



IBM TotalStorage Productivity Center (TPC) and IBM System Storage Productivity Center (SSPC)

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Storage Infrastructure Management

■ The Problem

- ▶ **Heterogeneous storage infrastructures**, driven by growth in file and database data, are consuming increasing amounts of administrative time. IT managers are looking for ways to make their storage administrators more efficient.

■ The Solution

- ▶ Empower administrators with **automated tools** for managing heterogeneous storage infrastructures

Four Major TPC Components

TotalStorage Productivity Center for Data

- ▶ Data collection and analysis, file systems and databases
- ▶ Reporting, chargeback and quotas
- ▶ Automated actions
- ▶ Support for heterogeneous disk (IBM, EMC, HDS, HP, Engenio)
- ▶ IBM 3584 Tape Asset Reporting

TotalStorage Productivity Center for Disk

- ▶ Disk subsystem management
- ▶ Performance management—IBM and heterogeneous storage
- ▶ Storage provisioning—IBM and heterogeneous storage

TotalStorage Productivity Center for Fabric

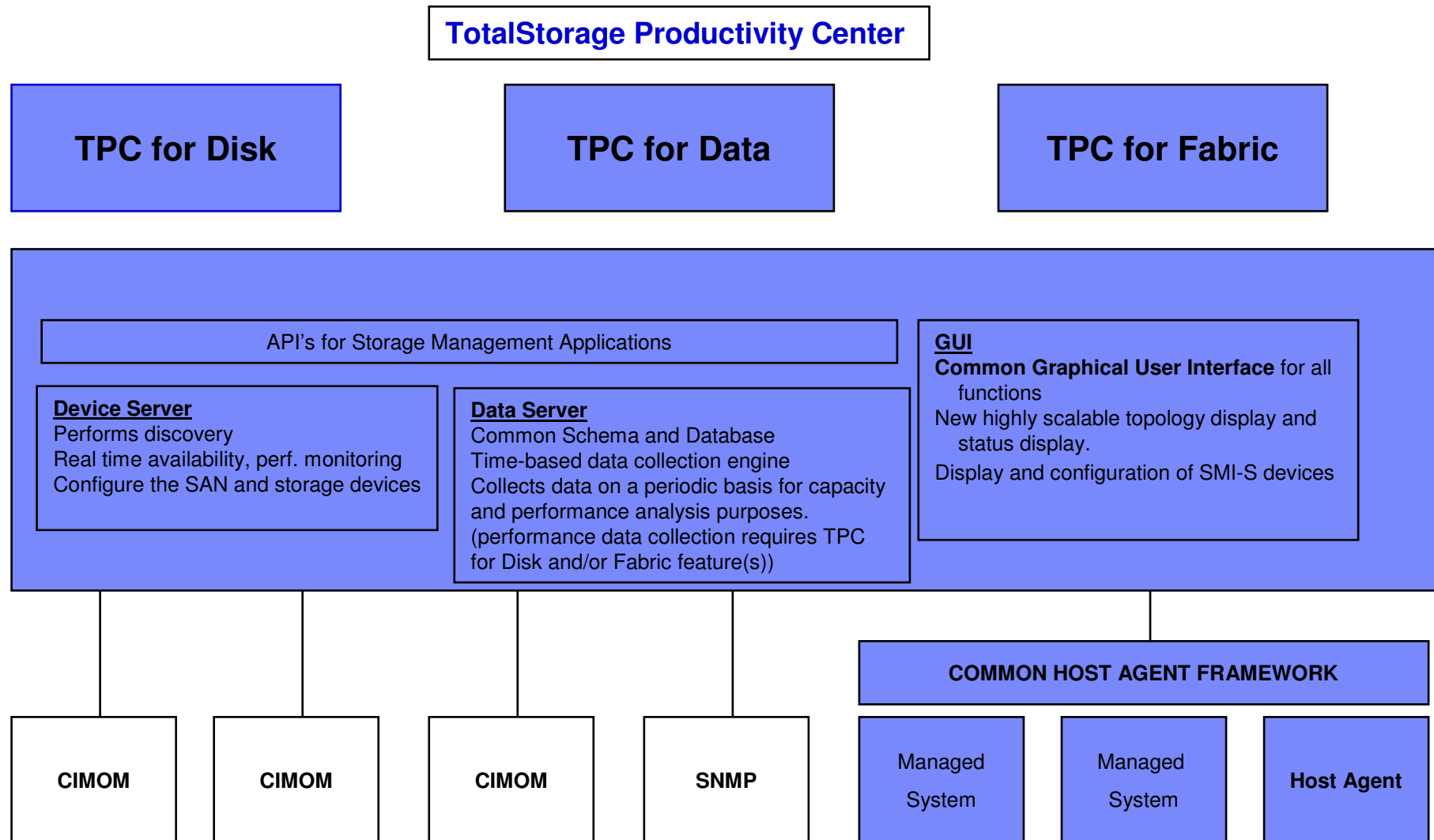
- ▶ SAN topology display and management
- ▶ Event reporting, performance reporting
- ▶ Security enforcement via zone control
- ▶ Heterogeneous fabric support (Brocade, Cisco, McData)

TotalStorage Productivity Center for Replication

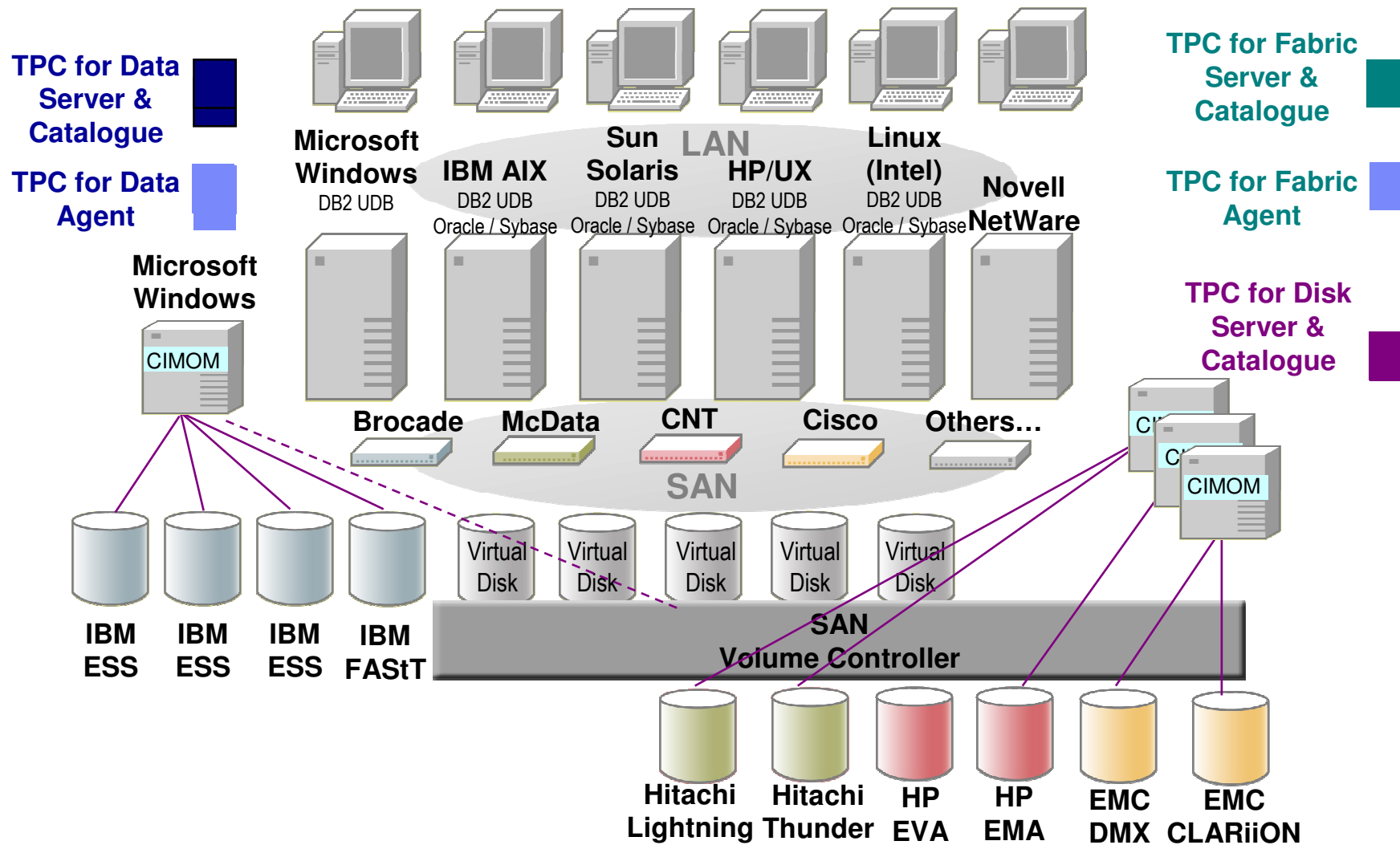
- ▶ Single point of control for point-in-time and remote volume replication services
- ▶ Automated source-target matching
- ▶ Cross-device consistency groups, DS8000/ESS and SVC FlashCopy and Metro Mirror

