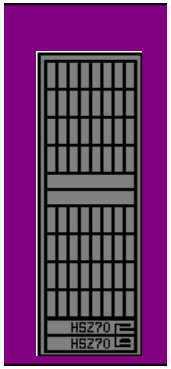
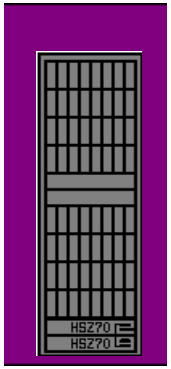
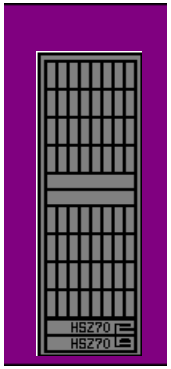


Storage System Scripting Utility (SSSU) and Command Scripter

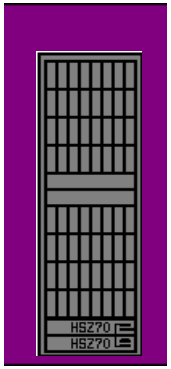


Agenda

- Storage System Scripting Utility (SSSU)
- Command Scripter



Storage System Scripting Utility (SSSU)

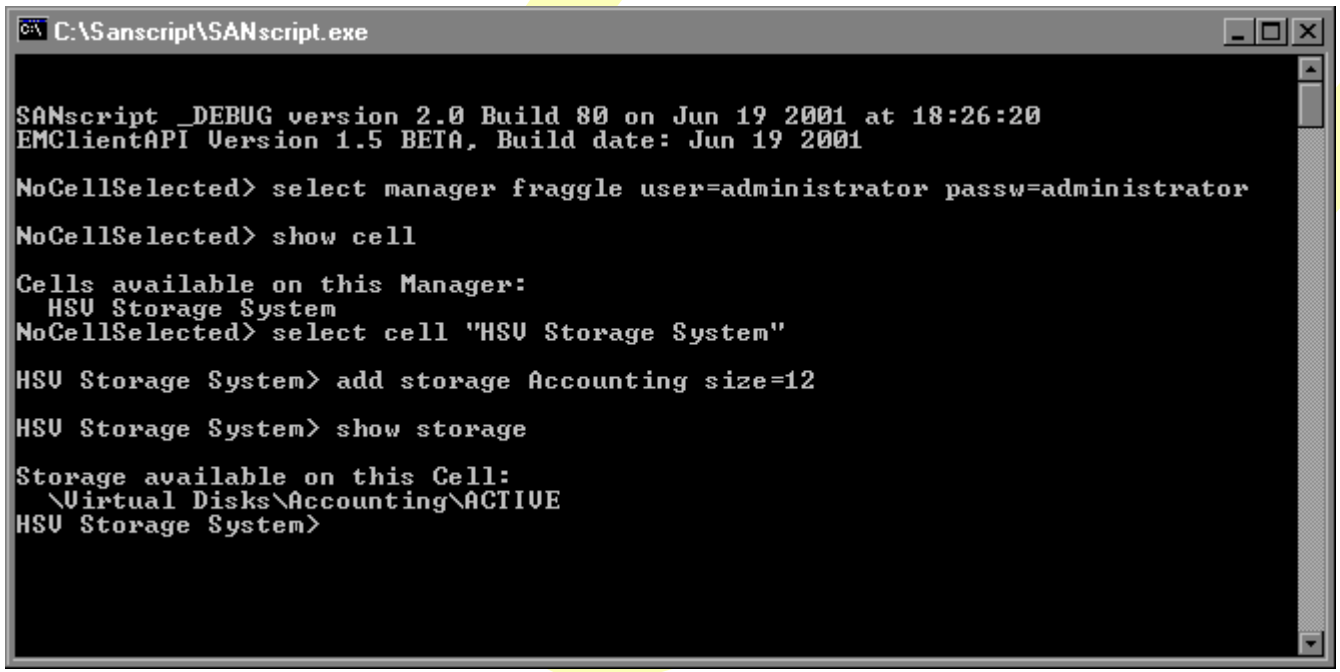


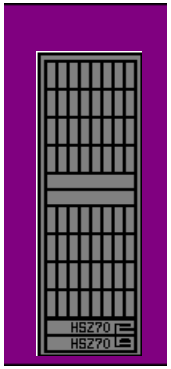
SSSU – What is it?

