



ADVANCED TECHNOLOGY GROUP (ATG)



Accelerate with ATG:

Ken Griffo – WW SAN Sales IBM

Art Scrimo – MDS Software SME, Cisco

Dave Mannenbach– IBM c-type SAN Product Manager



Accelerate with ATG Technical Webinar Series

Advanced Technology Group experts cover a variety of technical topics.

Audience: Clients who have or are considering acquiring IBM Storage solutions. Business Partners and IBMers are also welcome.

To automatically receive announcements of upcoming Accelerate with IBM Storage webinars, Clients, Business Partners and IBMers are welcome to send an email request to accelerate-join@hursley.ibm.com.



2024 Upcoming Webinars – Register Here!

[Exploring the IBM Storage Scale GUI - January 23rd, 2024](#)

[IBM Copy Services Manager V6.3.9.0 & DS8900F R9.4 Updates - January 30th, 2024](#)

[IBM Storage Ceph Updates for Versions 6 and 7 - February 6th, 2024](#)

[IBM Storage Fusion: Exploring the Differences between Data Foundation & Global Data Platform – February 13th, 2024](#)

[IBM Storage Virtualize CDR 8.6.1 Technical Update - February 27th, 2024](#)

Important Links to bookmark:



ATG Accelerate Site: <https://ibm.biz/BdSUFN>

ATG MediaCenter Channel: <https://ibm.biz/BdfEgQ>

Offerings

Client Technical Workshops

- **IBM DS8900F Advanced Functions:** Feb. 7-8 in Dallas, TX
- **IBM Cyber Resiliency with IBM Storage Defender:** Feb. 14-15 in Dallas, TX
- **IBM Storage Fusion:** Feb. 21-22 in Dallas, TX
- **IBM Storage Scale & Storage Scale System:** Feb. 28-29 in Costa Mesa, CA
- **IBM FlashSystem Deep Dive & Advanced Functions:** March 6-7 in Dallas, TX
- **IBM Storage Ceph:** March 20-21 in Costa Mesa, CA
- IBM FlashSystem and Storage Virtualize
- IBM Cloud Object Storage

TechZone Test Drive / Demo's

- IBM Storage Scale and Storage Scale System GUI
- IBM Storage Virtualize Test Drive
- IBM DS8900F Storage Management Test Drive
- Managing Copy Services on the DS8000 Using IBM Copy Services Manager Test Drive
- IBM DS8900F Safeguarded Copy (SGC) Test Drive
- IBM Cloud Object Storage Test Drive - (Appliance based)
- IBM Cloud Object Storage Test Drive - (VMware based)
- IBM Storage Protect Live Test Drive
- IBM Storage Ceph Test Drive - (VMware based)

Please reach out to your IBM Representative or Business Partner for more information.

***IMPORTANT* The ATG team serves clients and Business Partners in the Americas, concentrating on North America.**

Save the date

Storage @ IBM TechXchange Conference 2024

October 21-24, 2024

Mandalay Bay | Las Vegas
#IBMTechXchange

Key Learnings

- Practical how-to advice
- Patterns and best practices
- Success stories, IBM PoV, proven techniques

Featured Products

IBM Storage Defender

IBM Storage Fusion

IBM Storage Scale + IBM Storage Ceph

IBM Tape + IBM SAN

IBM Storage FlashSystem + IBM Storage DS8000

Collaborate. Learn. Play.

Community

IBM Champions

User Groups

Tech Peers

Business Partners



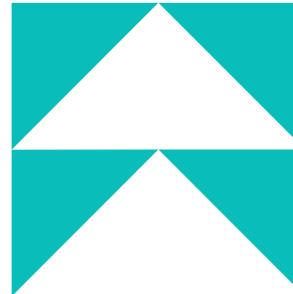
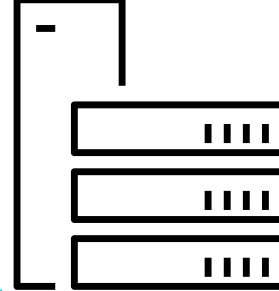
Sandbox

Network

Learn

Collaborate

Play



Accelerate your Career

Labs (Instructor-Led, Self-paced)

IBM Certification Testing

Earn up to 25 hours in CPE credits

Breakout Sessions

Trends and Directions

User Groups

Product Deep Dives

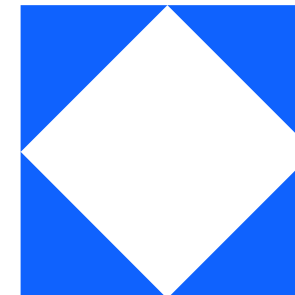
Meet the Expert

Professional Development

Show the Code

Birds of a Feather

Academic/Research



Roadmaps

Go deep with people in the know and set the stage for where IBM is going in the future



<https://www.ibm.com/community/ibm-techxchange-conference/>

Game On!



Accelerate with ATG Survey

Please take a moment to share your feedback with our team!

You can access this 6-question survey via [Menti.com](https://www.menti.com/join/17086924) with code 1708 6924 or

Direct link <https://www.menti.com/alwhyze7z1gz>

Or

QR Code



ADVANCED TECHNOLOGY GROUP (ATG)



Accelerate with ATG:

Ken Griffo – WW SAN Sales IBM

Art Scrimo – MDS Software SME, Cisco

Dave Mannenbach– IBM c-type SAN Product Manager

Meet the Speakers



Ken Griffo

Ken is the Worldwide Sales Lead for IBM's Fibre Channel Storage Networking business. Prior to that Ken was a Client Systems Manager for key clients of IBM. Throughout his 35+ year professional career, Ken has served as a field sales person, sales manager, and worldwide sales leader, focused on growing IBM's storage business since 1996. Ken began his career with IBM back in 1987 as a professional hire from EDS. He has a B.S. in Mathematics from the University of Notre Dame and an MBA in Marketing and International Business from The University of Michigan.



Dave Mannenbach

Dave is the Product Manager for IBM's c-type Fibre Channel Storage Networking business. Throughout his 35+ year professional career, Dave has served IBM DS8000 firmware code developer, DS8000 Cache and Device Manager Team Lead, IBM Storage Blade product manager, and IBM SAN engineer. Dave began his career with IBM Tucson in 1988 with B.S. in Electrical Engineering from the University of Wisconsin-Madison.

Meet the Speakers



Art Scrimo

Art Scrimo is a Senior Product Manager within Cisco that focuses on software within the broader cisco portfolio. Art has over 25 years of experience in managing, architecting, and driving SAN technologies. Art lives in Denver, Colorado and has a wife and daughter.

Why IBM SAN c-type?



