

Dell EMC SAN Health

Tips and Tricks



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A quick guide to optimizing SAN Health

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Dell EMC SAN Health Assessment Tools

Free customer downloadable tool

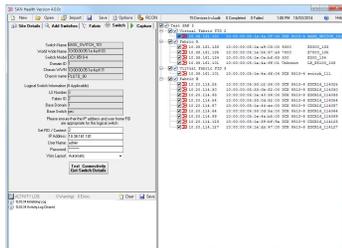


Live Optics uses Dell EMC SAN Health output to create a summary presentation

Fast, free and easy-to-use SAN auditing software

SAN Health provides useful results

Capture a point in time snapshot of switch logs and diagnostics

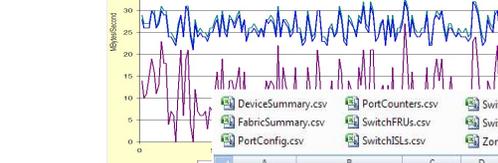


Automated report generation

SAN SUMMARY DETAILS FOR SAN_EXAMPLE												
SWITCHES IN SAN_EXAMPLE												
Fabric Name	Switch Name	Domain	IP Address	World Wide Name	Model	Speed	OS Ver	Ports	Unused			
Storage_Edge	sw2000_32	32	192.168.163.32	10:00:00:00:00:00:00:00	3200	26	3.2.1.9	9	1			
Storage_Edge	sw4100-41	41	192.168.163.41	10:00:00:05:1e:34:9e:5e	4100	46	5.1.0d	32	24			
Storage_Edge	sw3850-50	50	192.168.163.50	10:00:00:05:1e:34:9e:20	3850	26	5.1.0a	16	10			
Server_Edge	sw3800_38	38	192.168.163.38	10:00:00:00:69:02:00:0e:7e	3800	26	3.2.0b	16	4			
Server_Edge	sw4800-48	48	192.168.163.48	10:00:00:00:69:02:00:0e:25:18	48000	46	5.1.0d	48	39			
Server_Edge	sw24000-24	24	192.168.163.24	10:00:00:00:69:02:00:0e:20:00	24000	26	5.1.0d	32	21			
Server_Edge	sw3800-38	38	192.168.163.38	10:00:00:00:69:02:00:0e:38	3800	26	5.1.0d	32	23			

Comprehensive reporting with health and best practice checks

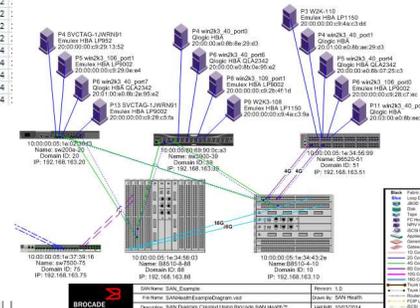
HEALTH AND MONITORING STATUS FOR SAN_EXAMPLE																	
Fabric Name	Switch State	Power Supplies			Fans			Temp Sensors			Errors		SNMP	SysLog			
	Mag	OK	Bad	Mag	OK	Bad	Mag	OK	Low	OK	High	Lvl1	Lvl2	No	Yes	No	Yes
Storage_Edge	0	3	0	2	0	0	12	0	12	0	0	0	0	3	0	0	0
Server_Edge	0	2	0	7	0	0	15	0	17	0	0	0	0	6	0	0	0
TOTALS	4	5	4	0	10	0	34	0	35	0	0	0	0	9	0	0	0



Performance graphs for visualizing activity

1	A	B	C	D	E	F	G	H
1	IP Address	Switch WWN	FRU Type	Location	Status	Serial Number	Part Number	Uptime
2	10.18.224.201	10:00:00:05:33:a6:3c:49	Fan	Fan 1	OK			129days
3	10.18.224.201	10:00:00:05:33:a6:3c:49	Power Supply	PS 1	OK			129days
4	10.18.224.201	10:00:00:05:33:a6:3c:49	CHASSIS	Unit 1	OK	CCD2518H010	40-1000737-02	129days
5	10.18.224.202	10:00:00:05:33:aa:e7:e4	Fan	Fan 1	OK			559days

Search, filter and sort the audit data



Useful topology diagrams to view physical layout



Installing SAN Health

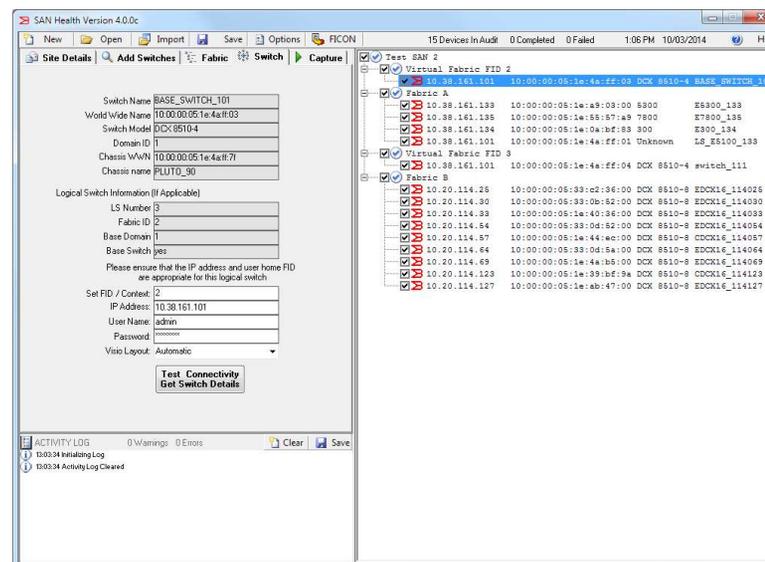
SAN Health installs easily within 3 minutes

- Select a suitable workstation
- Any Windows box that has TCP/IP connectivity to the management port of the SAN switches
- CPU and memory requirements are dictated by the number of switches that will be audited at any one time
- Less than 20 switches requires an Intel P4 or AMD Equivalent (AMD K7) and 512MB of RAM
- The memory requirement then increases in relation to the switches in the audit. 100 switches , the maximum supported requires 4GB of RAM with a fast, modern CPU

SAN Health Diagnostics Capture

Client Side Software

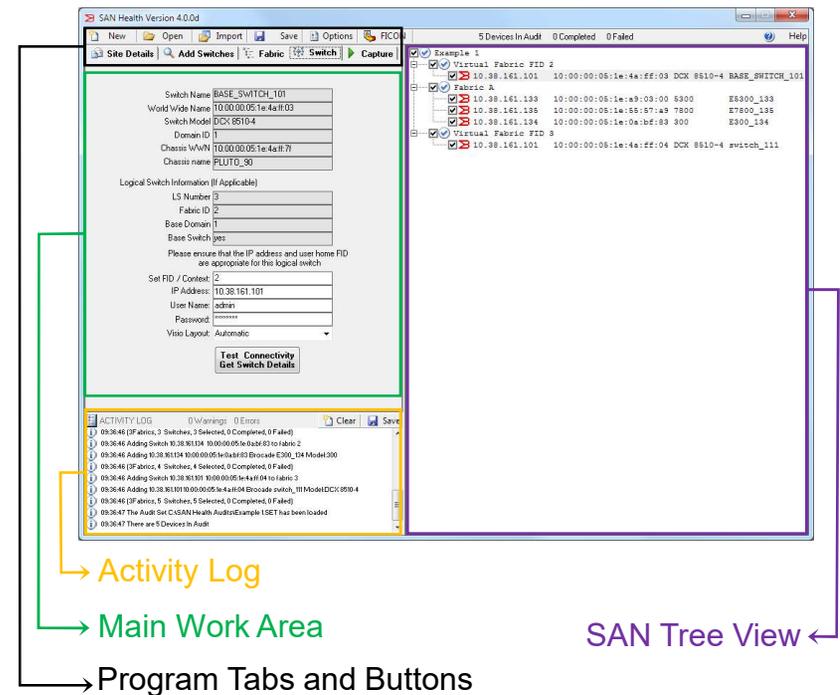
- Quick, easy and intuitive to use
- 5 to 10 minutes to complete an audit
- Connects via telnet/secure shell to the switches and retrieves the output from non-intrusive show commands
- Can run against a single fabric or multiple fabrics at once