- The Enterprise Storage Scripting Utility for Enterprise Virtual Array is a command line application that allows you to configure and control HSV controllers.
- The Scripting Utility is the client side of a client/server application. The Scripting Utility's server component resides on the hp StorageWorks Management Appliance.
- The Scripting Utility announces itself as SSSU, which stands for Storage System Scripting Utility.
- Complex configuration requests and operations can be handled by either the Command View EVA GUI or the Scripting Utility.
- While initial configuration requests can be handled easily and expediently through the GUI, repetitious and complex configuration steps can be scripted and executed through the character cell interface of the Scripting Utility.

Storage System Scripting Utility (SSSU)

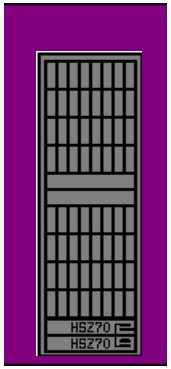
- Commonly referred to as SANscript
  - Tool to issue commands through a shell UI and execute scripts
  - Scripts to create/modify a configuration
  - Interactive mode as a command prompt
  - Configuration commands to add, set, and delete
  - Capture of a configuration into a script file
  - Show command to display configuration





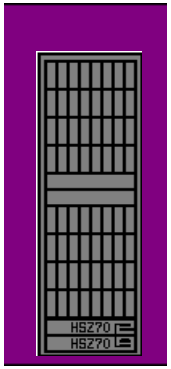
SSSU – Definitions of Terms

- **Cell** - A controller or controller pair that is treated conceptually as a unit. In the management GUI, this appears as the name you give the initialized storage system. Cell is also referred to as a Storage Cell.
- **Disk** A physical storage device (disk drive) connected to the cell.
- **Group** A collection of disks that storage is created from. Group is also referred to as a **Disk Group**.
- **Spare Policy -** Disk failure protection level: NONE, SINGLE, and DOUBLE.
  - NONE—sets no space aside for spares
  - SINGLE—sets space aside that is equivalent to two disk
  - DOUBLE—sets space aside that is equivalent to four disks
- **Host** A system that has data path access to the LUNs defined on the cell.
- **Manager** The object that controls configuration of the cell.
- **Storage** A collection of blocks created on one or more disks that can be used by a host for information storage and retrieval. Storage is also referred to as a **Virtual Disk**.
- **LUN** The host-accessible presentation of storage on the cell.



SSSU - Installing the Scripting Utility

- The Scripting Utility is installed from your host operating system solution kit. See the installation instructions in the SSSU directory on that kit for details on how to install SSSU..
- For your convenience, you may wish to add the directory containing the Scripting Utility executable to your path, or copy the executable to a directory already in your path..
- The executable file is named *sssu* or *SSSU.EXE*, depending on the operating system environment.



SSSU – Starting the Scripting Utility

- The Scripting Utility is started at a command prompt window or equivalent.

  IMPORTANT: In order to execute the Scripting Utility, ensure that the password access to the controller (if enabled) is already set up from the HSV Element Manager software. You cannot set this password from within the Scripting Utility.

- Syntax

  SSSU <*additional arguments*>

SSSU – Implementation

- If the Scripting Utility is started without arguments on the command line, a generic application "NoCellSelected>" prompt is displayed on the terminal and input can be accepted.
- If the Scripting Utility is started with arguments on the command line, those commands are echoed to the input terminal and executed, then the utility exits.

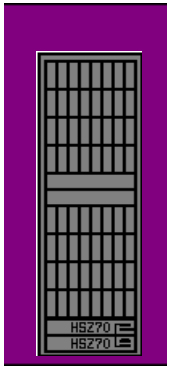
  NOTE: Commands or object names with embedded blanks (spaces) must be enclosed in double quotes.
- **Examples**

  SSSU

  This example starts the Scripting Utility without additional arguments and will prompt you for commands.

  SSSU FILE "snap d1.txt"

  This example starts the Scripting Utility and executes the file named *sanp d1.txt* and then exits. The file extension is not required with Scripting Utility files, *txt* here is used just an example.



