

ECC & Storage Management Progress, Challenges and Requirements

Storage Engineering
Storage Management



- Deployment Status
- Challenges
- Gaps
- Requirements

- Global Storage Engineering
 - Vivek Jain
- NA Storage Integration
 - John Bachant
 - Murphy Long
 - Susan Kaplow
 - Steven Cai
- EMEA
 - Colin Bradley
 - John Meaney
 - David Coles
- ASPAC
 - Fibish Madathil
 - Geok-Kwee Tee
- Japan (Nikko)
 - Geoff Tayler
- Various System Admin and Database Admin
- EMC PS
 - John Maloney, Fanglin Lu (Deployment, Eng.)
 - Jeff Tang, Robert Cianchetti (STS customization)

○ NA

- 7 sites, 4 large, 1 medium, 2 small (51 ECC servers)
- Deployment started in July'05
- ECC Host agent has been deployed to 5,649 (appx. 98%) open system host (Solaris, AIX, HP/UX, Linux and Wintel)
- ECC DB Agents have been deployed to 1,095 servers (95% of identified) and a total of 1,838 databases have been discovered
- 159 Symm arrays, 94 Clariion, 12 HDS arrays
- Expected installation in MWDC

○ EMEA

- 2 large sites in London (24 ECC servers)
- 800 hosts (98%), 33 Symms, 64 switches, 12 Centera, DB (2%)
- Database rollout in progress
- Expected installations in Meerbusch and Frankfurt

○ ASPAC

- 2 large site (8 ECC servers)
- ECC Host agent has been deployed around 405 open system host(Solaris, AIX, HP/UX and Wintel) in Singapore
- Database rollout in progress
- Expected installations in Korea, Hong Kong, Australia, Taiwan

○ Japan(Nikko Citi)

- 3 small sites (3 ECC servers)
- 120 Solaris hosts, 60 Linux, 6 DMX
- Expected installation in CSJ

Note: The data above changes daily with continued deployment

- Asset Management
 - Arrays, SAN attached hosts and switches (in EMEA) discovered and stored in Oracle DB
 - Allocation and Utilization storage information
 - Better asset utilization by assisting in reclamation
 - Enabled Host consistency across different inventory systems (SANscreen, TAS)
 - Host configuration including storage relationship discovered and stored
 - ECC storage array report replaces (manual) DSI storage report (in testing)
- Chargeback
 - NA developed customized chargeback process integrated with TAS and FINCON.
 - ECC chargeback replaces existing DSI chargeback process (in parallel testing)
 - Other regions - In progress (some challenges remain)
- Alert Monitoring
 - NA (pilot)
 - EMEA (limited production)
- Performance Management
 - EMEA
- Provisioning
 - Japan (Nikko) only

- Deployment
 - Agent Installation
 - Hosts agents logged in incorrect ECC servers
 - Physical location of host agents does not match the ECC server location
 - Single Citi agent package with 12 DC (global) names, errors while deploying
 - Agent Upgrade
 - Rip and replace is time-consuming and error-prone
 - Push mechanism does not update Citi package inventory system
 - DB agent
 - Needs Solutions Enabler on each server, required SE database API does not automatically start
 - SE and NaviCLI version concurrency
 - Different versions for SYMCLI & ECC, Navisphere & ECC
 - System and Database coordination
 - Agent deployment process presents coordination challenges with different businesses and groups
- Maintenance
 - Patches released for SP5 and not SP4
 - Patch management
 - Do not have direct access to the monthly patches list that are released for ECC
 - Inconsistent across regions.
 - Stores stopping due to overload (resolved)
 - Symm/SDM agent servers panicking due to agent/HBA driver timing issues.
 - Discrepancy in the repository with the meta device configuration is not accurate - patch released for SP4
 - Symmetrix Array that have greater than 8,192 volumes not reporting correctly (resolved)

 Database

- Database Discovery - The process is not dynamic
- If the ORACLE_HOME or ORACLE_BASE values change post discovery the database goes unmanaged and needs to be re-discovered. This happens during the oracle upgrade process of patching and db upgrades.
- The error messages are not meaningful enough to determine why database cannot be discovered
- Managed Object permissions where the primary agent is selected does not work correctly. Agents gets hijacked post discovery by other database agents.
- Unable to determine when database was last discovered
- Database agent hijacking – an agent(s) other than the agent explicitly granted permission to manage the database during discovery start managing the database.

 HDS

- Unable to determine when the array has been discovered fully. The diamond icon does not display on the array managed object in the console as it does with all other storage managed objects.
- HDS relationship view on Solaris not available (resolved)

⚙ Performance & Scalability

- Inability to scale beyond 2000 hosts and 910 databases in a single infrastructure.
- STS Web sessions limited to 5 concurrent users
- ECC Java Console limited to 10 concurrent sessions
- Storage Agents for Symmetrix, CLARiiON, HDS, and Centerra require dedicated agents and hardware with restricted scalability
- DCP overload

⚙ Security

- Agents run as a root (UNIX) / system (Windows) owned process
- DB agents do not conform to Citi DB security standards
 - Oracle
 - Password hash access - resolved
 - Oracle agent requires read access to database owner SYS objects. This is a Citigroup audit violation. Agent should have read access to a locked down user that has access granted to the SYS objects.
 - MSSQL Windows (domain) authentication
- World Writeable files (resolved)

⊗ Chargeback customization

- Implement federated model (LOB, Bus, Server)
- Chargeback calculations, raw conversation
- Clusters , RAID type not available for Clariion
- HDS device-to-disk information not available via agent
- Symm and Clariion device-to-disk information not available via STS-XML
- TAS and FINCON integration (NA)

⊗ Stale Data (data integrity)

- Clariion, HDS, Symm, Database do not have last discovery age value
 - Cannot reconcile data from other sources
 - ECC console and STS numbers don't match with native utilities (e.g. FS, oracle schema)

⊗ Other

- Data collection policies – configuration is a manual task to avoid overloading
- Cloned Hosts causing Java memory leak problems leading to performance issues
- Documentation – The DB agent support not well documented for SP4 (Local vs proxy)

⚙ ECC Hosts Discovery issues

The reasons for discovery failure can be many but typically are focused into one of the following categories at Citigroup

