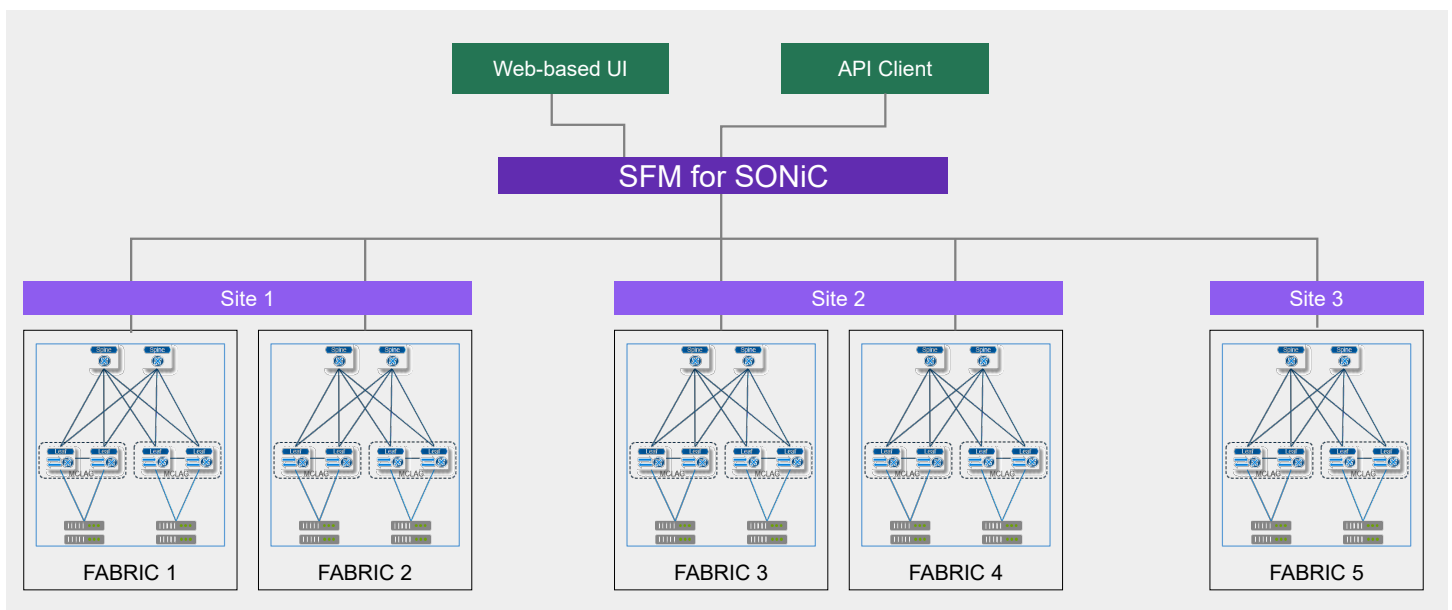# SmartFabric Manager for SONiC

In the era of digital transformation, network automation is a pivotal element in orchestrating networks that mirror the scale and efficiency of the cloud. The escalating complexity of networks calls for a centralized approach to connectivity management, coupled with AI-powered predictive monitoring and analytics. This fusion of technology facilitates automated operations, enabling network fabrics to expand both vertically and laterally with ease.

At the heart of Dell's networking solutions is the Enterprise SONiC Distribution by Dell Technologies, a commercial grade offering of SONiC enhanced with enterprise features, hardening, and global support. It is tailored for the demanding environments of cloud, data centers, and edge fabrics, enabling IT organizations to manage their networks with unprecedented innovation, automation, and reliability. With Enterprise SONiC, networks are unified and centrally managed, increasing productivity and reducing the time spent on day-to-day operations.