- 8G, 16G, 32G and 64G
- (no forklift, all within a single chassis)



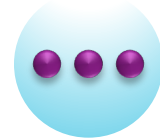
- Hardware-based dedicated Network Processing Unit (NPU) on each line card
- No performance degradation
- Always on I/O level metrics for every flow on all ports
- Move reactive to proactive



- 1+1 redundant supervisors
- N:N grid-redundant power supplies
- N+1 redundant backplane fabric modules
- Link aggregation across line cards, ports groups and port ASICs
- **Automated Recovery** from slow-drain events



- Secure-boot
- Integrated anti-counterfeiting Technology



- Power-on auto provisioning
- REST API
- Python & TCL support
- Single pane of glass visibility with DCNM



IBM c-type SAN – Unique Advantages

Integrated Analytics for Deep Visibility

1

- Industry's first & only fabric integrated visibility and analytics
- Open and Programmable architecture

Investment Protection

2

- No forklift upgrade for higher speeds & newer Protocols (NVMe)
- FC(2/4/8/10/16/32/64), FCoE(10/40Gbps), FICON, FCIP (1/10/40 Gbps)

Performance & Scalability

3

- Industry's first 1.5/3 Tbps per slot capacity for All Flash & NVMe Arrays
- Industry's only director with 768 ports for CapEx & OpEx savings

Exceptional Reliability & Availability

4

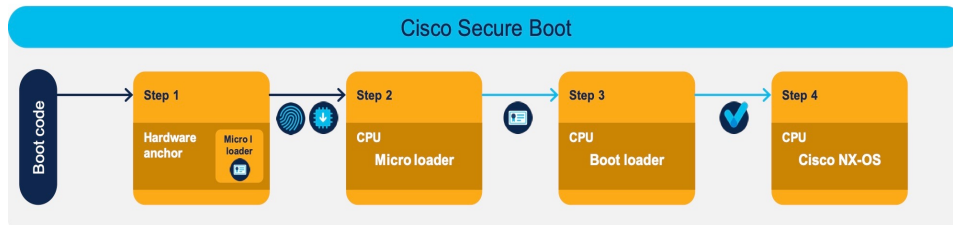
- Dual Supervisors, Grid power redundancy, Optional fabric redundancy
- Hardware base SAN Congestion detection & automatic recovery

Operational Simplicity

5

- Programmability via switch native Python, TCL, APIs, Ansible, etc.
- Quick provisioning & simple management via DCNM

Anti-counterfeit technology and Cisco Secure Boot



- Anti-counterfeit technology using built-in security chip
- Software authentication using SUDI (Secure Device Identifier)
- Run genuine Cisco hardware using genuine Cisco software-transparent integration

→ Image Signing → Integrity Checks

Recent IBM c-type SAN Innovations!

- **Dynamic Ingress Rate Limiting (DIRL)**
- FPIN support
- VMID analytics
- 40GE IPS port (MDS9700 Line Card)
- SFP threshold monitoring (low/high power)
- Fan-out ratio alerting
- Dynamic de-congestion isolation
- NPV uplink load-balancing improvements
- Increased scale in autozone and option for VSAN selection

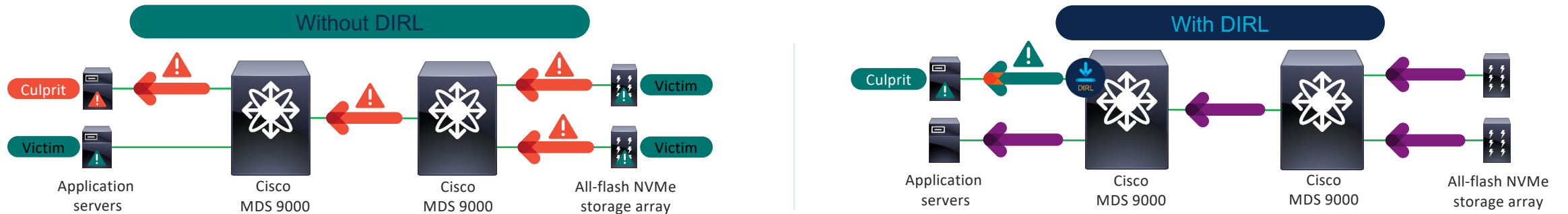


Accelerate Performance of All-flash NVMe Storage (ELIMINATE SAN Congestion and Slow Drain Impacts)

Limit the culprit devices using

Dynamic Ingress Rate Limiting

to prevent congestion and slow drain in storage area networks (SAN)



End-device independent



Adaptive



No side effects



Easy adoption



Affordable



Topology independent

Why DURL?

- Congestion is the top issue facing storage networks
- Reduce outage time and Performance Impacts
- This technology is a game changer (Cisco Innovation and Patent in process)
- No Charge Software Update

SAN Congestion & Slow Drain – Overview

Detection

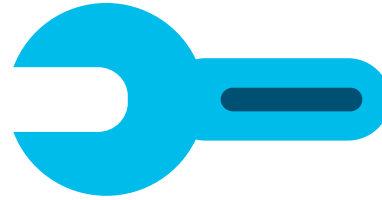
in 2.5 μ s



TxWait, slowport-monitor,
Automatic alerting using
port-monitor

Troubleshooting

Detailed tools



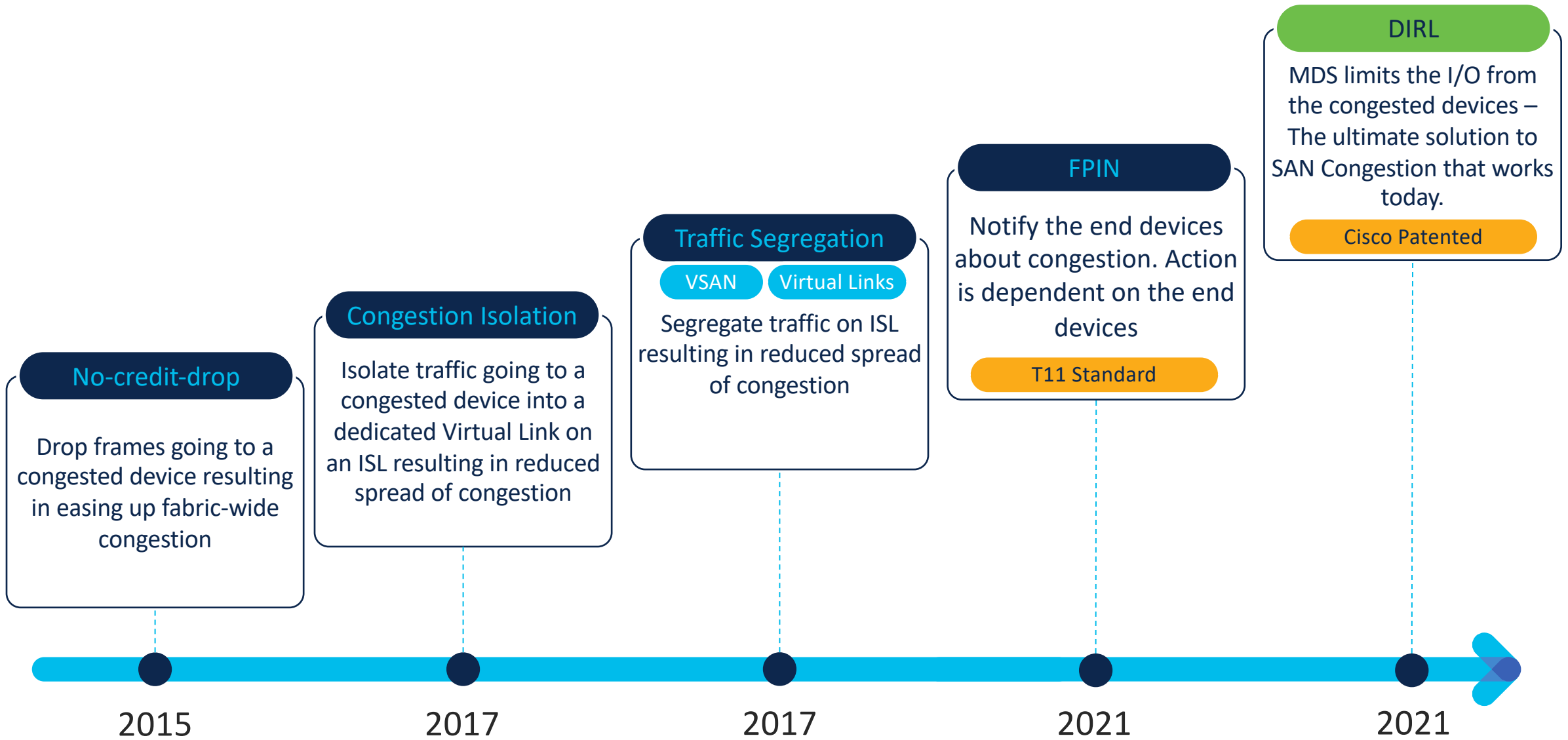
NDFC
Slow drain analysis *
Long term trending and
seasonality of congestion
events