- Master and or Host Agents Not Running or active
- Hosts installed in more than one ECC infrastructure
- ECC Hosts in Wrong Infrastructure
- Installing ECC agents prior to resetting the /etc/path_to_inst file during SAN Stack installation
- Incorrect or Aborted ECC Installation
- Cloned Hosts
 - AIX hosts cloned in some sites by SA
- Duplicate hosts in same infrastructure
 - Solaris 10 upgrades, Windows re-imaging
- Decommissioned Hosts that need to be deleted from ECC

- Native implementation of federated model of reporting and chargeback with open external interfaces for integration with Citi-specific systems or 3rd-party data
- StorageScope does not have XML output for array_device_to_disk information.
 - This information is not processed natively by xml2dbloader to load the STS Custom reporting database. An additional interface is required to load the StorageScope Custom Reporting database. This information is a mandatory requirement for Chargeback reporting.
- Storage agent for HDS - Device to Disk information is not available (in 6.0)
 - Non ECC programs and procedures will need to be developed to gather the required information from the HDS Device Manager.
- Lack of ability to determine when a managed object has last been discovered - exception Hosts
- Lack of ability to get VMware guest Storage Device Utilization information from the VMware agent without using the host agent (in 6.0)
- Automatic discovery of new DB instances (in 6.0)
 - (Interim step) Ability to upload a CSV with the required data so that the discovery process is performed in batches to speed things up.
- Automatic Load-balancing of DCPs
 - ECC should be in a position to make recommendations of what servers can be placed in each DCP and also alert us when a DCP is becoming overloaded and highlight the larger MOs in the DCP
- Platform support (HDS USPV, AIX VCS, native DB agents, 2+ node RAC clusters)
- Closer integration and increased management, reporting and monitoring with HDS, Centera and Clariion, NetApp
- NetApp and Centera chargeback as per Citi requirements

○ ECC

- Reduce Application maintenance
 - Bugs, deployment, discovery
- Reduce customization
- Better global communication of patches across regions
- Increased scalability
- Improved Application performance
 - Topology views, GUI updates on provisioning job completion, agent view
- Better Console security controls
 - Ability to segregate duties within tasks (maker-checker)
 - Least privileges rule
- Better console (UI) object organization

○ Storage Management

- Comprehensive Storage Management strategy and roadmap for Citi
- Host true-up
 - Determine the orphan hosts and storage
- Capacity management (accurate forecasting)
- Configuration management (per Citi config)
- Provisioning validation and execution (as per Citi SAN stacks)
- Root-cause Analysis
- Scalability

○ Detailed requirements documented separately

- Citi has made substantial progress in rollout across various regions
- Various maintenance, scalability, performance and organizational challenges
- Application maintenance and upgrade needs to be simplified to reduce operational overhead
- Chargeback process will be in production shortly (NA)
- More benefits of ControlCenter still to be realized in an effort to standardize processes and improve efficiencies

- 1) EMC is essentially refusing to support 5.2 SP4 & 5. All cases opened in the last 6 months have resulted in recommendations to upgrade to 6.0
- 2) Autopath/SPS support for Linux. Currently SPS and Autopath are disabled for linux hosts in 5.2 SP5.
- 3) Segregation of duties. We could do this with ARM, but since ARM depends on SPS, and SPS does not support Linux - it doesn't represent much of a solution.
- 4) Task management - All activities should be capable of "Execute Later". Currently all configuration and zoning tasks have to be executed immediately
- 5) Full alerting - we have many examples of inconsistencies between the alerts forwarded by the dial-home interface and those forwarded to ECC. Many serious alerts just aren't forwarded to ECC.
- 6) Support for receipt and forwarding of SNMP traps, or rather SNMP traps from fabric devices should generate real time ECC alerts, which after processing in ECC can be forwarded onto an Enterprise management architecture.
- 7) Event logging - all commands should be spooled to syslog as well as the command log.
- 8) Command log - this should preserve tasks. i.e. assignment of commands to a task list should be recorded, and when the tasklist is executed that should also be recorded. At present assignment of tasks to a tasklist is not recorded, and instead all commands in it are recorded as having been executed by the executor. Once the task list is deleted all references to it are lost.

Site	Current MO and Component Count																		Stores
	Symm	Symm/SDM Agt	CLAR	CLAR Agt	Total Arrays	Oracle	Oracle Agt	Oth. DB	CMA Agt	Total DB	Switches	FCC Agt	Celer	Celerra A	HDS	HDS Agt	Host Agt	WLA Agt	
390	51	3	18	2	69	300	117	435	235	735	0	0	0	0	0	0	1812	0	3
SWDC	14	1	16	2	30	54	21	71	56	125	0	0	0	0	3	1	787	0	1
Rutherford	40	3	25	3	65	319	82	809	204	515	0	0	0	0	0	0	1262	0	3
Silver Spring	29	2	10	1	39	123	117	95	99	218	0	0	0	0	6	1	1072	0	3
Solana	9	1	12	1	21	3	3	10	11	13	0	0	0	0	0	0	146	0	1
Tampa	0	0	9	1	9	101	26	22	17	123	0	0	0	0	0	0	164	0	1
Weehawken	16	2	4	1	20	51	65	58	42	109	0	0	0	0	3	1	406	0	3
7	159	12	94	11	253	951	431	1500	664	1838	0	0	0	0	12	3	5649	0	15

Sample reports: Array Summary

Array, summary (by Site, Array Name)

All values in "RAW GB"

Array Serial Number	Array Name	Site	Vendor & Model	Unformatte d	Formatted Disk Total	Device Total	Allocated	Free	% Allocated	Replication	Notes
111 Wall (9/24/2007 8:10:33AM)											
APM00055200037	OCC130N0037	111 Wall	EMC Clarion CX700	13,140	12,031	11,858	11,250	607	94.88%	Non-replicated	
APM00033500574	OS118E	111 Wall	EMC Clarion CX800	8,760	8,021	7,918	7,405	514	93.51%	Not replicated	
APM00033702033	OS119E	111 Wall	EMC Clarion CX800	8,760	8,021	7,945	6,962	983	87.63%	Not replicated	
F20005200283	OS123E	111 Wall	EMC Clarion 4700	792	760	720	687	33	95.38%	Not replicated	
APM00051401253	OS126E	111 Wall	EMC Clarion CX700	13,140	12,031	11,930	11,282	648	94.57%	Not replicated	
APM00051401252	OS127E	111 Wall	EMC Clarion CX700	13,140	12,031	11,824	10,608	1,216	89.72%	Not replicated	
Subtotals for 111 Wall :				57,732	52,895	52,195	48,195	4,001			

