



# Tivoli Storage Manager Operations Center

Colin Dawson  
Kristen Muramoto

May 2014

# Disclaimer

- IBM's statements regarding its plans, directions, and intent are subject to change or withdrawal without notice at IBM's sole discretion.
- Information regarding potential future products is intended to outline our general product direction and it should not be relied on in making a purchasing decision.
- The information mentioned regarding potential future products is not a commitment, promise, or legal obligation to deliver any material, code or functionality. Information about potential future products may not be incorporated into any contract.
- The development, release, and timing of any future features or functionality for our products remains at our sole discretion.



# Roadmap

## VISIBILITY

Status • Monitoring • Alerts

## CONTROL

Actions • Workflow • Configuration • Settings

## AUTOMATION

Complex Tasks • Wizards • Advisors

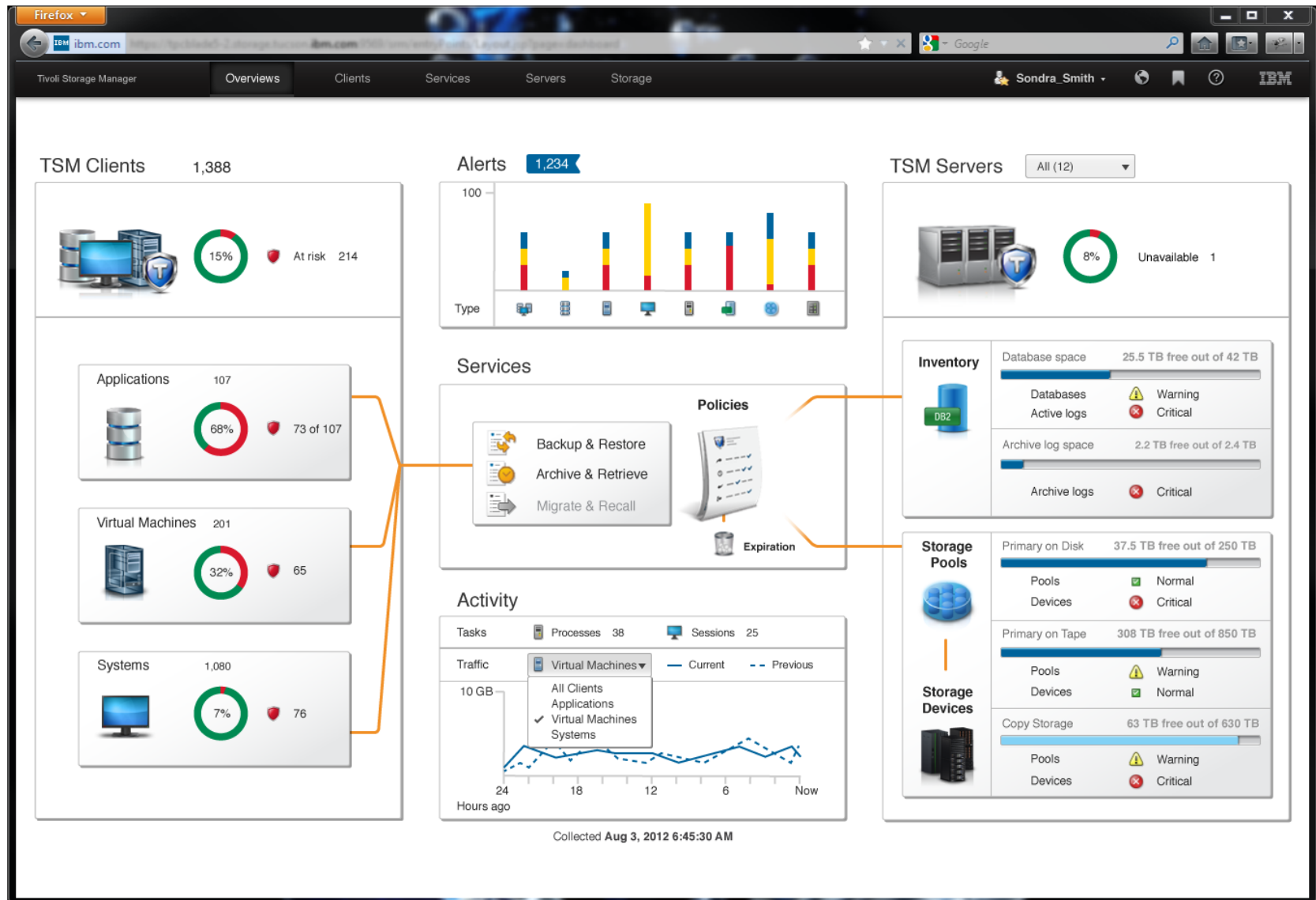
2013

2014

2015+



# Overview Dashboard

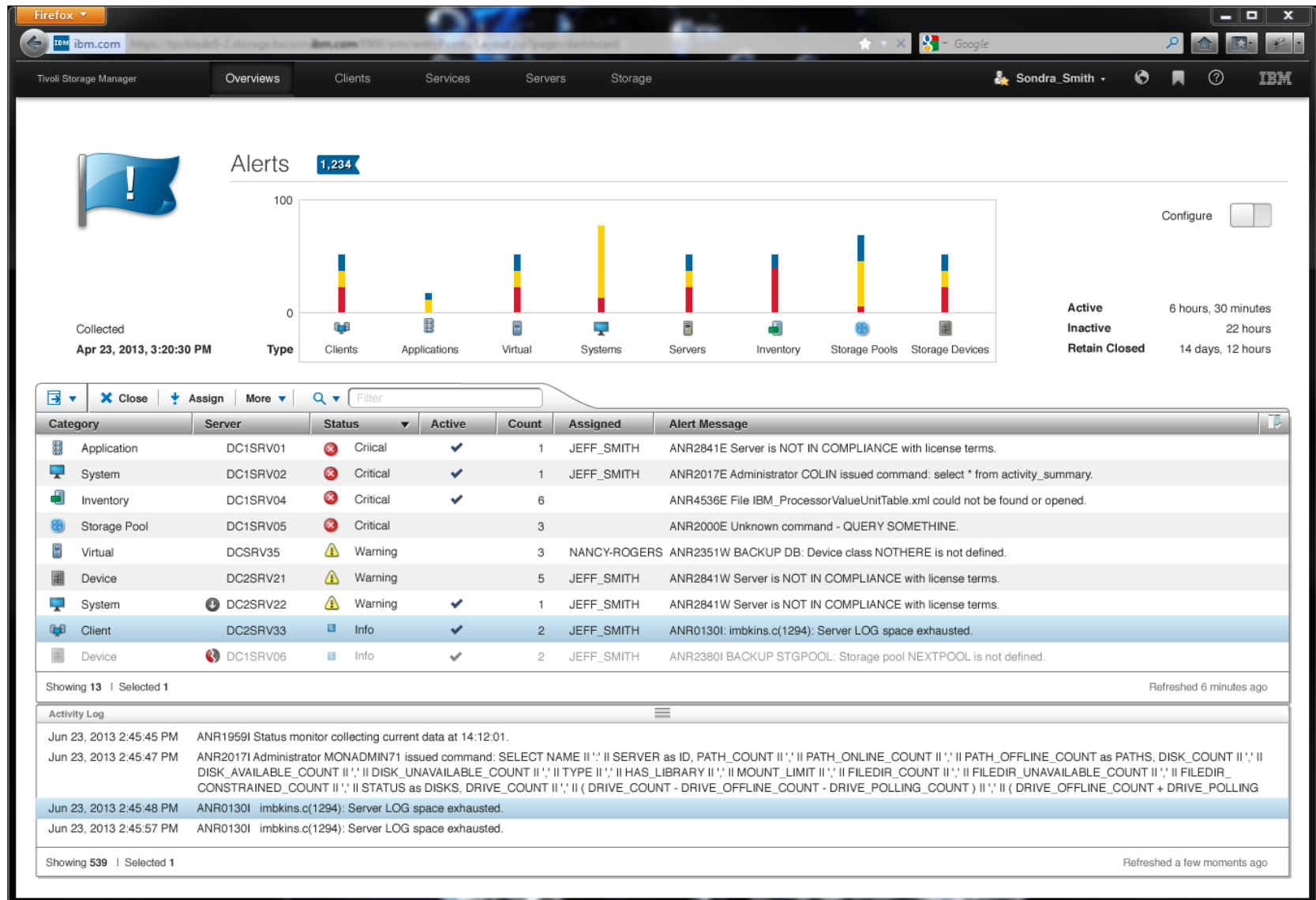


# Overview Dashboard

- “Morning cup of coffee”
- At-a-glance status across entire environment
- Visual flow of data
- At-risk clients
- Storage capacity
- Alerts
- Activity day-to-day comparison