Prevention

in 1 ms



DIRL
(Dynamic Ingress Rate Limiting)
Cisco Innovation



NDFC 12.1.3

Released Aug. 2023

- **Host Centric View for SAN**
- **Storage Centric View for SAN**
- NPV Wizard to NDFC
- **Support for IT Streaming for SAN Insights on App node**
- Expand Config Drift Capability
- Brocade Zoning conversion wizard
- Optics alerting mechanism
- Congestion visualization
- FDMI and RDP support for host and Interface Views
- FICON dedicated View
- Performance Monitoring and Slow Drain data collection with NX-API
- Support for Cisco MDS 9396V Fibre Channel switch
- Show interfaces not Currently Zoned
- CLI output window
- Subnet Configuration Changes (Single Subnet for ND)

Host Information

Name STG-TME-ESXI-C240-3	IP Address 172.22.163.215	OS Version
MAC Address D8:B1:90:D5:1B:F6	Protocol	FCIDs [2] 0x780060, 0x3d0160
WWNs [6] 21:00:00:24:FF:74:E6:C2, 21:00:00:24:FF:74:E6:C3, 10:00:00:90:FA:A0:09:8C, 10:00:00:90:FA:A0:09:8D, 20:00:18:8B:9D:1B:48:05, 20:00:18:8B:9D:1B:48:06		

Host Status

Up/Total Paths 🟢 2/2	VM Usage 5/5
-------------------------	-----------------

Paths

Filter by attributes

Show last day ▾

Device Alias	Status	Fabric	Switch Interface	RX(Mbps)				TX(Mbps)				PWWN	Updated Time
				Avg	Avg %	Peak	Peak %	Avg	Avg %	Peak	Peak %		
Fab-B : C240_3_C3	🟢 Ok	Fab-B	MDS9132T-1 fc1/15	0B/s	0	0B/s	0	0B/s	0	0B/s	0	21:00:00:24:ff:74:e6:c3	
Fab-A : C240_3_C2	🟢 Ok	Fab-A	MDS9148V-A fc1/7	0B/s	0	0B/s	0	0B/s	0	0B/s	0	21:00:00:24:ff:74:e6:c2	

2 items found

Cisco NDFC 12.1.3 – Host View

Rows per page 5 ▾ < 1 >

Topology

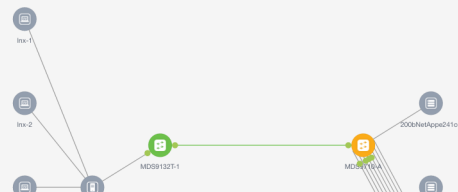
View



Hierarchical Left-Right ▾

- Healthy
- Major
- Minor

Search by Name

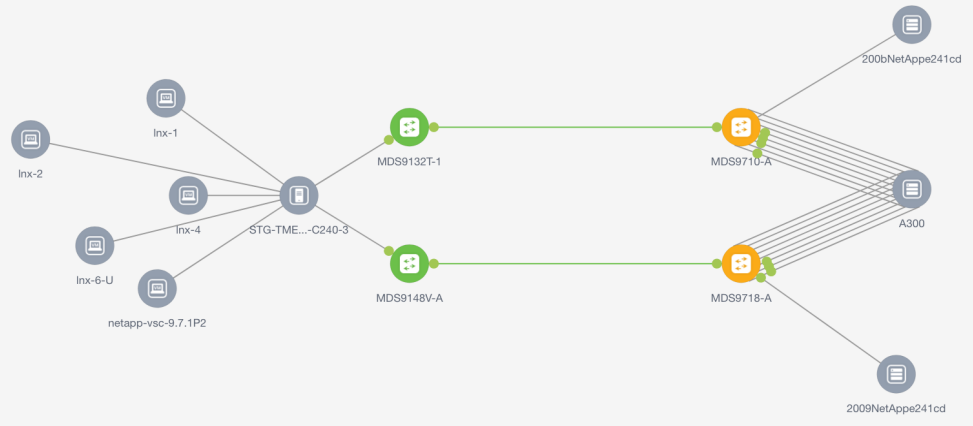


View ^

Search by Name

Hierarchical Left-Right ▾

- Healthy
- Major
- Minor
- Warning
- Critical
- NA



Custom Graphing

Protocol SCSI ▾ Date Range (Max. of 7 days from 2023-06-04 to 2023-09-01) 📅 2023-09-01 - 2023-09-01 ▾ 🔄 ▶ 5 Minutes ⏸ Auto Refresh Time Remaining 00:00 ➕ Add Graph