390 Greenwich (9/24/2007 8:10:33AM)

000185700270	OEE007R0270	390 Greenwich	EMC Symmetrix 8730	18,688	17,502	17,437	8,432	9,005	48.36%	Replicated	
000185700681	OEE010R0681	390 Greenwich	EMC Symmetrix 8730	18,688	17,502	17,437	4,821	12,616	27.65%	Replicated	Site unknown
000185701556	OEE012N1556	390 Greenwich	EMC Symmetrix 8730	18,688	17,502	17,437	5,447	11,990	31.24%	Non-replicated	EOL - techrefresh
000285701900	OEE016N1900	390 Greenwich	EMC Symmetrix 8830	18,688	17,470	17,377	8,978	8,399	51.67%	Non-replicated	
000185704638	OEE017R4638	390 Greenwich	EMC Symmetrix 8830	18,688	17,470	17,377	16,452	925	94.68%	Replicated	
000185702386	OEE019N2386	390 Greenwich	EMC Symmetrix 8830	18,688	17,470	17,350	17,310	40	99.77%	Non-replicated	Dedicated to: EIW
000185705030	OEE023N5030	390 Greenwich	EMC Symmetrix 8830	18,688	17,470	16,834	13,055	3,779	77.55%	Non-replicated	
000185705018	OEE024N5018	390 Greenwich	EMC Symmetrix 8830	18,688	17,470	17,377	14,613	2,764	84.10%	Non-replicated	
000185705022	OEE025R5022	390 Greenwich	EMC Symmetrix 8830	20,440	19,108	18,995	16,213	2,782	85.35%	Replicated	Dedicated to: GCX
000185700450	OEE026N0450	390 Greenwich	EMC Symmetrix 8830	18,688	17,470	17,377	6,297	11,080	36.24%	Non-replicated	
000185700886	OEE028N0886	390 Greenwich	EMC Symmetrix 8830	18,688	17,470	17,377	14,193	3,184	81.68%	Non-replicated	
000185706014	OEE030N6014	390 Greenwich	EMC Symmetrix 8830	18,688	17,470	17,377	5,367	12,009	30.89%	Non-replicated	
000187720394	OEE033R0394	390 Greenwich	EMC Symmetrix DMX2000S	20,878	19,517	19,237	19,220	16	99.91%	Replicated	
000187720493	OEE034N0493	390 Greenwich	EMC Symmetrix DMX2000S	21,024	19,654	18,978	8,971	10,007	47.27%	Non-replicated	Dedicated to: P2P
000187700579	OEE036N0579	390 Greenwich	EMC Symmetrix DMX2000P	20,878	19,517	19,256	12,610	6,646	65.49%	Non-replicated	
000187790061	OEE037N0061	390 Greenwich	EMC Symmetrix DMX2000S	20,878	19,517	19,256	16,859	2,398	87.55%	Non-replicated	
000187790063	OEE039N0063	390 Greenwich	EMC Symmetrix DMX2000S	20,878	19,517	19,256	18,545	711	96.31%	Non-replicated	
000187790077	OEE040R0077	390 Greenwich	EMC Symmetrix DMX2000S	20,878	19,517	19,256	17,804	1,452	92.46%	Replicated	
000187720948	OEE042N0948	390 Greenwich	EMC Symmetrix DMX2000S	20,878	19,517	19,256	17,533	1,723	91.05%	Non-replicated	
000187721014	OEE044N1014	390 Greenwich	EMC Symmetrix 2000S-M2	20,878	19,517	19,256	18,816	441	97.71%	Non-replicated	
000187880235	OEE045N0235	390 Greenwich	EMC Symmetrix DMX3000	41,902	39,171	38,697	38,642	55	99.86%	Non-replicated	Dedicated to: Citidirect
000187721001	OEE046N1001	390 Greenwich	EMC Symmetrix 2000S-M2	20,878	19,517	19,256	19,220	36	99.81%	Non-replicated	
000187721179	OEE047R1179	390 Greenwich	EMC Symmetrix 2000S-M2	20,878	19,517	19,290	19,154	136	99.29%	Replicated	
000187720885	OEE048N0885	390 Greenwich	EMC Symmetrix DMX2000S	20,878	19,517	19,256	17,668	1,588	91.75%	Non-replicated	
000187721190	OEE049N1190	390 Greenwich	EMC Symmetrix 2000S-M2	20,878	19,517	19,290	15,983	3,307	82.85%	Non-replicated	
000187721194	OEE050N1194	390 Greenwich	EMC Symmetrix 2000S-M2	20,878	19,517	19,290	18,882	408	97.89%	Non-replicated	
000187721390	OEE051R1390	390 Greenwich	EMC Symmetrix 2000S-M2	20,878	19,517	19,281	18,346	936	95.15%	Replicated	
000187720945	OEE053N0945	390 Greenwich	EMC Symmetrix 2000S-M2	13,870	12,966	12,794	12,762	33	99.75%	Non-replicated	Dedicated to: GCIB
000187720674	OEE054N0674	390 Greenwich	EMC Symmetrix 2000S-M2	20,878	19,517	19,290	18,747	543	97.18%	Non-replicated	
000187880538	OEE055N0538	390 Greenwich	EMC Symmetrix 3000-M2	41,902	39,171	38,720	37,294	1,426	96.32%	Non-replicated	
000187880552	OEE057N0552	390 Greenwich	EMC Symmetrix 3000-M2	41,902	39,171	38,720	38,242	478	98.77%	Non-replicated	
000187721094	OEE058R1094	390 Greenwich	EMC Symmetrix 2000S-M2	20,878	19,517	19,281	14,399	4,883	74.68%	Replicated	

Note: Disk sizes will be reduced when formatted - the formatted size is often referred to as the "engineering" size.

Note: Unless otherwise noted, all capacities are displayed in raw, engineering gigabytes (i.e. 1 gb = 1,024 mb).

