Improving Service and Cutting Labor Costs with Automated Storage Provisioning

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Today's storage provisioning task:

IS	IS NOT
involves many tedious, manual steps in order to connect storage to hosts	Involves just the act of creating LUNS
required every time an application needs more storage	difficult for environments with single storage array
time consuming for storage administrators when frequently required	simply locating available storage
a critical step in providing QOS to user community	easy to do in complex environments
prone to Serious Errors and potential down time	something that can be delegated to inexperienced personnel
requires extensive knowledge of storage subsystems	
difficult to document – often involves complex spreadsheets or scattered bits of paper	

What is automated storage provisioning?

IS	IS NOT
quick way to respond to application needs for additional storage	loss of control over storage
time saving for storage administrators when frequently required	designed for environments with single storage arrays
eliminates many tedious steps in order to connect storage to hosts	simply finding available storage
eliminates risk of manual errors	a replacement for element managers
requires minimal knowledge of storage subsystems	a total SRM solution
a way for system or host administrators to quickly obtain storage as needed	a tool for end users
the ability to carve LUNS as needed - with specified attributes	
eliminates over-allocation and over-commitment of storage resources	
eliminates purchasing storage in anticipation of need	
single view of all storage subsystems	

The cost of storage provisioning

- Without automated solutions, provisioning is a bottleneck because storage administrators must rely on scattered bits of information maintained on whiteboards, large pieces of paper, pads, spreadsheets, or in their heads
- When provisioning, the documentation itself requires as much as 39% of the time spent on the process
- A typical company with a **30 terabyte SAN**, and experiencing a storage **growth rate of 50 percent per year**, could face provisioning **costs of over $750,000 over a three year period**

How to save money…with automated storage provisioning

- Automating the storage provisioning process can **lower** the human **costs** involved in managing storage by as much as **$250,000 per year**
  - An average storage administrator may configure as many as 4,000 LUNS per year
  - It can take an expert administrator upwards of 55 minutes to provision a single volume
  - At a fully-loaded hourly rate of $70 per hour, this translates into a storage provisioning labor cost of more than $250,000 per year

When to consider automated provisioning

- Managing more than one storage array. In the future, heterogeneous support will be a necessity.
- Need to be able to do more work with less resources (labor).
- Providing storage as a utility or considering providing storage as a utility. Charge-back is a possibility.
- Would like to have information on who is using what storage, how much they are using, and what the cost of that storage might be. Maybe doing this by hand today.
- Receiving many requests to provide additional storage and spending considerable amount of time on provisioning tasks.
- Using Service Level Agreements (SLAs) to measure service delivered.

Should you be considering automated provisioning?

- Are you part of an organization that provides storage as a service to internal or external users?
- Do you have a need to track storage that is allocated to users and insure that their requirements are being met?
- Do you manage your storage under Service Level Agreements (SLAs)?
- Would it be useful for you to know how much storage is being used by which users?
- Would it be helpful for you to be able to assign costs to the storage you are providing to your users?
- Do you anticipate a need to utilize storage monitoring and charge-back capabilities?
- Do you manage storage assets in a rapidly changing environment?
- Does it take hours, or even days, for you to provide additional storage to users when requested?
- Is your storage growing at a rapid rate?

How to evaluate provisioning tools

- Whom is the product designed for?
  - Storage Administrators
  - System Administrators
  - Others?
- Does the tool support truly heterogeneous environments?
- Are there software or hardware pre-requisites?
- What are the “automated” parts of the process?
- How is “LUN masking” done?

Automated Provisioning Implementations

Product A	Product B	Product C	Product D
Stand alone	Integrated Module	Integrated Module	Integrated Module
EVA, HSG 80	ALL HP + EMC SMI-S	Symmetrix, Clariion, HSG	EMC Symmetrix & Clarion, LSI, Hitachi (working on HP
Allows for charge-back	Charge-back via accounting module	NO Charge-back	NO Charge-back
Allows self-provisioning	No self-provisioning	No self-provisioning	No self-provisioning
No Triggers or Alerts	Triggers & Alerts via SRM modules	No Triggers or Alerts	Has Triggers & Alerts within SRM
LUNs carved from raw storage	Some carving	LUNs must be pre-configured	Unknown

What is HP OpenView Storage Provisioner?