Filter STG-TME-ESXI-C240-3

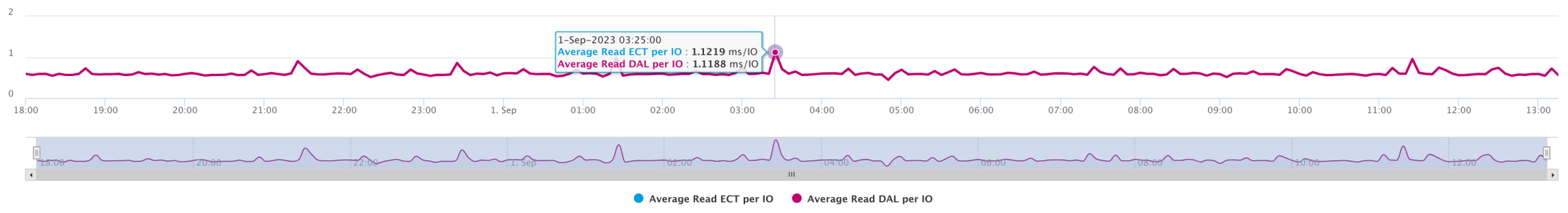
ℹ Filter value cannot be changed

Metrics Average Read ECT per IO ✕ Average Read DAL per IO ✕ ▾

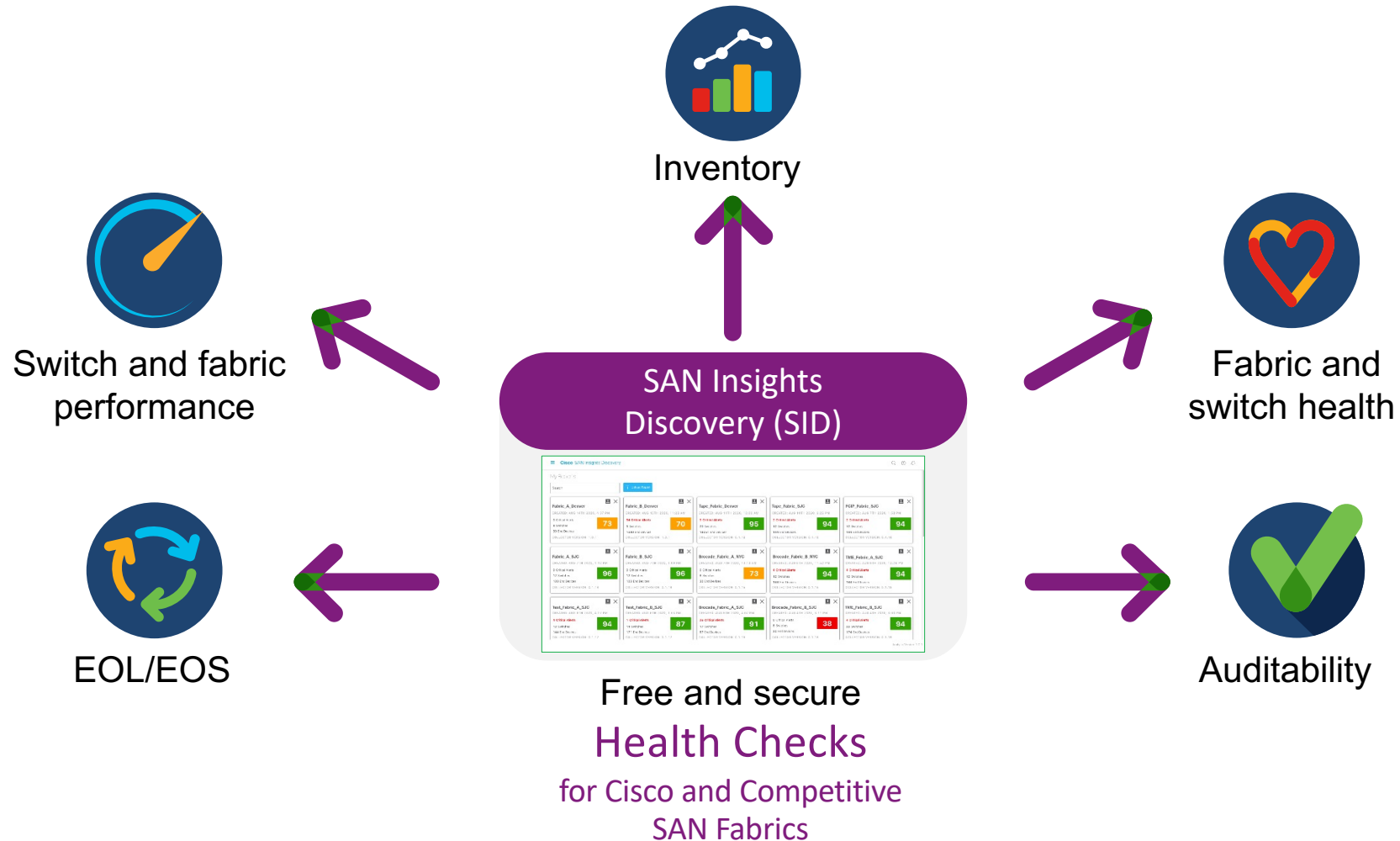
ℹ Select up to 4 metrics ➕ Apply

Graph Table

Cisco NDFC 12.1.3 – Host View



Cisco SAN Insights Discovery – Modern Fabric Health Check



IBM SAN c-type Storage Networking Portfolio



SAN32C-6



SAN48C-6



SAN96C-6



SAN16C-R (FCIP & replication)



SAN24C-7



SAN48C-7



48-port 64G FC module



48-port 32G FC module



24/10 SAN Extn (FCIP) module

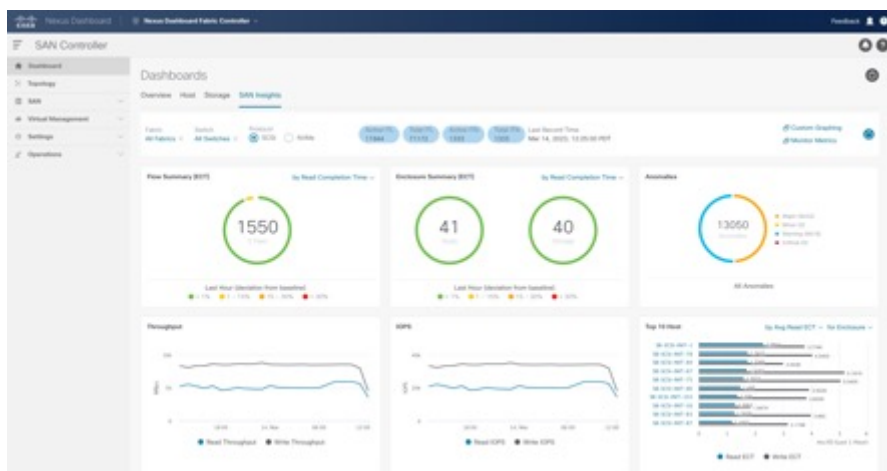
SAN768C-6



SAN384C-6



SAN192C-6



Cisco
Nexus Dashboard
SAN controller

Built-in innovation, intelligence and security

Matching IBM FlashSystem To IBM c-Type

Entry Enterprise

SAN48C-6



FlashSystem 5200



FlashSystem 5015
& 5035



SAN32C-6

Midrange Enterprise

SAN96C-6



FlashSystem 7300

High-End Enterprise

SAN384C-6



FlashSystem 9500
and 9500R



IBM Spectrum Virtualize

*Storage function,
scalability, interoperability,
cloud integration and
automation*

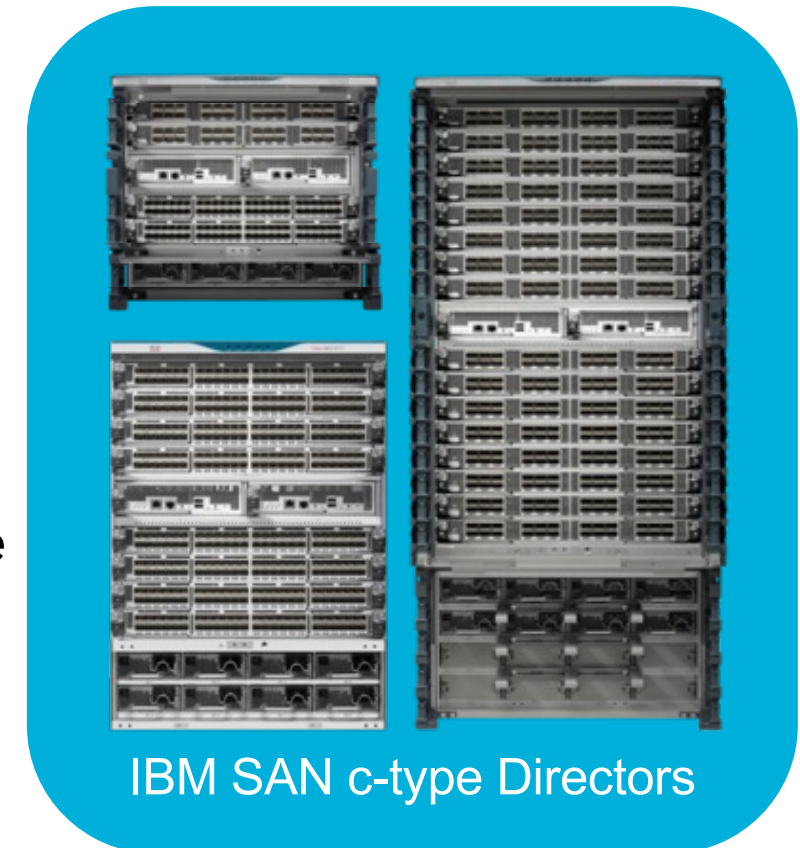


IBM Storage Insights

*Anomaly detection,
fabric monitoring, full
stack visibility, predictive
support*