Note: "x of devices" refers to logical array devices, and a metavolume counts as one device.

Note: An "*" indicates that there are HDS disk totals not included.

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Sample report: Chargeback by P&L

Chargeback (by App P&L) as of 9/24/2007 8:05:54AM

All values in "RAW GB"

Line of Business	Site	Server Name	Host OS	Tier	Protection Type	Raw Capacity Allocated from Array	Usable Capacity Allocated from	App ID	App Name	App P&L	Billable Capacity for App P&L	Billable Chargeback for App P&L
App P&L code: (unknown)												
(unknown)	Solana	cfmd004	Solaris 2.8	Tier 2	RAID-1	404.60	202.30	7994	ORACLE MIS	(unknown)	202.30	\$695.92
(unknown)	390 Greenwich	kdbinc3c	Linux 2.6.9	Tier 2	RAID-5	694.46	606.91	151117	GF/FX Algorithmic Trading Platform	(unknown)	694.46	\$2,388.94
(unknown)	Silver Spring	md38asset00b	Solaris 2.8	Tier 2	RAID-1	4.67	2.33	34552	Remedy	(unknown)	1.56	\$5.35
(unknown)	Silver Spring	md38asset00b	Solaris 2.8	Tier 2	RAID-5	202.30	177.01	34552	Remedy	(unknown)	67.43	\$231.94
(unknown)	Silver Spring	pbgmd38raduap01	Solaris 2.8	Tier 2	RAID-1	3.01	1.50	154800	Investment Product Search	(unknown)	0.33	\$1.15
(unknown)	Silver Spring	pbgmd38raduap01	Solaris 2.8	Tier 2	RAID-5	154.14	134.87	154800	Investment Product Search	(unknown)	17.12	\$58.91
(unknown)	Silver Spring	pbgmd38raduw01	Solaris 2.8	Tier 2	RAID-1	3.01	1.50	154800	Investment Product Search	(unknown)	0.25	\$0.86
(unknown)	Weehawken	pbgnj19radpap01	Solaris 2.8	Tier 2	RAID-1	1.01	0.50	154800	Investment Product Search	(unknown)	0.11	\$0.38
(unknown)	Weehawken	pbgnj19radpap01	Solaris 2.8	Tier 2	RAID-5	77.07	67.43	154800	Investment Product Search	(unknown)	8.56	\$29.45
(unknown)	Weehawken	pbgnj19radpap01, pbgnj19radpw01	Solaris 2.8	Tier 2	RAID-1	1.83	0.92	154800	Investment Product Search	(unknown)	0.18	\$0.61
(unknown)	Rutherford	webwels20s-phys, webwels21s-phys	Solaris 2.8	Tier 2	RAID-1	2,821.03	1,410.52	33487	Global Link (GL Trade)	(unknown)	58.68	\$201.85
Subtotals for (unknown):											1,060.98	\$3,815.38
App P&L code: 0000000567												
GAG-031-SECURITIES AND FUND SER	390 Greenwich	calnap1c	Solaris 2.8	Tier 2	RAID-1	741.77	370.89	146840	GFA DW - Global Fund Accounting Data Warehouse	0000000567	185.44	\$637.93
GAG-031-SECURITIES AND FUND SER	Rutherford	calnap1p	Solaris 2.8	Tier 2	RAID-1	741.77	370.89	146840	GFA DW - Global Fund Accounting Data Warehouse	0000000567	185.44	\$637.93
GAG-031-SECURITIES AND FUND SER	Rutherford	calnap1u	Solaris 2.8	Tier 2	RAID-1	269.74	134.87	146840	GFA DW - Global Fund Accounting Data Warehouse	0000000567	53.95	\$185.58
GAG-031-SECURITIES AND FUND SER	Weehawken	ssalcsa001	Windows 2000	Tier 2	RAID-1	1,247.53	623.77	146840	GFA DW - Global Fund Accounting Data Warehouse	0000000567	623.77	\$2,145.75
GAG-031-SECURITIES AND FUND SER	Silver Spring	ssalcsa002	Windows 2000	Tier 2	RAID-1	1,247.53	623.77	146840	GFA DW - Global Fund Accounting Data Warehouse	0000000567	623.77	\$2,145.75
GAG-031-SECURITIES AND FUND SER	390 Greenwich	ssaldev002	Windows Server 2	Tier 4	RAID-5	77.21	67.46	146840	GFA DW - Global Fund Accounting Data Warehouse	0000000567	38.61	\$72.58
GAG-031-SECURITIES AND FUND SER	390 Greenwich	ssaldev004	Windows Server 2	Tier 2	RAID-1	134.87	67.43	146840	GFA DW - Global Fund Accounting Data Warehouse	0000000567	67.43	\$231.97
GAG-031-SECURITIES AND FUND SER	SWDC	ssaldev006	Windows Server 2	Tier 2	RAID-5	77.16	67.43	146840	GFA DW - Global Fund Accounting Data Warehouse	0000000567	38.58	\$132.72
GAG-031-SECURITIES AND FUND SER	SWDC	ssaldev008	Windows Server 2	Tier 4	RAID-5	77.16	67.43	146840	GFA DW - Global Fund Accounting Data Warehouse	0000000567	38.58	\$72.53
GAG-031-SECURITIES AND FUND SER	390 Greenwich	ssaldevcsa001	Windows 2000	Tier 4	RAID-5	77.21	67.46	146840	GFA DW - Global Fund Accounting Data Warehouse	0000000567	38.61	\$72.58
GAG-031-SECURITIES AND FUND SER	390 Greenwich	ssalucosa001	Windows 2000	Tier 2	RAID-1	134.87	67.43	146840	GFA DW - Global Fund Accounting Data Warehouse	0000000567	67.43	\$231.97
GAG-031-SECURITIES AND FUND SER	390 Greenwich	webtpn20r-phys, webtpn21r-phys	Solaris 2.8	Tier 2	RAID-1	1.46	0.73	146840	GFA DW - Global Fund Accounting Data Warehouse	0000000567	0.02	\$0.07
GAG-031-SECURITIES AND FUND SER	390 Greenwich	webtpn20r-phys, webtpn21r-phys	Solaris 2.8	Tier 2	RAID-5	2,663.85	2,327.23	146840	GFA DW - Global Fund Accounting Data Warehouse	0000000567	38.09	\$131.04
GAG-031-SECURITIES AND FUND SER	390 Greenwich	webtpn20r-phys, webtpn21r-phys	Solaris 2.8	Tier 1	None	4,652.95	4,652.95	146840	GFA DW - Global Fund Accounting Data Warehouse	0000000567	66.54	\$304.08
GAG-031-SECURITIES AND FUND SER	Rutherford	webwels20s-phys, webwels21s-phys	Solaris 2.8	Tier 2	RAID-1	2,821.03	1,410.52	147691	SMA Imaging	0000000567	44.01	\$151.39
Subtotals for 0000000567:											2,110.27	\$7,163.87
App P&L code: 0000000684												
GAG-5900-NON GLOBAL FINANCE OTF	Silver Spring	cbapp1	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	144563	CITI.com	0000000684	0.00	\$0.00
GAG-5900-NON GLOBAL FINANCE OTF	Weehawken	cbapp2	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	144563	CITI.com	0000000684	0.00	\$0.00
GAG-5900-NON GLOBAL FINANCE OTF	Silver Spring	cbapp3	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	144563	CITI.com	0000000684	0.00	\$0.00
GAG-5900-NON GLOBAL FINANCE OTF	Weehawken	cbapp4	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	144563	CITI.com	0000000684	0.00	\$0.00
Subtotals for 0000000684:											0.00	\$0.00