Running SAN Health

Follow this simple process

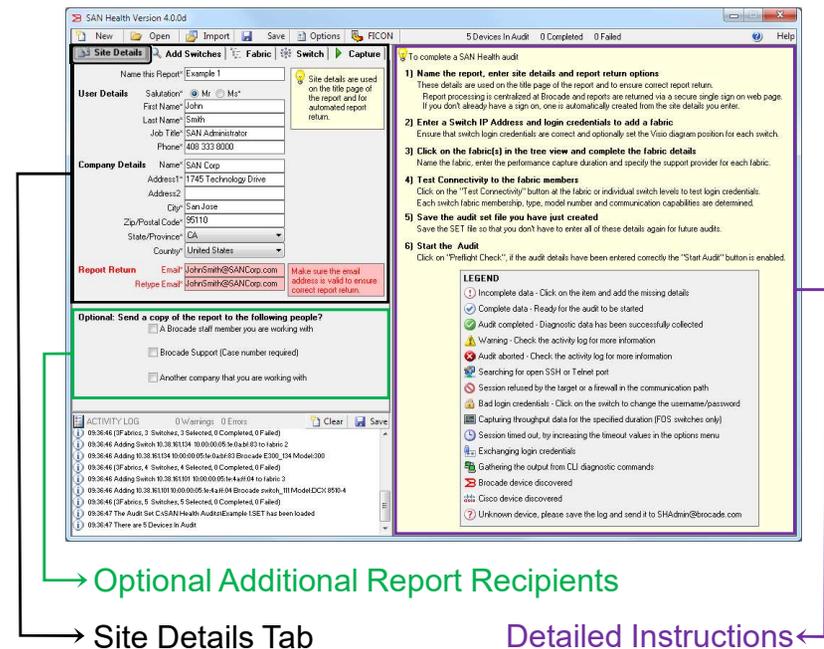
- Four simple steps:
 1. Enter Site Details
 2. Enter Switch and Fabric Details
 3. Run the Audit
 4. Generate the Report
- Optionally select report content and fine tune audit options



Running SAN Health

1. Enter site and contact Information

- This information is used as the report title and to determine the recipients of the completed report
- It is used to create the secure single sign-on account where the completed report will be posted for download
- Optionally, if you wish to share the report with support or someone that you are working with, enter these details here

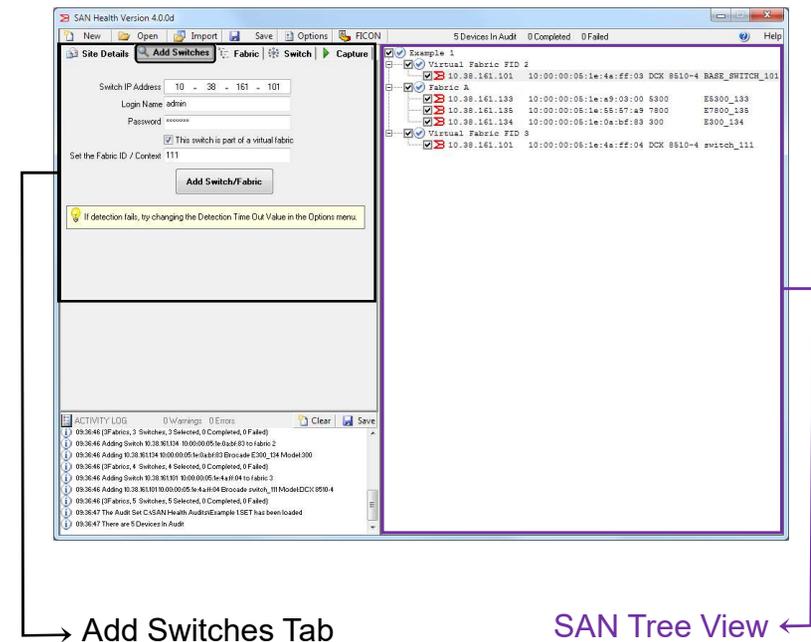


Running SAN Health

2. Enter Switch and Fabric Details – Add Switches Tab

- Add switches by inputting their IP address, a username, and a password
- Additional switches in the fabric will be automatically discovered
- SAN Health is Virtual Fabric aware and Fabric ID/Context can be entered here

New for 4.0!



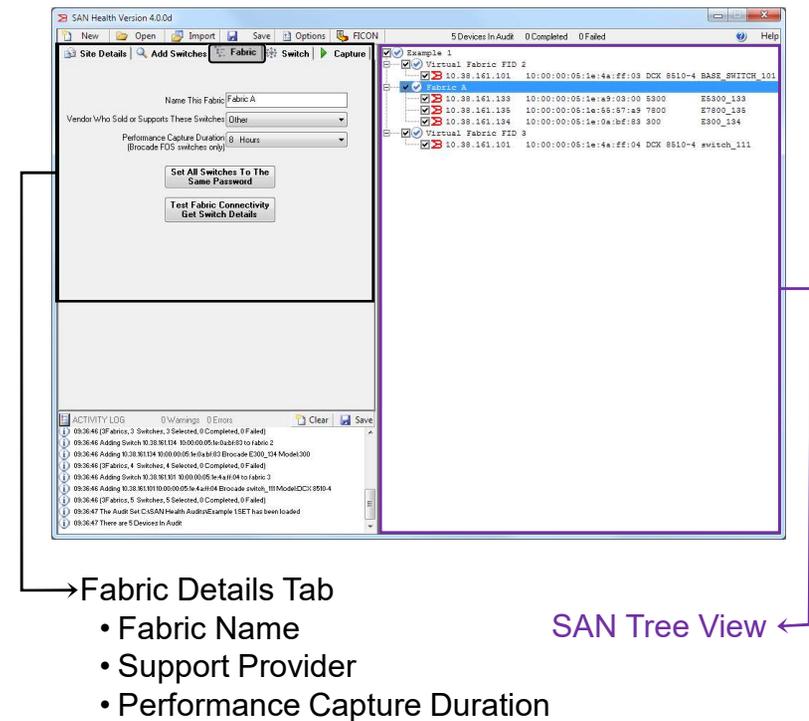
- Add Switches Tab
- IP Address
- User Credentials
- Virtual Fabric ID

SAN Tree View

Running SAN Health

2. Enter Switch and Fabric Details (cont.) – Fabric Tab

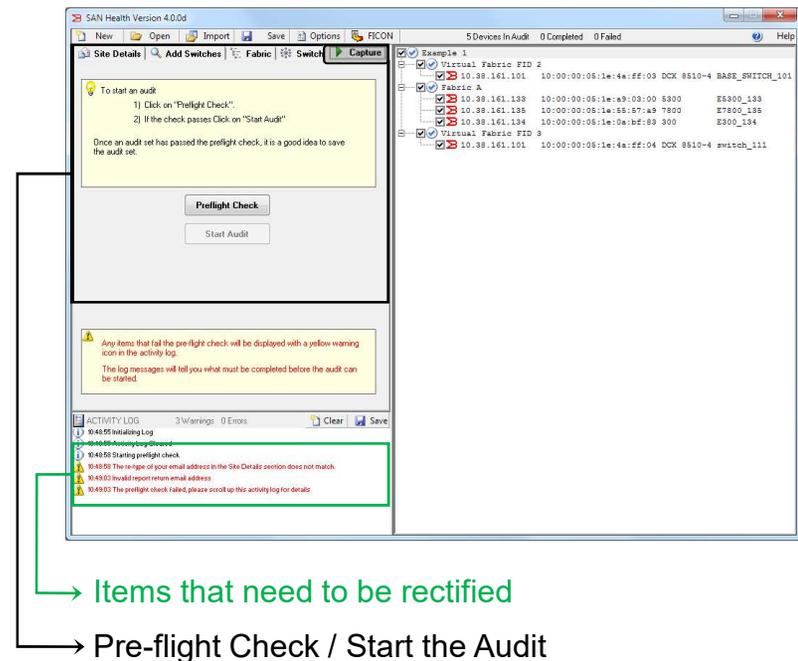
- Add the fabric details
 - Give the fabric a logical name
 - Enter the support provider
 - Select the duration for capturing port throughput statistics (Brocade FOS based switches only)



Running SAN Health

3. Running the Audit – Starting the Audit

- A pre-flight check is conducted before an audit can be started
 - If anything is incomplete or incorrectly formatted, an error will display in the activity log
- Clicking on “Start Audit” launches an individual telnet or SSH session to each switch and the output from diagnostic CLI commands is captured