Standard Edition Bundle

TPC 3.x Design Overview

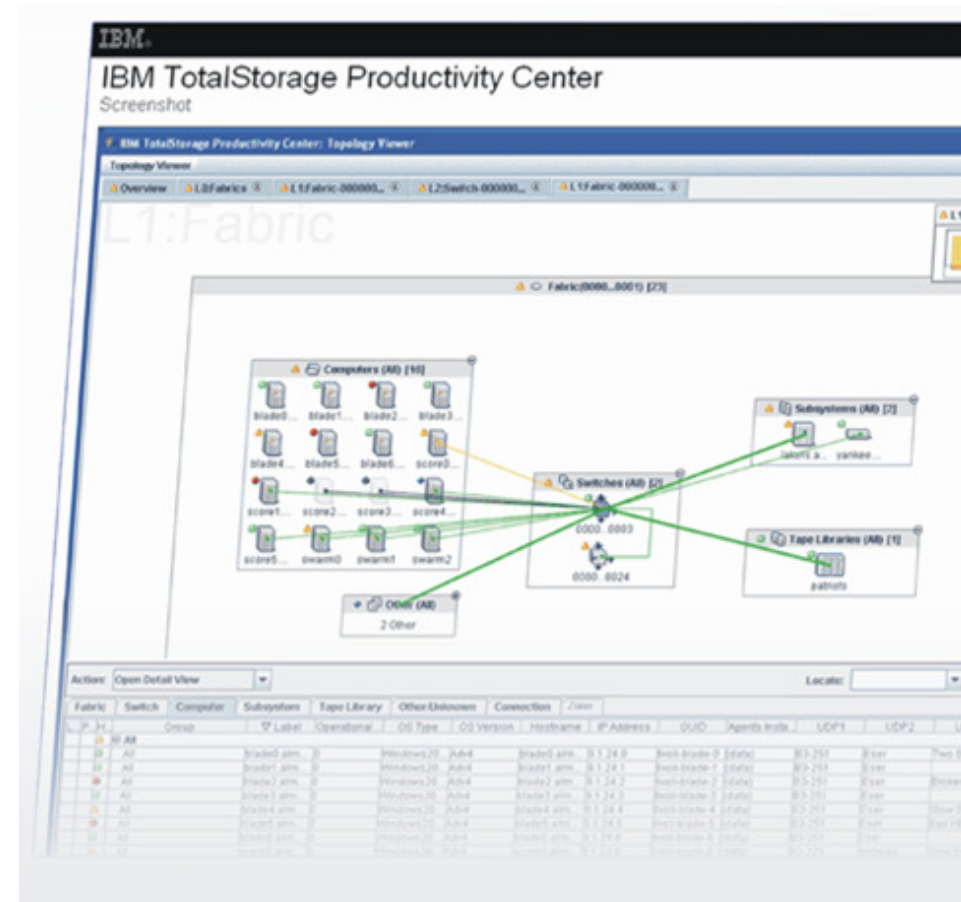


TPC Architecture



TPC Adds Value To Your Storage Environment

- **Enable end-to-end storage management with a single tool**
 - ▶ Extends storage configuration management across the SAN
 - ▶ Centralizes management of storage
- **Improve storage utilization, performance and service levels**
 - ▶ SAN Topology end to end views and management
- **Reduce storage complexity to make your team more productive**
 - ▶ Storage Reporting across host file systems, data bases and storage
 - ▶ Correlation to host usage
- **Ties to ISM and CCMDB for complete information life cycle management**



Optimize your Storage with TPC for Data

Rationalize Data

Use proven techniques coupled with TotalStorage Productivity Center to analyze existing storage utilization to:

- Determine valid and invalid data groups
- Reclaim/consolidate storage space
- Delete/Archive Invalid Data
- Provide initial data rationalization policies

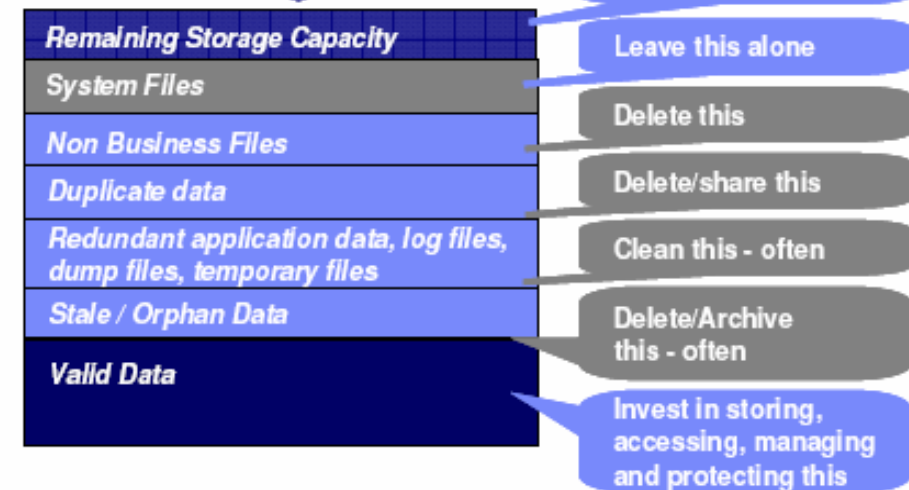
Improve initial storage management efficiencies

- Analyze current storage management environment

Virtualize Storage to increase asset utilization

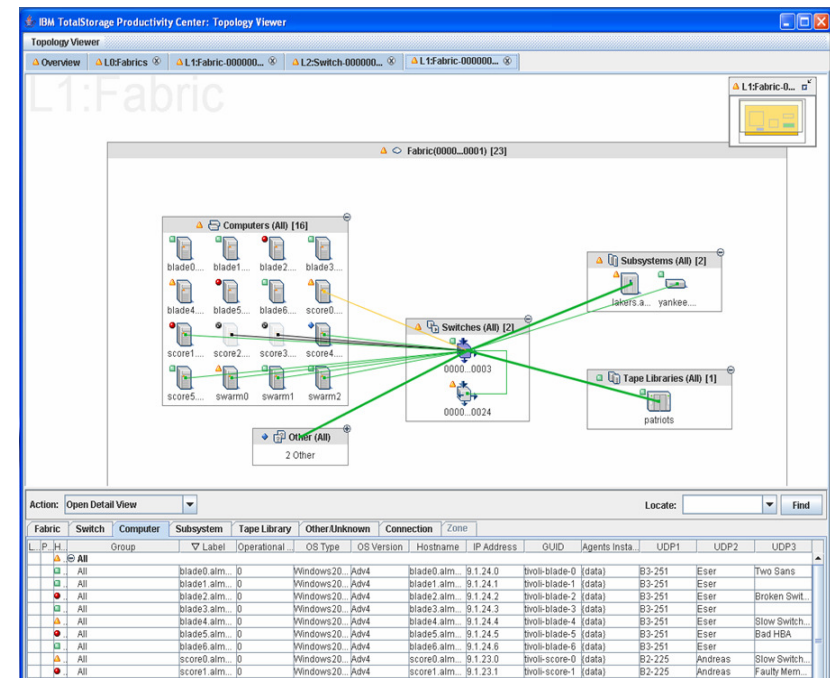


Analysis



TotalStorage Productivity Center for Fabric

- **Centralized point of control** for SAN configuration
- Automated management
 - ▶ **Multi-vendor switch zone provisioning**
 - ▶ **SAN, NAS, iSCSI**
 - ▶ **Multi-vendor HBA support**
- Visualization of the topology
- Real-time monitoring – **performance reports**
- Automated status and problem alerts
 - ▶ Direct integration with Tivoli system management
 - ▶ Integrated with 3rd party system management via SNMP



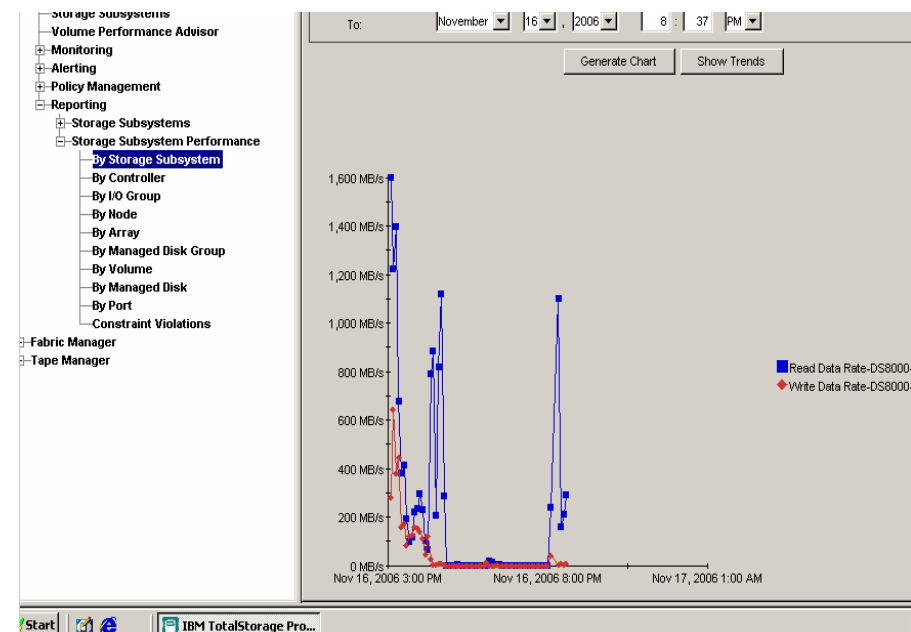
TotalStorage Productivity Center for Disk