Note: Host-level fields (e.g. "Capacity Allocated from Array" and "Billable Capacity for Server") are repeated on servers with multiple "App P&L" associations.

Note: "(unknown)" indicates data not found in external data feeds.

Note: A "*" prefix indicates that this host is listed as a "Contingency Machine" in TAS.

Note: A "H" prefix indicates that this host was manually entered in FCC - not discovered by host agent. No utilization data will be available.

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Sample report: Chargeback by LOB

Chargeback (by Line of Business) as of 9/24/2007 8:05:48AM

All values in "RAW GB"

Line of Business	Site	Server Name	Host OS	Tier	Protection Type	Raw Capacity Allocated from Array	Usable Capacity Allocated from Array	App ID	App Name	App P&L	Billable Capacity for App P&L	Billable Chargeback for App P&L
LOB: (unknown)												
(unknown)	Rutherford	apodb1	AIX 5.3.0	Tier 2	RAID-1	404.60	202.30	31386	ZEUS - GFI Risk Mgt	50EUCS	404.60	\$1,391.84
(unknown)	390 Greenwich	apodb1c	AIX 5.3.0	Tier 2	RAID-1	404.60	202.30	31386	ZEUS - GFI Risk Mgt	50EUCS	404.60	\$1,391.84
(unknown)	390 Greenwich	apodb1d	AIX 5.3.0	Tier 4	RAID-5	255.00	204.00	31386	ZEUS - GFI Risk Mgt	50EUCS	255.00	\$479.40
(unknown)	Rutherford	apodb1u	AIX 5.3.0	Tier 2	RAID-1	404.60	202.30	31386	ZEUS - GFI Risk Mgt	50EUCS	404.60	\$1,391.84
(unknown)	390 Greenwich	apodb2u	AIX 5.3.0	Tier 2	RAID-1	404.60	202.30	31386	ZEUS - GFI Risk Mgt	50EUCS	404.60	\$1,391.84
(unknown)	Rutherford	areps20d	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34873	ARES - Analytical Risk Evaluation System	50EUCS	67.43	\$231.97
(unknown)	Rutherford	areps20u	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34873	ARES - Analytical Risk Evaluation System	50EUCS	22.48	\$77.34
(unknown)	Rutherford	areps20u	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	31386	ZEUS - GFI Risk Mgt	50EUCS	44.95	\$154.63
(unknown)	Rutherford	areps21u	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	31386	ZEUS - GFI Risk Mgt	50EUCS	134.87	\$463.95
(unknown)	390 Greenwich	areps3	Solaris 2.8	Tier 2	RAID-5	77.16	67.43	34873	ARES - Analytical Risk Evaluation System	50EUCS	38.58	\$132.72
(unknown)	390 Greenwich	areps3	Solaris 2.8	Tier 2	RAID-1	115.25	57.63	34873	ARES - Analytical Risk Evaluation System	50EUCS	57.63	\$198.24
(unknown)	390 Greenwich	areps4	Solaris 2.8	Tier 2	RAID-5	77.16	67.43	34873	ARES - Analytical Risk Evaluation System	50EUCS	38.58	\$132.72
(unknown)	390 Greenwich	areps4	Solaris 2.8	Tier 2	RAID-1	115.25	57.63	34873	ARES - Analytical Risk Evaluation System	50EUCS	57.63	\$198.24
(unknown)	Rutherford	areps5	Solaris 2.8	Tier 2	RAID-5	77.16	67.43	34873	ARES - Analytical Risk Evaluation System	50EUCS	38.58	\$132.72
(unknown)	Rutherford	areps6	Solaris 2.8	Tier 2	RAID-5	77.16	67.43	34873	ARES - Analytical Risk Evaluation System	50EUCS	38.58	\$132.72
(unknown)	390 Greenwich	asldb1c	Solaris 2.8	Tier 2	RAID-5	77.16	67.43	11975	Asia Sub Ledger/Local Layer	HK6021	38.58	\$132.72
(unknown)	390 Greenwich	calapp06o-node0,	Solaris 2.8	Tier 2	RAID-1	607.63	303.82	147281	Genesys - LCS	GB3553	30.38	\$104.51
(unknown)	Rutherford	calapp06o-node1	Solaris 2.8	Tier 2	RAID-1	675.07	337.53	147281	Genesys - LCS	GB3553	168.77	\$580.56
(unknown)	390 Greenwich	calgensys01o-node0,	Solaris 2.8	Tier 2	RAID-1	811.39	405.69	147281	Genesys - LCS	GB3553	811.39	\$2,791.17
(unknown)	Rutherford	calgensys01o-node1	Solaris 2.8	Tier 2	RAID-1	1,215.99	608.00	147281	Genesys - LCS	GB3553	1,215.99	\$4,183.01
(unknown)	Weehawken	casxspcob02	Windows Server 2k	Tier 2	RAID-1	134.87	67.43	153967	XSP Xotek Solutions Plus	GB5660	67.43	\$231.97
(unknown)	Weehawken	casxspcob03	Windows Server 2k	Tier 2	RAID-1	134.87	67.43	153967	XSP Xotek Solutions Plus	GB5660	67.43	\$231.97
(unknown)	Silver Spring	casxspcob02	Windows Server 2k	Tier 2	RAID-1	134.87	67.43	153967	XSP Xotek Solutions Plus	GB5660	67.43	\$231.97
(unknown)	Silver Spring	casxspcob03	Windows Server 2k	Tier 2	RAID-1	134.87	67.43	153967	XSP Xotek Solutions Plus	GB5660	67.43	\$231.97
(unknown)	Silver Spring	cbapp1	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	144563	CITI.com	ENT10129	0.00	\$0.00
(unknown)	Silver Spring	cbapp1	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	144563	CITI.com	ENT10520	0.00	\$0.00
(unknown)	Silver Spring	cbapp1	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	144563	CITI.com	ENT17273	0.00	\$0.00
(unknown)	Silver Spring	cbapp1	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	144563	CITI.com	ENT17272	0.01	\$0.05
(unknown)	Silver Spring	cbapp1	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	144563	CITI.com	ENT10197	0.03	\$0.09
(unknown)	Silver Spring	cbapp1	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	144563	CITI.com	ENT17088	0.03	\$0.09
(unknown)	Silver Spring	cbapp1	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	144563	CITI.com	ENT15522	0.04	\$0.14
(unknown)	Silver Spring	cbapp1	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	144563	CITI.com	ENT16321	0.46	\$1.58
(unknown)	Weehawken	cbapp2	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	144563	CITI.com	ENT10129	0.00	\$0.00
(unknown)	Weehawken	cbapp2	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	144563	CITI.com	ENT10520	0.00	\$0.00
(unknown)	Weehawken	cbapp2	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	144563	CITI.com	ENT17273	0.00	\$0.00
(unknown)	Weehawken	cbapp2	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	144563	CITI.com	ENT17272	0.01	\$0.05
(unknown)	Weehawken	cbapp2	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	144563	CITI.com	ENT10197	0.03	\$0.09
(unknown)	Weehawken	cbapp2	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	144563	CITI.com	ENT17088	0.03	\$0.09
(unknown)	Weehawken	cbapp2	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	144563	CITI.com	ENT15522	0.04	\$0.14
(unknown)	Weehawken	cbapp2	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	144563	CITI.com	ENT16321	0.46	\$1.58