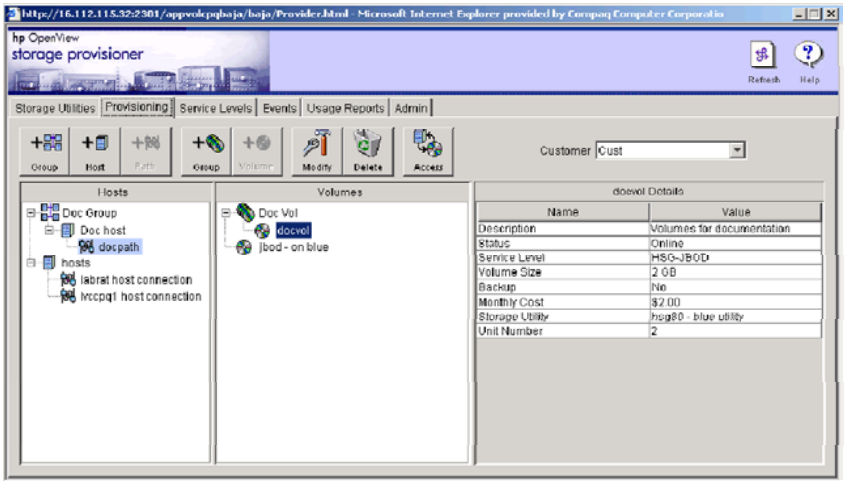
- A software application that automates portions of the provisioning process
- An application that sends commands directly to the device (element) managers
- An additional component of hp OpenView storage area manager (OpenView SAM)
- A tool for storage administrators

Example of an automated provisioning process

- Automatic discovery of storage subsystems
- Move subsystems into utilities
- Define service levels and costs for each utility
- Create customer accounts
- Allocate storage quotas to customers
- Provision storage to customer's hosts or allow them to provision their own storage
- Monitor storage usage via reports
- Charge for usage if desired


flash demo
»HP OpenView
Storage Provisioner

HP OpenView Storage Provisioner



Eliminates constant configuring of storage subsystems to accommodate user's changing needs

- **Save time:** automating error-prone tasks and lower-level functions
  saves time and frees storage administrators for more important tasks
- **Save money:** faster provisioning helps companies leverage staff and prevents over-allocating storage resources
- **Improve service:** by establishing storage services in advance, providers decrease delays associated with new storage requests

Provisioner features

- Supports all EVA PLUS EMA (HSG) subsystems
- Allows “permission” to self-provision storage
- Creates “fast-provisioning” environment in advance of storage needs
- Carves LUNs as needed and with designated attributes
- Provides extensive reporting
- Provides clear picture of all storage resources through single interface
- Prevents over-allocation and over-purchasing of storage resources

Storage Provisioner deployment

Service offerings

- **Install and start-up**
  - Optional
  - Enhanced offerings include implementation
- **First year service and support**
  - Included in product price
  - Service upgrades available

Volume Usage Report

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Current Volume Usage Report

Storage Utility	Storage System	Name	Customer	Service Level	Size (GB)
Baja_QA Util	Baja_QA	hsv vol1	Bank of Kauai	HSV-VRAID0	1
Baja_QA Util	Baja_QA	vol w/ new hsv sl	Bank of Kauai	new hsv sl	111
Blue only	BLUE	blue vol	Cust	HSG-JBOD	2
LEFT Util	LEFT	vol w/ new sl	Bank of Kauai	new sl	18
qa_2 utility	BAJA_QA_2	vol	Cust	HSV-VRAID0	2
Right only	RIGHT	right vol	Cust	HSG-JBOD	9

Quota Report

Quota Report

Customer	Storage Utility	Quota	Allocated	Used
Bank of Kauai	Baja_QA Util	Host	33	1
Bank of Kauai	Baja_QA Util	Storage (GB)	333	112
Bank of Kauai	Baja_QA Util	Volume	33	2
Bank of Kauai	LEFT Util	Path	2	1
Bank of Kauai	LEFT Util	Storage (GB)	222	18
Cust	Blue only	Path	6	1
Cust	Blue only	Storage (GB)	50	2
Cust	qa_2 utility	Host	6	3
Cust	qa_2 utility	Storage (GB)	250	2
Cust	qa_2 utility	Volume	512	1
Cust	Right only	Path	6	1
Cust	Right only	Storage (GB)	50	9