Running SAN Health

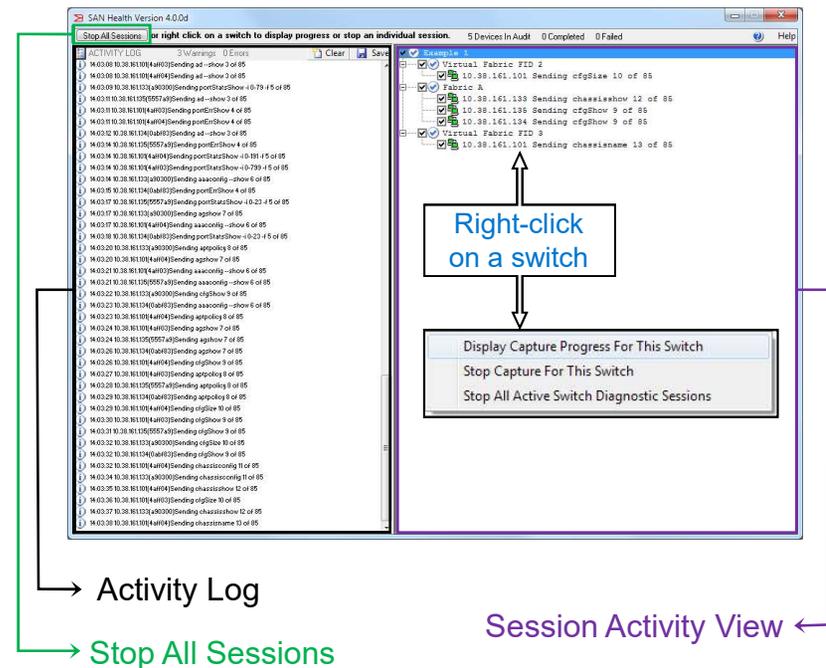
3. Running the Audit – Monitoring the Audit

- All activity can be stopped at any time by clicking on “Stop All Sessions”
- The tree view displays the progress for each switch
- Right-click on any switch for more options

Display the detailed progress of that switch

Stop the capture for the selected switch

Stop the capture for all the switches

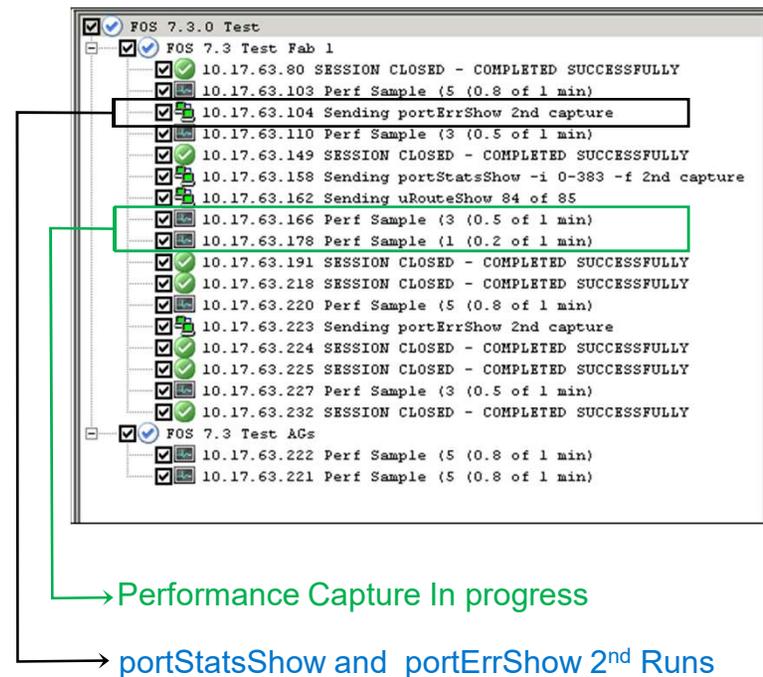


Running SAN Health

3. Running the Audit – Performance Capture and 2nd Port Stat Capture

- FOS switches can be set to capture port throughput data for a specified duration
- PortstatsShow and portErrShow will run a second time at the end of the audit to capture the delta in port error counters that occurred over the duration of the audit

New for 4.0!



Report Generation

4. Generate the Report – Reviewing the Captured Data

- The final screen displays all captured diagnostic data
- Upload the raw diagnostic data file to the centralized report generators for automated analysis
 - Click the button to automatically send the file via HTTPS
 - Click on the email address to generate an email and attach the file
 - Click on the URL to manually upload via HTTPS