Key Capabilities

- **Configures** multiple storage devices from a single console to improve productivity
- **Monitors** and tracks the performance of storage devices to optimize the SAN performance

Performance Management

- Collects, stores, alert on performance metrics
- Recommends optimized storage allocation
- Monitors and tunes storage
- Includes Integrated Device Management



Creating volumes with TotalStorage Productivity Center

Storage Administrators can provision storage directly from TotalStorage Productivity Center

- ▶ Assign host ports
- ▶ Assign volumes to subsystem ports
- ▶ Create/assign fabric zone
- ▶ Define RAID level
- ▶ Create/delete volumes

The screenshot shows the 'Volumes' tab in the TotalStorage Productivity Center. At the top, there are buttons for 'Create', 'Assign Host Ports', and 'Delete'. Below these, a message states: 'A volume job is in progress. To view the job status, click Monitoring --> Jobs.' The 'Volume view:' section has two radio buttons: 'Filter by extent pool' (selected) and 'Filter by host port'. The 'Filter by extent pool' dropdown is set to '2107.1301901-vs0'. Below this, a table titled 'Volumes (2107.1301901):' displays a list of storage volumes.

Volume	Subsystem	Subsystem Name	LCU	Type	Size	Unit
Camera_1809	DS8000-2107-1301901-IBM	2107.1301901	24	FB	5 GB	
Camera_180A	DS8000-2107-1301901-IBM	2107.1301901	24	FB	5 GB	
Camera_180B	DS8000-2107-1301901-IBM	2107.1301901	24	FB	5 GB	
Cuda_3606	DS8000-2107-1301901-IBM	2107.1301901	54	FB	5 GB	
Cuda_3607	DS8000-2107-1301901-IBM	2107.1301901	54	FB	5 GB	
Cuda_3608	DS8000-2107-1301901-IBM	2107.1301901	54	FB	5 GB	
FSVT_1000	DS8000-2107-1301901-IBM	2107.1301901	16	FB	5 GB	
FSVT_1001	DS8000-2107-1301901-IBM	2107.1301901	16	FB	5 GB	
FSVT_1002	DS8000-2107-1301901-IBM	2107.1301901	16	FB	5 GB	
FSVT_1003	DS8000-2107-1301901-IBM	2107.1301901	16	FB	5 GB	
FSVT_1004	DS8000-2107-1301901-IBM	2107.1301901	16	FB	5 GB	
FSVT_1005	DS8000-2107-1301901-IBM	2107.1301901	16	FB	5 GB	
FSVT_1006	DS8000-2107-1301901-IBM	2107.1301901	16	FB	5 GB	
FSVT_1007	DS8000-2107-1301901-IBM	2107.1301901	16	FB	5 GB	

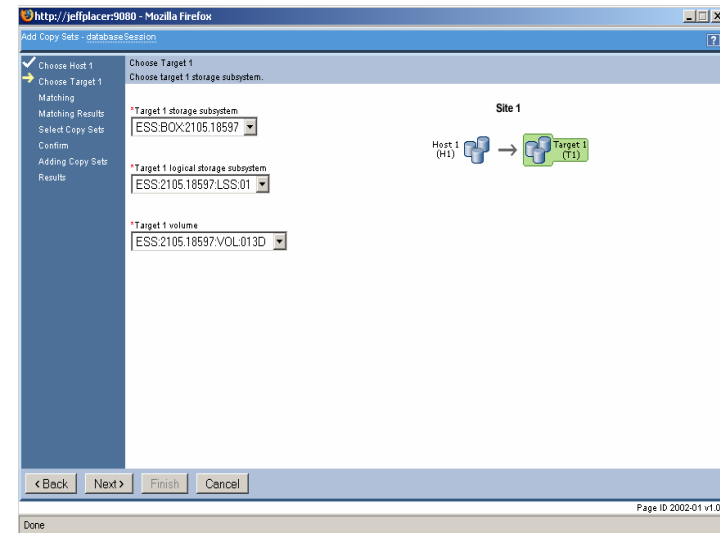
TotalStorage Productivity Center for Replication

■ Coordinates Copy Services

- ▶ FlashCopy
- ▶ Metro Mirror
- ▶ Global Mirror for DS6K / DS8K / ESS
 - Including consistency groups
- ▶ Metro Global Mirror for DS8000
- ▶ z/OS based version

■ Simpler to Use

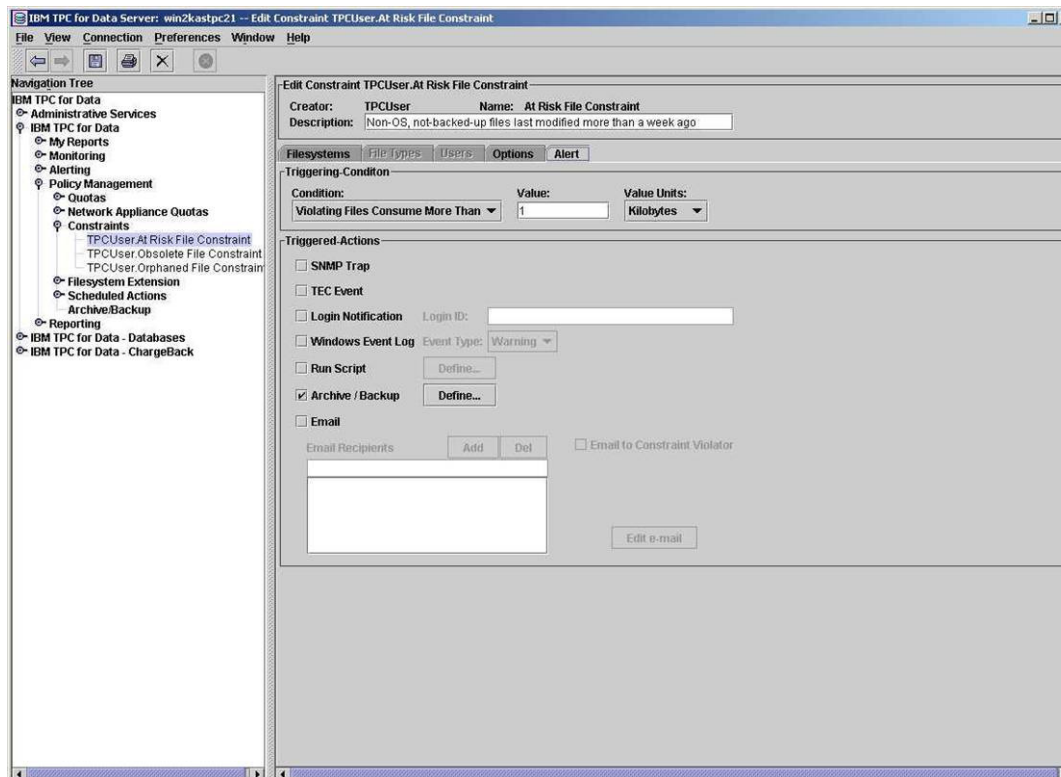
- ▶ Single control point
- ▶ GUI, CLI and near real-time monitor for Copy Services
- ▶ Source and target volume matching
- ▶ SNMP alerts



■ Disaster Recovery Manager

- Site Awareness
- Stand-by server option
- Disaster Recovery Testing
- Complementary with GDPS