# Alerts

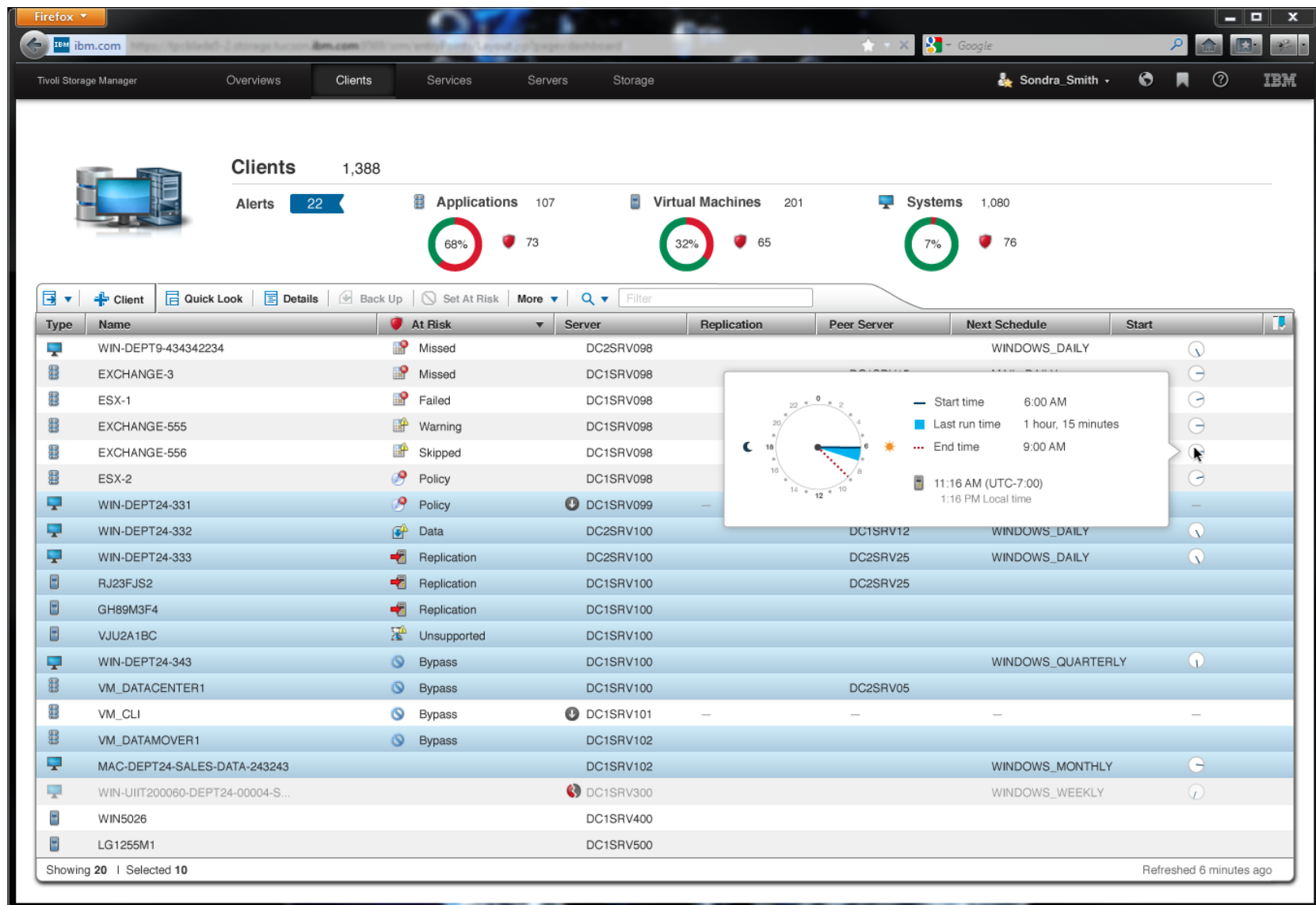


# Alerts

- Visual count across all servers by category
- Configurable retention settings
- Assign to administrators
- In-context activity log messages

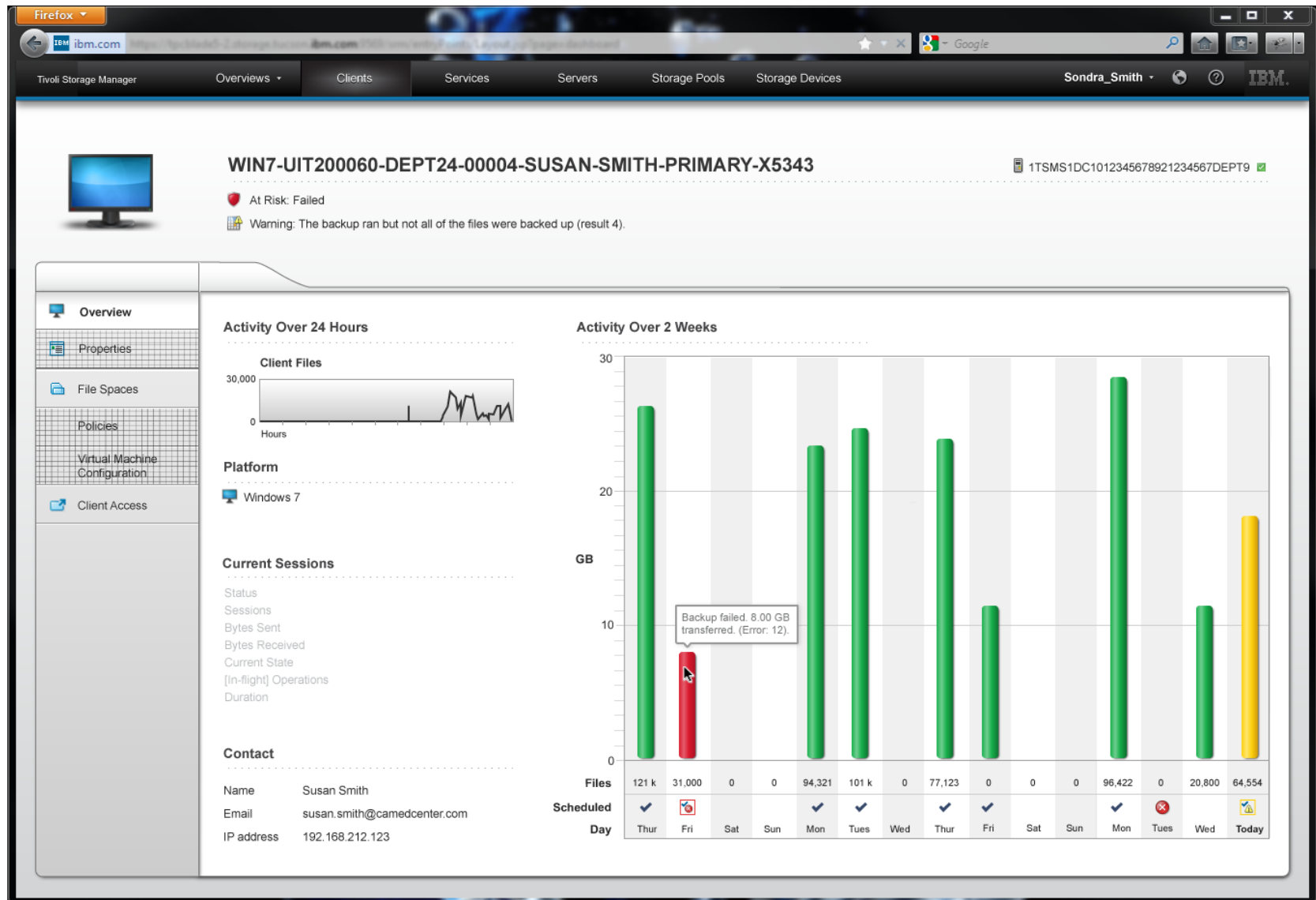


# Clients





# Client Details



# Clients

- View of all clients across hub and configured spoke servers
- At-risk: ie. missed schedule, out of policy, unsupported
- Custom at-risk configuration
- Visibility to virtual machines
- Manually redrive backups



# Services

The screenshot displays the IBM Tivoli Storage Manager 'Policies' page. The browser window shows the URL 'https://api.tsmc1-2.storage.ibm.com/ibm.com/1000/entry/entry...'. The page has a navigation bar with 'Services' selected. Below the navigation bar, there are three tabs: 'Backup & Restore', 'Archive & Retrieve', and 'Migrate & Recall'. The main content area features a table of policies. The table has columns for Policy Domain, Server, Clients, Mgmt Classes, Option Sets, Schedules, Default Mgmt Class, and three Destination columns. The 'UNIX\_SERVER' policy is highlighted in blue. At the bottom of the table, it says 'Showing 4 | Selected 1' and 'Refreshed 6 minutes ago'.