19 Devices in Audit, 19 Completed and 0 Failed
C:\SAN Health Audits\Sam_Yadmin_141231_1007_FOS_7_3_Fabric_BSH

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<!-- SAN Health Data File Created Using SAN Health Version 4.0.0b Test Build! -->
<SANHealthAuditData>
  <CaptureDate>
    <Date>
      <Day>20</Day>
      <Month>02</Month>
      <Year>2014</Year>
    </Date>
    <Time>10:07:23</Time>
  </CaptureDate>
  <SANHealthVersion>
    <Major>4</Major>
    <Minor>0</Minor>
    <Revision>0</Revision>
  </SANHealthVersion>
  <AuditUniqueID>
    <ID>1B73225FVvE34Sv#ID</ID>
  </AuditUniqueID>
</SANHealthAuditData>
```

To complete the SAN Health process you must send the encrypted SAN Health data file (.BSH) to the report generation queue so that it can be turned into an Excel-based report and Visio topology diagram.

Send the diagnostic data file to the report generation queue via HTTPS

Or submit the file yourself manually
As an email attachment to
SHUpload@brocade.com
or click on the link below and follow the instructions
<https://my.brocade.com/upload/ReportGeneration.jsp>

If you do not receive a report back within 48 hours, please contact SHAdmin@brocade.com.
Processing time is usually from 1 to 8 hours depending on fabric size, 48 hours is stated to allow for any error conditions that may arise.

Three files will be returned to you inside a single zip file: A report in Microsoft Excel format (.xls)
A topology diagram in Microsoft Visio format (.vsd)
A SAN Health Professional data file (.SHData)

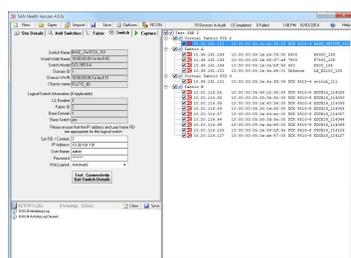
The report will be posted to a secure single-sign-on download page against the user ID **syadmin@san_techs.com**

If an account for this user ID does not already exist, it will be automatically created and an activation email sent.

→ Audit Results And Filename
→ Upload Methods
→ Review Captured Data

SAN Health Report Generation

Automated Processing and Report Return



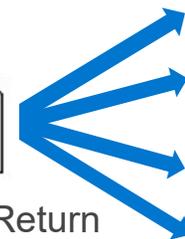
Diagnostics Capture



Report Generator



Report Return

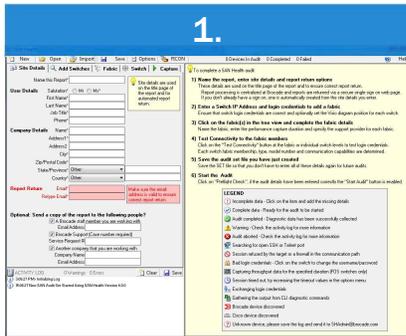


- 1) Detailed Report (Excel)
- 2) Topology Diagram (Visio)
- 3) SAN Health Pro Data File
- 4) Audit Data as CSV

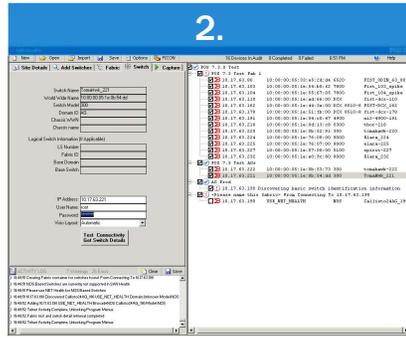
- The report generators analyze the raw diagnostic data, graph the performance data and generate a detailed report, topology diagram and CSV data files
- Report generation is a real time automated backend process
- Usually 1 to 10 hours to process (48 hour maximum)
- Reports are returned via a single sign on secure download
- Reports are automatically deleted after 30 days

Summary of the SAN Health Process

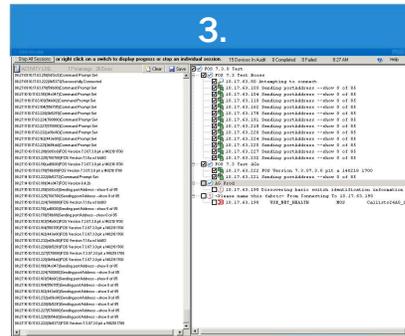
4 Easy Steps



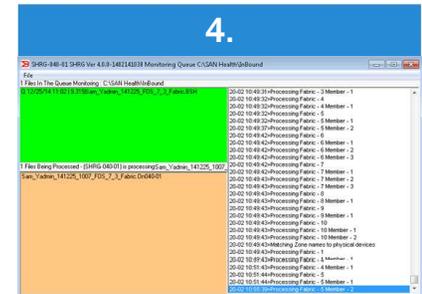
Enter Site Details



Enter Switch and Fabric Details



Run the Audit

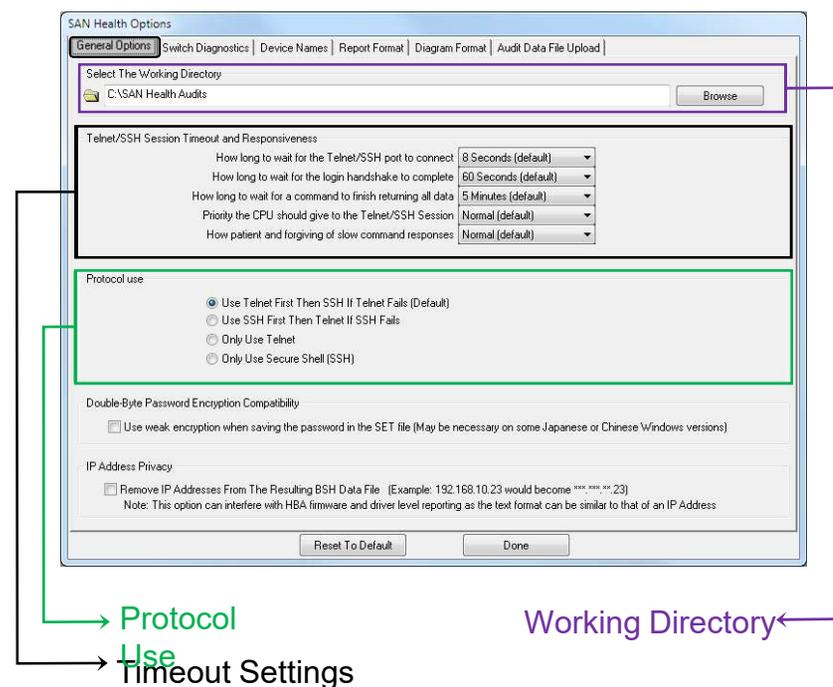


Generate the Report

Setting the SAN Health Options

General Options Tab

- **Audit options are typically left as default**
- Some environments may require changes to the timeouts or to the SSH/Telnet order
- IP addresses can be stripped from the raw data if desired

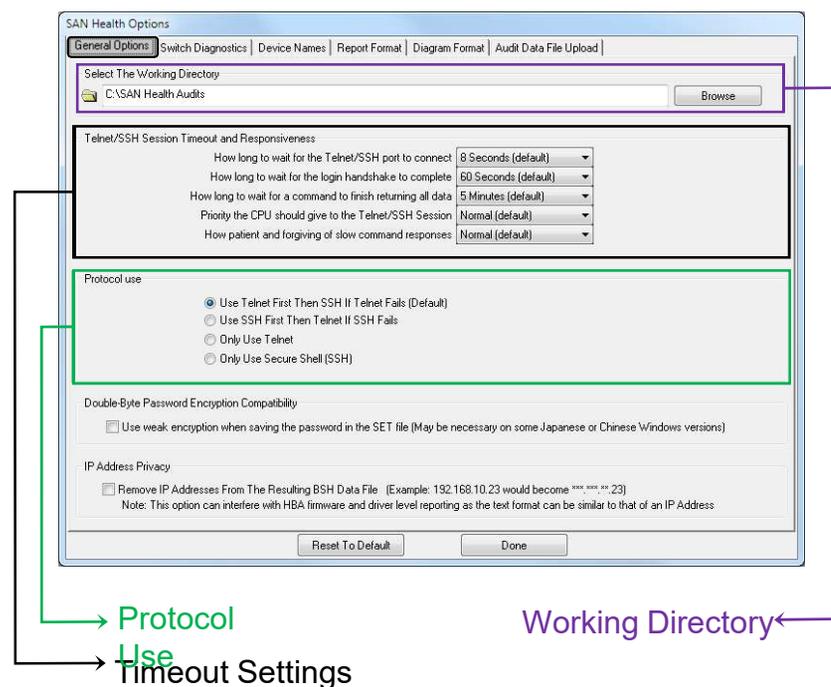


Setting the SAN Health Options

Switch Diagnostics Tab

- Review the diagnostic commands that will be sent to the switches during the audit
 - Deselecting commands will result in less information in the final report
- Port Statistics can be automatically reset at the end of the audit to see the changes between reports

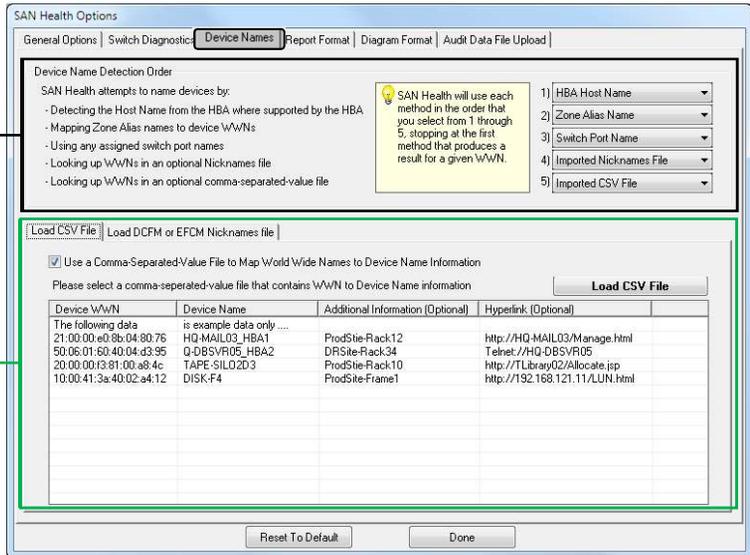
New for 4.0!



Setting the SAN Health Options

Device Names Tab