SSSU - Examples

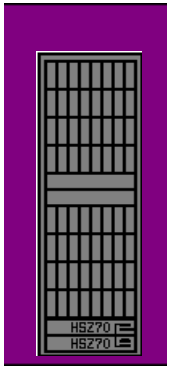
- **Hosts Example**
- For example, to add a host named *engineering* to the root Hosts folder:

  ADD HOST *Hosts**engineering* WORLD_WIDE_NAME=*1111-2222-3333-4444*

- Whenever you refer to this host, you must give the full path. For example, when adding a LUN to this host:

  ADD LUN *4* HOST=*Hosts**engineering* STORAGE=<*virtual_disk_name*>

- If you create a folder structure within the root Hosts folder, you must include all levels of the folder structure in your commands.



SSSU – Examples

Virtual Disk Example

- For example, to add a virtual disk family named *new_code* to the root folder Virtual Disks:

  ADD STORAGE *"\Virtual Disks\new_code"* SIZE=*10*

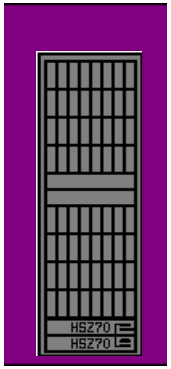
- This example creates a 10 GB virtual disk family named *new_code*.

  NOTE: This is a virtual disk family. The actual virtual disk name is *"\Virtual Disks\new_code\ACTIVE."* The family only consists of this one virtual disk, unless a copy or snapshot is made.

- Whenever you refer to this virtual disk, you must always give the full path and enclose it in double quotes.

- For example, referencing this same virtual disk *'new_code'* within another command, give the full path, add the *\ACTIVE,* and be sure to include everything within double quotes:

  SET STORAGE *"\Virtual Disks\new_code\ACTIVE"* WRITE_PROTECT



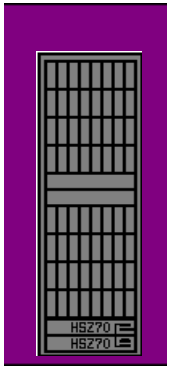
SSSU – Examples

Disk Groups Example

- When a path includes the root folder "\Disk Groups" you must enclose the entire path in double quotes:

  SHOW GROUP "\Disk Groups*admin*"

  ADD STORAGE *"\Virtual Disk\new_code"* SIZE=*10* GROUP="\Disk Groups\admi*n"*



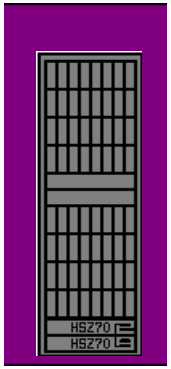
SSSU – Getting Help

- You can display a list of options for each command by entering a space and question mark ("?") after the command or option name. This displays a list of parameters or options that you can enter with the present command.
- For example, to get information on what options are available with the ADD command:
- Type ADD ? at the command prompt:

```
NoCellSelected> ADD ?
```

- The following list of options is presented:

```
CELL
COPY
FOLDER
GROUP
HOST
LUN
SNAPSHOT
STORAGE
```



SSSU – Configuration Examples

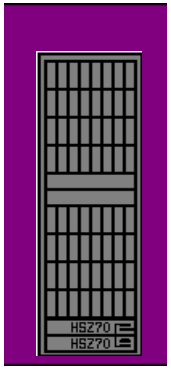
- **Creating and Presenting a Virtual Disk**
- To create a virtual disk and present it to a host, you:
  - Select the newly created cell (storage system)
  - Add a virtual disk (ADD STORAGE) to the storage system
  - Add a host to the storage system
  - Add a LUN as presentation to the host

SSSU - Configuration Examples

- Step 1
- Select the newly created cell (storage system)
- Use the SELECT CELL command to select the cell you just created.

NoCellSelected> SELECT CELL *Yekao*

Yekao>

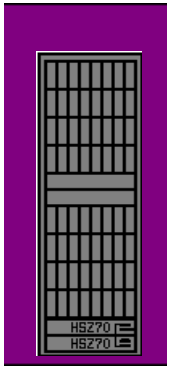


SSSU – Configuration Examples

- Step 2
- Create a virtual disk using the ADD STORAGE command, supplying at the very least the storage (virtual disk) name and size in whole GBs.