Interoperability

- Modules: 16G, 32G and 64G FC modules can work together in same chassis
- Optics: Optics can be interchanged between different modules
 - 16G optics*: supported on 16G, 32G and 64G modules
 - 32G optics: supported on 32G and 64G modules
 - 64G Optics: supported on 64G modules
- Other common components:
 - Supervisor-4 modules: support 16G, 32G and 64G modules
 - Fabric-3 modules: support 16G, 32G and 64G modules
 - PSUs: 80Plus Platinum certified, hot swappable, interchangeable



IBM SAN c-type Directors



c-type Directors: Investment Protection At Its Best

Full linecard backward compatibility, no forklift upgrade, SFP reuse

Optics reuse

Same Chassis

Different FC Generations



Reuse of SFPs allowed:

- additional savings
- investment protection at the optics level



✓ 16GFC linecard

✓ 32GFC linecard

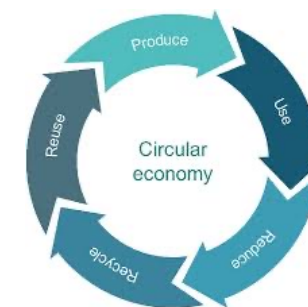
✓ 64GFC linecard

✓ FCIP linecard

No downtime during hardware upgrades

Widest speed range:

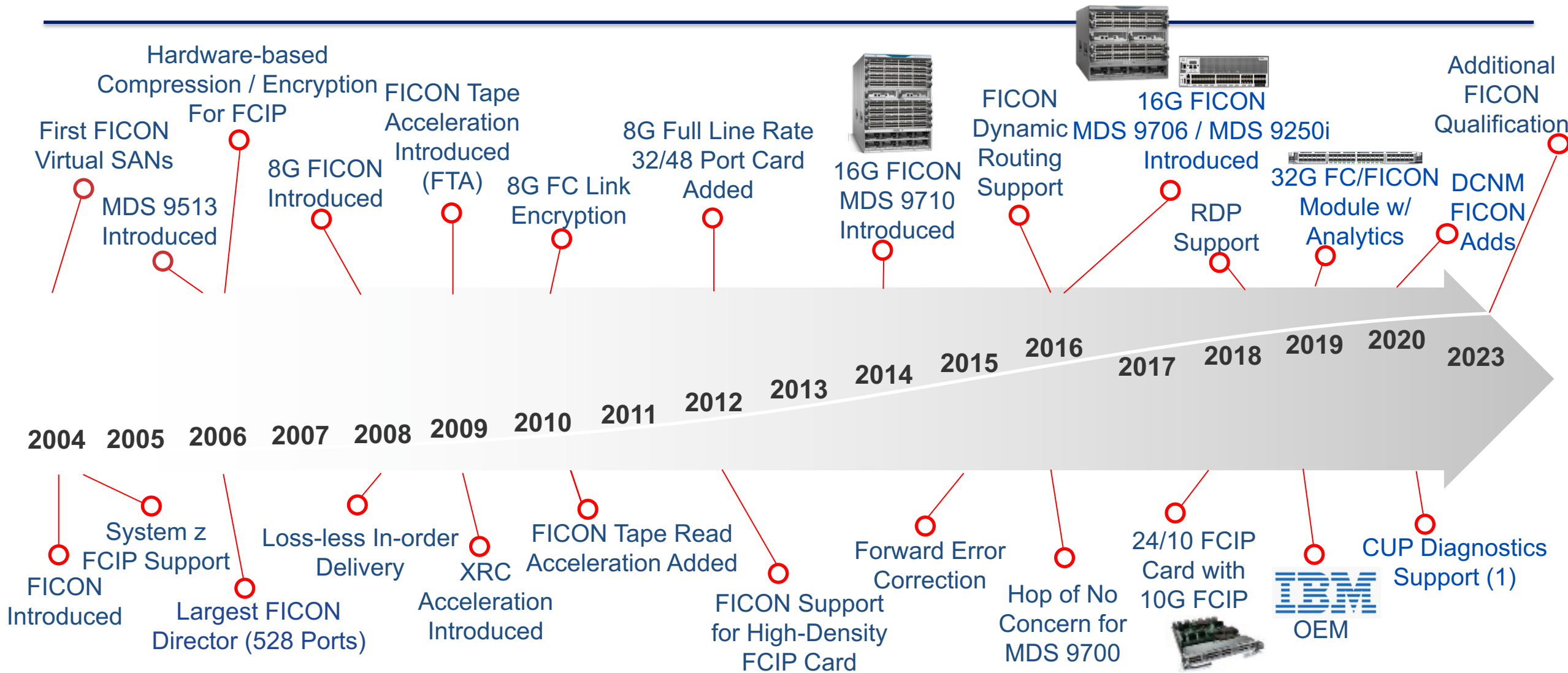
- Industry unique
- 2G >> 64G



Designed for the Circular Economy

- Reuse chassis
- Reuse linecards
- Reuse optics
- Reuse cabling
- Proven 10+ years lifetime

Cisco's FICON Evolution - 20 Years of FICON History



• Not all FICON Features Covered
Just Highlights

Evolution to "Smart Licensing:"

Subscription licenses for 1, 3 and 5 years

No more individual licensing: **Advantage** and **Premier** bundles

Subscription License Bundles

Classic PAK licenses

DCNM / NDFC License

Enterprise License

SAN Analytics License

Individual classic PAK licenses won't be available in their Smart version, now they will be sold as **1, 3 or 5 year bundles:**

