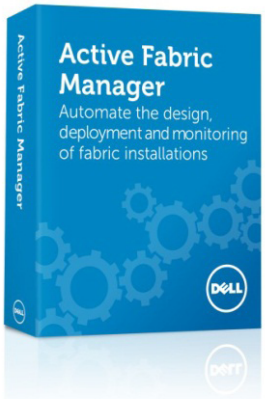


Active Fabric Manager 2.5

Automate the design, deployment and operation of data center fabrics with software-defined networking features.

Through a single console, Active Fabric Manager (AFM) reduces the design and deployment tasks associated with manually designing, building and operating data center fabrics by 86% through the use of customizable design templates and a high level of automation.

Dell Active Fabric

A network fabric is a high-performance, highly reliable network architecture that replaces the most commonly deployed point-to-point relationships with a dynamic multipoint-to-multipoint architecture. The underlying benefit of adopting the fabric paradigm is to realize high-performance and flexibility without requiring investments in capital-intensive physical infrastructures.

The concept of fabric is highly relevant when discussing cloud computing and software-defined environments. While virtualization is the underlying technology that enables the cloud, fabric technology is the most crucial component. Dell has provided a variety of fabric offerings catering to the needs of data center customers. Active Fabric solutions leverage Dell's portfolio of high-performance, cost-effective, inter-connect products that are purpose-built for stitching together server, storage and software elements in virtualized and cloud data centers. Planning, designing and deploying fabrics involve a lot of complexity. AFM simplifies this complexity by introducing a distinctive software offering.

Dell Active Fabric Manager

AFM is a direct answer to the rapidly changing dynamics that challenge today's enterprise and offers compelling benefits to empower enterprise IT to deliver powerful new capabilities that drive the business bottom line. Dell's AFM enables enterprises to immediately deliver a highly-automated SDN-enabled Ethernet fabric with ease. By leveraging the latest innovations in SDN and network programmability, AFM can automate the design, deployment and day-to-day operations of data center fabrics, reducing fabric deployment time by up to 86% compared to manual configurations while eliminating costly configuration errors that account for the majority of outages today.

While enterprise IT needs to adopt new technologies quickly, complexity and significant training requirements make adopting and mastering the latest technologies a daunting challenge. AFM's powerful software tools empower IT staff to masterfully design and deploy next-generation Layer 2 and Layer 3 fabrics within a matter of minutes. Unlike traditional network management tools that primarily focus on performance monitoring of various network elements, AFM has been purpose-built to leverage SDN technology and deliver a new operational model where automation is the baseline.

Simplify next-generation fabric design

AFM includes many innovations that eliminate manual tasks associated with fabric design and deployment. AFM includes a customizable design wizard that makes the process of designing an end-to-end network fabric simple. The wizard prompts the user to provide inputs required for the fabric design in an intuitive fashion. In the background, AFM carries out all necessary calculations to present the most appropriate fabric topology, eliminating guesswork and errors that are common in network design and implementation. The designs are derived from a set of over 100 pre-defined templates that have been tested and validated for enterprise deployment. These include Layer 2 and Layer 3 spine-leaf and converged LAN/SAN fabrics with Fibre Channel and Fibre Channel over Ethernet (FCoE) topologies and underlying technologies such as Dell Open Automation and Virtual Link Trunking (VLT).

AFM can also discover previously deployed fabrics and integrate them into the fabric design. With AFM, network administrators can fine -tune a number of design parameters to exactly match the needs of workloads that will eventually be deployed on the fabric. AFM even generates a Visio diagram for the purpose of documenting the fabric and also automatically updates the various identity elements like MAC and IP addresses.

Automate network deployments

AFM can simplify and accelerate the provisioning process by translating the fabric design to a completely functional deployment in a matter of minutes. Once the design phase is complete, AFM provides complete device configurations and powerful tools that enable the user to customize the deployment. Network administrators can complete all tasks from AFM's web GUI without having to issue a single CLI command.

Active Fabric Manager can reduce the time it takes to deploy data center fabrics by up to 86%.

AFM generates unique configurations for all switches and automates the subsequent provisioning. The deployment process also validates the cabling and any mismatches are flagged with remedial actions. If there is a need to edit the AFM-generated configurations, it can be done easily from the AFM console. Auto-generated configurations can be edited by the user and stored in the deployment template.