- Set the method for determining device names here
- An optional CSV file can be loaded
 - Use this CSV to add custom names and any descriptive text
 - A hyperlink can also be added to any device to allow it to be linked in the report (see next page for hyperlink details)



The screenshot shows the 'SAN Health Options' dialog box, specifically the 'Device Names' tab. The 'Device Name Detection Order' section lists five methods: 1) HBA Host Name, 2) Zone Alias Name, 3) Switch Port Name, 4) Imported Nicknames File, and 5) Imported CSV File. A yellow callout box explains that SAN Health will use each method in order until it produces a result. Below this, the 'Load CSV File' section is checked, and a table of device information is displayed.

Device WWN	Device Name	Additional Information (Optional)	Hyperlink (Optional)
The following data	is example data only		
21:00:00:e0:8b:04:80:76	HQ-MAIL03_HBA1	ProdSite-Rack12	http://HQ-MAIL03/Manage.html
50:06:01:53:40:04:c3:35	Q-DBSVR05_HBA2	DRSite-Rack34	Telnet://HQ-DBSVR05
20:00:00:13:81:00:a8:4c	TAPE-SILO2D3	ProdSite-Rack10	http://TLlibrary02/Allocate.jsp
10:00:41:3a:40:02:a4:12	DISK-F4	ProdSite-Frame1	http://192.168.121.11/LUN.html

Annotations in the image include a green arrow pointing to the 'Load CSV File' button and a black arrow pointing to the 'Device Name Detection Order' section.

Setting the SAN Health Options

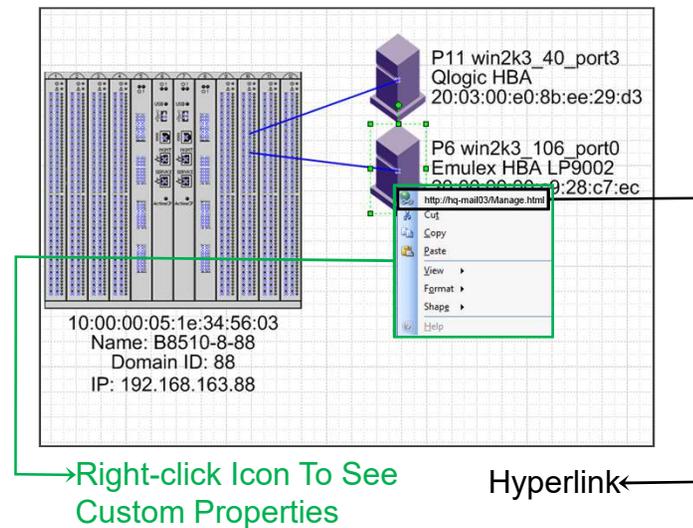
Hyperlinks

- Hyperlinks allow external management applications to be launched from the Excel report or Visio diagram

- Example Hyperlinks

- <http://HQ-MAIL03/Manage.html>
- [Telnet://HQ-DBSVR05](telnet://HQ-DBSVR05)
- <http://TLibrary02/Allocate.jsp>
- [LUN_Allocate.cgi](#)
- [FRAME_DF_Report.txt](#)

- If the hyperlink is to a file, the file must be in the same directory as the Visio or Excel file.



Hyperlink

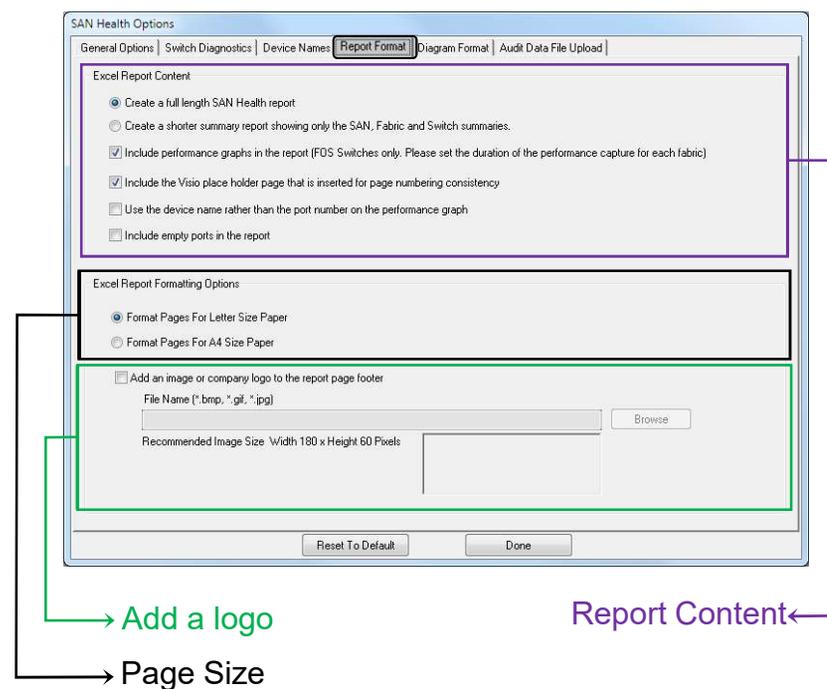
PORT MAP										
Domain	Port	Speed	Status	Type	World Wide Name	Device Name	Description	Avg Perf	Max Perf	Port ID
20	0	1 Gbps	No Light	gPort				N/A	N/A	
20	1	1 Gbps	No Light	gPort				N/A	N/A	
20	2	1 Gbps	No Light	gPort				N/A	N/A	
20	3	1 Gbps	Online	iPort	21:00:00:e0:8b:04:80:78	PROD_MAIL03	PROD_MAIL03	14 MBps	32 MBps	200200
20	4	1 Gbps	No Light	gPort				N/A	N/A	
20	5	1 Gbps	No Light	gPort				N/A	N/A	
20	6	1 Gbps	No Light	gPort				N/A	N/A	

<http://hq-mail03/Manage.html> - Click once to follow. Click and hold to select this cell.

Setting the SAN Health Options

Report Format Tab

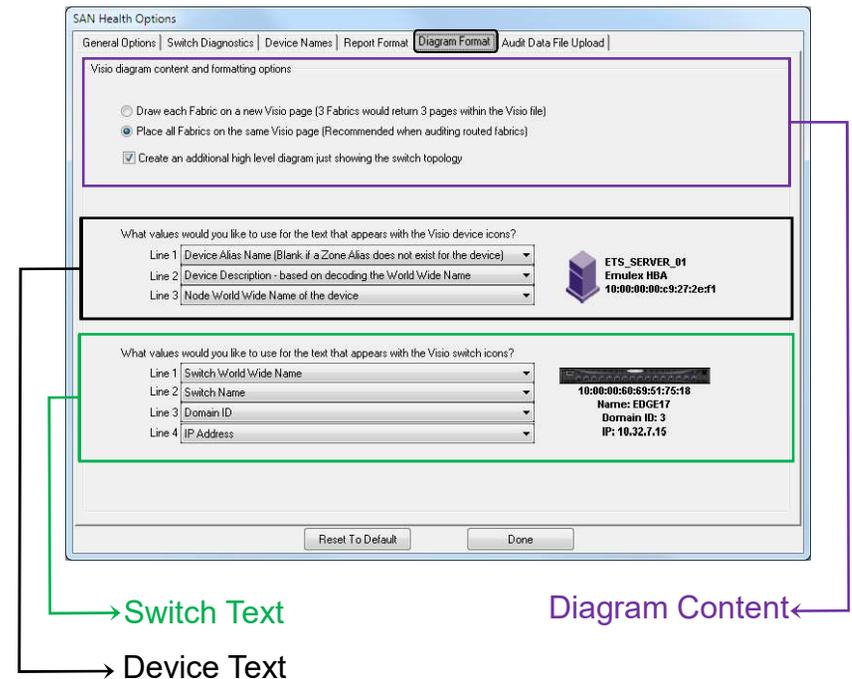
- Select report content
- Set report page size (Letter or A4)
- Add a company logo to the report footer



Setting the SAN Health Options

Diagram Format Tab

- Set whether fabrics are drawn on one page or multiple pages
- Set whether an additional high-level diagram consisting of just switches is created
- Set what data fields populate the text next to device icons and the text under switch icons



Setting the SAN Health Options

Automatic Data Upload Tab

- Auto upload of diagnostic data file can be set to occur at the end of each audit
 - HTTPS upload can be set and tested
 - Email settings can be set and tested
 - Set SAN Health to use a proxy server if required

The screenshot shows the 'SAN Health Options' dialog box with the 'Audit Data File Upload' tab selected. The dialog has several sections:

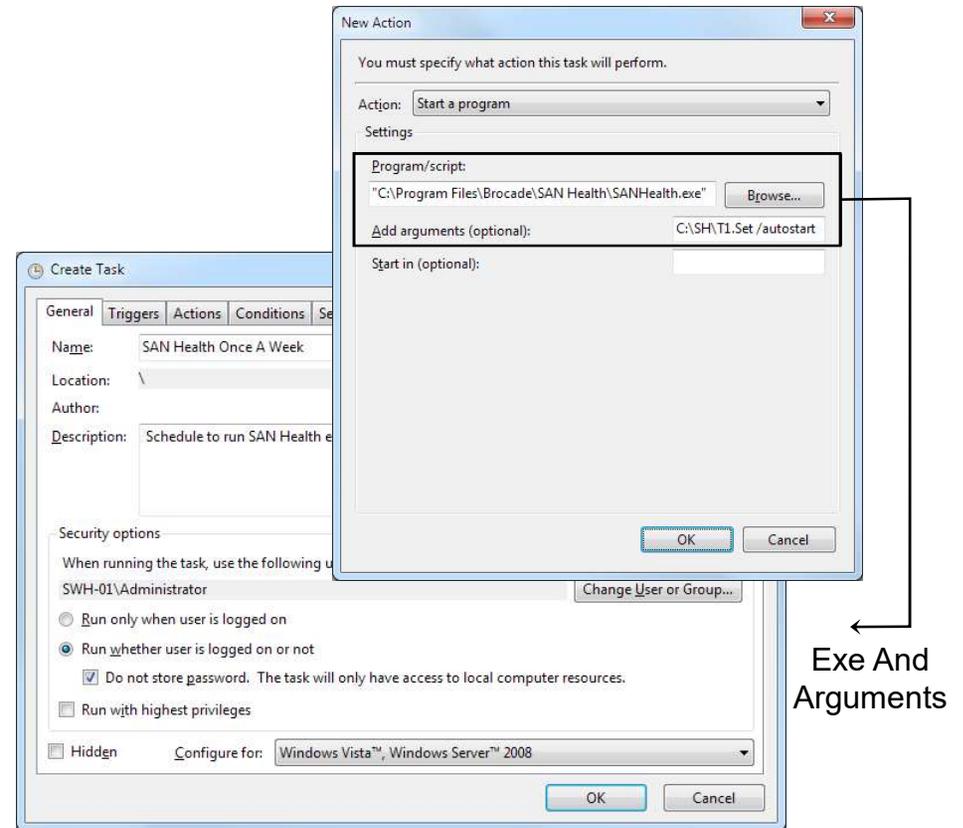
- Https Connection Options:** Includes a checked checkbox for 'Use a Proxy server', a 'Proxy Server Address' text box, a 'Proxy Server Port' text box (set to 80), and buttons for 'Test Proxy Connection' and 'Advanced Options'.