Advantage

DCNM / NDFC License

Enterprise License

Premier

DCNM / NDFC License

Enterprise License

SAN Analytics License

Cisco MDS Software License Bundles

MDS Advantage

DCNM / NDFC License

Enterprise License

MDS Premier

DCNM / NDFC License

Enterprise License

SAN Analytics License

Use Cases

SAN 101 – Technology Value Proposition

Resource Sharing

Redundancy

Data Replication Facilitation

Security

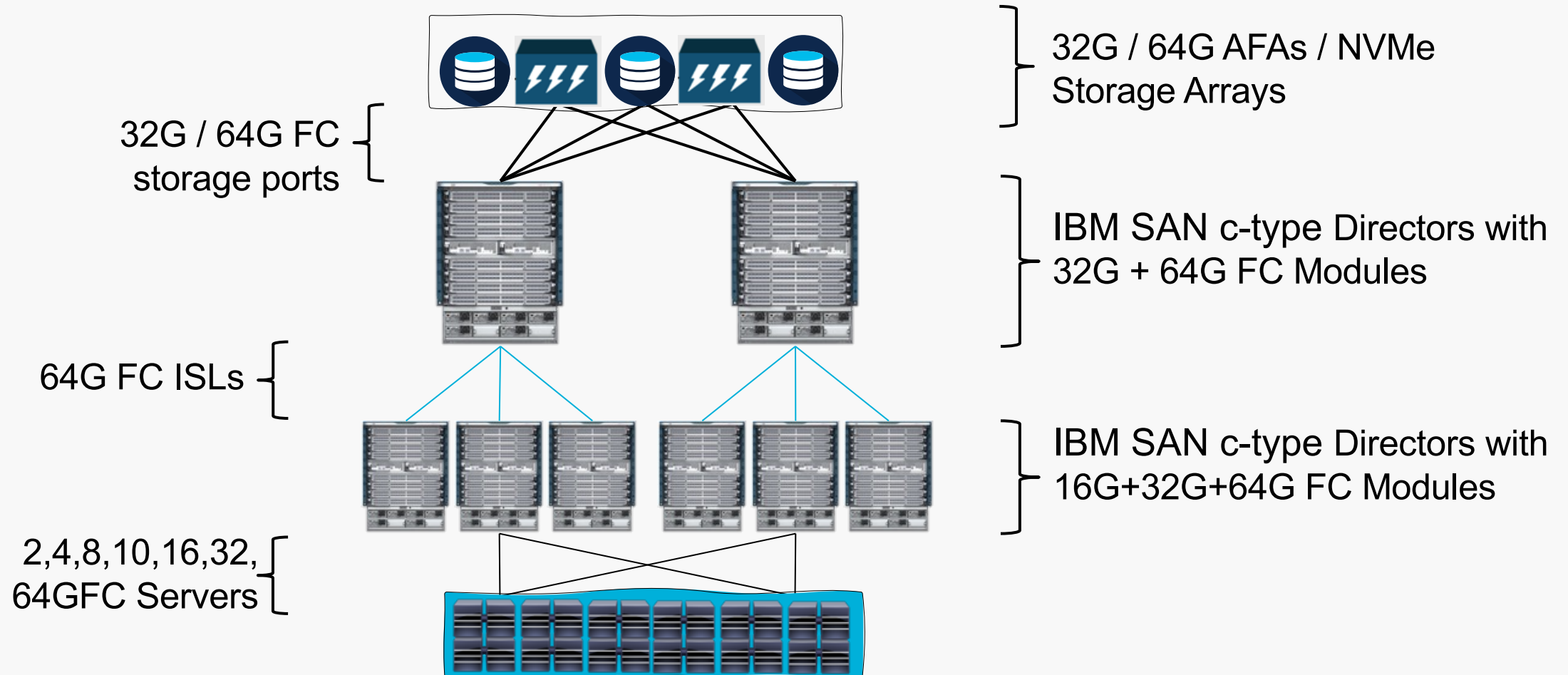
✓ Wire

✓ Zoning

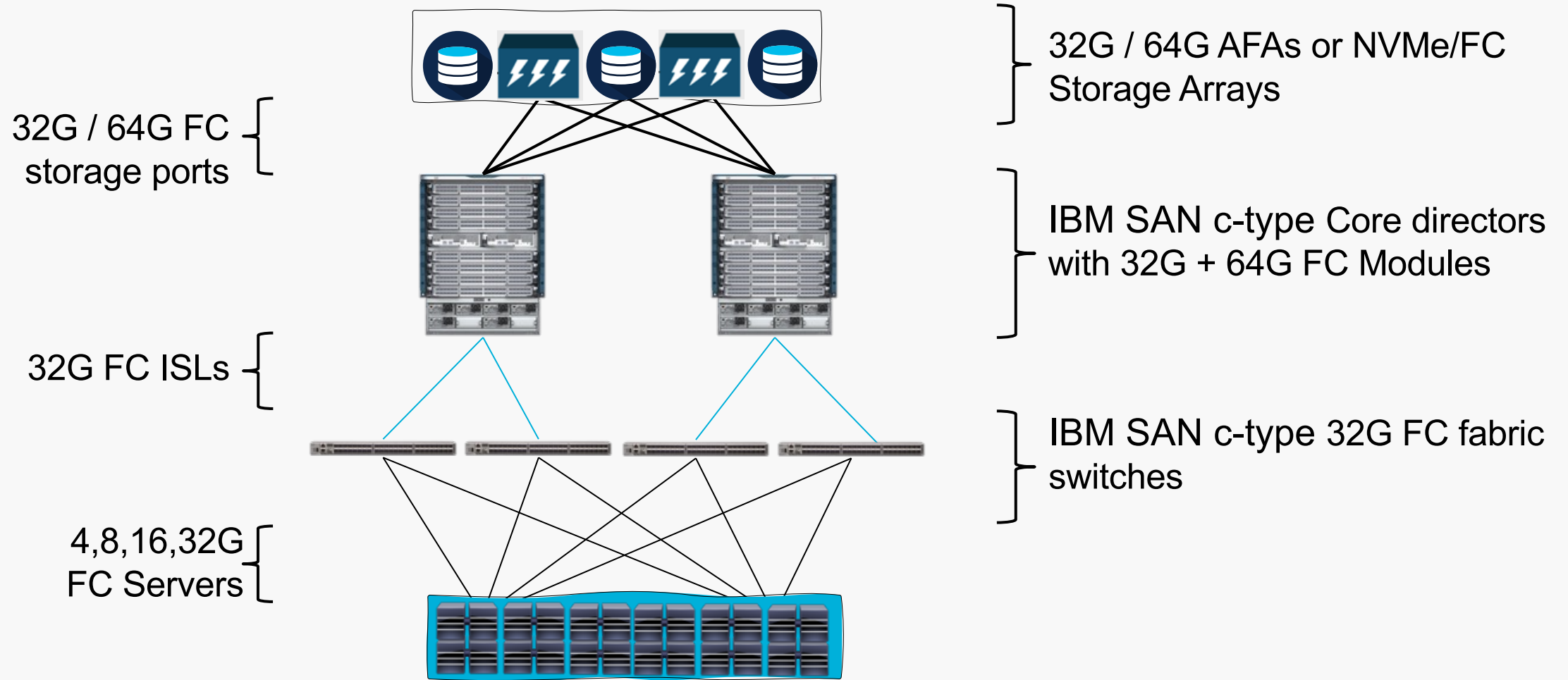
Infrastructure Flexibility