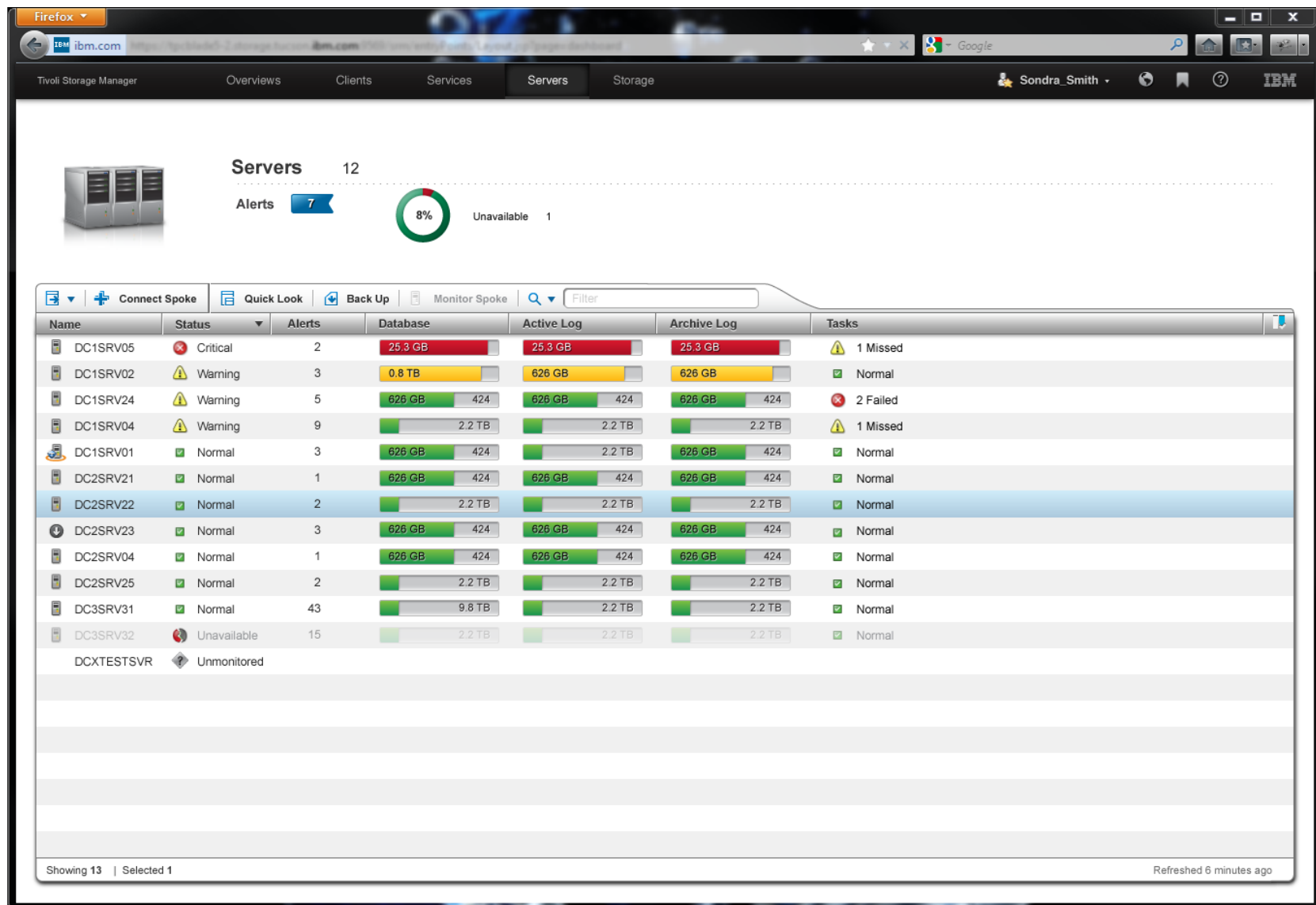
Policy Domain	Server	Clients	Mgmt Classes	Option Sets	Schedules	Default Mgmt Class	Destination	Destination	Destination
A_WKSTATION	DC1SRV01	131	4	2	2	3VER_30DAYS	FILE_POOL1	ARCH_POOL1	
PROD_DATABASE	DC1SRV05	49	2	0	0	10VER_90DAYS	FILE_POOL1	ARCH_POOL1	
TEST_DATABASE	DC1SRV01	10	0	0	0	STANDARD	VTI_POOL1		
UNIX_SERVER	DC1SRV02	422	12	3	4	14VER_45DAYS	VTI_POOL2		
UNIX_SERVER2	DC1SRV03	32	5	1	3	SILVER_30DAYS	VTI_POOL		

# Services

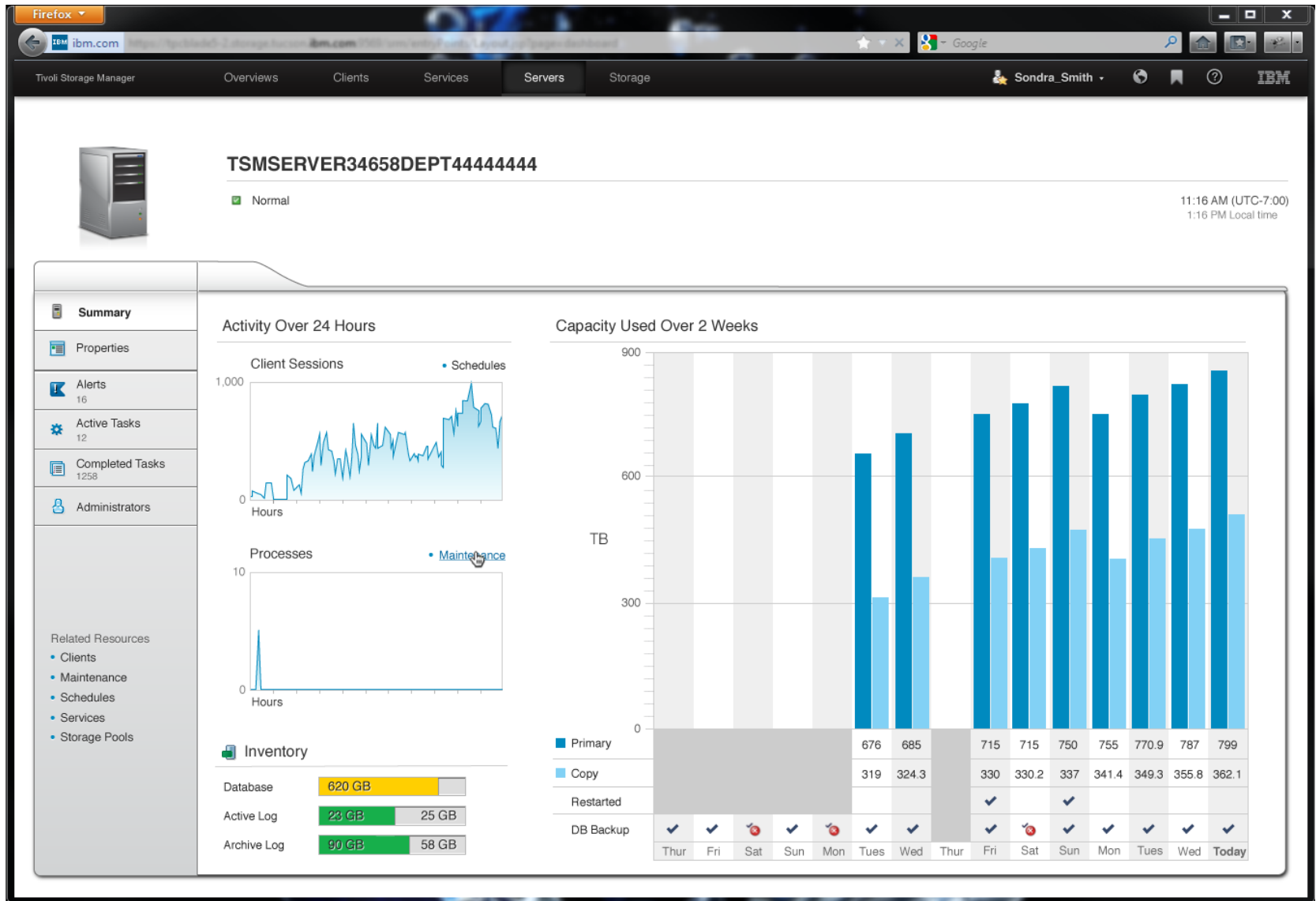
- Policy domains with attributes
- Enabled services
  - Backup & Restore
  - Archive & Retrieve
  - Migrate & Recall