  Yekao> ADD STORAGE *Enicar* SIZE=*4*

  Yekao>
- In the example, a *4* GB virtual disk named *Enicar* is created.
- **IMPORTANT:** The virtual disk (storage) can be between 1 GB (minimum) and 2 TBs (maximum). The increments must be in whole GBs.
- **NOTE:** To present this newly created virtual disk, you need to have at least one host server within the storage system. This host must be added to the Enterprise Virtual Array.



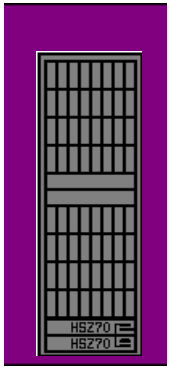
SSSU – Configuration Examples

- Step 3.
- Use the ADD HOST command to add a host to the storage system, supplying the World Wide Name (WWN) for the host port.
- **NOTE:** In this example, only one port is added, but because the Enterprise Virtual Array Storage System requires multipathing, you need to have at least two WWNs for each host. Therefore, additional WWNs are added with the SET HOST command.

```
Yekao> ADD HOST \Hosts\SVT165
WORLD_WIDE_NAME=1000-0000-c923-6735

Yekao> SET HOST \Hosts\SVT165

ADD_WORLD_WIDE_NAME=1000-0000-c923-6736
```

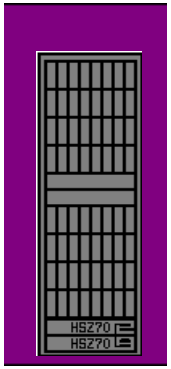


SSSU – Configuration Examples

- Step 4.
- Add the LUN to the host. Use the ADD LUN command, supplying the full path to the virtual disk and the host machine.

  Yekao> ADD LUN *13* STORAGE=*"\Virtual Disks\Enicar\ACTIVE"* HOST=*\Hosts\SVT165*

- **NOTE:** Remember, for any path or name that contains spaces, you must enclose the entire string in double quotes, as in the example above.
- Now LUN *13*, which is *4* GBs in size, is presented to the host named *SVT165*.



SSSU – Sample Configuration Output

- The following example shows the commands entered the previous procedures

NoCellSelected> SELECT MANAGER swma31k008 USERNAME=XXX PASSWORD=XXX

NoCellSelected> SHOW CELL

Cells available on this Manager:

Uninitialized Storage System1

NoCellSelected> SELECT CELL “Uninitialized Storage System1”

Uninitialized Storage System1> ADD CELL Yekao

NoCellSelected> SELECT CELL Yekao

Yekao> ADD STORAGE Enicar SIZE=4

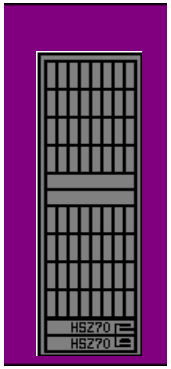
Yekao> ADD HOST SVT165 WORLD_WIDE_NAME=1000-0000-c923-6735

Yekao> SET HOST *Hosts\SVT165*

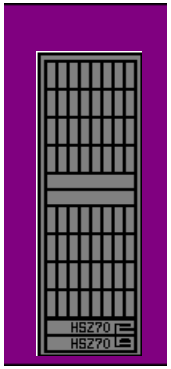
ADD_WORLD_WIDE_NAME=*1000-0000-c923-6736*

Yekao> ADD LUN 13 STORAGE=”\Virtual Disks\Enicar\ACTIVE”

HOST=\Hosts\SVT165

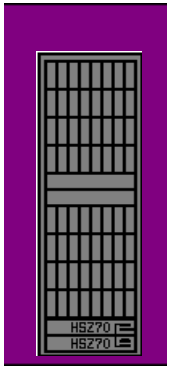


Command Scripter



Command Scripter – What is it?

- Command Scripter is a scripting application that provides command-level control of StorageWorks systems.
- With Command Scripter, you can create, edit, and run script files that contain StorageWorks Command Line Interpreter (CLI) commands. This scripting capability allows automation of frequently performed StorageWorks operations.
- Two interfaces are included in Command Scripter:
  - Command line interface for local and LAN connections to StorageWorks controller
  - Browser-based interface for centralized, remote connection
- Command Scripter supports the HSZ70, HSZ80, HSG60, HSG80, and HSJ80 controllers, ACS version 8.5 and later, and can be used with or without an Agent.