Predictable Performance

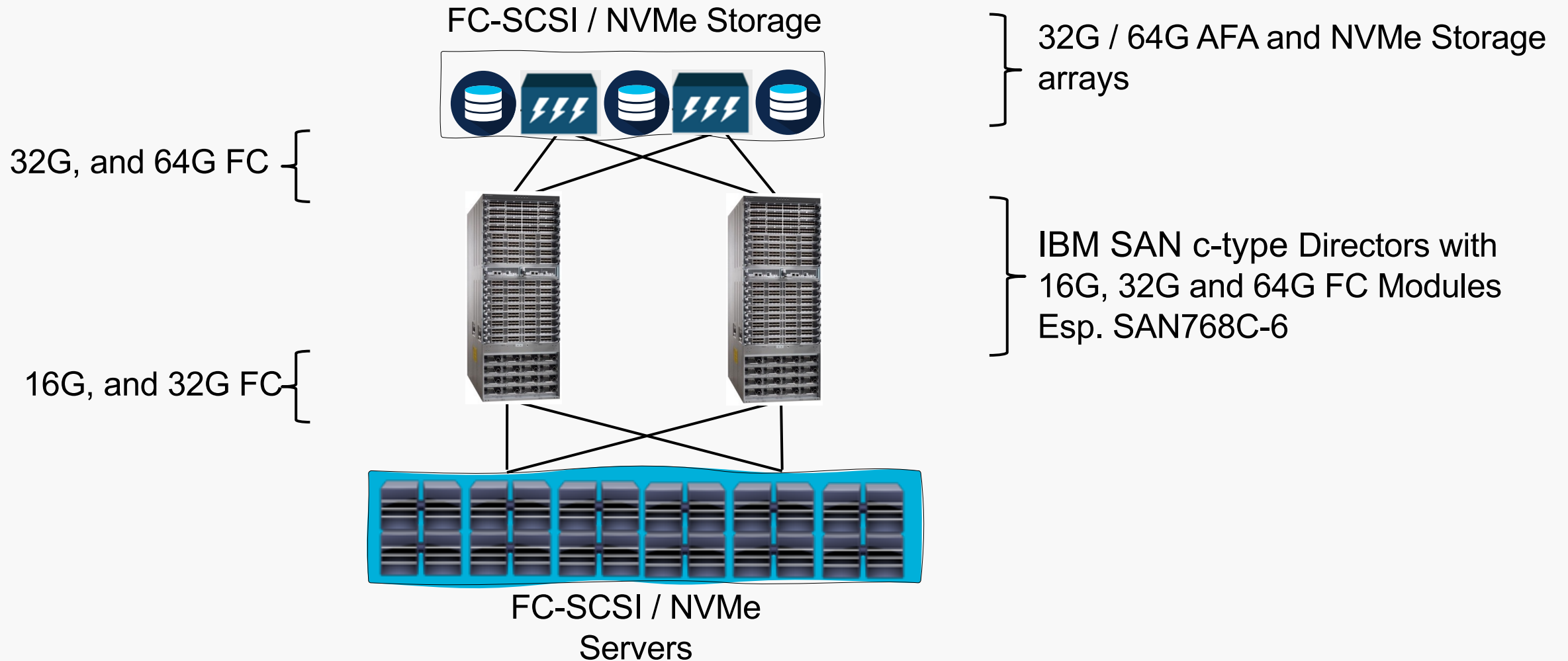
32G / 64G Storage Edge AND 64G Inter-Switch Links



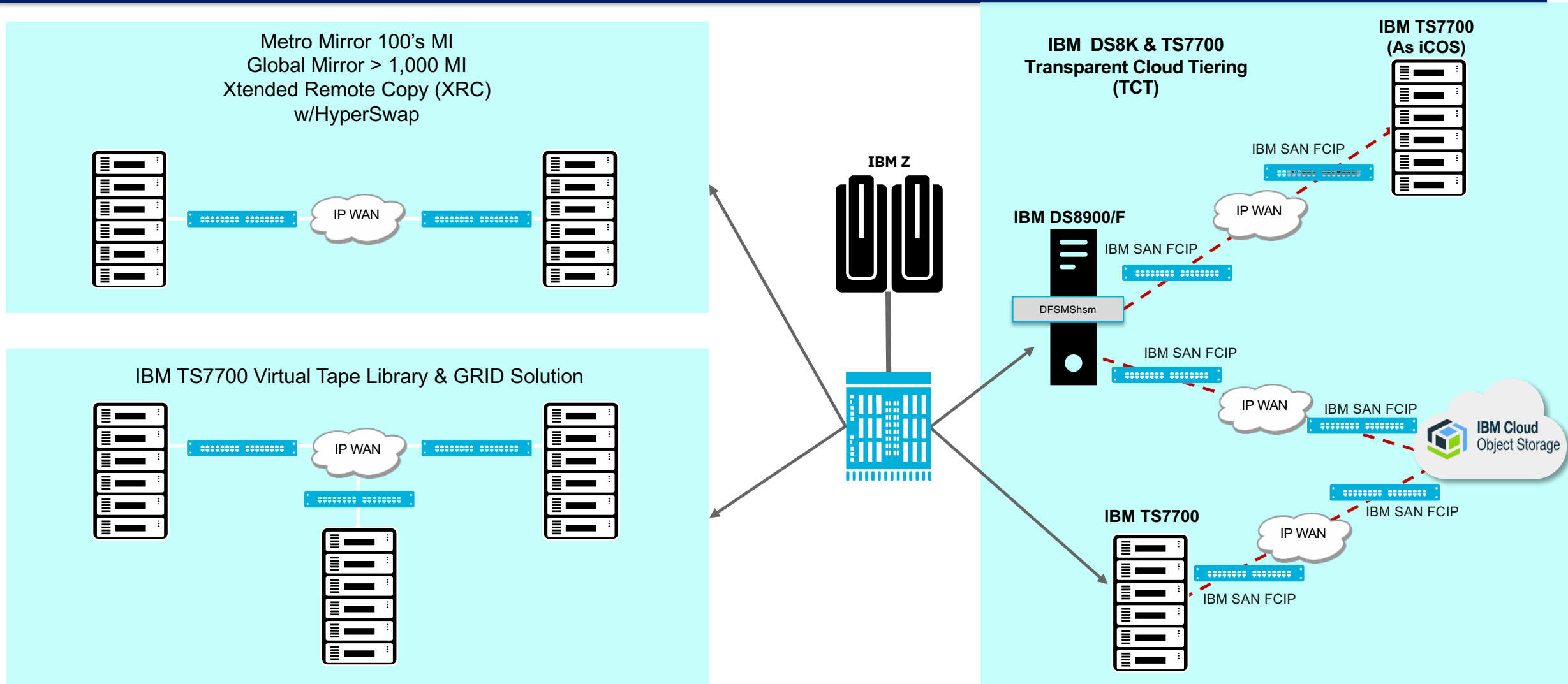
High speed storage ports w/32G ToR switches



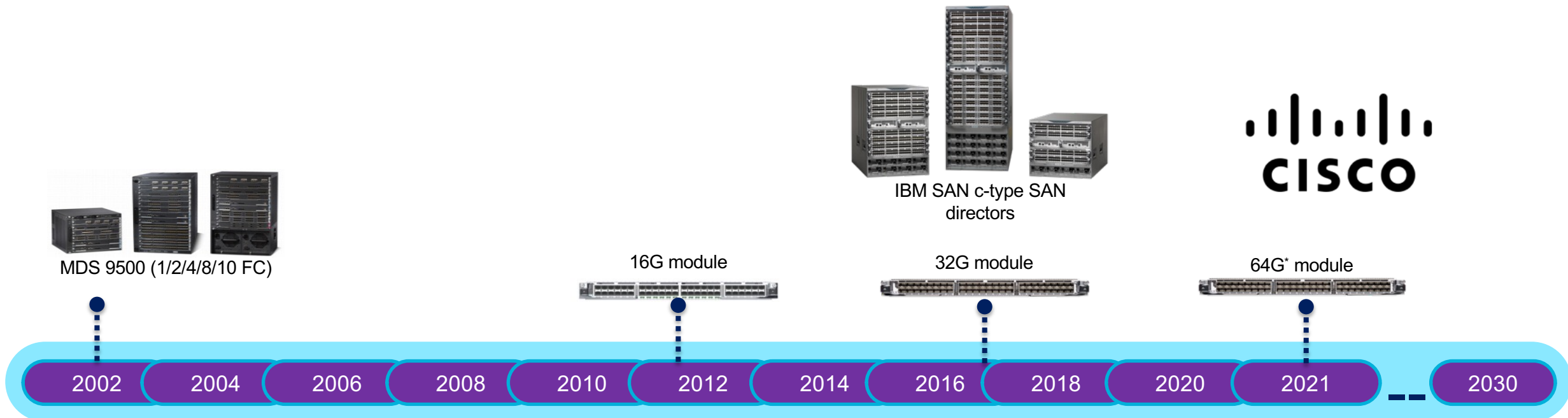
High-Performance Storage Consolidation



IBM Z DR/BC Solutions from IBM



c-Type Investment Protection



2/4/8/10/16/32/64G FC speed support

8/16/32/64G FC optics support

16/32/64G FC module support

Shared components: Power supply, Supervisor modules, FAN trays, cables, etc.