# Servers



# Server Details



# Servers

- Hub server visualization
- Status roll-up
- Count of protected clients
- Visualization of capacity based on thresholds



# Storage Pools

Firefox | ibm.com | Tivoli Storage Manager | Overviews | Clients | Services | Servers | **Storage** | Sondra\_Smith | IBM

## Storage Pools 7

Alerts 4 Primary Critical Copy Warning

Name	Server	Status	Capacity	Access	Type	Device Class	Deduplication Enabled	Reclaimable Volumes
VTLPPOOL	DC1SRV01	Critical	25.3 TB	Read/write	Primary	VTL_PT1		
FILEPOOL	DC1SRV02	Critical	62B GB 424	Read/write	Primary	FILE_V7K		
FILEPOOL	DC1SRV01	Warning	3.8 TB	Read/write	Primary	FILE_DS8K	✓	
FILECOPY	DC1SRV02	Warning	No capacity	Unavailable	Copy	FILE_V7K		
VTLCOPY	DC1SRV01	Normal	62B GB 424	Read-only	Active Data	VTL_PT2	✓	
DISKPOOL	DC1SRV01	Normal	2.2 TB	Read/write	Primary	DISK		
FILECOPY	DC1SRV04	Normal	62B GB 424	Unavailable	Copy	FILE_V7K		
DISKPOOL	DC1SRV08	Normal	62B GB 424	Read-only	Primary	FILECLASS		—

Showing 7 | Selected 1 | Refreshed 6 minutes ago



# Storage Pools

- Status roll-up
- Visualization of capacity based on threshold
- Details
  - Access (R/O, R/W)
  - Type (Primary, Copy, ADP)
  - Device class
  - Deduplication



# Storage Devices

Firefox | ibm.com | Storage Manager | Overview | Clients | Services | Servers | **Storage** | Sondra\_Smith | IBM

## Storage Devices

Alerts **15**

**Disks** Critical  
**Paths** Offline  
**Libraries** Warning  
**Drives** Offline

Quick Look | Filter

Device Class	Server	Type	Status	Disk Storage	Library	Library Name	Library Status	Drives	Paths
FILE4	DC1SRV01	FILE	Critical	2 Directories 1 Unavailable	—	—	—	—	—
FILE1	DC1SRV01	FILE	Warning	—	✓	FILELIB1	Normal	40 Available	110 Available 35 Offline
FILE1	DC1SRV02	FILE	Warning	5 Directories 2 Constrained	—	—	—	—	—
DISK	DC1SRV02	DISK	Warning	18 Volumes 5 Offline	—	—	—	—	—
FILE2	DC1SRV02	FILE	Normal	10 Directories 2 Constrained	—	—	—	—	—
DISK	DC1SRV03	DISK	Normal	31 Volumes All Online	—	—	—	—	—
LTO	DC1SRV08	LTO	Normal	—	✓	LTOLIB	Normal	117 Available	250 Available 15 Offline
LTO2	DC1SRV04	LTO	Normal	—	✓	LTOLIB2	Normal	53 Available	135 Available 3 Offline

Showing 6 | Selected 1 | Refreshed 6 minutes ago

# Storage Devices

- Status roll-up
- Summary and status for disk storage items
  - DISK
  - Sequential FILE
- Library related attributes
  - Drives
  - Paths



# Key Themes

## 2H2014

- Client & Maintenance Schedules
- Daily Reports
- Storage Pool & Policy Visibility

## 2H2015

- Replication
- Client Visibility & Protection
- Storage Device Management

2014

2015





COMING IN 3Q2014

- View/create/modify client schedules
- Associate client nodes to schedules
- View/modify server maintenance schedules



# Client Schedules

**Schedules**

Name	Clients	Start	Last Run Time	Repeats	Domain	Server	Service
LNX_DAILY	5	2:00 PM		Weekly	WIN_WORKSTATION	DC1SRV100	Selective
LNXPROD2_DAILY		4:45 PM		Every weekend	LINUX_SERVER	DC1SRV100	Incremental
MAIL_DAILY	9				WIN_PROD	DC1SRV100	Command
VM_DAILY	3					DC1SRV100	Incremental
WIN200X001_DAILY					STATION	DC1SRV100	Selective
WIN200X002_QUARTERLY	6				STATION	DC1SRV100	Incremental
WIN200X003_CUSTOM	7				STATION	DC1SRV100	Selective
WINDOWS_DAILY	2	11:00 AM		Custom	WIN_WORKSTATION	DC2SRV100	Incremental
WIN-DEPT9-434342234				Daily	WIN_WORKSTATION	DC2SRV100	Incremental
WIN-DEPT24-331							
WIN-DEPT24-332							
WIN-DEPT24-333							
WINDOWS_DAILY201	4	10:25 AM					
WIN-DEPT27-0111				Every weekend	LINUX_SERVER	DC1SRV100	Incremental
WIN-DEPT27-0112				Daily	WIN_WORKSTATION	DC1SRV200	Incremental
WIN-DEPT27-0113							
WINDOWS_DAILY202	10	10:25 AM					
WIN-DEPT30-0111							
WIN-DEPT30-0112				Every weekday	WIN_WORKSTATION	DC1SRV200	Incremental
WINDOWS_MONTHLY	3	8:30 AM					
WINDOWS_WEEKLY	2	8:30 AM					
DB_4HRS		4:00 AM		Hourly	APPLICATION_PROD	DC1SRV600	Command
						DC1SRV300	
						DC1SRV400	
						DC1SRV500	

Showing 13 | Selected 6

Refreshed a few moments ago

# Client Schedule Details

The screenshot displays the IBM Tivoli Storage Manager (TSM) Schedules interface. The top navigation bar includes 'Overview', 'Clients', 'Services', 'Servers', and 'Storage'. The 'Clients' tab is active, showing a list of clients on the left and a 'Schedule Details' window on the right. The 'Schedule Details' window is titled '6 schedules selected on DC1SRV100 (UTC-7:00)'. It contains a table with columns: Name, Start, Repeats, and Clients. The table lists six schedules: LINUX\_DAILY, LNXPRDC2\_DAILY, VM\_DAILY, WINDOWS\_MONTHLY, WINDOWS\_QUARTERLY, and WINDOWS\_WEEKLY. Each schedule row has expandable details for start/end times, repeat intervals, and client lists. At the bottom of the window are 'Save' and 'Cancel' buttons. The main interface also shows a list of clients at the bottom, including DB\_4HRS, APPLICATION\_PROD, and DC1SRV600 through DC1SRV500.

Name	Start	Repeats	Clients
LINUX_DAILY	4:45 PM	Every weekday	
LNXPRDC2_DAILY	10:30 AM - 4:30 PM	Every day	WIN-DEPT9-434342234, WIN-DEPT24-331, WIN-DEPT24-332, WIN-DEPT24-333, WIN-DEPT24-334, WIN-DEPT24-335
VM_DAILY	5:00 AM	Every day	35
WINDOWS_MONTHLY	6:00 AM - 9:00 AM	Monthly, Last day	
WINDOWS_QUARTERLY	8:30 AM - None	Quarterly, Second month, Third weekend	WIN-DEPT9-434342234, WIN-DEPT24-331, WIN-DEPT24-332, WIN-DEPT24-333
WINDOWS_WEEKLY	2:00 PM	Weekly	150
WINDOWS_WEEKLY_LAW	2:00 PM	Weekly	34



# Create Client Schedule > Name

The screenshot shows a web browser window with the URL <https://api.ibm.com/2.0/storage/backup>. The page displays the 'Create Schedule' wizard in the 'Name' step. The left sidebar contains a navigation menu with the following items: Name, Service, Time, Clients, and Summary. The main content area features a diagram with three icons: a calendar (labeled 'Name'), a document (labeled 'Service'), and a clock (labeled 'Time'). Below the diagram, a message states: 'Create a new schedule to automate client protection tasks. [Learn more](#) →'. The form fields are as follows:

Server	DC1SRV100
Domain	STANDARD
Type	Application
Subtype	Microsoft SQL Database
Name	* MACYS_DAILY
Description	Lorem ipsum dolor sit amet, nonummy ligula volutpat hac integer nonummy. Suspendisse ultricies, congue etiam tellus, erat libero, nulla eleifend, mauris pellentesque. Suspendisse integer praesent vel, integer gravida mauris, fringilla vehicula lacinia non

At the bottom of the wizard, there are two buttons: 'Next' and 'Cancel'. The IBM logo is visible in the bottom right corner of the browser window.