Billing Report

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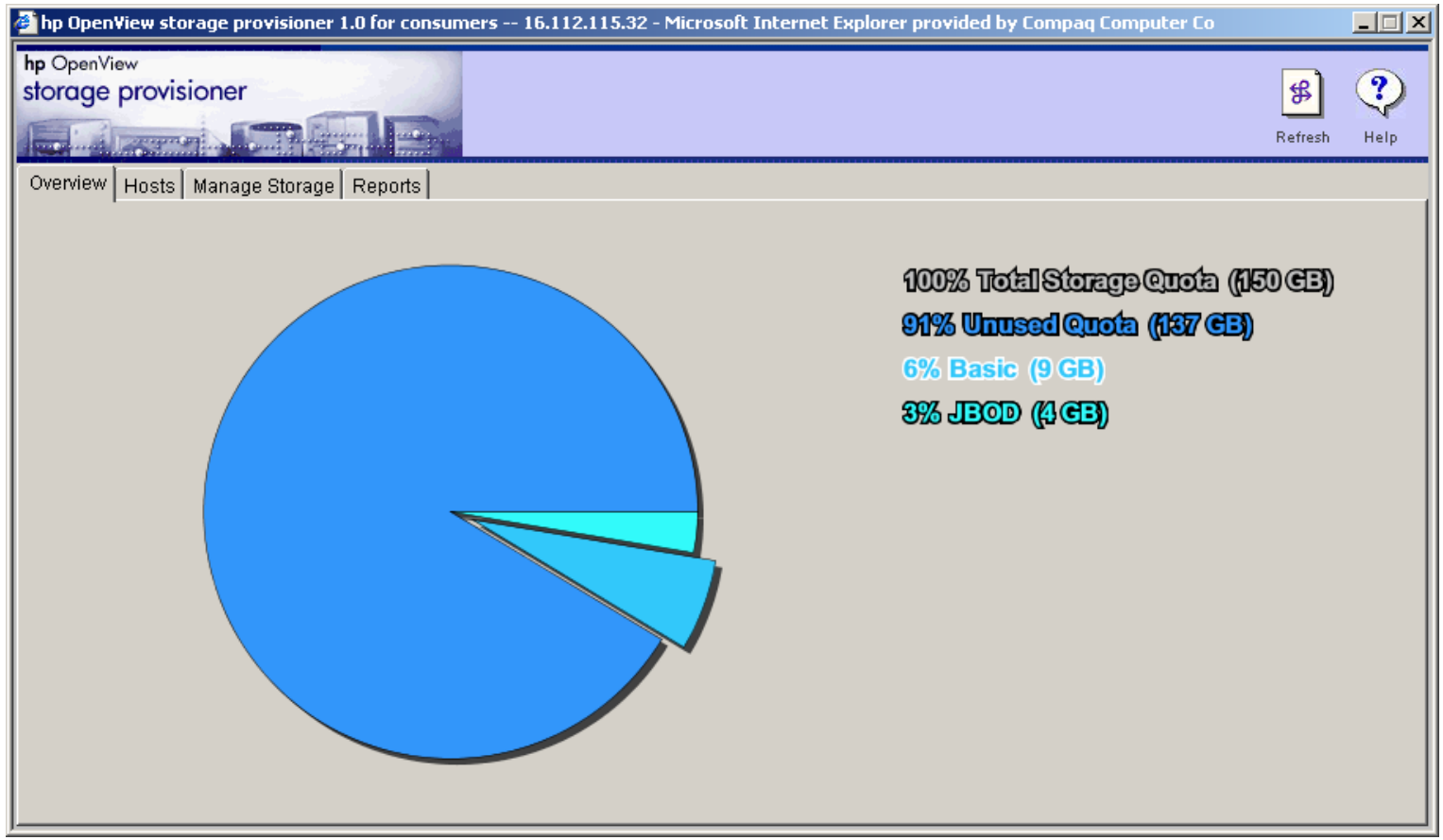
Shows volumes that existed during reporting period

Billing History Report (10/1/02 - 10/31/02)

Group	Customer	Service Level	Volume Name	Storage Utility	Size (GB)	Created	Deleted	Days	Cost
	BoK	JBOD	vol (D1)	L Util	9	10/1/02	10/22/02	22	$0.00
	BoK	vraid 0	New Volume (New Volume)	BQA Ut	10	10/2/02		30	$110.00
	BoK	vraid 0	wol (wol)	BQA Ut	3	10/1/02		31	$33.00
	Cust	Advanced	Volume3 (Volume3)	BQA Ut	20	10/15/02		17	$2,000.00
Wolfpack cu...	alpha wolf	Basic	New Volume (D2)	Wolfpack hsg util	9	10/18/02		14	$225.00
Wolfpack cu...	alpha wolf	JBOD	vol2 (D2)	Wolfpack hsg util	9	10/14/02	10/14/02	1	$0.00
Wolfpack cu...	alpha wolf	JBOD	vol (D4)	Wolfpack hsg util	4	10/3/02		29	$20.00

Export Close

Customer Quota and Usage Graphs



Provisioner Roadmap

- OV SAM 4.0 (early 2004)
  - Provisioner to merge with Storage Allocater
  - Automated provisioning to be integrated as 5th OV SAM module
  - Allocater will EOL with release of OV SAM 4.0
  - Increased array support via SMI-S
    - XP
    - EMC Symmetrix
    - Others
  - Remove redundancy with Storage Accountant
  - Expand “active” capabilities with thresholding and scripting

how to obtain more information about storage provisioner

- http://www.hp.com/products1/storage/products/storagesoftware/openviewstorageprovisioner/index.html
- **Evaluation copy (60 day)**
- **US and Canada – 50% discount off 2TB license**

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