IBM SAN c-type SAN directors: Single chassis multi-generation support

Why IBM Storage Networking?

SAN Central: Unique to IBM Technical Skills

Fabric	Storage	Software	Server
IBM b-type (Brocade) director, switch & router (2498, 2499, 8960, 8961)	DS8000	Windows Clustering	Windows
IBM c-type (Cisco) director, switch & router (8977, 8978)	XIV	HACMP	Linux
Cisco reseller director, switch & router (2053, 2054, 2417, 9710, 9711)	Storwize V5000 / V3700	Subsystem Device Driver (SDD)	AIX
IBM BladeCenter fibre channel switch modules	FlashSystem	Spectrum Accelerate, Protect, Scale	System i & p & x
IBM Flex System switch modules	IBM Entry & Midrange disk	Veritas: Backup Exec, ClusterX, DMP, Netbackup, Sanpoint, Volume Manager	BladeCenter
SAN Volume Controller	IBM Tape systems and libraries		Flex System
Storwize V7000	ProtectTIER		VMWare, VIOS
Spectrum Virtualize	Hitachi HDS		Other
	EMC		Protocols: Fibre Channel, FCAL, FCoE, FCIP, FICON, NCMc, SCSI, iSCSI
			HBA & CNA: Qlogic, Emulex
			Viavi Xgig trace tools
			SAN architecture

IBM's Storage Networking Value

- **End-to-end Solutions for IBM Infrastructure (POWER, Z, Fusion with Red Hat OpenShift, Flash, Disk, Tape)**
- **IBM Logo Products with Full IBM Support**
- **SAN Central**
- **Extensive Development Testing**
- **25 Years in SAN Business (Since Technology Inception)**
- **IBM Systems Lab Services Expertise**

IBM RPQ: C-type Switch Discount Program

As of 12/06/23

1. Purchase one or more qualifying c-type Switches*

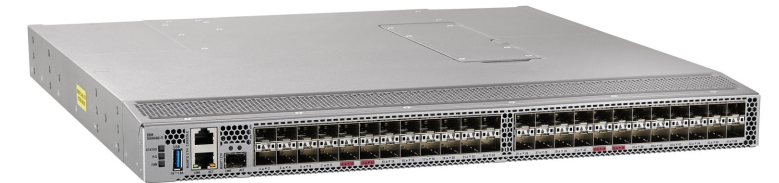
- SAN32C-6 (8977-T32) : 32G Fibre Channel switch with 8 x 32G SFPs. Port side Exhaust
- SAN48C-6 (8977-T48) : 32G Fibre Channel switch with 24 x 32G SFPs. PSE
- SAN48C-7 (9024-V48) : HALF POPULATED 32G or 64G FC switch with 24 x 32G/64G SFPs. PSE.

2. Submit ePricer requests, business as usual

- RPQ team does NOT require approval– Promo will be a Pass-thru Discount applied to the RPQ.

3. Primary Targets

1. Entry Level 32G Configurations; For example, Qty 2– 32G SAN32C-6 with FlashSystem 5015/5035/5045
2. Mid-Range 64G Configuration with low latency and high performance; For example, Qty 2- 64G SAN48C-7 with FlashSystem 5200



Qualifying Products*

SAN32C-6 (8977-T32)

SAN48C-6 (8977-T48)

SAN48C-7 (9024-V48)

RPQs Now Live

Hardware Ships Beginning Jan 2024

Available Until July 2024

Promotion RPQ	e-config Description
8S1962	PROMO 8977T32 8 PORT 32G SW
8S1963	PROMO 8977T48 24 PORT 32G SW
8S1964	PROMO 9024V48 24 PORT 32G SW
8S1965	PROMO 9024V48 24 PORT 64G SW

IBM SAN Director Program

The IBM c-type program includes two Director Tech Refresh options:

Cisco Tech Refresh

(refreshing Cisco gear)

- Purchase qualifying c-type Director*
- Buy 3 qualifying linecards (with 48 SFPs on each)**
- Get 1 additional linecard or bundle at no charge
- All linecards must have chargeable SFPs; "bundles" and their associated RPQs come with SFPs, which are N/C in the bundle RPQ.
 - [Terms and Conditions on last slide](#)

Competitive Tech Refresh

(refreshing Broadcom gear)

- Purchase qualifying c-type Director*
- Buy 2 qualifying linecards (with 48 SFPs on each)**
- Get 2 qualifying linecards or bundles at no charge
- All linecards must have chargeable SFPs; "bundles" and their associated RPQs come with SFPs, which are N/C in the bundle RPQ.
 - [Terms and Conditions on last slide](#)

Qualifying Products*

IBM c-type SAN Products

SAN192C-6 (8978-E04)
 SAN384C-6 (8978-E08)
 SAN768C-6 (8978-E16)

Click [HERE](#) to learn more on the products

Base Feature Code**	Promotion Feature	e-config Description (IBM product documentation often refers to a linecard as a "FC Switching Module")
AJL8	8S1918	48-port 64Gbps FC Switching Module and 64G SW SFP Bundle
AJL6	8S1943	48-port 64Gbps FC Switching Module (Empty Linecard – billable SFPs must be configured with it)
AJL7	8S1917	48-port 64Gbps FC Switching Module and 32G SW SFP Bundle
AJL4 and AJHE or AJHJ	8S1924	48-port 32Gbps FC Switching Module (Empty Linecard - billable SW 32Gbps optics must be configured with it)
AJL4 and AJHF or AJHK	8S1925	48-port 32Gbps FC Switching Module (Empty Linecard - billable LW 32Gbps optics must be configured with it)

Additional resources

- [IBM Storage Networking c-type family](#)
 - [Cisco NX-OS data sheet](#)
 - [Interoperability guide](#)
 - [Supported optics guide](#)
 - [Cisco NX-OS configuration guides](#)
 - [Cisco NX-OS programmability guide](#)
 - [Release notes](#)
 - [White papers](#)
- [San Insights Discovery \(SAN Health/Inventory\)](#)

Very Important -> [Click to Register your deal here](#)

IBM c-type SAN Update

Thank you!

- Ken Griffo – WW SAN Sales IBM, kgriffo@us.ibm.com
- Art Scrimo – MDS Software SME, Cisco, ascrimo@cisco.com
- Dave Mannenbach – IBM c-type SAN Product Manager, mannenba@us.ibm.com
- Fausto Vaninetti – IBM c-type SAN at Cisco, fvaninet@cisco.com
- Adam Rodgers – IBM c-type SAN Sales at Cisco, adarodge@cisco.com
- Raul Lanza – IBM c-type SAN Sales at Cisco (Americas), ralanza@cisco.com

Accelerate with ATG Survey

Please take a moment to share your feedback with our team!

You can access this 6-question survey via [Menti.com](https://www.menti.com/join/17086924) with code 1708 6924 or

Direct link <https://www.menti.com/alwhyze7z1gz>

Or

QR Code