# Create Client Schedule > Service

**Create Schedule**

**Service**

**Name**  
MACYS\_DAILY

**Service**

**Time**

Select the type of service to schedule. The script files that you specify must exist on the client systems. [Learn more](#)

☒ **Weekly full and daily incremental backup**  
A full backup one day and incremental backups on all other days.

Script files

Full

Incremental

☐ **Daily full backup**  
A full backup on all days.

Script file

**Back** **Next** **Cancel**

# Create Client Schedule > Time

**Create Schedule**

**Name**

**Service**

**Time**

**Summary**

**Name**  
MACYS\_DAILY

**Service**  
Daily incremental backup

**Time**

The start time specifies when the schedule can begin. [Learn more](#) →

Repeats ☒ Every day

— Start time 6:00 AM ▼

... End time 9:00 AM ▼

Anticipated clients 11-49 ▼

Full backup on Friday ▼

Back Create Cancel

# Create Client Schedule > Clients

**Create Schedule**

**Clients**

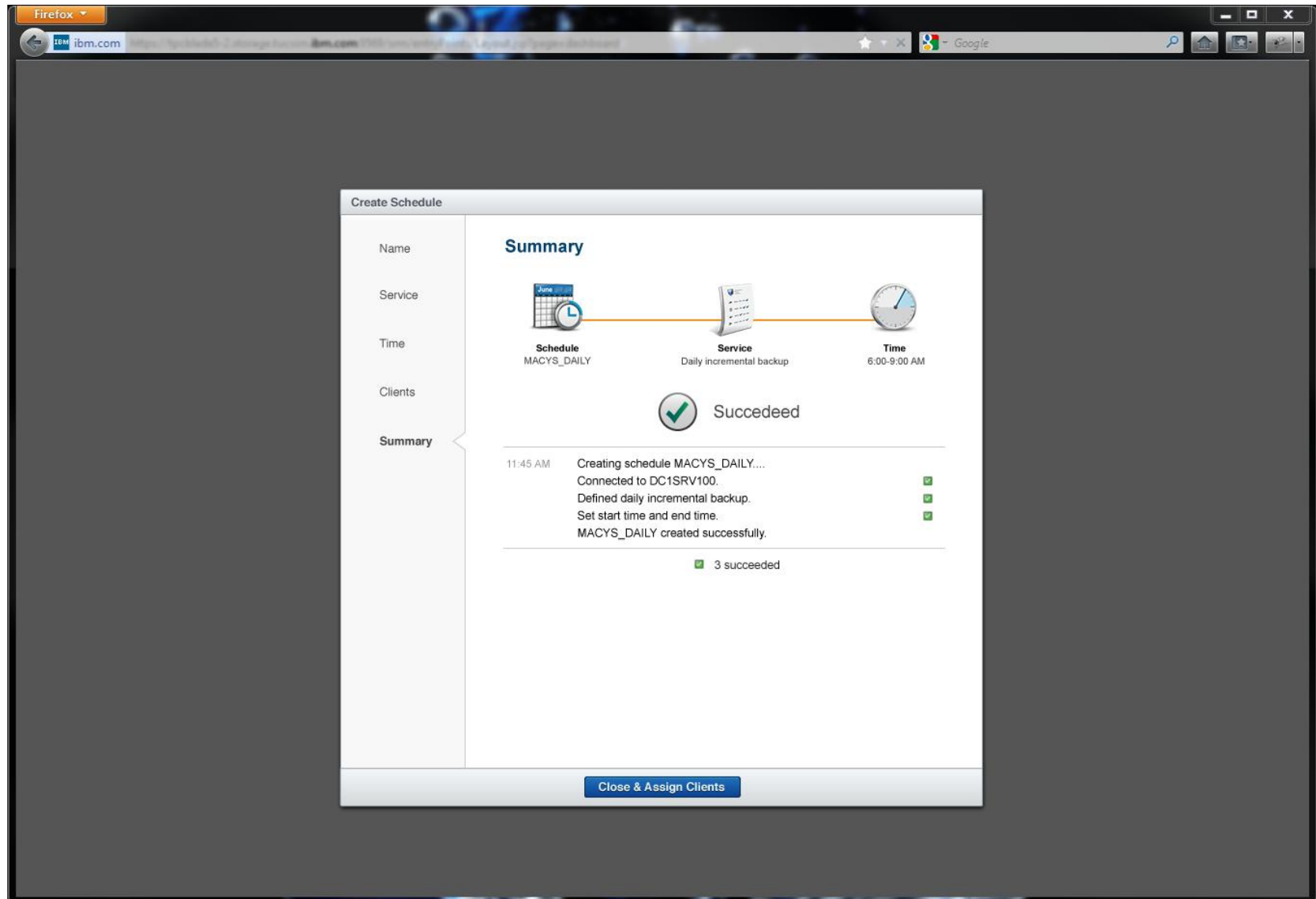
Select the clients that will use this schedule (optional). You can add or remove schedule members later. [Learn more](#) →

	Type	Name
<input type="checkbox"/>	ESX	ESX-2
<input type="checkbox"/>	ESX	ESX-4
<input type="checkbox"/>	ESX	ESX-23
<input type="checkbox"/>	ESX	ESX-214
<input type="checkbox"/>	ESX	ESX-241
<input type="checkbox"/>	ESX	ESX-253
<input type="checkbox"/>	ESX	ESX-295
<input type="checkbox"/>	ESX	ESX-983
<input type="checkbox"/>	EXCHANGE	EXCHANGE-3
<input type="checkbox"/>	EXCHANGE	EXCHANGE-555
<input type="checkbox"/>	EXCHANGE	EXCHANGE-563