- Automatically Send the BSH Data File in for Processing:** Includes a checked checkbox for 'Automatically send the BSH file to the report generation queue on audit completion'.
- Submit the BSH file using https:** Includes a selected radio button, a 'Test https Connection' button, and a 'Send A Test File' button.
- Submit the BSH file using email:** Includes an unselected radio button, a 'Set The From Address As' text box (set to 'lemignan@e-i.com'), a 'Send A Test Email' button, an 'Email The BSH Data File To' text box (set to 'SHUplod@brocade.com'), and an 'SMTP Server (Optional)' text box.

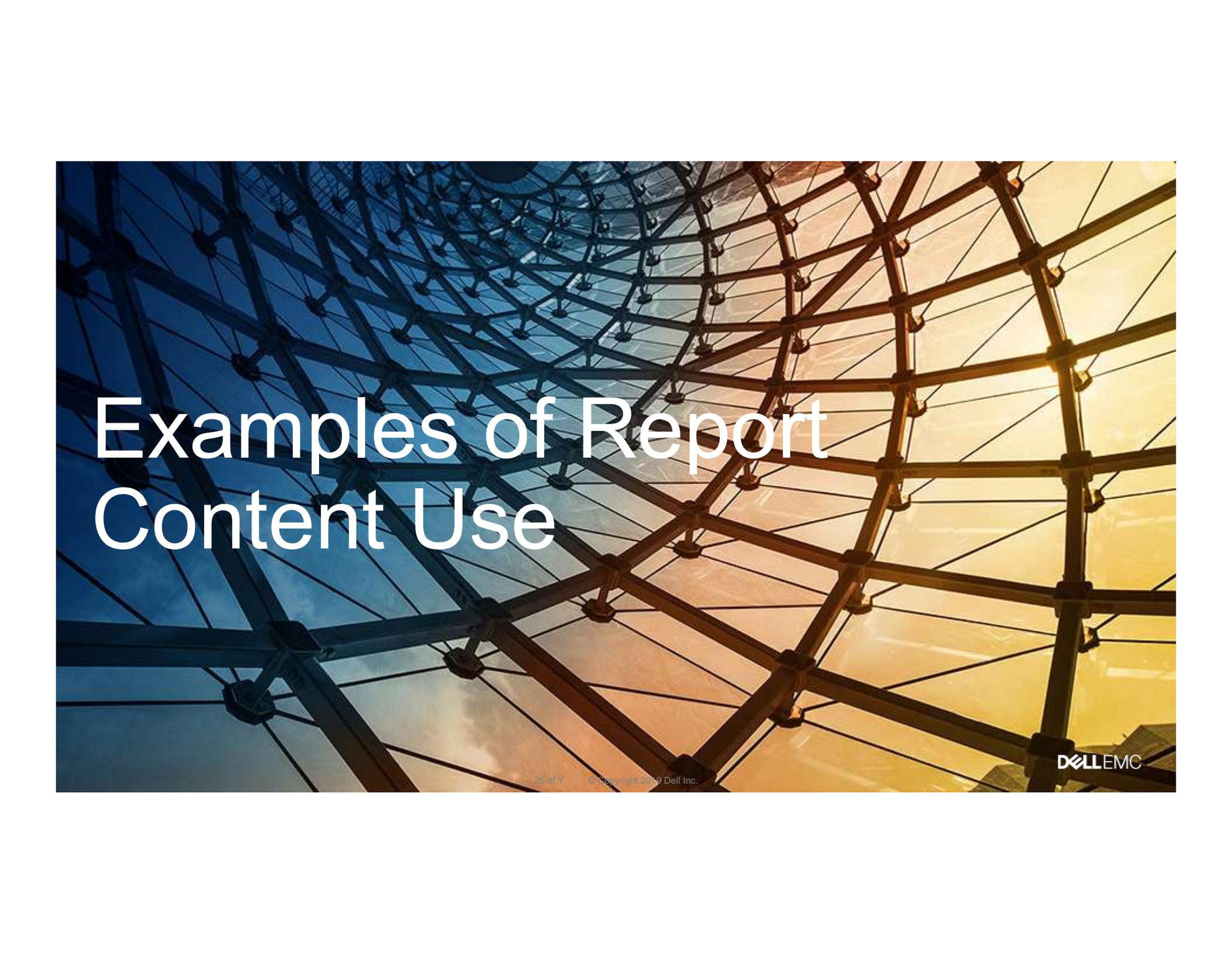
At the bottom of the dialog are 'Reset To Default' and 'Done' buttons.

Running SAN Health

Scheduling Audits

- Windows Scheduler can run audits on a set schedule
 - Run SANHealth.exe as the program
 - Use the .SET file as one argument
 - Add /autostart as a second argument
 - Password does not need to be stored
 - User does not need to be logged in for SAN Health to run





Examples of Report Content Use

Report Content

Easy to Navigate Spreadsheet

- The Microsoft Excel-based reports are structured in a hyperlinked, drill-down hierarchy of SAN to Fabric to Switch to Port
- Each page as a hyperlink back to the Table Of Contents to make navigation through large reports easier

TABLE OF CONTENTS	
SAN SUMMARY	
SAN Summary For SAN_Example.....	Page 5
Device Details.....	Page 6
Visio Topology Diagram.....	Page 7
Comments And Recommendations.....	Page 8
FABRIC DETAILS	
Fabric - Storage Edge	
Fabric Summary and Port Map For Storage_Edge.....	Page 9
Zone Summary For Storage_Edge.....	Page 11
Fabric - Backbone	
Fabric Summary and Port Map For Backbone.....	Page 13
Zone Summary For Backbone.....	Page 15
Fabric - Server Edge	
Fabric Summary and Port Map For Server_Edge.....	Page 16
Zone Summary For Server_Edge.....	Page 24
SWITCH DETAILS	
Switch Summary and Port Details For sw3200_32.....	Page 26
Switch Summary and Port Details For sw3800_38.....	Page 29
Switch Summary and Port Details For sw7500-75.....	Page 32
Switch Summary and Port Details For sw48000-48.....	Page 35
Switch Summary and Port Details For sw4100-41.....	Page 41
Switch Summary and Port Details For sw200e-20.....	Page 44
Switch Summary and Port Details For sw24000-24.....	Page 47
Switch Summary and Port Details For sw3850-50.....	Page 51
Switch Summary and Port Details For sw3900-39.....	Page 54
APPENDICES	
Explanatory Notes.....	Page 57
Glossary.....	Page 65
References.....	Page 67

Report Content

In Report Explanations

- Many cells in the report can be selected to see more info in the formula bar
- Learn more about report content such as zone membership, hanging zones, etc

Select the cell you would like Information on

Look in the formula bar for explanatory details

f_x Hst:Trg (Total number of hosts compared to the total number of targets)

Switch Name	Port Counts			Attached Device Types				Inter Switch Links			Fan Out Ratios		Port Speeds							
	Total	Free	Unltd	Disk	Tape	Host	Aplnc	Gtway	ISL	TrkMst	TrkSlv	Hst:Trg	Dvc:ISL	1G	2G	4G	8G	16G	1GE	10GE
FAMDA02	336	155	0	44	34	77	0	0	26	1	0	0.99:1	5.74:1	0	4	304	28	0	0	0

f_x Average (During the performance capture portion of the audit, this was the average throughput for this ISL)

ISL / TRUNK SUMMARY																	
From Switch				To Switch				ISL or Trunk Type	FSPF Cost	Farthest Pnt (Hops)	Dynamic or Static	Available Bandwidth and Utilization					
Name	Dom	Area	Slot/Port	Name	Dom	Area	Slot/Port					Speed	BW	Average	% Use	Peak	% Use
FAMDA03	174	24	fc1/25	FAMDA02	22	-	fc1/25	Normal ISL	-	1	D	8 Gbps	8	12.2MB/s	1%	44.6MB/s	3%
