# Connectrix MDS Nexus Dashboard Fabric Controller

Key Benefits

- Resolve congestion issues quickly with the use of NDFC

- Slow Drain Analysis

- Provides end-to-end SAN visibility including a global view across data centers

- Simplify, identify and analyze all day-to-day tasks

Connectrix MDS Nexus Dashboard Controller (NDFC) provides management, control, automation, monitoring, visualization and troubleshooting across the Connectrix MDS SAN portfolio. NDFC manages the MDS Fibre Channel devices and all SAN configurations from an intuitive User Interface (UI) through wizards, templates and user-friendly features and functions. There are many configurable dashboards and dashlets that display an assortment of information, including health scores, status, utilization, alarms and events for links, switches and fabrics.

NDFC is designed with an HTML-based web User Interface (UI), which is the main interface for the product. There is also a fully integrated device manager used for visualizing and managing each individual switch or director.

The day-to-day SAN operations, such as In-Service Software Upgrades (ISSU), Zoning, Event management, Port Monitoring (PMON), etc., are managed and maintained from the simplified web UI. The application is a platform providing historical data that can be used to help during day-to-day troubleshooting, viewing analytics data and looking for SAN congestion through slow-drain analysis. NDFC is also critically important for reviewing event data, SNMP traps, syslogs and consolidated auditing and reporting. NDFC provides detailed visibility, analytics and inventory, to provide awareness of performance at a deeper level than basic monitoring.
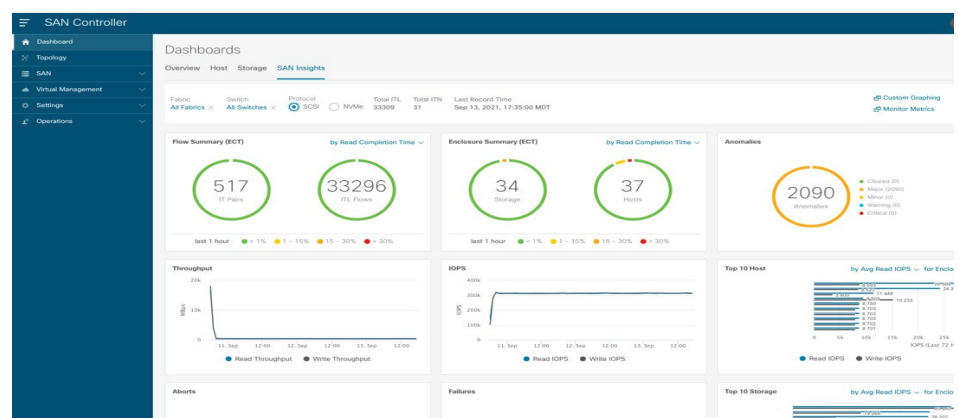
Nexus Dashboard SAN Controller
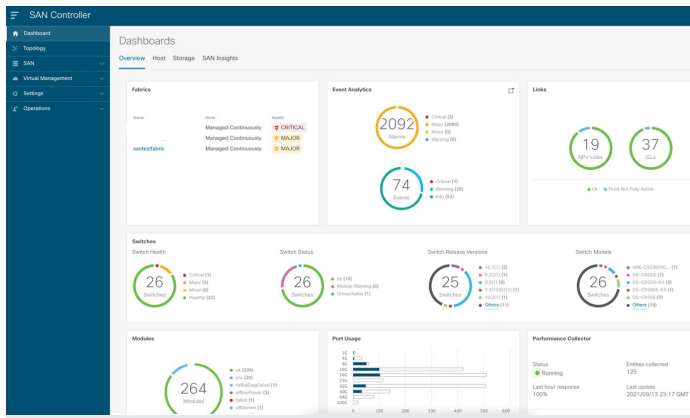
Resolve congestion issues quickly with the use of NDFC Slow Drain Analysis

NDFC slow-drain analysis is a highly effective tool used to identify and help solve fabric level congestion. Finding a slow-draining device in a SAN fabric can often be challenging. NDFC slow-drain analysis automates the often-manual process of trying to find these congestion issues by gathering data every 10 seconds from every port in the fabric. The statistics are displayed in bar charts and graphs showing fluctuation in counters and can be sorted according to switch interfaces/ port-channels and various counters.

There is also a visual aspect to slow-drain analysis in which the topology shows the fabric layout and can indicate where in the physical fabric severe problems reside. NDFC slow-drain analysis checks the rate of change in the counters, which reduces false positives and quickly identifies and predicts troublesome ports. You can schedule automated daily jobs with automatic email reporting.

SAN end-to-end visibility

NDFC SAN Insights is an integrated feature that visualizes Connectrix MDS SAN Analytics data provided by an MDS 32G or 64G Fibre Channel Fabric switches and director switching modules to help administrators recognize fabric level performance and enhance link utilization to optimize their storage infrastructure.

With fully native and integrated SCSI and NVMe analytics engine built into the 32G and 64G MDS series switches, there is no need for separate hardware. Simply discover your devices in NDFC, then complete the easy configuration.

MDS NDFC SAN Insights is a powerful SAN analytics engine that is always working in the background to find and set an evolving baseline. This baseline can help the Storage Administrators to detect changes in the performance and provides an intuitive interface that can be used to find real-time problems in the SAN fabric infrastructure.