TPC for Data : Direct Tivoli Storage Manager integration

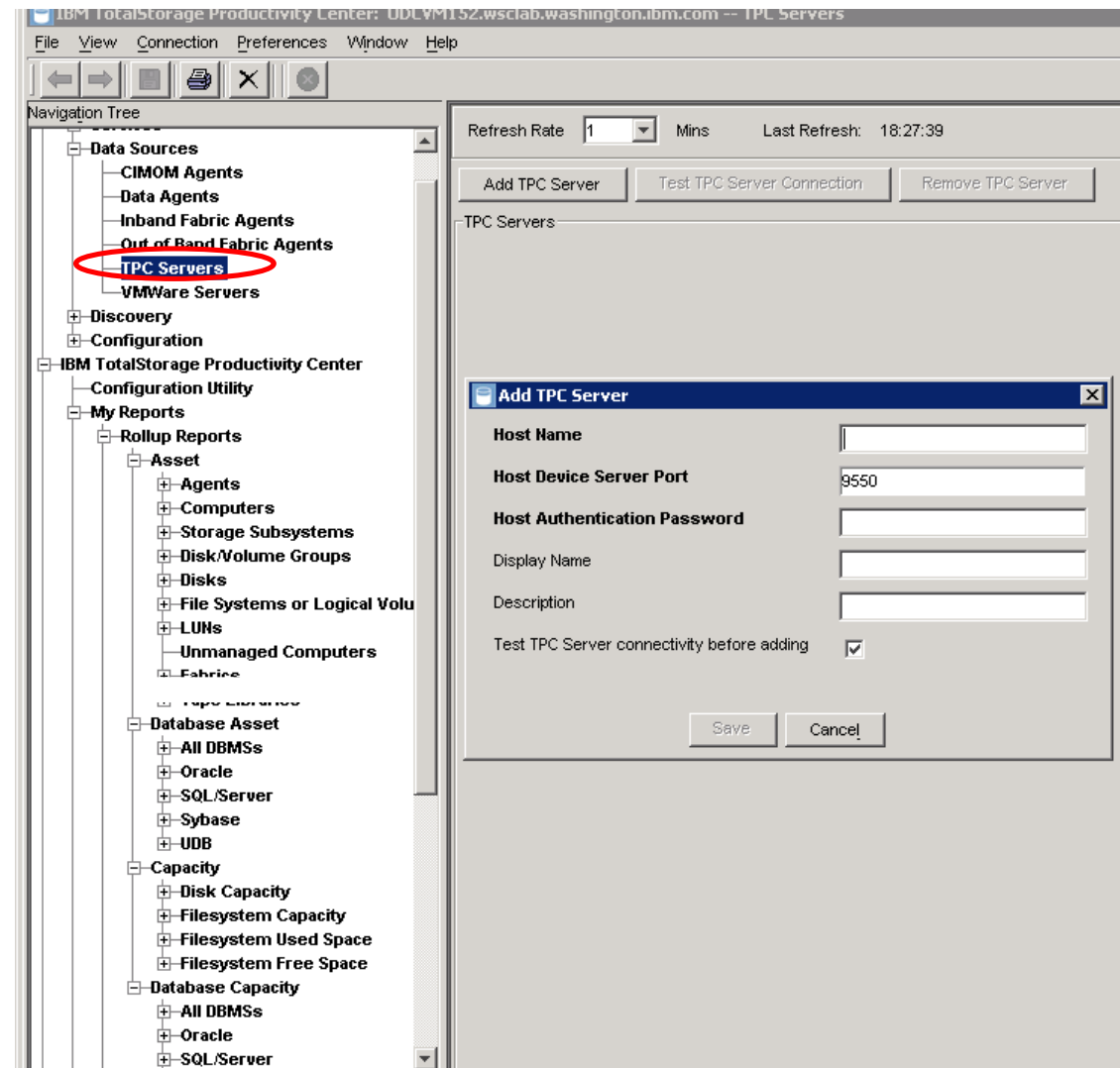


- Easily set policies to back up or archive key files using Tivoli Storage Manager
- Initiate a Tivoli Storage Manager backup or archive directly from a file report
- **Customer benefits**
 - ▶ Enhanced storage personnel productivity
 - ▶ Improved ability to handle data retention policies
 - ▶ Better execution on data protection requirements

TPC V3.3 Enhancements

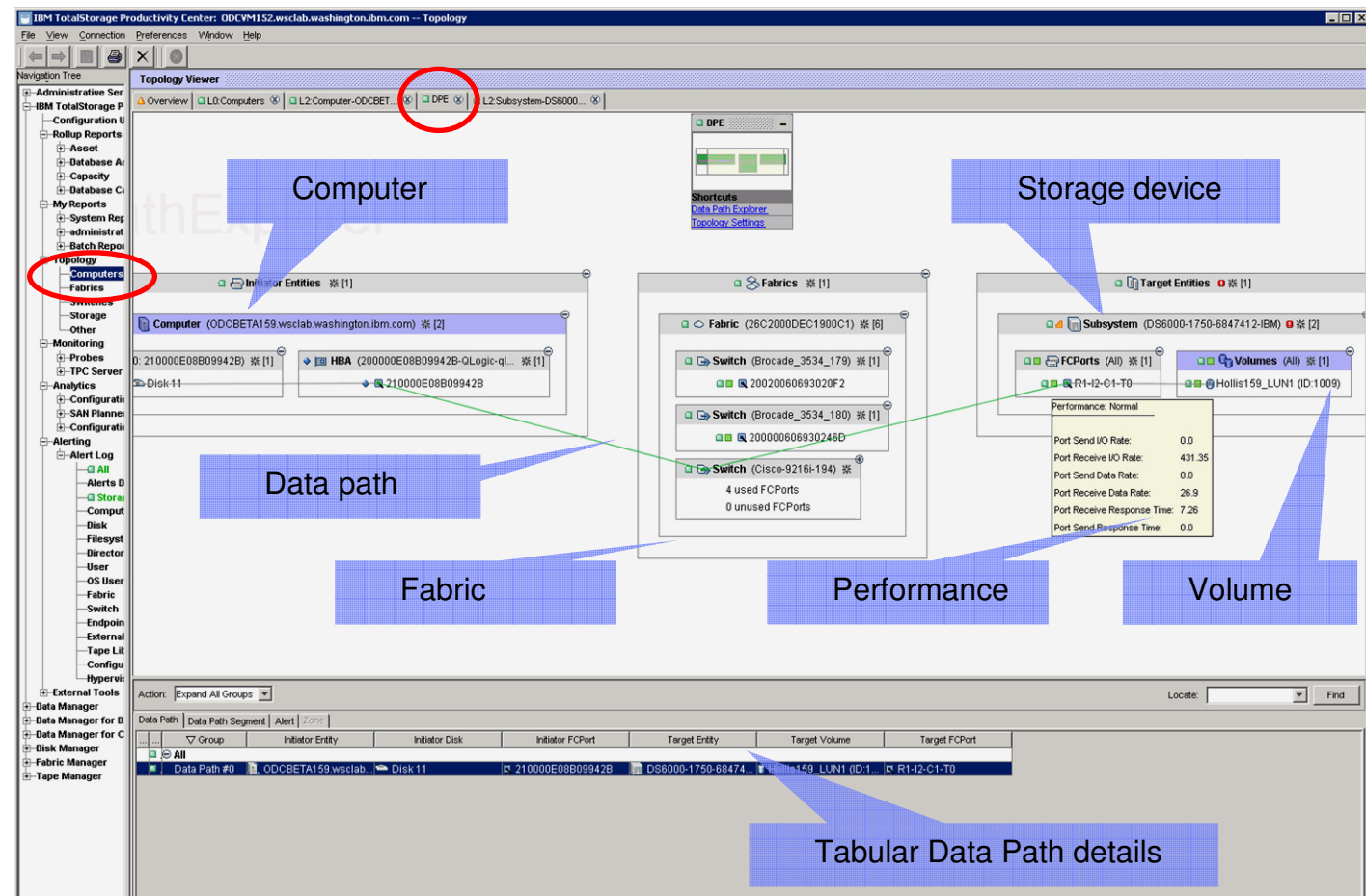
Enterprise Roll-up Reports

- **Single TPC server**
can now consolidate asset and health information collected from multiple TPC instances
- **Scalable Roll-up reports**
from all subordinate TPC servers include:
 - ▶ **Asset Reports**
 - ▶ **Database Asset Reports**
 - ▶ **Capacity Reports**
 - ▶ **Database Capacity Reports**
- **Policy-based alerting**
is also available across all subordinate TPC servers
- **Centralizes operations**
throughout your enterprise with scalable asset & capacity reports from multiple sites



Performance Impact Analysis Reports

- **Quickly assess the performance status of your storage infrastructure**
- **End-to-end view of the entire storage path (including SVC)**
- **Reduces time to problem source identification**
- **Enables improved system availability**



Performance Impact Analysis Reportsh

■ Detailed Screen Review

The screenshot displays the Performance Impact Analysis Reportsh interface. Key components and their functions are highlighted with callouts:

- DPE (Data Path Explorer):** A panel on the left showing shortcuts for [Data Path Explorer](#) and [Topology Settings](#).
- Configure Topology viewer:** A callout pointing to the [Topology Settings](#) link in the DPE panel.
- Display resources associated with this data path:** A callout pointing to the DPE panel itself.
- Health icon displays aggregated health status of this resource and its subordinate objects:** A callout pointing to a green health icon next to a resource.
- This icon shows if port is connected:** A callout pointing to a green port icon.
- Performance Health icon visually shows if any performance alerts have been triggered, most recent performance metrics are also displayed real-time:** A callout pointing to a yellow performance health icon.