Streamline and accelerate IT operations

Once the fabric is fully functional, AFM provides a number of features that support day-to-day operations. AFM includes a performance monitoring module that collects and displays real-time and historical statistics at multiple levels of visibility; network (comprising of multiple fabrics), fabric, device (networking switch) and port. AFM provides a wizard-based workflow to simplify and deliver high-availability during upgrades to device software. The upgrade image is downloaded and staged in a standby partition enabling seamless upgrade process. AFM constantly validates the physical cabling as well as the configurations on all switches in the fabric. Any out-of-band changes are detected and flagged with the appropriate level of severity and the remedial actions needed to fix the issue.

Holistic lifecycle management

AFM also includes a number of maintenance features. The software includes a set of workflows to back up and restore configurations of one or more switches in a fabric. The workflows can be scheduled or executed in an ad hoc fashion. Similarly there are workflows to update the switch firmware. Node replacement workflows in AFM help ensure that failing switches can be replaced proactively without impacting the fabric operations.

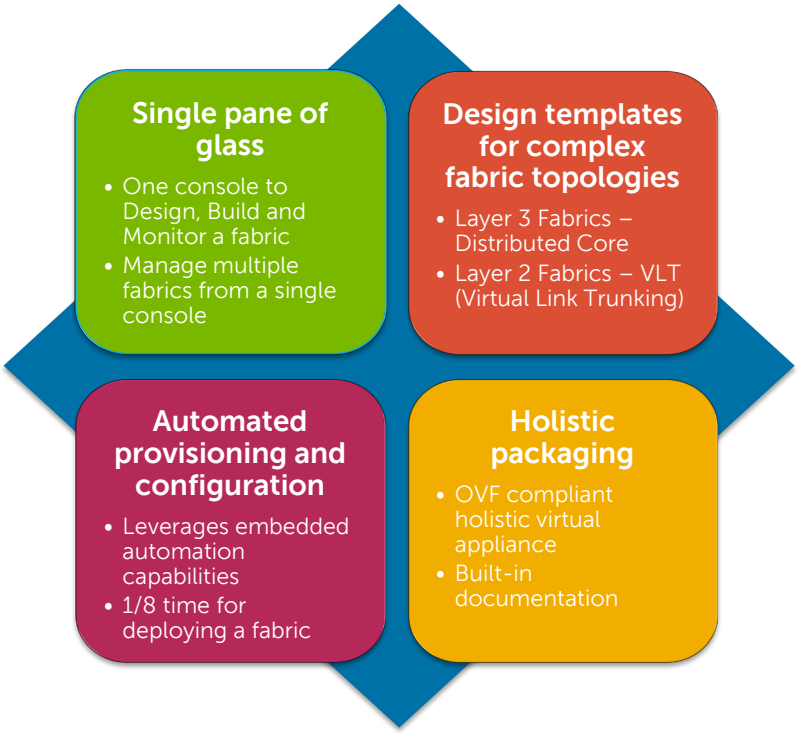
Ecosystem integration

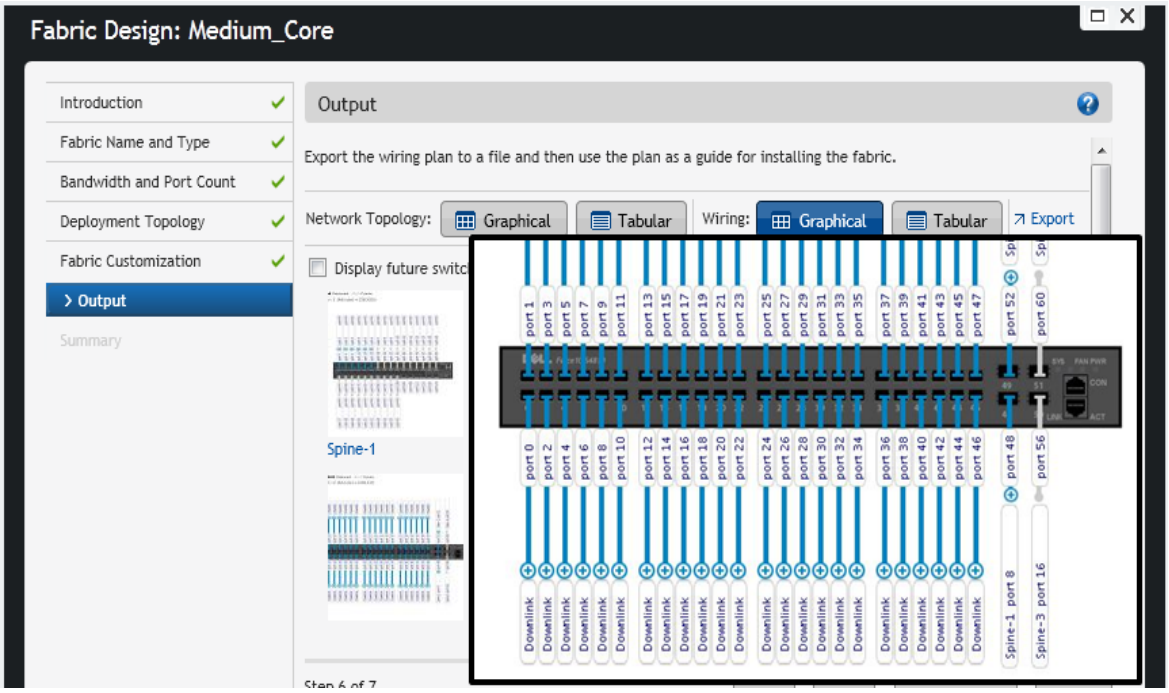
AFM now provides northbound API integration with several higher-layer orchestration applications, including Dell's OpenManage Network Manager, OpenStack Neutron plugin and VMware® vSphere™.