FAMDA03	174	72	fc2/25	FAMDA02	22	-	fc2/25	Normal ISL	-	1	D	8 Gbps	8	11.2MB/s	1%	41.4MB/s	4%

f_x Hang Mems (This is the total number of zones that are hanging, meaning they have one or more members defined, but not present)

CONFIG "ZONESET_A" IS ACTIVE														
Zone Database Use	Aliases Statistics				Zone Statistics				Hang Mems	Config Statistics				Zones in Active Config
	Total	Avg Mems	Max Mems	Hang Mems	Total	Avg Mems	Max Mems	Total		Avg Mems	Max Mems	Hang Mems		
1.2%	79	0.99	1	12	211	3.97	19	146	4	27.75	54	49	211	

Report Use Examples

Zone and Configuration Checking

15 ALIASES													
Alias Name	Alias Member(s)												
dell_4_3bwwn	10:00:00:00:c9:29:04:77												
dell_4_4bwwn	10:00:00:00:c9:29:04:32												
demotestalias	156,5												
hitachi_00	50:00:60:e8:02:ee:78:00												
dmx800_16c1	50:06:04:8a:cc:c8:8c:6f												
dmx800_16d1	50:06:04:8a:cc:c8:8c:7f												

ZONING METRICS													
Fabric Name	Zone	Aliases Statistics				Zone Statistics				Config Statistics			
	Database Use	Aliases	AvMem	MaxMem	Hanging	Zones	AvMem	MaxMem	Hanging	Configs	AvMem	MaxMem	Hanging
Prod-1	6.1% of 127k	72	1.8	2	7	62	2.9	6	7	1	62	62	1
Prod-2	6.1% of 127k	84	1.1	2	3	64	3.8	8	5	1	64	64	1
DR-1	6.6% of 127k	128	1.3	2	17	28	4.8	13	9	1	28	28	1
DR-2	9.5% of 127k	182	1	2	27	41	6.2	14	20	2	40.5	41	2
TOTALS		466	1.3	2	54	195	4.4	14	41	5	48.6	64	5

- Hanging zones are identified, these are most likely historical zones where the device has moved or has been decommissioned
- Alerts are provided for zones with too many members and these should also be examined

Domain	Port	Speed	Status	Type	World Wide Name	Alias Name	Description	Avg Perf	Max Perf	Port ID
4	0	2 Gbps	Online	F-Port	10:00:00:00:c9:2b:50:a5	ETS_FILE01_2	EMULEX	37.6 MB/s	69 MB/s	040000
4	1	2 Gbps	Online	F-Port	10:00:00:00:c9:2d:03:71	NOT ZONED	EMULEX	0 MB/s	0 MB/s	040100
4	2	2 Gbps	Online	F-Port	10:00:00:00:c9:2b:9d:ac	ETS_BOOTP01	EMULEX	22.6 MB/s	65 MB/s	040200
4	3	2 Gbps	Online	F-Port	10:00:00:e0:02:02:88:24	IT_TAPE	CROSSROADS	25.4 MB/s	68 MB/s	040300
4	4	2 Gbps	Online	E-Port	10:00:00:60:69:51:73:1b	To CORE15	ISL	14.9 MB/s	44 MB/s	
4	5	2 Gbps	Online	E-Port	Trunk Slave		ISL	14.8 MB/s	44 MB/s	

- Devices that you forget to zone will not be able to communicate

Report Use Examples

Switch Setting Consistency

- Ensure consistency of management settings
- Easily identify configuration anomalies
- Check monitor and alert settings

HEALTH STATUS AND MONITORING																	
Switch Name	Switch State		Power Supplies			Fans			Temp Sensors			Errors		SNMP		SysLog	
	Marg	OK	Bad	Marg	OK	Bad	Marg	OK	Low	OK	High	Lvl1	Lvl2	No	Yes	No	Yes
SHRF001	0	1	0	0	2	0	0	4	1	3	0	0	0	0	1	0	1
SHRF002	0	1	0	0	2	0	0	4	1	3	0	0	0	1	0	0	1
SHRF003	0	1	0	0	2	0	0	4	1	3	0	0	0	0	1	1	0
SHRF004	0	1	0	0	2	0	0	4	1	3	0	0	0	0	1	1	0
TOTALS	0	2	0	0	4	0	0	8	2	6	0	0	0	1	3	2	2

SHRF001 IN FABRIC FP_1Z UNIX			
Switch Name	SHRF001	Brocade Model	DCX 8510
IP Address	10.125.233.12	WwN	10:00:00:60:69:81:3f:1a
FC IP address	0.0.0.0	Domain ID	70
Vendor	Hitachi Data Systems	Serial Number	FS010014205
Switch Status	HEALTHY/OK	MAC Address	N/A
Active Config	ON (ZoneConfig)	Ethernet Port	AUTO
Zone DB Use	8.1 % of 127 kbytes	Switch Date	N/A
POST	Enabled	QuickLoop	Disabled
Telnet Timeout	0 minutes	Fabric Watch	Alarms are disabled
		Role in Fabric	Subordinate

MONITORING AND ALERTING						
FABRIC WATCH		SYSLOG SETTINGS				
Status	Syslog Status	IP Address 1	IP Address 2	IP Address 3	IP Address 4	IP Address 5
disabled	Not In Use	N/A	N/A	N/A	N/A	N/A
SNMP SETTINGS						
Switch Description		Switch Location		Contact Information		
FibreChannelSwitch.		EndUserPremise.		FieldSupport.		