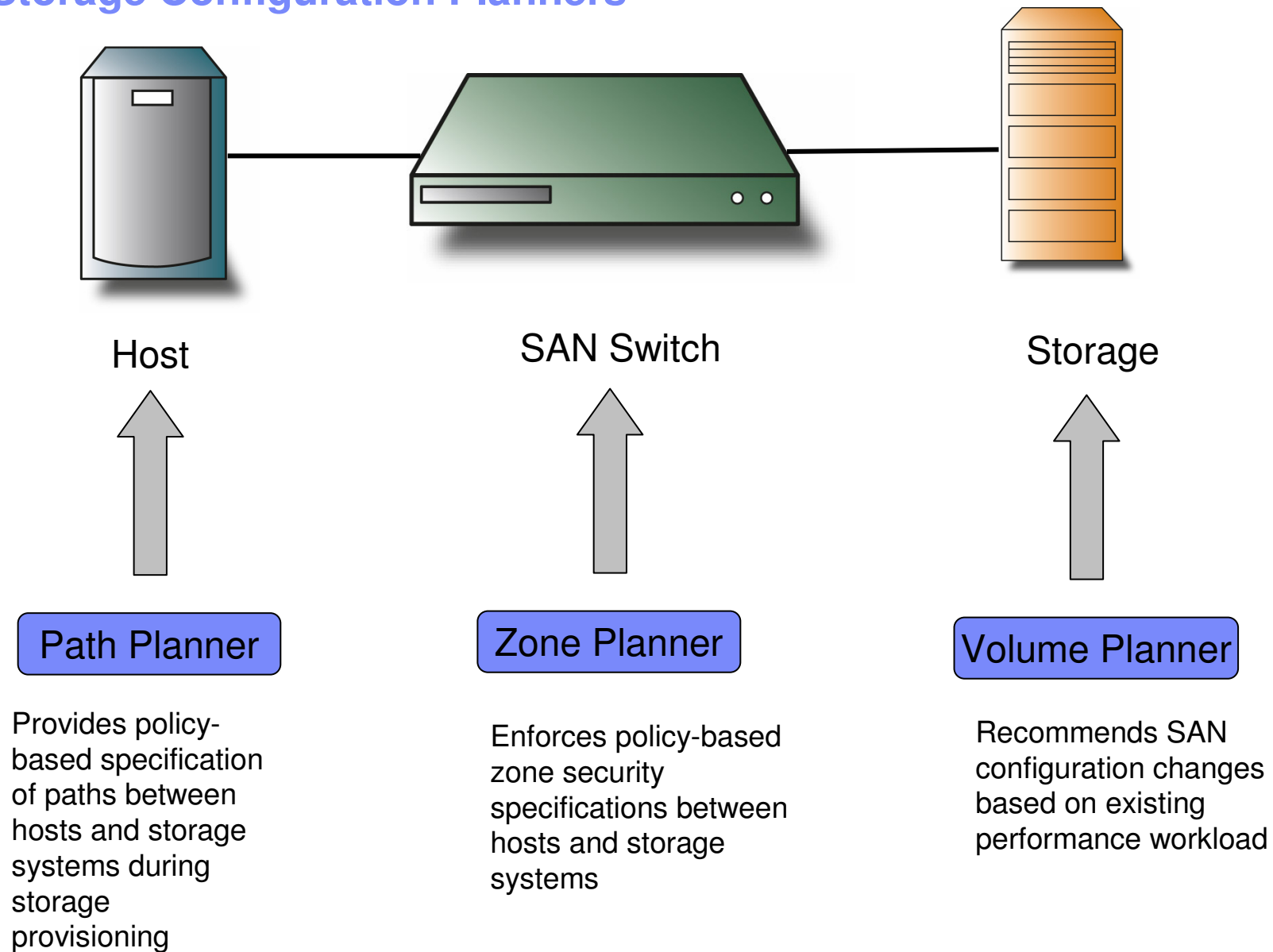
The main view shows a hierarchy of resources:

- Fabrics:** A container for fabric resources.
- Fabric (26C2000DEC1900C1):** A specific fabric resource containing multiple switches.
- Switches:** Individual switch resources, including Brocade and Cisco switches.
- Subsystem (DS6000-1750-6847412-):** A subsystem resource containing FCPorts.
- FCPorts (All):** A container for all FC ports, including R1-I2-C1-T0.
- Volume (Hollis159):** A volume resource.

The Performance Health icon for the FCPort R1-I2-C1-T0 displays the following real-time metrics:

Performance: Normal	
Port Send I/O Rate:	0.0
Port Receive I/O Rate:	431.35
Port Send Data Rate:	0.0
Port Receive Data Rate:	26.9
Port Receive Response Time:	7.26
Port Send Response Time:	0.0

Storage Configuration Planners



New SAN Configuration Planners

Analytics

Intelligent planning and implementation guidance

based on best practices policies with new planning wizards

1. **Volume Planner** recommends SAN configuration changes based on existing performance workload
2. **Path Planner** provides policy-based specification of paths between hosts and storage systems during storage provisioning
3. **Zone Planner** enforces policy-based zone security specifications between hosts and storage systems.

☒ **Volume Planner** Specify how the storage will be allocated and its performance characteristics

Total Capacity: GB
☒ Divide capacity between and volumes
☐ Divide capacity among volumes of size GB to GB
 Performance Profile:
 RAID Level:
 Volume Name Prefix:
☐ Use existing unassigned volumes (if available)

☒ **Path Planner** Setup multipath options (if supported by the host drivers)

Multipath Option:
☐ Specify number of paths:
☐ Use fully redundant paths (requires 2 fabrics)

☒ **Zone Planner** Automatically change the zoning to ensure hosts can see the new storage

Automatically create zone...
☐ Specify maximum number zones:
☐ Specify maximum zone members per zone:
☐ No two HBA with different vendors should be in the same zone
☐ No two controllers with different types should be in the same zone
☐ Use active zone set

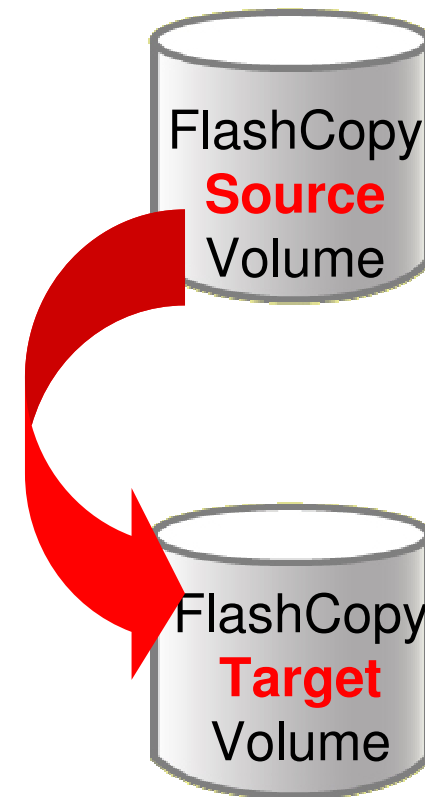
FlashCopy Target Volume Reports

Enhanced Reporting

Requires SE

New Reports identify FlashCopy target volumes and their associated capacity

- ▶ **Allows administrators to:**
 - Quickly identify & monitor the size and content of the FlashCopy target volume.
 - Protect the volumes' storage space by removing it from the reported usable capacity
- ▶ Helps prevent operations errors (data overlays) caused by administrator executing a FlashCopy event targeted at a volume that might already contain valuable data.



Configuration Change Analytics & Auditing

Best Practices

Requires SE

- **New configuration management feature allows IT administrators to track, audit, compare and contrast** multiple SAN configurations
- **Automatic detection** or manual detection of changes can be accomplished based on user policies
- **At-a-glance views** of all topology information is available with pop-outs providing detailed change information
- **Allows quicker time to problem isolation** by contrasting the difference between old & new configurations
- **Helps minimize potential outage impacts** from configuration changes

Configuration History

Navigation Tree:

- Administrative Services
- IBM TotalStorage Productivity
 - Configuration Utility
 - Rollup Reports
 - My Reports
 - Topology
 - Monitoring
 - Analytics
 - Configuration History**
 - Computers
 - Fabrics
 - Switches
 - Storage
 - Other
 - SAN Planner
 - Configuration Analysis
 - Alerting
 - External Tools
- Data Manager
 - Data Manager for Databases
 - Data Manager for Chargeback
 - Disk Manager
 - Fabric Manager
 - Tape Manager

Configuration History (Cisco-9216i-194)

Overview: L0: Computers, L2: Computer-ODCBET..., L1: Switches-26C200...

Computers (All) [6]

200000E..., 200000E..., 200000E..., 200000E..., 200100E..., ODCBET...

Switches (All) [5]

5 Switches

Subsystems (All) [4]

0200612..., 6848562, DS6000..., SVC-214...