Note: Host-level fields (e.g. "Capacity Allocated from Array" and "Billable Capacity for Server") are repeated on servers with multiple "App P&L" associations.

Note: "(unknown)" indicates data not found in external data feeds.

Note: A *** prefix indicates that this host is listed as a "Contingency Machine" in TAS.

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Sample report: Chargeback by server

Chargeback (by Server Name) as of 9/24/2007 8:10:33AM

All values in "RAW GB"

Line of Business	Site	Server Name	Host OS	Tier	Protection Type	Raw Capacity Allocated from Array	Usable Capacity Allocated from	App ID	App Name	App P&L	Billable Capacity for App P&L	Billable Chargeback for App P&L
acctfs1c												
GAG-058-GLOBAL FINANCE PRODUCTS-GAG	390 Greenwich	acctfs1c	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	50028	1.35	\$4.64
GAG-057-GFI RETAIL-GAG	390 Greenwich	acctfs1c	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	500RB	1.35	\$4.64
GAG-070-SALES-GAG	390 Greenwich	acctfs1c	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	50127	24.28	\$83.51
GAG-097-GLOBAL CASH-GAG	390 Greenwich	acctfs1c	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	50168	2.70	\$9.28
GAG-071-ADM & OTH ACT-GAG	390 Greenwich	acctfs1c	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	501GC	10.79	\$37.12
GAG-079-PRIME BROKERAGE/CPM-GAG	390 Greenwich	acctfs1c	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	501W2	1.35	\$4.64
GAG-097-GLOBAL CASH-GAG	390 Greenwich	acctfs1c	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	5012F	5.39	\$18.56
PRODUCTION	390 Greenwich	acctfs1c	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	502BL	1.35	\$4.64
PRODUCTION	390 Greenwich	acctfs1c	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	502ND	8.09	\$27.84
GAG-057-GLOBAL INT RATE DERIVATIVES-GAG	390 Greenwich	acctfs1c	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	504FS	1.35	\$4.64
GAG-097-GLOBAL CASH-GAG	390 Greenwich	acctfs1c	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	505MC	2.70	\$9.28
GAG-097-GLOBAL CASH-GAG	390 Greenwich	acctfs1c	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	507DJ	8.09	\$27.84
GAG-097-GLOBAL CASH-GAG	390 Greenwich	acctfs1c	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	507E2	2.70	\$9.28
GAG-095-GLOBAL EQUITY DERIVATIVES-GAG	390 Greenwich	acctfs1c	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	507T9	2.70	\$9.28
PRODUCTION	390 Greenwich	acctfs1c	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	508D8	1.35	\$4.64
GAG-193-MUNICIPAL SEC DIV-GAG	390 Greenwich	acctfs1c	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	508HL	1.35	\$4.64
GAG-070-SALES-GAG	390 Greenwich	acctfs1c	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	508R4	1.35	\$4.64
GAG-097-GLOBAL CASH-GAG	390 Greenwich	acctfs1c	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	76640	56.64	\$194.86
Subtotals for acctfs1c:											134.87	\$483.96
acctfs1p												
GAG-058-GLOBAL FINANCE PRODUCTS-GAG	Rutherford	acctfs1p	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	50028	1.35	\$4.64
GAG-057-GFI RETAIL-GAG	Rutherford	acctfs1p	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	500RB	1.35	\$4.64
GAG-070-SALES-GAG	Rutherford	acctfs1p	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	50127	24.28	\$83.51
GAG-097-GLOBAL CASH-GAG	Rutherford	acctfs1p	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	50168	2.70	\$9.28
GAG-071-ADM & OTH ACT-GAG	Rutherford	acctfs1p	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	501GC	10.79	\$37.12
GAG-079-PRIME BROKERAGE/CPM-GAG	Rutherford	acctfs1p	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	501W2	1.35	\$4.64
GAG-097-GLOBAL CASH-GAG	Rutherford	acctfs1p	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	5012F	5.39	\$18.56
PRODUCTION	Rutherford	acctfs1p	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	502BL	1.35	\$4.64
PRODUCTION	Rutherford	acctfs1p	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	502ND	8.09	\$27.84
GAG-057-GLOBAL INT RATE DERIVATIVES-GAG	Rutherford	acctfs1p	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	504FS	1.35	\$4.64
GAG-097-GLOBAL CASH-GAG	Rutherford	acctfs1p	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	505MC	2.70	\$9.28
GAG-097-GLOBAL CASH-GAG	Rutherford	acctfs1p	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	507DJ	8.09	\$27.84
GAG-097-GLOBAL CASH-GAG	Rutherford	acctfs1p	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	507E2	2.70	\$9.28
GAG-095-GLOBAL EQUITY DERIVATIVES-GAG	Rutherford	acctfs1p	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	507T9	2.70	\$9.28
PRODUCTION	Rutherford	acctfs1p	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	508D8	1.35	\$4.64
GAG-193-MUNICIPAL SEC DIV-GAG	Rutherford	acctfs1p	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	508HL	1.35	\$4.64
GAG-070-SALES-GAG	Rutherford	acctfs1p	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	508R4	1.35	\$4.64
GAG-097-GLOBAL CASH-GAG	Rutherford	acctfs1p	Solaris 2.8	Tier 2	RAID-1	134.87	67.43	34428	eSALES	76640	56.64	\$194.86
Subtotals for acctfs1p:											134.87	\$483.96