Introducing SFM for SONiC

SmartFabric Manager for SONiC is Dell's answer to the call for simplicity in network management. It is a tool that transforms the daunting task of network setup and maintenance into a streamlined, intuitive process. SFM for SONiC automates deployment and management, offering customizable blueprints and automated fabric discovery that reduce manual errors, cut operational costs, and enhance network reliability.
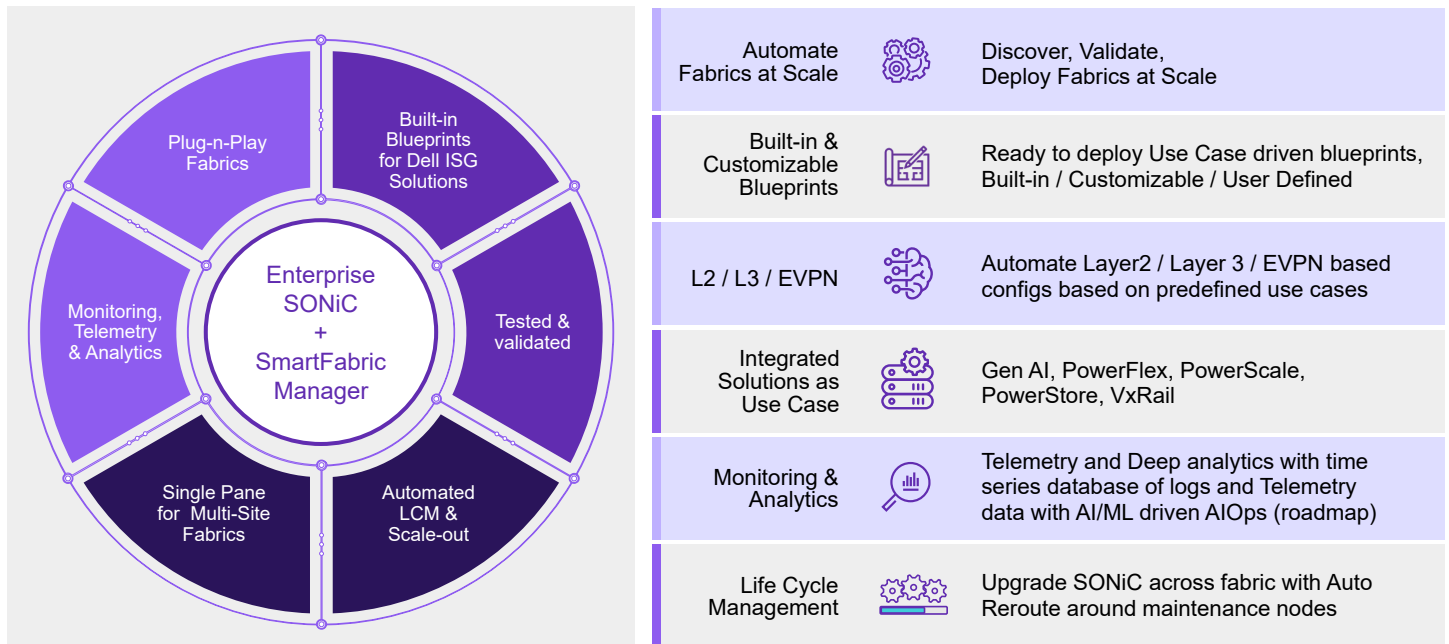
SFM for SONiC is not just about simplifying network design and deployment; it is about empowering IT teams with control and visibility. It optimizes efficiency through standard APIs for seamless automation and provides a detailed performance insight through advanced analytics and monitoring. With SFM for SONiC, customers can reduce configuration errors, deploy with confidence, manage less, innovate more, and enjoy increased network availability and performance.