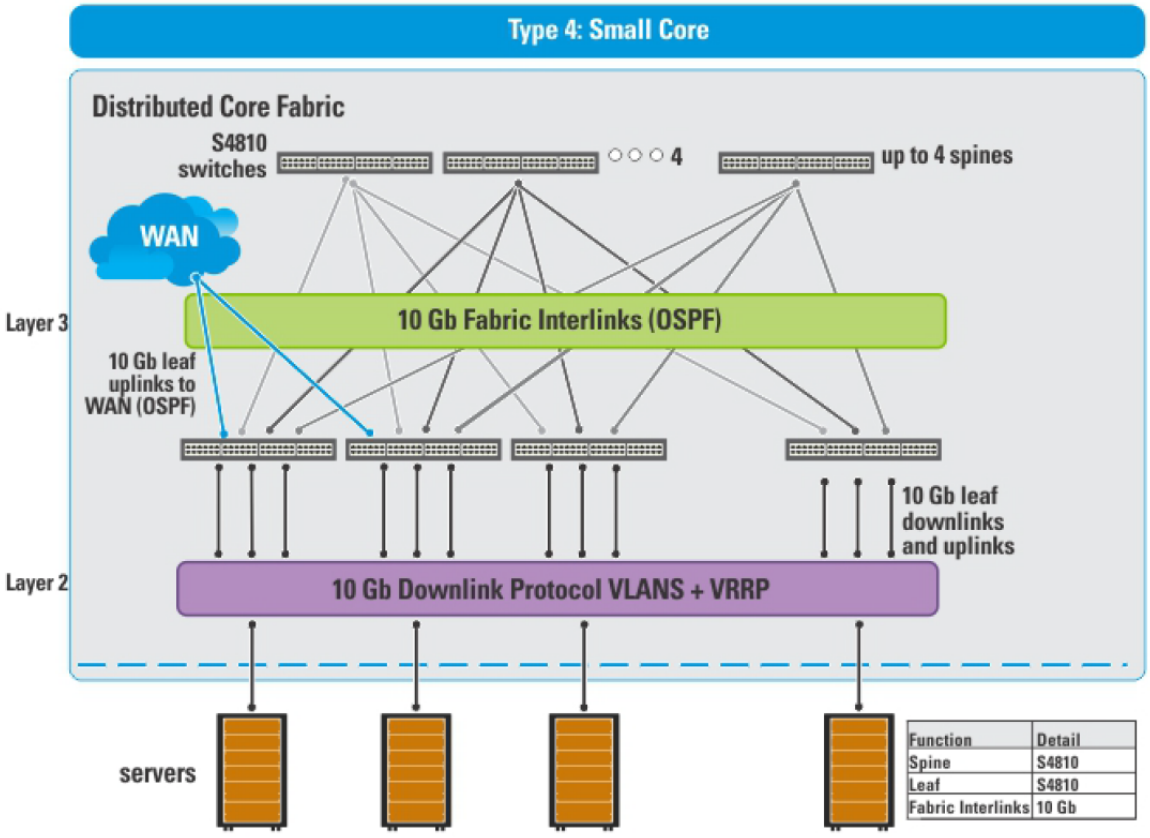
Software-defined control — without the risk

AFM software operates outside of the data path — if the AFM server is shut down or becomes dysfunctional, the fabrics that are managed by AFM will continue to function without any interruption. However, AFM also includes a number of high-availability features to overcome any failure without the need for human intervention. AFM leverages off-the-shelf failover capabilities offered by the various hypervisor tools to recover from failure of the virtual appliance. The internal components of AFM (which includes a database server and an application server) are designed with no single point of failure.