Simplify, identify, and analyze all day-to-day tasks

NDFC has key features and capabilities that make the role of a SAN administrator easier. It has an integrated device manager for each switch to view and configure all the relevant switch-level information. NDFC SAN covers all the switch and fabric level operations and management from VSAN, Zoning, Port Channels, Device Alias, PMON, FCIP, link diagnostics, events, switch backup, ISSUs, host path redundancy and slow-drain analysis. NDFC provides an overall topology view, built on switch-health status and link status/bandwidth, that gives a holistic view of the storage network. From the topology view, links or even switches can be compared to see usage and health and can be used to debug or predict issues.
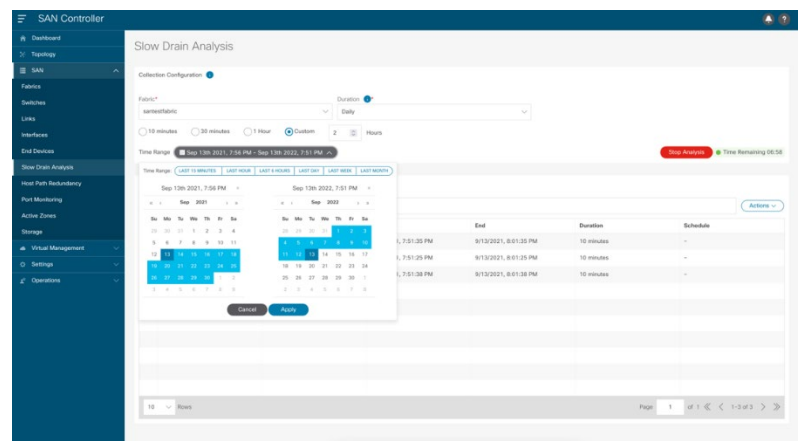
FICON Management

NDFC SAN also has options to configure and monitor FICON. NDFC enables FICON environments on VSANs and/or on switches, enable features such as fabric binding, and "all port prohibited" field, and static domain ID. While creating port channels, FICON port addresses will be automatically enabled and shown if the switch or VSAN is FICON enabled.

The dashboard has specific dashlets that display data for the top ten performing FICON Channel (CH) ports and FICON Control-Unit (CU) ports. Each entry shows the port traffic of the switch interface, specifies the device to which the FICON port is connected, and specifies the average of Rx and Tx traffic and the exceeded percentage value.

Licensing for NDFC

NDFC is licensed much the same as legacy MDS Data Center Network Manager (DCNM) with one difference, DCNM Server license is no longer supported. To be enabled on NDFC, all devices must have DCNM Switch based licenses installed. Any existing devices with current DCNM switch-based licenses will automatically be discovered under NDFC, nothing needs to be done for those. If you have DCNM server-based licenses, please talk with your Dell Connectrix account team to get them converted to switch based licenses.

MDS optional features provide the flexibility your environment needs

In addition to NDFC management, there are optional license key features that provide the flexibility for you to choose just the features you need for your Connectrix MDS SAN. From SAN distance extension to mainframe FICON, optional software licenses allow you to pay just for the features your business requires.

License	Description	Features
Enterprise Package	Includes advanced traffic engineering and advanced security features for enterprise SANs	Advanced traffic management includes Inter-VSAN Routing, Quality of Service (QoS) features, Extended credits. Security features include switch-to-switch and host-to-switch authentication, LUN zoning, read-only zones, port security, VSAN based access control, IP Sec for iSCSI and FCiP, IKE Digital Certificates and fabric binding for Fibre Channel.
SAN Extension over IP	Provides integrated, cost-effective and reliable business continuance solutions that use	Supports SAN Extension Tuner, Inter-VSAN Routing for FCiP and FCiP protocol support, FCiP compression, FCiP Write Acceleration, FCiP Read/Write Tape Acceleration
I/O Acceleration (IOA)	IOA capability is available on MDS 9700 series directors from NX-OS 8.2(1) release and can be enabled using the I/O acceleration package license which is available to configure separately on a module. A module can be configured either for IOA or SAN ex- tension over IP functionality at any time. IOA functionality can be deployed in conjunction with disk data replication solutions to extend the distance between data centers or reduce the effects of latency on application performance due to slower disk or tape devices or low speed links	Transport and speed-independent acceleration that accelerates disk and tape traffic over any 2/4/8/16/32G Fibre Channel port. Works over Metropolitan Area Networks (MANs) and WANs. Data compression in conjunction with FCIP ISLs. High availability using Port-Channels with acceleration over Fibre Channel and FCIP ISLs. Transport Independent Write Acceleration (WA) of Disk Replication traffic and Tape Acceleration (TA) of Tape Replication Traffic.
Mainframe Package	Includes features required for mainframe environments. FICON supports high-speed connectivity between mainframe servers and I/O devices.	VSAN for FICON and FCP Intermixing, FICON Control Unit Port (CUP), Fabric Binding, Switch Cascading, FICON Native Mode Channel-to channel operation, persistent FICON FCID assignment, Port Swapping for host channel cable connections, FICON tape acceleration.
SAN Analytics	Accessed through the SAN Insights license	SAN Insights was designed for customers that would like to leverage the data gathering, computation and end-to-end visualization of data provided by the analytics engine that resides on the MDS 32Gb/s and 64Gb/s switching modules through DCNM.

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