Note: Host-level fields (e.g. "Capacity Allocated from Array" and "Billable Capacity for Server") are repeated on servers with multiple "App P&L" associations.

Note: "(unknown)" indicates data not found in external data feeds.

Note: A "" prefix indicates that this host is listed as a "Contingency Machine" in TAS.

Note: A "M" prefix indicates that this host was manually entered in FOC - not discovered by host agent. No utilization data will be available.

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Sample report: Server summary

Server, summary (by Site, Host Name)

All values in "RAW GB"

Host Name	Host OS	Tier	Protection Type	Capacity Allocated from Array	Billable Monthly Chargeback for Server	Primary Capacity Allocated from Array	File System						Raw Partition			Primary Capacity Utilization
							Non DB Used	Non DB Total	Non DB Utilization	DB Used	DB Total	DB Utilization	DB Used	DB Total	DB Utilization	
390 Greenwich (9/24/2007 8:10:33AM)																
acctfs1c	Solaris 2.8	Tier 2	RAID-1	134.87	\$464	134.87	7.18	100.00	7.18%	0.00	0.00	0.00%	0.00	0.00	0.00%	6.82%
alasnyo1, alasnyo2	Solaris 2.8	Tier 2	RAID-1	6,609.99	\$22,738	6,609.99	4,199.63	5,949.73	70.69%	0.00	0.00	0.00%	0.00	0.00	0.00%	88.69%
alasnyu1	Solaris 2.8	Tier 2	RAID-1	539.47	\$1,856	539.47	73.75	243.00	30.36%	0.00	0.00	0.00%	0.00	0.00	0.00%	18.87%
alasnyu2	Solaris 2.8	Tier 2	RAID-1	1,146.38	\$3,944	1,146.38	538.78	688.00	78.31%	0.00	0.00	0.00%	0.00	0.00	0.00%	47.00%
aldbnyo1	Solaris 2.8	Tier 4	RAID-5	14,045.11	\$26,405	14,045.11	13.38	90.19	14.84%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.10%
alrs39c1	Solaris 2.8	Tier 2	RAID-1	606.91	\$2,088	606.91	23.80	96.00	24.80%	0.00	0.00	0.00%	0.00	0.00	0.00%	3.82%
alsdb1c	Solaris 2.8	Tier 1	None	357.12	\$1,632	0.00	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00%
alsdb1c	Solaris 2.8	Tier 2	RAID-1	238.08	\$819	238.08	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00%
alsdb1c	Solaris 2.8	Tier 2	RAID-5	154.32	\$531	154.32	17.54	50.35	34.84%	0.00	0.00	0.00%	0.00	0.00	0.00%	11.37%
alsdb3c	Solaris 2.8	Tier 2	RAID-1	741.77	\$2,552	741.77	60.34	136.00	44.38%	0.00	0.00	0.00%	0.00	0.00	0.00%	8.13%
#aistecorp1c	Other	Tier 1	None	2,023.68	\$9,248	0.00	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00%
#aistecorp1c	Other	Tier 1	RAID-1	4,047.36	\$18,496	0.00	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00%
aistecorp1u	AIX 5.3.0	Tier 2	RAID-5	1,157.43	\$3,982	1,157.43	266.48	1,117.66	23.84%	0.00	0.00	0.00%	0.00	0.00	0.00%	23.02%
afinfx1c	Linux 2.4.21	Tier 2	RAID-1	202.30	\$696	202.30	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00%
afinfx1d	Linux 2.4.21	Tier 4	RAID-5	125.00	\$235	125.00	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00%
afinfx1u	Linux 2.4.21	Tier 2	RAID-1	202.30	\$696	202.30	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00%
amd001	Windows 2000	Tier 2	RAID-5	231.49	\$796	231.49	118.72	231.46	51.28%	0.00	0.00	0.00%	0.00	0.00	0.00%	51.28%
amlap1	Solaris 2.8	Tier 2	RAID-1	2,629.93	\$9,047	2,629.93	1,667.78	2,407.99	89.28%	0.00	0.00	0.00%	0.00	0.00	0.00%	89.42%
amimap1c	Solaris 2.8	Tier 2	RAID-1	404.60	\$1,392	404.60	32.55	197.27	18.60%	0.00	0.00	0.00%	0.00	0.00	0.00%	8.04%
amimdb1c	AIX 5.3.0	Tier 2	RAID-1	202.30	\$696	202.30	50.12	97.50	51.40%	0.00	0.00	0.00%	0.00	0.00	0.00%	24.77%
amimdb1c	AIX 5.3.0	Tier 2	RAID-5	1,350.34	\$4,645	1,350.34	457.55	722.89	83.30%	0.00	0.00	0.00%	0.00	0.00	0.00%	33.88%
amimdb1c	AIX 5.3.0	Tier 4	RAID-5	7,484.72	\$14,071	7,484.72	5,300.30	6,280.84	84.38%	0.00	0.00	0.00%	0.00	0.00	0.00%	70.81%
amimdb1c, web390gpi02p	Solaris 2.10	Tier 2	RAID-5	115.74	\$398	115.74	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00%
amimdb1c, web390gpi03p	Solaris 2.10	Tier 2	RAID-5	115.74	\$398	115.74	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00%
amimme1c	Solaris 2.8	Tier 2	RAID-1	809.21	\$2,784	809.21	53.47	195.31	27.38%	0.00	0.00	0.00%	0.00	0.00	0.00%	8.81%
amovdt1	Solaris 2.8	Tier 4	RAID-5	932.48	\$1,753	932.48	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00%
apodb1c	AIX 5.3.0	Tier 2	RAID-1	404.60	\$1,392	404.60	31.83	120.00	28.62%	0.00	0.00	0.00%	0.00	0.00	0.00%	7.87%
apodb1d	AIX 5.3.0	Tier 4	RAID-5	255.00	\$479	255.00	2.11	62.50	3.37%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.83%
apodb2u	AIX 5.3.0	Tier 2	RAID-1	404.60	\$1,392	404.60	30.99	120.00	26.82%	0.00	0.00	0.00%	0.00	0.00	0.00%	7.88%
apture390apdr	Windows Server 2003	Tier 4	RAID-5	231.49	\$435	231.49	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00%
Apture390GSQL1	Windows 2000	Tier 2	RAID-5	308.65	\$1,062	308.65	6.25	268.03	2.33%	3.50	4.36	80.13%	0.00	0.00	0.00%	3.16%
apture390gusq1	Windows 2000	Tier 2	RAID-1	404.60	\$1,392	404.60	13.59	399.11	3.40%	4.33	5.44	79.44%	0.00	0.00	0.00%	4.43%
apture390webdr	Windows Server 2003	Tier 2	RAID-5	231.49	\$796	231.49	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00%
AptureOR	Windows 2000	Tier 2	RAID-5	308.65	\$1,062	308.65	38.93	68.10	57.17%	0.00	0.00	0.00%	0.00	0.00	0.00%	12.81%
#aptureuat	Other	Tier 2	RAID-1	404.60	\$1,392	404.60	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00%
arch390gsg1	Windows Server 2003	Tier 2	RAID-1	404.60	\$1,392	404.60	87.44	336.81	26.98%	49.83	67.74	73.56%	0.00	0.00	0.00%	33.83%
#arch390gweb1	Other	Tier 2	RAID-5	115.74	\$398	115.74	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00%
arecapny1	Solaris 2.8	Tier 1	None	333.08	\$1,522	0.00	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00%
areps3	Solaris 2.8	Tier 2	RAID-1	115.25	\$396	115.25	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00%
areps3	Solaris 2.8	Tier 2	RAID-5	77.16	\$265	77.16	3.64	57.21	8.38%	0.00	0.00	0.00%	0.00	0.00	0.00%	4.72%
areps4	Solaris 2.8	Tier 2	RAID-1	115.25	\$396	115.25	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00%
areps4	Solaris 2.8	Tier 2	RAID-5	77.16	\$265	77.16	1.09	57.21	1.80%	0.00	0.00	0.00%	0.00	0.00	0.00%	1.41%
asldb1c	Solaris 2.8	Tier 2	RAID-5	77.16	\$265	77.16	6.12	19.45	31.48%	0.00	0.00	0.00%	0.00	0.00	0.00%	7.84%
atlap21c	Solaris 2.8	Tier 1	None	134.87	\$616	0.00	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00%