Change summary

Action: Open Detail View

Computer	Switch	Subsystem	Tape Library	Other/Unknown	Conn
All	All	020061200716XX01			
All	All	6848562			
All	All	DS6000-1750-68474			
All	All	SVC-2145-Gburg1N			

Change Summary:

Type	Serial#	Allocat
Storage Subsystem -> Removed		
Model	2145 -> Removed	
Health	Unknown -> Removed	
Element Manager	http://9.82.39.192:9080 -> Removed	
Label	020061200716XX01 -> Removed	
Serial#	020061200716XX01 -> Removed	

Configuration History (Time Range: 01/03/2007 to 01/04/2007)

Snapshots in Range (10):

- 01/03/2007 14:13 (438 Changes)
- 01/04/2007 10:47 (14 Changes) #
- Current Environment (0 Changes)

Displaying Now: From: 01/04/2007 10:47 (14 Changes) # To: Current Environment (0 Changes)

New Configuration Analysis

Best Practices & Security

Requires SE

- **New monitoring & notification** features that provide configuration validation based on best-practices policies
- **Automated Analysis** or manual analysis can be applied to all fabrics, a single fabric, or a single zoneset
- **Easy identification:** Policy violators are flagged and displayed in the topology viewer
- **Real-time Security events** notify IT administrator of zone security violations
- **Multiple methods for dynamic alerting:** SNMP traps, tech events, emails

Navigation Tree

- Administrative Services
 - IBM TotalStorage Productivity Center
 - Configuration Utility
 - Rollup Reports
 - My Reports
 - Topology
 - Monitoring
 - Analytics
 - Configuration History
 - SAN Planner
 - Configuration Analysis**
 - administrator.Test 1**
 - Alerting
 - Alert Log
 - External Tools
 - Data Manager
 - Data Manager for Databases
 - Data Manager for Chargeback
 - Disk Manager
 - Fabric Manager
 - Tape Manager

Edit Analyzer administrator.Test 1

Creator: administrator Name: Test 1

Description: Test 1

Configuration Analysis

Scope: All Fabrics

Depending on selected scope, some policies do not apply and are grayed out. These policies will be ignored by the configuration c

☐ Select All/Unselect All

- ☒ 1. Each active and connected computer and storage subsystem port must be in at least on
- ☒ 2. Each HBA accesses storage subsystem ports or tape ports, but not both.
- ☒ 3. Each volume is accessed only by computers running the same type and version of opera
- ☒ 4. Each zone contains only HBAs from a single vendor.
- ☒ 5. Each zone contains only a single model of storage subsystem.
- ☒ 6. Each zone is part of a zone set.
- ☐ 7. Each host must be zoned so that it can access all of its assigned volumes.
- ☒ 8. Each computer has only HBAs of the same model and firmware version.
- ☒ 9. For each host type and operating system, every HBA of a given model must have the sa
- ☒ 10. Every SAN switch of a given model must have the same firmware version.
- ☒ 11. Every storage subsystem of a given model must have the same firmware version.
- ☒ 12. Each fabric may have a maximum of x zones.
The maximum number of zones that can be present in a fabric. 9
- ☒ 13. Each zone may have a maximum of x zone members.
The maximum number of zone members that can be present in a zone. 20



IBM System Storage Productivity Center (SSPC)

What is System Storage Productivity Center (SSPC)?

SSPC is a new console offering **integrated** view for simplified storage management

Centralized server reduces the need to install, manage and administer multiple servers

Ease of deployment by shipping pre-loaded

TPC Basic Edition provides **incremental value**

- basic asset & capacity reporting
- contextual, topology viewer

Migration path for a complete storage mgmt. suite

- Disk performance reporting & trend analysis
- SAN management
- Storage resource management (SRM)
- Replication management

Administrator points browser at SSPC for enterprise storage management AND device configuration.

Pre-loaded Software:

IBM TPC Basic Edition

SVC Admin Console

DS8000 Storage Manager linkage

DS3000, DS4000 Storage Manager

TS3500 Tape Specialist linkage



IBM SSPC

Pre-loaded Upsell Software:

IBM TPC Standard Edition

IBM TPC for Replication



IBM DS8000

IBM SVC

IBM
DS3000
DS4000

IBM
TS3500
TS3310

SSPC Hardware Details

Based on the IBM System x3550 Server

- ▶ 1U High
- ▶ Contains 1 Intel Xeon Quad-Core processor running at 1.6GHz
- ▶ Contains 4 GB of Memory
- ▶ Contains two 146GB 15K SAS drives in a RAID 1 configuration (C:\)

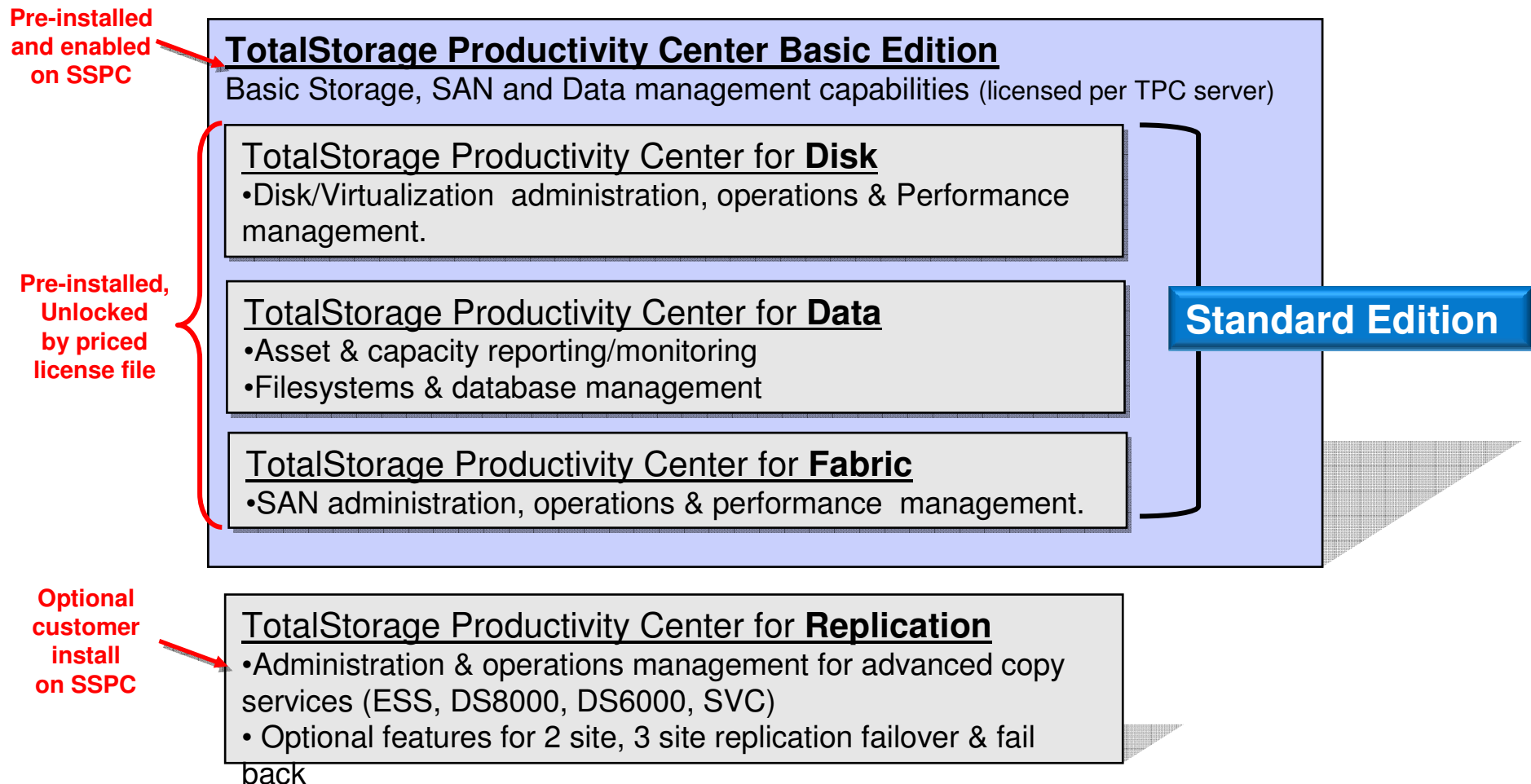
Hardware Options

- ▶ Display, Keyboard, & Mouse (1U high)
- ▶ Performance Upgrade (adds 1 more processor & 4GB of memory)
- ▶ Country Specific Power Cords

SSPC Value

- SSPC centralizes disk element management (DS8000 & SVC) to one server and removes the need to install management/administration code on separate servers.
- SSPC provides a simple entry point to introduce storage management software (TPC) that is initially targeted at disk asset & capacity reporting with a topology viewer.
- The TPC for Disk product can be added to enable performance management of disk, if desired.
- TPC is designed with scalability in mind and can grow beyond TPC for Disk to become an encompassing solution when the management of Fabric and Data is added.
- It offers a simple migration path and a proven hardware platform for adding higher value storage management applications like full Performance Management (TPC-SE) and Replication Management (TPC-R).