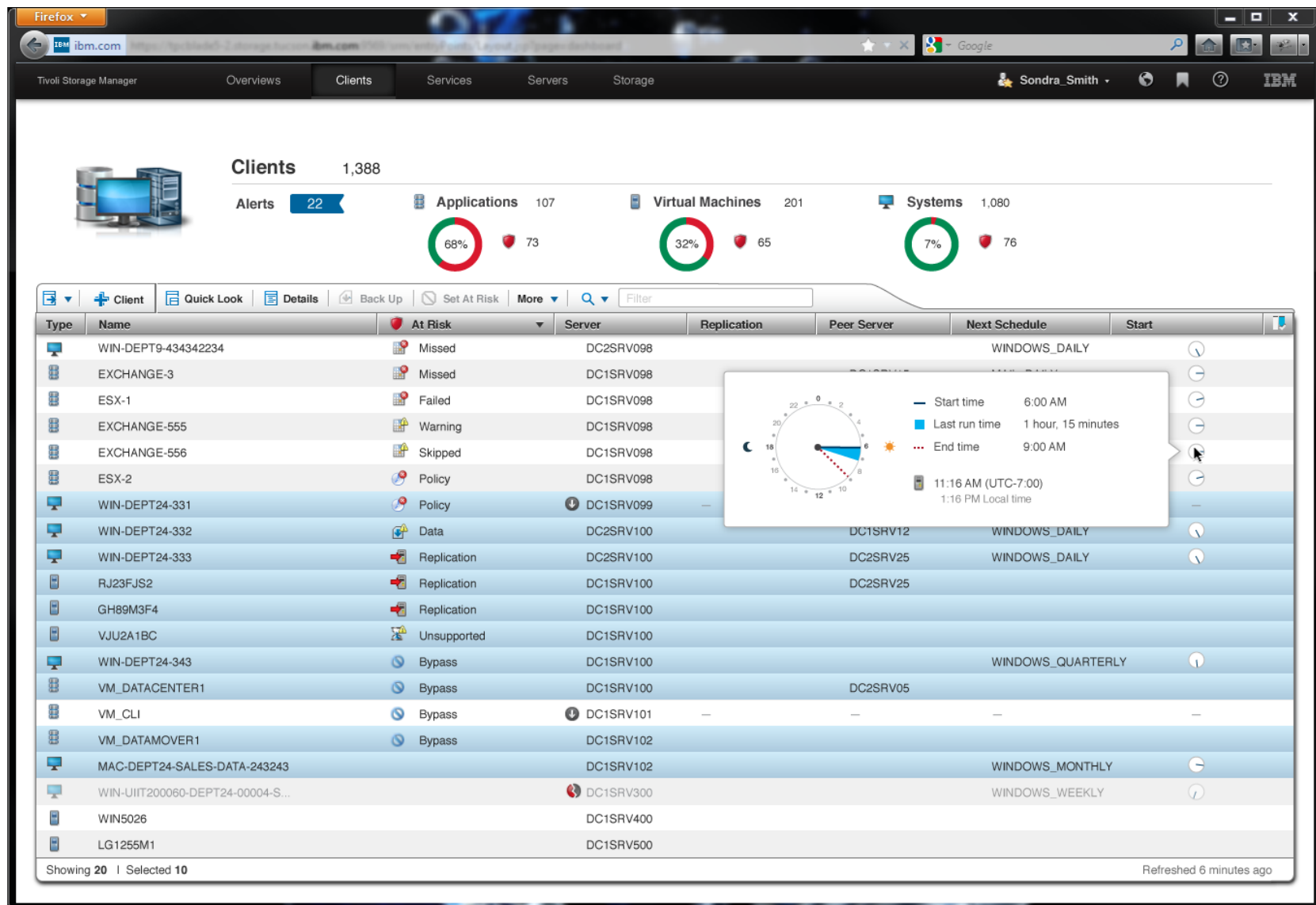
Showing 1,523 | Selected 0

[Back](#) [Create](#) [Cancel](#)

# Create Client Schedule > Summary



# Clients



# Schedule Membership

**Clients** 1,388

**Schedule Membership**

10 clients selected on **DC1SRV100** (UTC-7:00) Showing 12 schedules in **WIN\_DOMAIN**

Assign	Name	Start	Repeats	Clients
<input checked="" type="checkbox"/>	▼ LNXPRODC2_DAILY_GROUP572343312343 Start time 10:30 AM End time 4:30 PM		Weekly On Monday, Tuesday, Thursday, Friday and Sunday	WIN-DEPT9-43434223410921188122938479901 WIN-DEPT24-331 WIN-DEPT24-332 WIN-DEPT24-333 WIN-DEPT24-334
<input type="checkbox"/>	▼ LNXPRODC2_DAILY_GROUP572343312343 Start time 10:30 AM End time 4:30 PM		Weekly On Monday, Tuesday, Thursday, Friday and Sunday	WIN-DEPT9-43434223410921188122938479901
<input type="checkbox"/>	▶ VM_DAILY	5:00 AM	Every day	35
<input type="checkbox"/>	▶ VM_WEEKLY	11:00 PM	Weekly	3
<input type="checkbox"/>	▼ WINDOWS_QUARTERLY Start time 8:30 AM		Quarterly on the last Tuesday of the second month	WIN-DEPT53-342 WIN-DEPT24-331 WIN-DEPT24-332 WIN-DEPT24-333
<input type="checkbox"/>	▶ WINDOWS_WEEKLY	2:00 PM	Weekly	
<input type="checkbox"/>	▶ LINUX_DAILY	4:45 PM	Every weekday	
<input type="checkbox"/>	▼ MACYS_DAILY Start time 6:00 AM End time 9:00 AM		Every day	

**Save** **Cancel**

LG1255M1 DC1SRV500

Showing 20 | Selected 10 Refreshed 6 minutes ago

# Maintenance Schedules

Firefox | IBM | ibm.com | Tivoli Storage Manager | Overviews | Clients | Services | Servers | Storage | Sondra\_Smith | IBM

## Maintenance

**Maintenance** | Schedule Details | Filter

Server	Last Run Time	Last Start Time	History	Task	Initiated By
DC1SRV100		3:24 PM		EXPIRE INVENTORY	Automatic
DC1SRV100		2:10 AM		BACKUP DATABASE TYPE=FULL	DAILY_DBBK
DC1SRV100		6:37 PM		REPLICATE NODE*	DAILY_REPL
DC1SRV100		Running		BACKUP STGPOOL DISKPOOL LTOPOOL	DISK_TO_LTO
DC1SRV100				BACKUP STGPOOL FILEPOOL LTOPOOL	FILE_TO_LTO
DC1SRV200		6:00 PM		RUN SCRIPT DAILY_MAINT	MAINT_PLAN
				Step 1: EXPIRE INVENTORY	
				Step 2: BACKUP DATABASE TYPE=FULL	
				Step 3: BACKUP STGPOOL DBPOOL VTLPOOL	
				Step 4: BACKUP STGPOOL MAILPOOL VTLPOOL	
				Step 5: RECLAIM STGPOOL BIGTAPEPOOL	
DC1SRV200		Running		GENERATE BACKUPSET	DAILY_BACKUP-SET
DC1SRV300					
DC1SRV400		4:20 PM		reclaim stgpool ltlpool	Command
DC1SRV500					

Showing 9 | Selected 5 | Refreshed a few moments ago



# Maintenance Schedule Details

Firefox | ibm.com | Tivoli Storage Manager | Overviews | Clients | Services | Servers | Storage | Sondra\_Smith | IBM

## Maintenance

**Schedule Details**

4 schedules selected on 3 servers in different time zones (UTC-2:00, UTC+2:00, UTC+4:00)

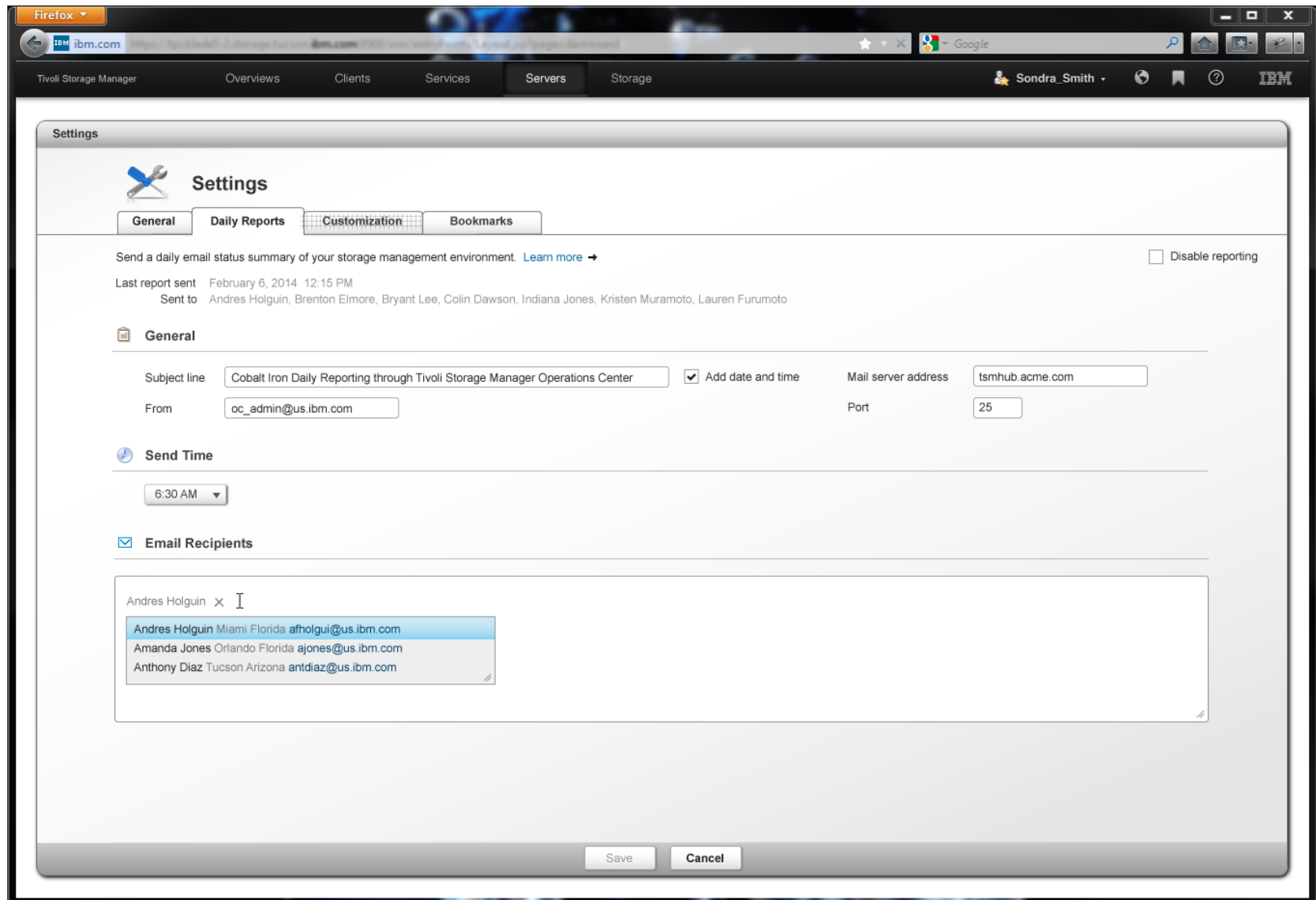
Enabled	Name	Start	Repeats	Task	Server
<input checked="" type="checkbox"/>	DAILY_EXPIRATION	2:00 PM	Monthly	EXPIRE INVENTORY	DC1SRV100
<input checked="" type="checkbox"/>	DAILY_EXPIRATION	Start time: 2:00 AM End time: 6:00 AM	Every day	EXPIRE INVENTORY	DC1SRV200
<input checked="" type="checkbox"/>	DISK_TO_LTO	Start time: 11:00 PM End time: 3:30 AM	Weekly	BACKUP STGPOOL DISKPOOL LTOPOOL	DC1SRV100
<input checked="" type="checkbox"/>	DBBK_FULL	Start time: 6:00 AM End time: None	Several times a day Every twelve hours	BACKUP DATABASE TYPE=FULL DEVCLASS=OUTFILE	DC1SRV200
<input type="checkbox"/>	MAINT_PLAN	Start time: 6:00 PM End time: 10:45 PM	Every day	RUN SCRIPT DAILY_MAINT Step 1: EXPIRE INVENTORY Step 2: BACKUP DATABASE TYPE=POOL Step 3: BACKUP STGPOOL DBPOOL VTLPOOL Step 4: RECLAIM STGPOOL BIGTAPEPOOL	DC1SRV200

