge for VDI and in the datacenter for the virtual desktop session.

Enterasys offers the only fabric solution today that delivers a unified edge access solution using a single management system or "single pane of glass" to provide a single application experience with lower operational expense.

- Single pane of glass management for wired/wireless access solutions
- Single network policy wired/wireless
- Flexible delivery, distributed, centralized and virtualized options
- Fewer SSIDs are required as differentiated access is enforced in the fabric, not the SSID
- Reduced operational expense
- Multimedia support with advanced QoS for integrated video/voice/data

Managing the access fabric is essential to delivering the right services and applications to users in a context that is in alignment with their role in the organization. That access should be consistent regardless if they are plugged into an Ethernet switch or accessing the network wirelessly. OneFabric Control Center provides a single portal to managing and delivering access to each user regardless of how they are connecting, and doing it within a single application reduces the complexity of ensuring access methods are in sync with one another. A single console also reduces the management burden of training IT staffers on multiple systems.

With wireless LAN solutions built on the same architecture as OneFabric wired LAN solutions, the delivery of applications is associated to the user and their role within the organization. With a single fabric, you can reduce the number and naming conventions associated with wireless networks to a single SSID. Within that SSID, OneFabric can map the user to the applications and resources they have access to and then prioritize those applications by their service profile. This allows IT WLAN architects to reduce the complexity of their wireless deployment and focus their time on service coverage vs. complex wireless LAN naming constructs and role mappings. It also greatly simplifies troubleshooting of user access should a problem occur.

OneFabric Security Solutions

OneFabric Control Center is a key component of Enterasys networking solutions and assures that network operations are aligned with the business, operationally efficient, and secure. It is distinctive for its granularity that reaches beyond ports and VLANs, drilling down to individual users, applications, and protocols. No matter how many moves, adds or changes occur in your environment, OneFabric Control Center keeps everything in view and under control through role-based access controls.

OneFabric tightly integrates network infrastructure, management software and security components into a comprehensive security and prioritization solution that extends from the wired and wireless edge of the network to the virtualized servers in the data center.

The OneFabric security solution provides:

- Visibility into the devices and users that are connected to the network
 - Where they are connected
 - What networked resources they are accessing
 - Applications and protocols that are being used
- Enforcement of security, prioritization and acceptable use policies
 - Enforced at the wired or wireless edge of the network and data center to data flows originating from or destined for the virtual servers
- Threat detection and automated responses for both known and “Zero Day” threats

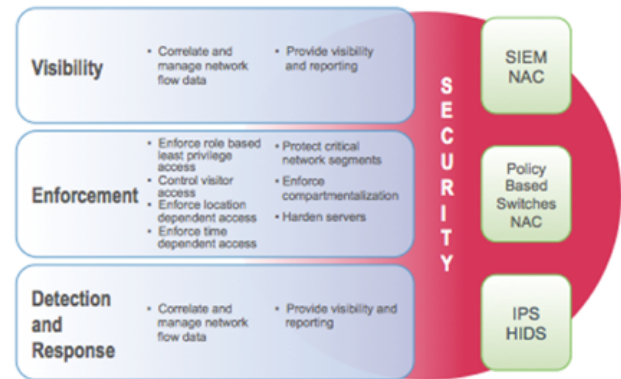


Figure 4: OneFabric Security Solution Architecture

Unlike security solutions that are bolted together from components that function in isolation from each other, OneFabric security provides a fully integrated SIEM, IPS, NAC and role based least-privilege solution. Each element of the solution is designed to work together and complement each other. The result is a comprehensive, extensible, highly effective and easy to manage security architecture.

Simplicity is at the heart of OneFabric Control Center, enabling IT staff to avoid time-consuming manual switch-by-switch configuration tasks via a high degree of workflow automation. OneFabric Control Center fills the functionality gap between traditional element managers that offer limited vendor-specific device control, and expensive, complex enterprise management applications.

One click can equal a thousand actions when you manage your network with Enterasys. OneFabric Control Center can even manage beyond Enterasys switching, routing and wireless hardware to deliver standards-based control of other vendors' network equipment, ensuring the modularity of OneFabric solutions.

It is through the intelligence, automation and integration of management software that your IT organization can optimize the efficiency of network operations and reduce total cost of ownership. Enterasys OneFabric Control Center provides centralized visibility and granular control of enterprise network resources.

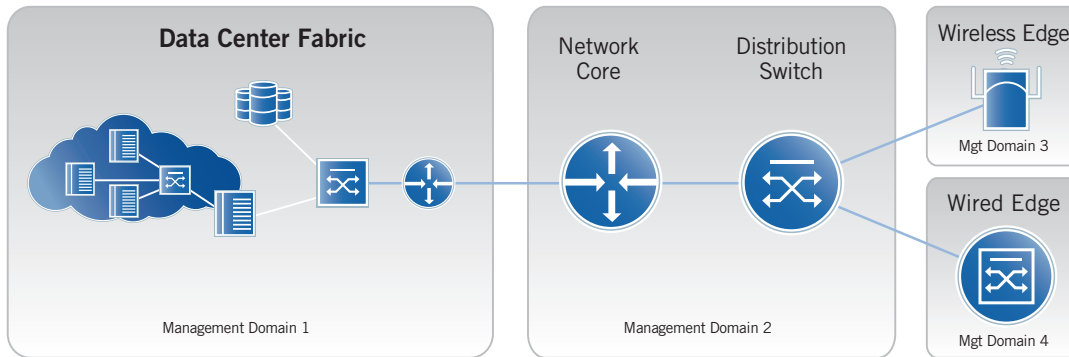
Summary

Enterasys OneFabric is about addressing the entirety of the network infrastructure between the application and its end-users as a single system as opposed to addressing the network as a combination of pieces and parts. It is designed as a modular, scalable system that can be implemented along with existing projects and budget cycles.

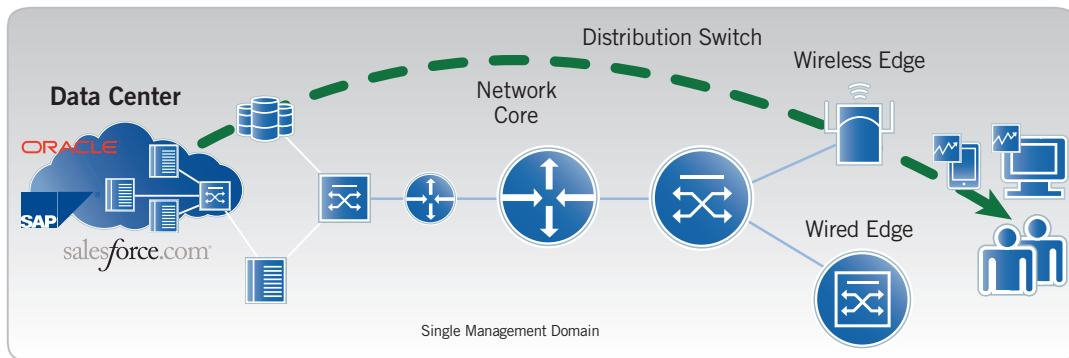
OneFabric value:

- Lower OPEX
- Lower CAPEX
- Higher resiliency
- Better alignment with the business
- Increased business agility through faster provisioning of services “end-to-end”
- Embedded security for increased visibility and reduced risk

Competitive Model



OneFabric from Enterasys



WANT TO LEARN MORE?

Discover what OneFabric can do for your business and your entire network management team. Talk to an Enterasys representative today or visit us at enterasys.com/onefabric.