IBM SSPC & TotalStorage Productivity Center Versions



Features Comparision

Function	DS Storage Manager	SVC Admin Console	TPC Basic Edition	TPC Standard Edition
Storage Infrastructure Configuration/Status Reporting				
Device Discovery/Configuration	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Manage multiple DS8000s / SVCs from 1 User Interface	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Topology Viewer and Storage Health Management			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Provisioning, including Fabric zoning and Disk LUN assignment			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Configuration Management – Highlight configuration changes over time periods, Best Practice recommendations, Storage configuration planning and recommendations, Security planner				<input checked="" type="checkbox"/>
Storage Reporting				
Basic Asset & Capacity Reporting			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Storage reporting on the relationships of computers, file systems and DS8000 LUNs/volumes				<input checked="" type="checkbox"/>
Capacity Analysis/Predictive Growth				<input checked="" type="checkbox"/>
Customized and Detailed Capacity Reporting – including				<input checked="" type="checkbox"/>
Chargeback and Database Reporting				
Performance Management				
Performance Reporting/Thresholds				<input checked="" type="checkbox"/>
Volume Performance Advisor – Recommend DS8000 configuration based on performance workloads				<input checked="" type="checkbox"/>
Fabric performance reporting and monitor				<input checked="" type="checkbox"/>

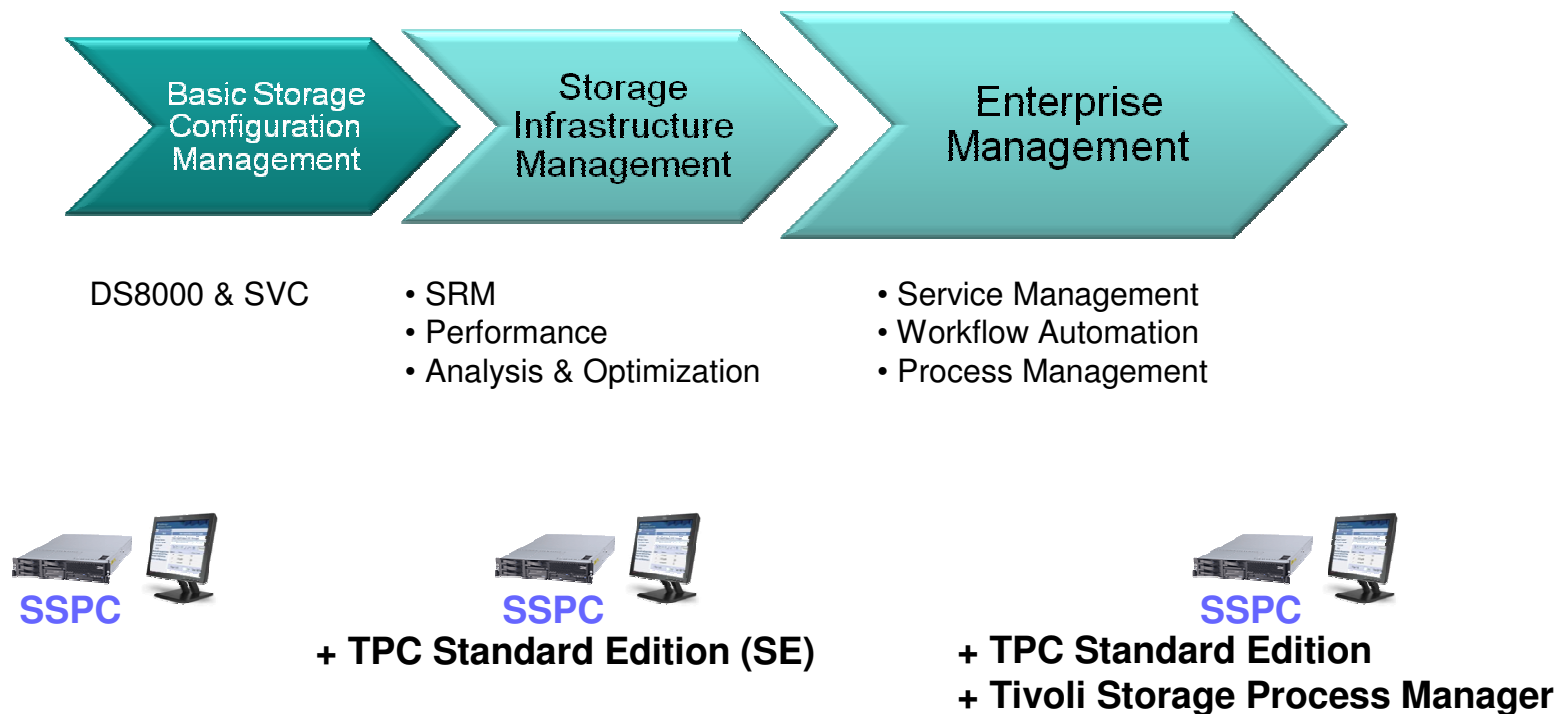
TPC Basic Edition (BE), BE w/TPC for Disk, and Standard Edition Functionality

Function	Basic Edition	Basic Edition with TPC for Disk	Standard Edition *
Storage Infrastructure Configuration/Status Reporting			
Device Discovery/Configuration	X	X	X
Topology Viewer and Storage Health Management	X	X	X
Launch of Device Element Managers	X	X	X
Storage Reporting			
Basic Asset & Capacity Reporting	X	X	X
Capacity Analysis/Predictive Growth		X	X
Customized and Detailed Capacity Reporting – including Chargeback and Database Reporting			X
Performance Management			
Performance Reporting on IBM and SMI-S storage arrays		X	X
Threshold Reporting on IBM and SMI-S storage arrays		X	X
Fabric performance reporting and monitor			X
SAN Volume Controller Performance Management		X	X
Full Provisioning (including Fabric zoning and Disk LUN assignment)		Disk LUN only	X

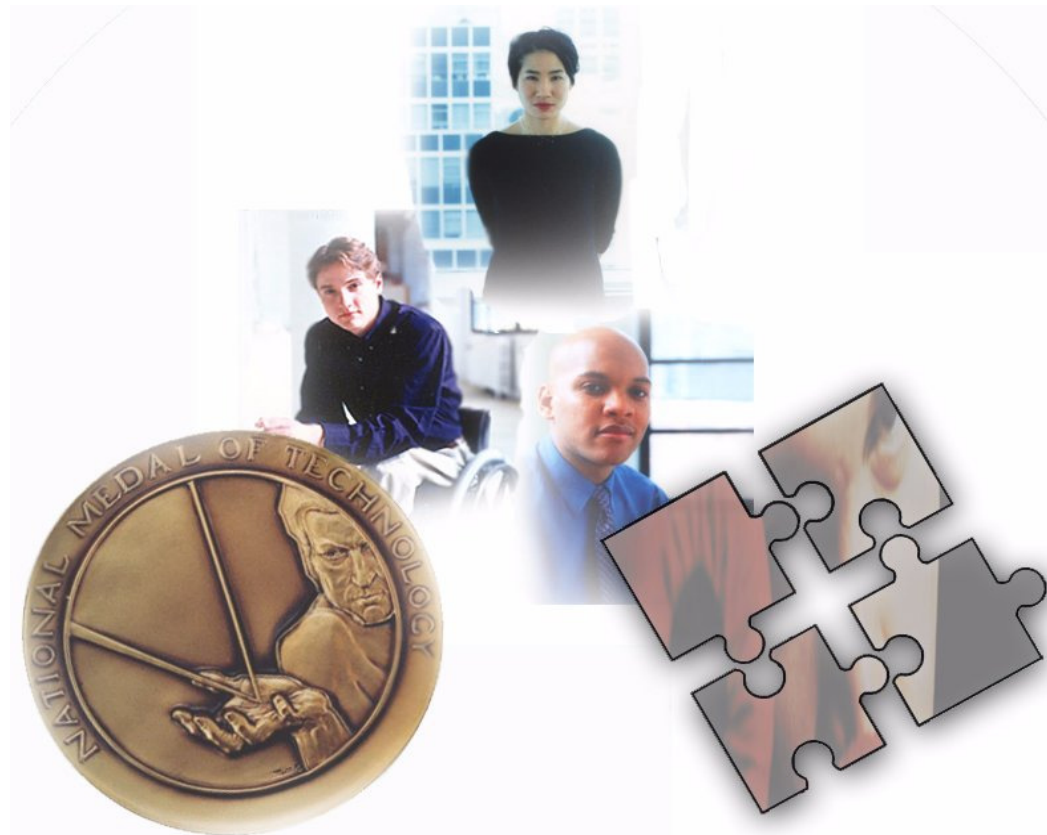
* TPC for Data functions are not reflected in this table

SSPC Progression

Easy upgrade path to advanced management



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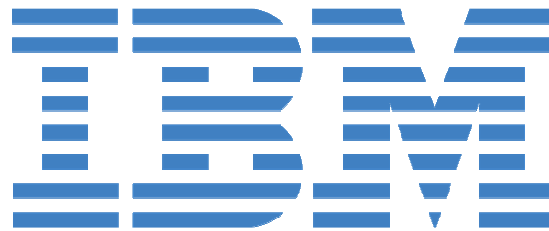
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BACKUP SLIDES

Standards used with TPC

- **CIMOM SMI-S**
 - ▶ **Disk Subsystems > Assets, Volume Mgmt, Performance**
 - ▶ **Tape Libraries > Assets**
 - ▶ **SAN Switches > Performance**
- **ANSI - GS3**
 - ▶ **Fabric Topology Inband (Fabric Agent)**
 - ▶ **Fabric/Switch Notification Inband (Fabric Agent)**
 - ▶ **SAN Switch Zoning (excl. Brocade)**
- **SNMP – FC MIB**
 - ▶ **Fabric Topology out-of-band (IP)**
 - ▶ **Fabric/Switch Notification out-of-band**
 - ▶ **SAN Switch Zoning for Brocade (API)**

SMI-S – What is it?