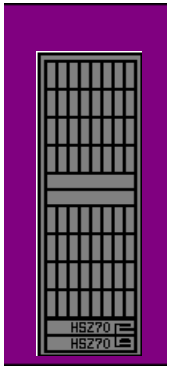
Command Scripter

Browser Interface

- The Command Scripter browser interface consists of the following pages with the functionality indicated:
- Select Agent Host—Select HSG Element Manager or SWCC Server
- Select Subsystem—elect a subsystem on the server
- Run Commands and Scripts—Issue CLI commands or scripts of commands
- Script Editor—Create and edit CLI scripts

Command Scripter Command Line Interface

- Command Scripter gives you the option to use the command line to execute commands and scripts.



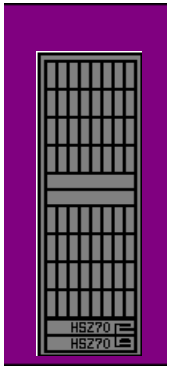
Command Scripter

Controllers Supported

- SANworks Command Scripter supports the following StorageWorks array controllers:
  - HSG80 ACS 8.7 (Fibre Channel)
  - HSG60 ACS 8.6 (Fibre Channel)
  - HSZ70 HSOF 7.7 (ultra SCSI)
  - HSZ80 ACS 8.6 (ultra SCSI)
  - HSJ80 ACS 8.6 (CI)

Operating Systems Supported

- Windows NT Version 4.0, Service Pack 6A
- Windows 2000 Professional, Advanced Server, Data Center, and XP Professional
- Sun Solaris, versions 2.6, 7 and later
- Compaq Tru64 UNIX, versions 4.0F, 4.0G, and 5.0A and later
- OpenVMS, version 7.1 and later
- HP-UX, Version 11.0 and later
- IBM AIX, Version 4.3.3



Command Scripter Usage

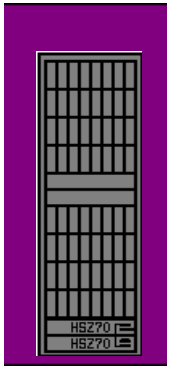
- Command Scripter can be run with or without an agent
  - User's Guide has all details for all supported O.S.'s
- Executing a single command:

  cmdscript -h "host name" -s "subsystem" -l "level" "command"

  Example: cmdscript -h myhost -s hsg800 -l 2 cli show this
- Executing a script:

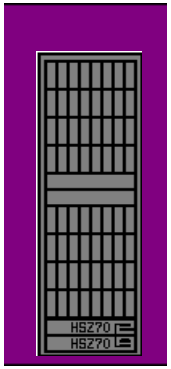
  cmdscript -h myhost -s hsg80 - l 2 < scriptFilePath/script/FileName

  Example: cmdscript -h myhost -s hsg80 - l 2 < script.txt



Command Scripter Usage – example 1

```
# Integrated Backup test script
# Clones a JBOD
cli cl cl
cli mirror disk50000 mc4
cli set mc4 nopolicy
cli set mc4 members=2
cli set mc4 replace=disk60000
waitnormal mc4 60 2000
cli set d3 nowriteback
delay 10
cli reduce disk60000
cli unmirror disk50000
cli set d3 writeback
cli add mirror jclone disk60000
cli init jclone nodestroy
# Create jclone on backup host
cli add unit d100 jclone
cli set d100 disable_access=all
cli set d100 enable_access=backup
quit
```



Command Scripter Usage – example 2

```
# Integrated Backup test script
# Clones a two disk mirror set
cli cl cl
cli set m4 nopolicy
cli set m4 members=3
cli set m4 replace=disk40200
waitnormal m4 60 2000
cli set d1 nowriteback
delay 10
cli reduce disk40200
cli set d1 writeback
cli set m4 policy=best_perf
cli add mirror mirclone disk40200
cli init mirclone nodestroy
# Create mirclone on backup host
cli add unit d100 mirclone
cli set d100 disable_access=all
cli set d100 enable_access=backup
quit
```

Any Questions?