Community Strings : SecretC0de(rw)		OrigEquipMfr(rw)	private(rw)	public(ro)	common(ro)	FibreChannel(ro)
Access Control List : Not Configured		Not Configured	Not Configured	Not Configured	Not Configured	Not Configured

Report Use Examples

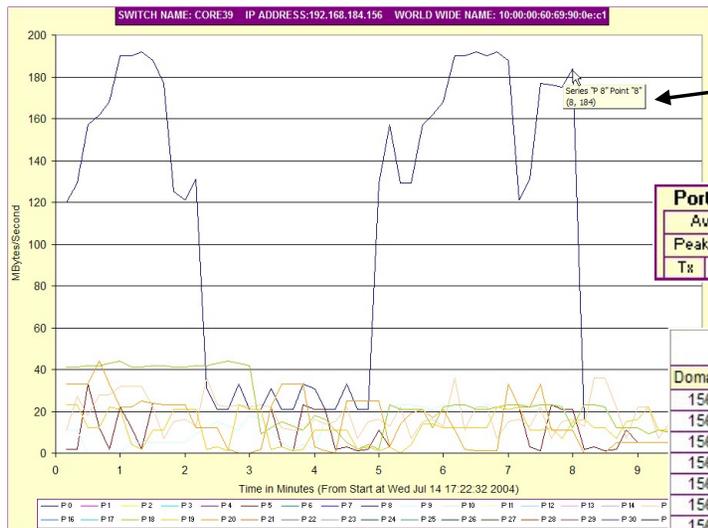
Fan-Out-Ratios and Potential Oversubscription

PORT USE														
Fabric Name	Port Use						Fan Out Ratios			Port Long Distance Modes				
	Disk	Tape	Host	ISL	Free	Total	Host:Disk	Port:ISL	Device:ISL	10km	25km	50km	100km	Auto
Prod-1	6	11	48	28	83	176	8:1	5.29:1	1.32:1	176	0	0	0	0
Prod-2	2	18	62	32	78	192	31:1	5:1	1.56:1	192	0	0	0	0
DR-1	28	0	91	42	79	240	3.25:1	4.71:1	1.83:1	240	0	0	0	0
DR-2	30	5	101	54	66	256	3.37:1	3.74:1	1.52:1	256	0	0	0	0
TOTALS	66	34	302	156	306	864	4.58:1			864	0	0	0	0

- High Host to Disk ratios implies that the disk port may be oversubscribed
 - Check the traffic pattern on the disk ports
 - Use Fabric Watch to monitor the buffer credits alerts on that port
 - Check the disk vendors recommended fan-out-ratio
- High Device to ISL ratios may be indicative of a poor design or a higher potential for congestion

Report Use Examples

High levels of Traffic and Unusual Spikes



Mouse over the data to display the port number

Identify the device from the port details page

Port 8	dmx800_1d1	EMC Symmetrix [98]	EMC SYMMETRIX 000187900465	SAF-17b	EMUL B61F0000	0F25FD10																					
Av Perf	96.8MB/s	Port w/WN	50:06:04:8a:cc:c8:8c:70	Speed	2 Gbps	Port ID	9c1300	Media	ShortWave	SFP Type	IBM																
Peak Perf	192 MB/s	Node w/WN	50:06:04:8a:cc:c8:8c:70	Type	F-Port	Status	Online	LD level	L0	Bound	SCSCI																
Tx	7.4m	Rx	7.4m	Ecln	0	crc	0	Shrt	0	Lng	0	EOF	0	Eout	9	Sync	0	Link	0	C3D	0	Lsig	0	Rjct	0	Bsy	0

PORT MAP FOR ALL SWITCHES IN FABRIC ETS-FABRIC-B [Table Of Contents](#)

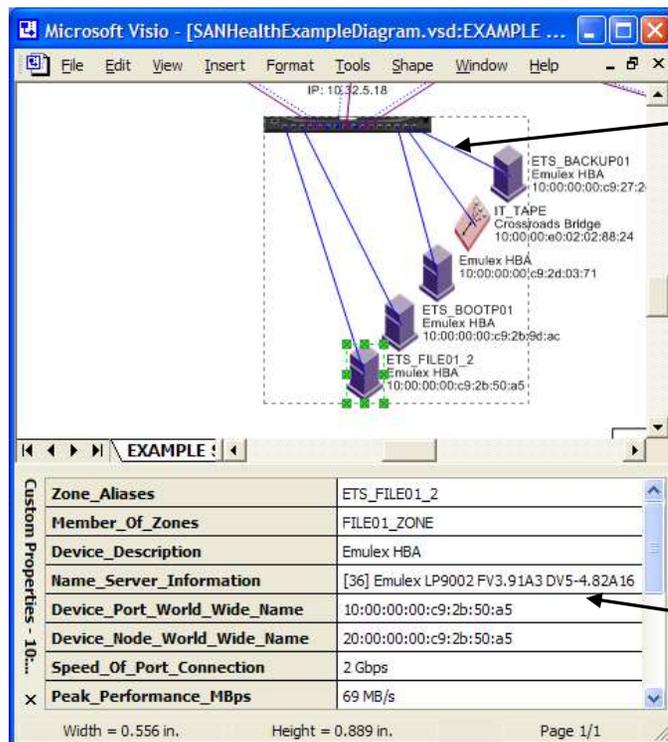
Domain	Port	Speed	Status	Type	World Wide Name	Alias Name	Description	Avg Perf	Max Perf	Port ID
156	0	2 Gbps	No_Light							
156	1	2 Gbps	No_Light							
156	2	2 Gbps	No_Light							
156	3	2 Gbps	No_Light							
156	4	1 Gbps	Online	F-Port	21:00:00:d0:b2:00:42:40	xiotech_1	XIOTECH	18.2 MB/s	36 MB/s	9c0f00
156	5	2 Gbps	Online	L-Port	21:00:00:04:cf:d5:35:7a	demotestalias	SEAGATE	10.2 MB/s	33 MB/s	9c05cd
156	6	2 Gbps	In_Sync							
156	7	2 Gbps	Online	L-Port	21:00:00:20:37:d9:78:37	NOT ZONED	SAGATE	0 MB/s	0 MB/s	9c07cd
156	8	2 Gbps	Online	F-Port	50:06:04:8a:cc:c8:8c:60	dmx800_1c1	EMC	96.8 MB/s	192 MB/s	9c0800
156	9	2 Gbps	Online	L-Port	21:00:00:20:37:c8:7d:e6	euro_1_10bwwn	SEAGATE	12.4 MB/s	23 MB/s	9c09d6

May be normal, most commonly seen on ISLs and target ports

Use the Port Map to identify the traffic partner devices

Diagram use Case Examples

Finding Embedded Data Within Visio Icons



Color coded connectors that represent the link's bandwidth

- Microsoft Visio based topology diagram
- Point in time accurate diagram
- User selectable device text

Custom Properties Window displays the attributes of every component in the diagram

Diagram use Examples

Migration Planning

A point in time snapshot of the environment assists when planning a migration
Additional snapshots during the migration are useful milestone or documentation checkpoints

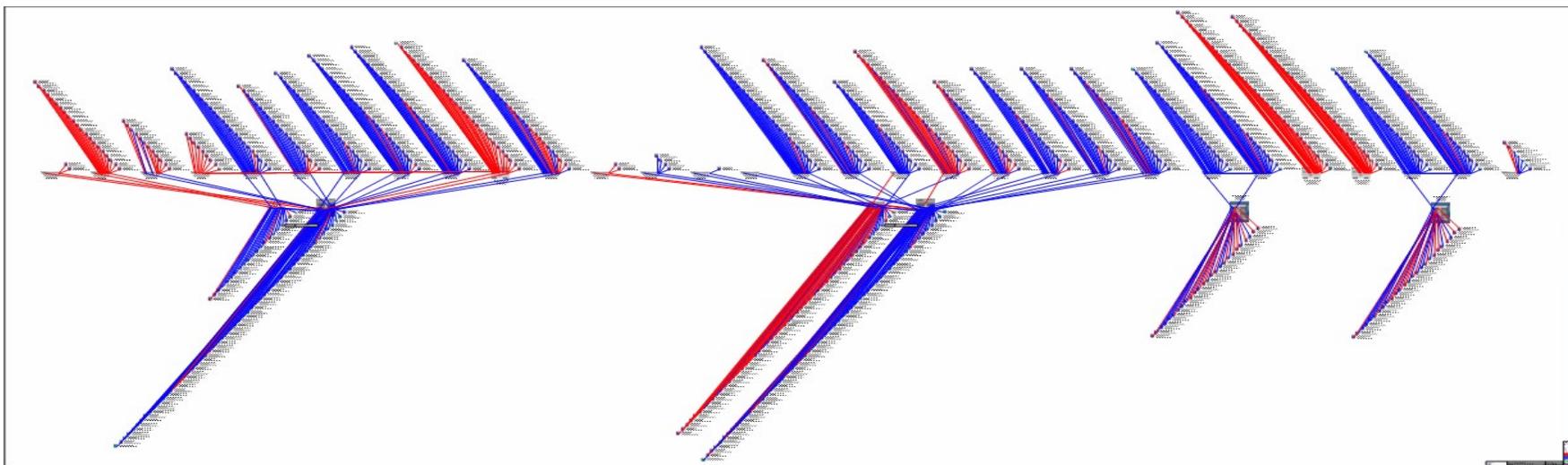
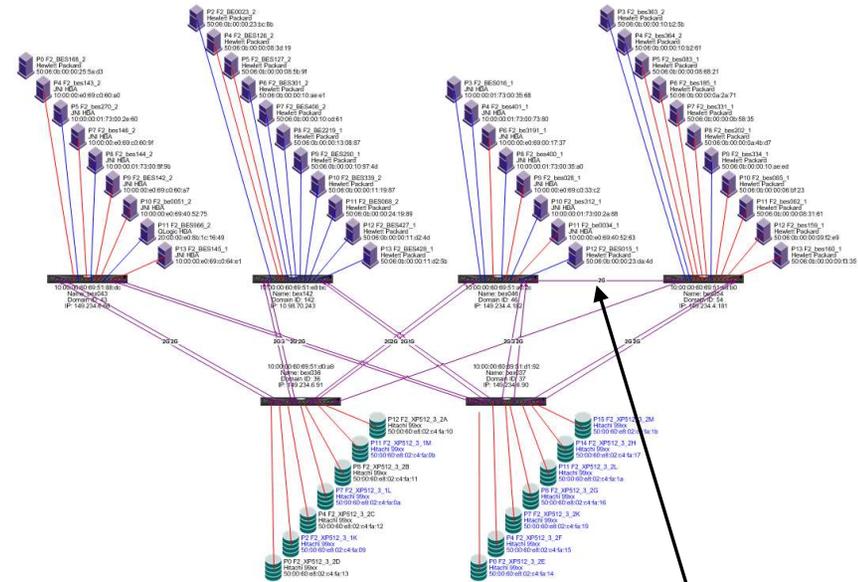
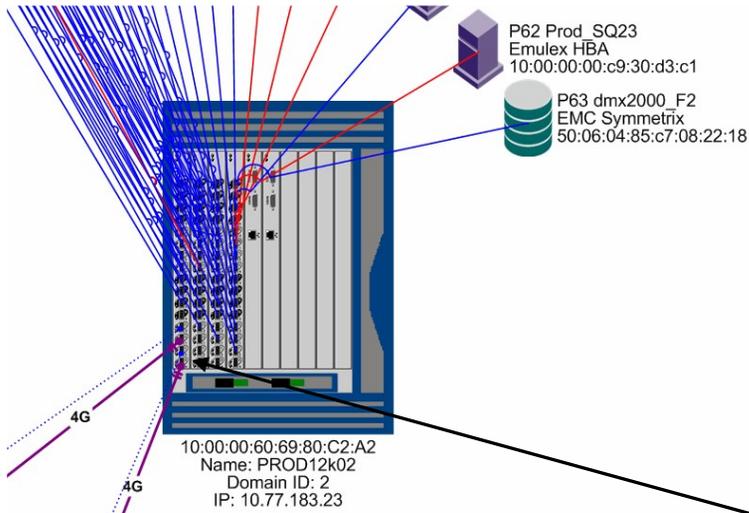


Diagram Use Examples

Physical Configuration Review

- Problems are sometimes only obvious when you look at a diagram



Poorly configured ISL placement
may be easier to see on a diagram

Multiple ISLs going to a single
blade may not be by-design

D~~E~~LL EMC