Showing 9 | Selected 5 | Refreshed a few moments ago

- Client coverage
- Server health
- Storage health
- Configure alerts and email recipients



## Daily Reports &gt; Configure



# Daily Reports > In Context

The screenshot shows an IBM Notes client window titled "Daily Reports Prototype - IBM Notes". The interface includes a menu bar (File, Edit, View, Create, Actions, Attachment, Tools, Window, Help) and a toolbar with various actions like Open, Discover, Reply, Forward, etc. The main content area displays an email from John Minnich to Andres F Holguin, dated 11/18/2013 02:05 PM. Below the email, a "Daily Data Protection Report Generated by Operation Center For Sprint PCS..." is shown, dated November 17, 2013 at 10:22 AM (Last 24 hours). The report includes an "Executive Summary" with metrics: Backup success rate 98.3% (down arrow), TSM server availability 100% (up arrow), and "At risk 19 of 1,152 Clients". Below this, "Protected Clients" are listed: 1,152 total, with 19 at risk. The report is categorized by Applications (40), Virtual Machines (300), and Systems (812). Each category shows a "At risk" status: Applications (8 at risk, 68%), Virtual Machines (5 at risk, 78%), and Systems (6 at risk, 80%). A table titled "At risk" lists specific clients and their status:

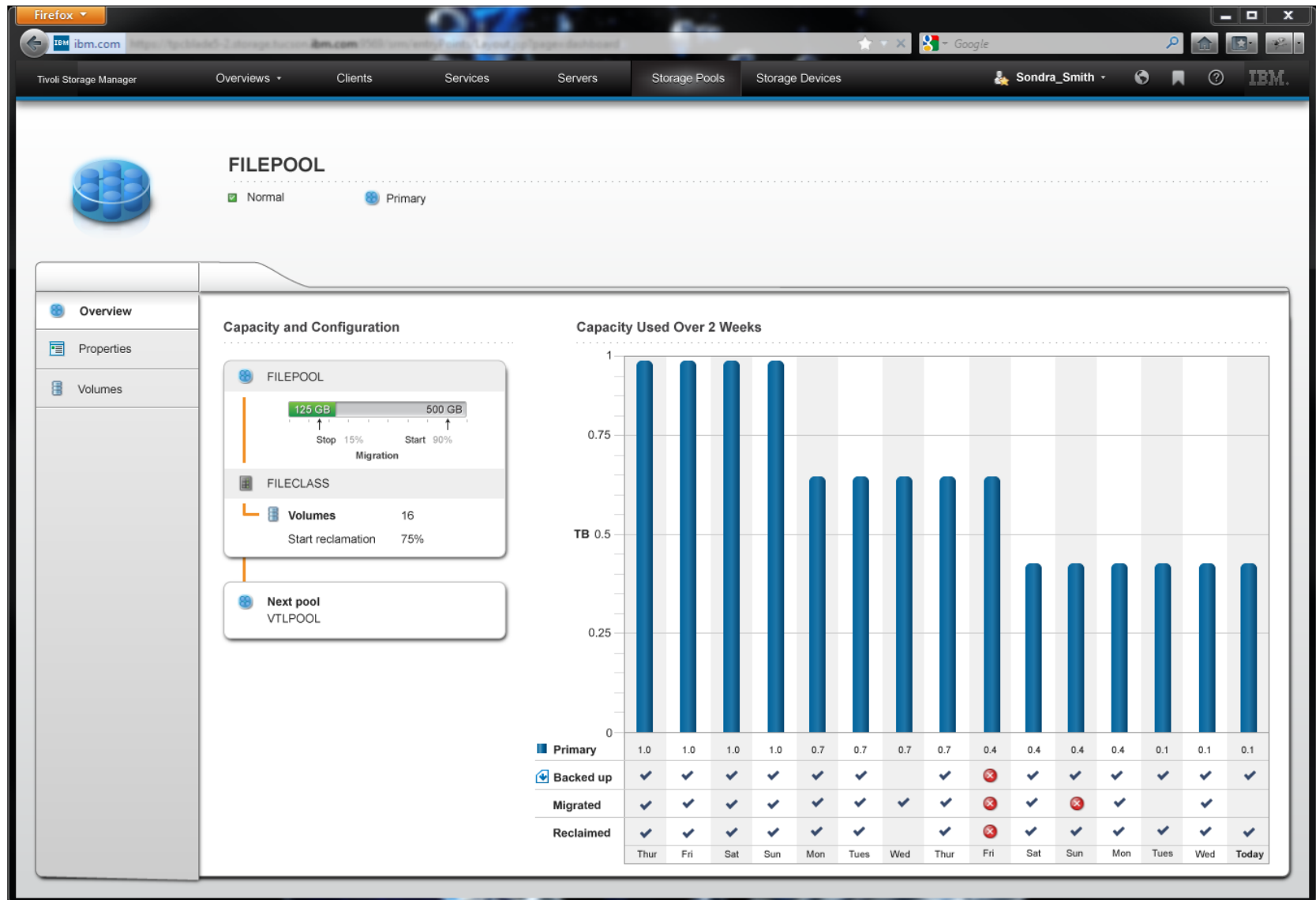
Name	At Risk	Server	VM Type	VM Owner
EXCHANGE-3	Missed	DC1SRV01	VMWare	ESXAPP
ESX-1	Missed	DC1SRV01	—	—
EXCHANGE-555	Failed	DC1SRV01	—	—
EXCHANGE-556	Failed	DC1SRV01	—	—
ESX-2	Failed	DC1SRV01	—	—
WIN-DEPT24-331	Warning	DC1SRV12	—	—
WIN-DEPT24-331	Warning	DC2SRV25	—	—
WIN-DEPT24-333	Warning	DC2SRV25	—	—
RJ23FJS2	Skipped	DC2SRV01	—	—

On the right side of the client, there is a "Sametime Contacts" panel showing a list of contacts, including Adam R. Kallish, Ben J. Randall, and others. Below the contacts is a "Feeds" panel showing "Day-At-A-Clance".