Note: Unless otherwise specified, all capacities are in units of raw GB and refer to Array Capacities ONLY.

Note: A "" prefix indicates that this host is listed as a "Contingency Machine" in TAS.

Note: A "F" prefix indicates that this host was manually entered in ECC - not discovered by host agent. No utilization data will be available.

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Server, detailed (by Site, Host Name)

All values in "RAW GB" (unless otherwise specific)

390 Greenwich

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arch390gsq11

nam.nsroot.net	DB Agent? Yes	VG Total = 404.56	Primary = 404.60	Billable cap. (raw GB)	Monthly charoeback	Annual charoeback	Pri. Capacity Utilization
169.193.97.251	JBOD : 67.83	VG Used = 0.00	Local Replica = 0.00	404.60	\$1,392	\$16,702	33.93%
Windows Server 2003 (Service Pack 1)		VG Free = 404.56	Remote Replica = 0.00				

Tier : Tier 2	Protection : RAID-1	Primary = 404.60	Billable cap. (raw GB)	Monthly charoeback	Annual charoeback	Pri. Capacity Utilization
Shared Devs? No		Local Replica = 0.00	404.60	\$1,392	\$16,702	33.93%
		Remote Replica = 0.00				

Capacity Allocated from Array = 404.60	Array File-system Total = 336.81	Database on FS Total = 67.74	Database on RAW Total = 0.00
Billable Capacity Allocated from Array 404.60	Array File-system Used = 87.44	Database on FS Used = 49.83	Database on RAW Used = 0.00
Billable Capacity Not Seen by Host = 0.00	Array File-system Free = 249.37	Database on FS Free = 17.91	Database on RAW Free = 0.00
Billable Capacity Not in Host VG = 0.00	Array File-system % Used = 25.96%	Database on FS % Used = 73.56%	Database on RAW % Used = n/a

Filesystems				
Mountpoint Name	Type	Size (usable)	%used	
C:\	Internal (NTFS)	33.91	22.80%	
D:\	Internal (NTFS)	33.91	2.75%	
E:\	Array (NTFS)	101.14	33.53%	
F:\	Array (NTFS)	67.43	64.56%	
G:\	Array (NTFS)	33.71	0.46%	

Databases				
Database Name	Type	Size (usable)	%used	
ecc	SQLServer	33.87	73.56%	