SFM for SONiC Features

SmartFabric Manager for SONiC:
Simplifying end to end fabric lifecycle management for integrated solutions and emerging use cases

Automate Fabrics at Scale		Discover, Validate, Deploy Fabrics at Scale
Built-in & Customizable Blueprints		Ready to deploy Use Case driven blueprints, Built-in / Customizable / User Defined
L2 / L3 / EVPN		Automate Layer2 / Layer 3 / EVPN based configs based on predefined use cases
Integrated Solutions as Use Case		Gen AI, PowerFlex, PowerScale, PowerStore, VxRail
Monitoring & Analytics		Telemetry and Deep analytics with time series database of logs and Telemetry data with AI/ML driven AIOps (roadmap)
Life Cycle Management		Upgrade SONiC across fabric with Auto Reroute around maintenance nodes

Feature	Description
User Security	• Local user accounts • Role Based Access Control (RBAC) – custom profile definition with read/write access.
Switch Discovery	• Discovers Dell PowerSwitch S & Z series and N3248TE running SONiC version 4.4 or above. • Manually add switches
Switch & Device Inventory	• Maintains an inventory of the discovered SONiC switches. • Click and launch SSH sessions from inventory. • Discover and display end devices (static onboarding) based on input from Blueprints
Fabric Discovery & Validation	• Fabric discovery and connectivity validation within a given fabric based on Blueprints
Multiple Fabric Support	• Ability to manage multiple fabrics within same site or across multiple sites (requires OOB connectivity across the sites)
Fabric Types	• BGP EVPN with VXLAN • Layer 3 with BGP • SFM v1.0 supports up to max of 192 switches. • L2 with MCLAG only at leaf layer • Supports 2 stage Clos in v1.0
High Availability	• HA to be deployed based on Host VM HA mechanism in 1.0
Life Cycle Management	• Uniform NOS version maintenance, auto rollback on failure, and maintenance mode route around to reduce downtime. • Upgrade/downgrade of SONiC images – one or multiple switches in one batch or entire fabric. • Replace faulty switches, restoring the old switch config onto the newly replaced switch automatically. • Backup and Restore of entire fabric snapshot in one click
AI Fabrics	• Built-in Blueprints for AI Fabrics, integrated view of all three fabrics – Scale-out or GPU Backend Fabric, Frontend or Access/Storage fabric and management fabric. • Auto configures ROCEv2, PFC Watchdog, Enables DLB by default for GPU Fabric • Blueprint based AI infrastructure deployment. • Supports Rail Optimized Topologies.
Blueprints for Success	• User-defined and predesigned blueprints for Dell Solutions and Generative AI save time and allow for design once, deploy n times across sites or fabrics.
REST API Support	• Offers REST API for all functionalities, which customers can use to integrate fabric level operations via scripting.

Feature	Description
Advanced Analytics & Monitoring	• Pulls Telemetry data from all switches via gNMI and REST API. Monitors and discovers flows across the fabric via sFlow sampling. • Maintains a time series database of all critical telemetry data and provide a time machine view of events and metrics collected via Telemetry. • Graphical dashboard plotting telemetry data, with ability to zoom in or out on the timeline monitored. • End to End Flow visualization in Topology view of a fabric based on sampled flow data, correlated with congestion signals detected.
Centralized Alerts and Logging	• Logs and Alerts from across the switches and provides a integrated dashboard view to slice and dice events and alerts across the fabric
Modular / Patch upgrade for SFM	• SFM modules can be patches instead of entire image upgrade. • No disruption to fabric operations during SFM upgrade • No disruption to fabric operations if SFM goes down for any reason. • Backup and config restore of SFM configuration

System Requirements

SFM is distributed in OVA and QCOW2 formats and can be deployed as a VM. Recommended host VM requirements for SFM deployment.

Resource	Requirement
Vertual hardware version	vmx-15
VMware ESKI version	7.0 and later
Linux [a]	Kernel-based Virtual Machine (KVM) made
RAM	32 GB
CPU	16 vCPUs
Hard disk	120 GB

Supported Switches and SONiC version.

SFM supports all S & Z series PowerSwitch models running SONiC version 4.4 or higher. SFM also supports N3248TE for management switch use case. Host VM running SFM should be on the same OOB network as the switch management connections to be able to discover the switches.

Licensing & Evaluation

SFM is subscription-based license available for 1 Yr / 3 Yrs subscriptions. Licensing is device based and requires separate Pro Support or Pro Support Plus contracts for Software Support.

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