- **Storage Management Initiative – Specification**
 - ▶ **Managed by the Storage Networking Industry Association**
 - ▶ **Provides an industry-standard interface for the discovery, monitoring and management of storage devices**
 - **Includes Tape, Storage Systems, fabric components, anything that can be attached to a SAN**
- **SNIA provides a certification test for devices that claim support for the standard**
 - ▶ **Device manufacturers submit their agents to be certified**
 - ▶ **Management application developers submit their applications to be certified**
 - ▶ **If a certified application discovers a certified agent – they can talk to each other**

Aperi History

- **October 2005 – Ten initial members announce formation of Aperi project**
- **January 2006 - IBM internal code contribution work started**
- **June 2006 - Novell joins Aperi; community submits project proposal to host project at Eclipse Foundation**
- **August 2006 - Eclipse announces formal approval of the Aperi Storage Management Framework Project**
- **August 2006 - Aperi release 0.1 code passes SNIA conformance testing (CTP)**
- **October 2006 – Aperi release 0.1 code passes Eclipse's rigorous intellectual property review**
- **November 2006 - Aperi code made available for public download**
- **December 2006 – Aperi release 0.2 code made extensible using Eclipse plugins and OSGi services**

Standard Tape Support

TotalStorage Productivity Center **Tape** Management

- **Discovery, monitoring, asset and capacity reporting**
- **Interception of tape-related indications (converted SNMP traps)**
 - ▶ Are added to TPC Alert Log
 - ▶ Status of discovered tape resources updated upon reception
- **Launching of Element Manager (Specialist)**
- **All the above functions are based on SMI-S 1.1**
- **Topology Viewer integration (new in TPC 3.1)**
 - ▶ Graphical display of network topology, including host connections
 - ▶ Allows quick health-check and drill-down capabilities
- **Supported libraries in 3.1:**
 - ▶ IBM 3584: fully supported, including indications
 - ▶ IBM 3494: partial support only (discovery and launch Specialist)

Screenshots of Tape in TPC 3.1 GUI

The screenshot shows the IBM TotalStorage Productivity Center: PC -- Tape Libraries window. The window has a menu bar (File, View, Connection, Preferences, Window, Help) and a toolbar. The left pane shows the Navigation Tree with the following structure:

- Administrative Services
- TotalStorage Productivity Center
 - My Reports
 - System Reports
 - bolik's Reports
 - Batch Reports
 - Topology
 - Fabrics
 - Computers
 - Storage
 - Other
 - Monitoring
 - Probes
 - Alerting
 - Alert Log
 - Data Manager
 - Data Manager for Databases
 - Data Manager for Chargeback
 - Disk Manager
 - Fabric Manager
 - Tape Manager
 - Tape Libraries**
 - Monitoring

The main area is titled "Tape Libraries" and contains several buttons: Launch Element Manager, Media Changers, Drives, I/O Ports, Cartridges, and Remove. Below these buttons is a table titled "Tape Libraries" with the following data:

	Tape Library	Manually Entered Name	Status	Drives	Cartridges	Max. Cartridges
	Tape-3584-7819011-IBM		Normal	12	40	0
	Tape-3584-1310015-IBM		Normal	0	0	0
	Tape-3584-1340014-IBM		Normal	0	0	0

Tapes: What is reported in Productivity Center

Component	What is
Library	Status, # drives, # changers, # cartridges, # slots, model, vendor, description, owner, contact, firmware version, element manager, lock present, locked state, security breach state
Drive	Status, needs cleaning, # mounts, WWNN/WWPN, firmware version, location
Changer	Status, media-flip supported, WWNN/WWPN, firmware version <i>Note for 3584 these really are the logical partitions, not physical accessors</i>
I/O Port	Extended state, location
Cartridge	Label, capacity, type, whether cleaner media, whether dual-sided, location, media description

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Drives Panel

IBM TotalStorage Productivity Center: PC -- Drives

File View Connection Preferences Window Help

Navigation Tree

- Admin
- TotalStorage
 - My
 - +
 - +
 - +
 - To
 - +
 - +
 - +
 - +
 - +
 - +
 - Mo
 - +
 - Ale
 - +
 - Data M
 - +
 - +
 - +
 - +
 - Fabric
 - +
 - Tape M
 - +

Drives

Drives Tape-3584-7819011-IBM

Drive	Status	Needs Cleaning ?	Mounts	WWPN	Firmware	Location
9.155.70.24:50 05 07 63 0F 03 62 0C	Normal	No	160	500507630F03620C	52E0	Drive located at Frame: 1, Row: 12
9.155.70.24:50 05 07 63 0F 03 62 08	Normal	No	154	500507630F036208	47Q0	Drive located at Frame: 1, Row: 7
9.155.70.24:50 05 07 63 0F 03 62 06	Normal	No	168	500507630F036206	47Q0	Drive located at Frame: 1, Row: 6
9.155.70.24:50 05 07 63 0F 03 62 05	Normal	No	157	500507630F036205	47Q0	Drive located at Frame: 1, Row: 5
9.155.70.24:50 05 07 63 0F 03 62 03	Normal	No	2789	500507630F036203	47Q0	Drive located at Frame: 1, Row: 3
9.155.70.24:50 05 07 63 0F 03 62 0A	Normal	No	150	500507630F03620A	52E0	Drive located at Frame: 1, Row: 10
9.155.70.24:50 05 07 63 0F 03 62 0B	Normal	No	162	500507630F03620B	52E0	Drive located at Frame: 1, Row: 11
9.155.70.24:50 05 07 63 0F 03 62 01	Normal	No	1516	500507630F036201	47Q0	Drive located at Frame: 1, Row: 1
9.155.70.24:50 05 07 63 0F 03 62 07	Normal	No	162	500507630F036207	47Q0	Drive located at Frame: 1, Row: 7
9.155.70.24:50 05 07 63 0F 03 62 02	Normal	No	1481	500507630F036202	47Q0	Drive located at Frame: 1, Row: 2
9.155.70.24:50 05 07 63 0F 03 62 09	Normal	No	153	500507630F036209	52E0	Drive located at Frame: 1, Row: 9
9.155.70.24:50 05 07 63 0F 03 62 04	Normal	No	2774	500507630F036204	47Q0	Drive located at Frame: 1, Row: 4

Panels for Media Changers, I/O Ports, and Cartridges are similar to this one

Integration with Tivoli Provisioning Manager

TPC 3.1.2 Advanced Provisioning

- ▶ Automated **policy-based storage provisioning** using **Tivoli Provisioning Manager 3.1 + Fixpack 3**
- ▶ **Tivoli Provisioning Manager**
 - Executes “workflows” to automate provisioning best practices and processes
 - **“Workflows” capture IT expert knowledge and can efficiently execute procedurally correct actions in response to dynamically changing business requirements**
- ▶ **TPC Advanced Provisioning provides TPM-executable storage provisioning workflows**
 - Reusable as part of higher-level integration workflows in TPM (e.g. bare-metal server provisioning including storage provisioning)
 - One stop storage device support for TPM. Exploits TPC’s heterogeneous device management to provide a single solution for automated storage device configuration across all TPC-supported subsystems and switches.
 - Automated population of TPC discovered storage information in to TPM model of IT infrastructure

Highlights of TPC 3.1.2 workflows

Building-block storage provisioning actions

- **Storage provisioning**
 - ▶ Policy-based (template-based) LUN creation, mapping (and reverse actions)
- **Zoning**
 - ▶ Zone creation, adding members to zones (and reverse actions)
- **Common workflows across all TPC-supported subsystems and switches (device-agnostic)**
- **Can be integrated with ITSM Storage Process Manager to execute process-based provisioning tasks**

- **Workflows and examples will be available from OPAL**
- **Usage scenarios**
 - ▶ Automated provisioning of volumes and zone configuration
 - TPC for AP with minimal TPM deployment
 - ▶ End-to-end storage provisioning of volumes through to host file systems
 - TPC for AP with full TPM deployment and user provisioning workflows
 - ▶ Server and application provisioning with storage
 - TPC for AP with full TPM deployment and user provisioning workflows