AFM delivers a powerful yet simple software solution that can empower businesses to fully utilize the latest infrastructure technologies with ease, streamline IT operations and deliver the key capabilities to accelerate business initiatives and win in today's business climate.




Fabric Design: Medium_Core
Introduction
Fabric Name and Type
Bandwidth and Port Count
Deployment Topology
Fabric Customization
Output
Summary
Output
Export the wiring plan to a file and then use the plan as a guide for installing the fabric.
Network Topology:
Graphical
Tabular
Wiring:
Graphical
Tabular
Export
Display future switc
Spine-1
Step 6 of 7


Type 4: Small Core
Distributed Core Fabric
S4810 switches
4
up to 4 spines
WAN
Layer 3
10 Gb Fabric Interlinks (OSPF)
10 Gb leaf uplinks to WAN (OSPF)
10 Gb leaf downlinks and uplinks
Layer 2
10 Gb Downlink Protocol VLANS + VRRP
servers
Function
Detail
Spine
S4810
Leaf
S4810
Fabric Interlinks
10 Gb

Feature	Benefit
Automated provisioning, validation and configuration	• Task and time compression associated with deployment of complex fabrics • Near instant validation and rapid troubleshooting
Design templates for Layer 2 and Layer 3 fabric topologies	• Accelerates the deployment of Active Fabric offerings • Provides a single tool to design, document, deploy and manage complex fabric topologies • Over 2x increase in the amount of supported topologies with over 100 templates
Support for converged LAN/SAN fabrics	• Helps preserve the customers Fibre Channel (FC) investment with the ability to design converged LAN/SAN fabrics including iSCSI, FC and FCoE
Visualization and Usability	• Provides a rich end user experience • Establishes a simplistic way to design and deploy complex networks • Redesigned fabric design wizards improves user experience while delivering several new customization options
Private cloud and virtualization suite integration	• Transparent Fabric Automation for OpenStack Neutron • CLI for VMware vSphere Distributed Switch (VDS) • Automated configuration of NVO parameters across fabric devices
Active Management link	• Active Management Link (AML) delivers out-of-the-box integration with Dell OpenManage Network Manager and leading NMS suites • AML enhances AFM's single-pane-of-glass experience by delivering the most commonly needed NMS data from the AFM UI
Package and distribute AFM as a holistic virtual appliance	• Reduces the number of prerequisites to install and use AFM • Simplifies end user experience
High availability for AFM Server	• Out-of-band design ensures no data loss in event of server failure • No manual intervention to recover from AFM server failure
Northbound APIs for Ecosystem integration (REST/JSON/XML)	• Network abstraction for end users of higher level orchestration
Expanded platform support	• Expanded support matrix Z9000, S6000, S5000, S4810, S4820T, MXL, S60, S55, PE M I/O aggregator
Auto-discovery and auto-configuration of existing fabric deployments	• Active Fabric Manager can now discover and "bolt-on" to existing Dell Active Fabric-supported installations

Active Fabric Manager is standalone software that is packaged as a holistic virtual appliance and runs in its own virtual machine. You can deploy AFM as a virtual appliance on a VMware ESX® virtual machine.

Additionally, AFM is distributed as a package that can be installed on bare-metal servers.

Installation requirements

Active Fabric Manager

Hardware
Processor: Intel Xeon E5620 2.4GHz, 12M cache, Turbo, HT, 1066MHz Max Mem
System Type: 64-bit operating system
Memory: 32GB memory (8x4GB), 1333MHz Dual Ranked LV RDIMMs for 2 processors, Advanced ECC
Disk space: 1TB 7.2K RPM SATA 3.5 Hot Plug Hard Drive

Virtual Appliance
VMware vSphere

Package Installation
CentOS 6.3 64bit

Active Fabric Manager Client
Internet Explorer 9 and higher
Firefox 12 and higher

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Learn More at Dell.com/Networking.

March 2014 | Version 1.0
Dell_Networking_Active Fabric Manager 2.5_spec_sheet