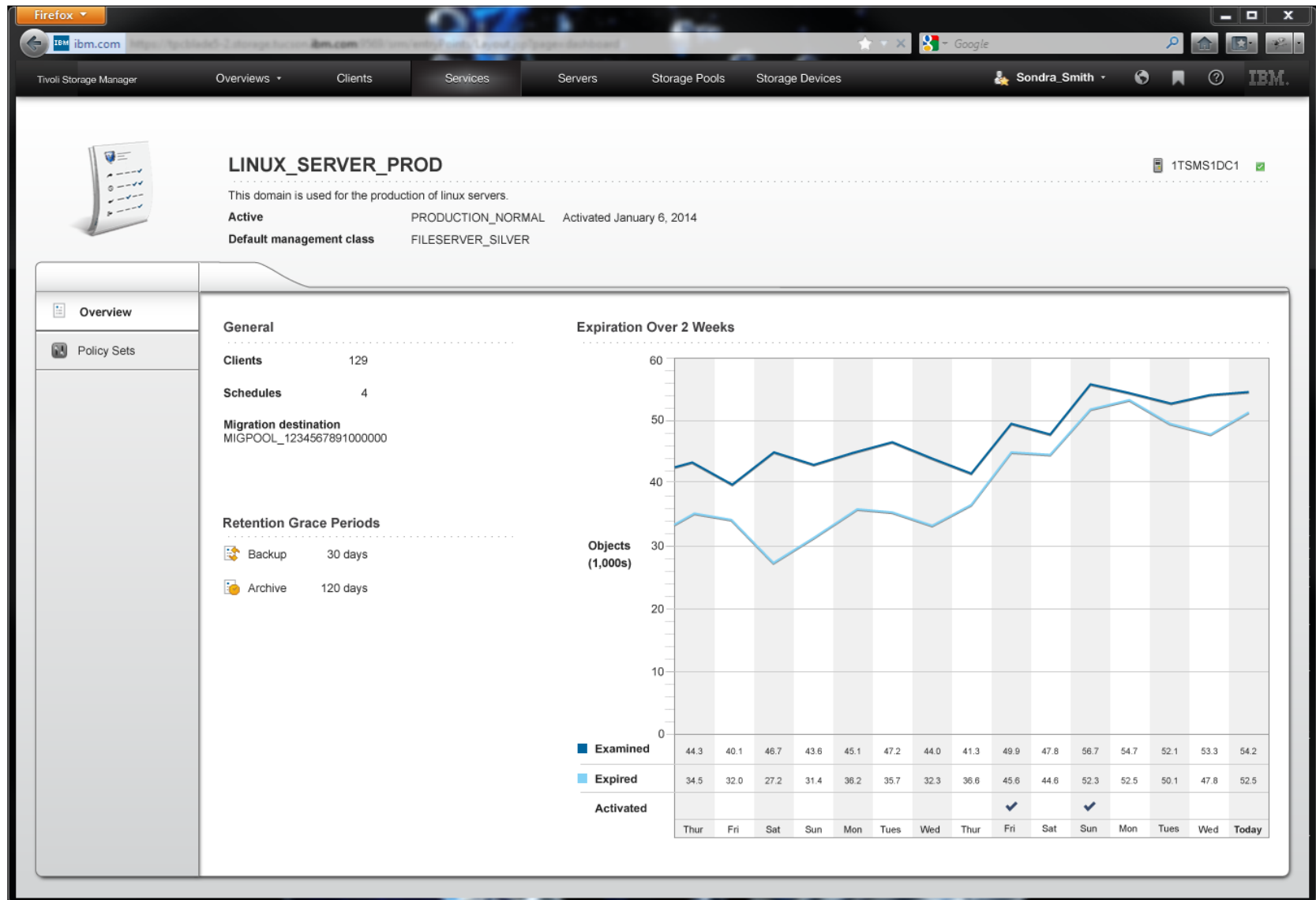
- Configure migrate/reclaim actions
- Edit storage pool properties
- View volume information
- View policy details & active policy set



# Storage Pool Details



# Policy Details



## Policy Details > Policy Set

IBM

ibm.com

Google

Tivoli Storage Manager

Overviews ▾

Clients

Services

Servers

Storage Pools

Storage Devices

Sondra\_Smith ▾

IBM

## LINUX\_SERVER\_PROD

This domain is used for the production of linux servers.

**Active** PRODUCTION\_NORMAL Activated January 6, 2014

**Default management class** FILESERVER\_SILVER

1TSMS1DC1

Management Class

Reactivate

More ▾

Filter

Overview

Policy Sets

Active PRODUCTION\_NORMAL 1 of 3

Configure

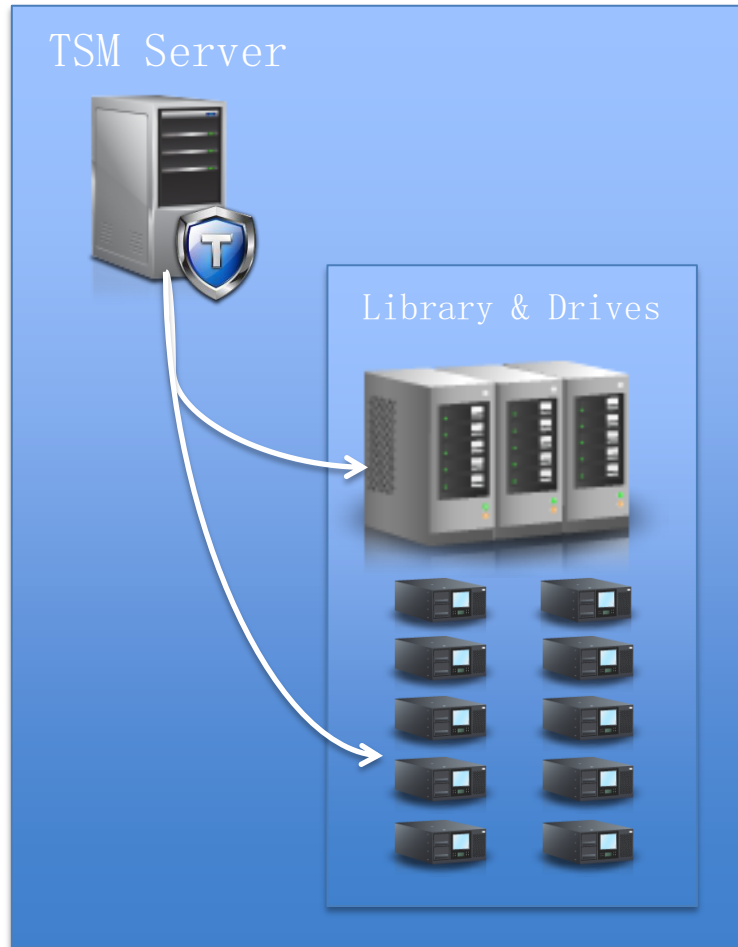
Management Class ▴	Default	Backup Destination	Backups	Keep Backups	Archive Destination	Keep Archives
FILESERVER_BRONZE		VTL_POOL	30	29 days	VTL_POOL	420 days
FILESERVER_GOLD		SSD_POOL	10	90 days		
FILESERVER_PEWTER		SLOW_POOL	5	7 days		
FILESERVER_SILVER		FILE_POOL	1	61 days		
MIG_LIVELDATA		FILE_POOL	No limit	60 days	SSD_POOL	180 days
WEBSEVERER_GOLD		SSD_POOL	30	59 days	SSD_POOL	120 days
WEBSEVERER_SILVER		FILE_POOL	10	31 days		





COMING IN 2015

# Storage Devices > Library Actions



**Availability**      Online –  
Offline

- Maintenance for Drives or Library

**Create Library**      Drive(s) –  
Path(s)

- Create a new library with drives and paths for use by TSM
- Library manager and clients in shared configuration

**Repair**      Drive(s) – Path(s)

- Redefine and online drives and paths that are offline

# Get Involved

## Join the Early Access Program (EAP)

- Collect and refine requirements
- Present in-progress designs
- Live demos
- Solicit feedback

## Beta

- Access to code drivers to run non-production in your test environment
- Provide feedback on implementation
- Advanced look at code prior to GA

Contact Gergana Markova ([gmarkova@us.ibm.com](mailto:gmarkova@us.ibm.com))





What's current in the Operations Center

## BACKUP SLIDES