Sun StorageTek™ Business Analytics Host Agent Installation Guide

Release 5.1

Copyright

English:

French:

Table of Contents

Introduction to the Host Agent

The Host Agent reports configuration information as well as file system, physical volume, and logical volume information for industry-leading server platforms, including Windows, Solaris, IBM AIX, HP-UX, Novell, and Linux platforms.

Note: With the acquisition of StorageTek, Sun Microsystems has re-branded and re-named Global Storage Manager (GSM) as Sun StorageTek Analytics, a member of the Enterprise Storage Manager portfolio of software solutions. The functionality of Business Analytics is identical to GSM, only the name has changed.

Sun StorageTek Business Analytics provides three agent installation CDs for the supported platforms: Windows Local Manager, Solaris Local Manager, UNIX Agents (HP-UX and IBM AIX). To upgrade the Host Agent, uninstall the previously installed Host Agent before you install the Sun StorageTek Business Analytics 5.0 Host Agent. The decision to upgrade an existing Host Agent to the current Sun StorageTek Business Analytics Host Agent may be performed because:

- The *Sun StorageTek Business Analytics Release Notes* indicate a problem has been fixed or a new feature added.
- The upgrade is recommended by your Sun representative.

The following notes apply to installing and configuring the Host Agent:

- Refer to the *Sun StorageTek Business Analytics Support Matrix* located on the Documentation CD to confirm the latest agent support requirements.
- Specify the optional configurable parameter, **CONFIG CACHE REFRESH INTERVAL**, which controls the duration for refreshing cached information. The default value is 7200 seconds.
- Specify the optional parameter, **HOST SLEEP TIME**, which is used to specify the interval for checking whether the HBA adapter is online. The default value is 600 seconds.
- Specify the location of the EMC PowerPath software executable program, if installed. This configuration setting is required to enable the host end-to-end mapping feature.
- May be installed by using the Central Manager or Local Manager Installation CD or by using the Sun StorageTek Business Analytics Host and SRM Agent Self-Extracting Install CD (Windows).
- Some installation types, such as Self Extracting Host Installation and Standalone Host Installation, **do not** support agent auto registration.
- Is installed and started automatically when the **Typical** installation option for the Central Manager is selected.
- Non-Solaris UNIX installs use the .tgz (gzipped tar) file and the install script (<Agentname>-install.sh).

Solaris Installation

Effective with Sun StorageTek Business Analytics Release 5.1, all Solaris installation packages contain the prefix, SUNWbizan, within their package names. These names appear in the informational status text that is displayed when you install or uninstall a Business Analytics agent.

The Solaris Agent Installation CD provides an installation script (setup). The installation script (setup) can be used to:

- View a list of the available agents, depending on the server platform, that you can choose to install or upgrade.
- Perform agent upgrade for existing agent packages.
- Uninstall (setup –u) a previously installed agent package.

The installation script will validate that you have logged in as root, which is the required user permission to perform an agent installation. It also validates that the system is running a supported Operating System for an agent that you select for installation or upgrading.

Automatic and Static Agent Registration

Automatic agent registration is a configuration option for agent data collection. In the storability.ini file, automatic agent registration is configured as follows:

- **Local Manager** – Specify the IP address or host name of the Local Manager to be contacted to activate agent registration.
- **Local Manager Registration Port** – Specifies the TCP port number used by the Local Manager for agent auto registration. The default port number is 17146.
- **Enable Auto Registration** – Turns agent auto registration on (default) or off.

To register the Host Agent statically, proceed as follows:
- Enter false in the **Enable Auto Registration** field.
- Modify the Routing Agent static agent configuration to include an entry (port number|<agent IP address/name>)
- Restart the Routing Agent
- Restart the companion Central Manager agents

Host Agent Matrix

The Host Agent matrix follows.

Item	Description
HBAs	The Sun StorageTek Business Analytics Host Agent supports any HBA that implements the standard Common (formerly SNIA) HBA API.
Operating Systems	
Windows	• InstallShield and Self-Extracting Agent Install supported • Silent Installation supported for both InstallShield and Self-Extracting Agent Install • Required Server Access: Administrator privileges • Default Cache Interval: 120 minutes
Solaris	• Solaris package install • Required Server Access: root access • Default Cache Interval: 120 minutes
AIX	• "Tar/install.sh" installation • Required Server Access: root access • Default Cache Interval: 240 minutes
HP-UX	• "Tar/install.sh" installation • Required Server Access: root access • Default Cache Interval: 240 minutes

Suse Linux	• "Tar/install.sh" installation • Required Server Access: root access • Default Cache Interval: 120 minutes
Red Hat Linux	• "Tar/install.sh" installation • Required Server Access: root access • Default Cache Interval: 120 minutes
Novell NetWare	• Novell NetWare Network Loadable Module (NLM) installation **Note**: The Host Agent for Novell NetWare does not collect certain information that is collected by the Host Agent installed on other platforms, including Host Bus Adapter (HBA) information.
Configuration Parameters	• **Local Manager** – Specifies the IP address or host name of the Local Manager to be contacted for agent auto registration. The default value is local host (meaning the Host Agent contacts the Routing Agent on its server for agent auto registration). • **Local Manager Registration Port** – Specifies the TCP port number used by the Local Manager for auto registration. The default port number is 17146 for agent auto registration. • **Config. Cache Interval** – Specifies how long configuration data is cached; default value is 600 seconds. The minimum cache age for the Host Agent is six hundred (600) seconds on Win32, Solaris and Linux servers. On IBM AIX and HP-UX servers, it is thirty (30) minutes. • **Enable Auto Registration** – Turns agent auto registration on (default) or off. • **EMC PowerPath File Location for End-to-End Mapping** – Specifies the fully qualified path to the EMC PowerPath binary, if installed.

Table 1 - Host Agent Matrix

Host Agent Objects

The following table describes the relational objects that the Host Agent publishes. You can use the Agent Diagnostic Tool (gsmdiag.exe) to collect any and all of these objects. See also the **Verifying Host Agent** section.

Object	Description
alerts-3_1	ip_address, port, when, application, severity, id, description, timestamp
gsa_agent_version-2_0	ip_address, port, agent_name, version, compile_time, managed_entities, tz_name, tz, timestamp
gsa_cache_control-2_0	ip_address, port, table_name, cache_age, last_update_request_length, update_request_pending, group_name, group_master, timestamp
gsa_hba_config	ip_address, nodename, host_id, api_version,vendor, model, serial_number, port_num, driver_version, wwnn, wwpn, firmware_version, port_fcid, port_type, effective_speed, max_speed, link_status, fabric_wwn, ctrl_instance, ctrl_num, hardware_path, timestamp

gsa_host_config	ip_address, nodename, host_id, osname, vendorname, model, version_number, release_level, numcpus, memory, timestamp.

Object	Description
gsa_host_filesystem-2_3	ip_address, nodename, host_id, device, filesystem name, filesystem_type, blocksize, total_blocks, blocks_ used, blocks_ available, total_files, files_used, files_available, filesystem _id lvm, logical_device_group, logical_device_ name, timestamp.
gsa_host_interfaces	ip_address, nodename, host_id, interface_name, mac_ address, interface_ip, interface ip_name, subnet *mask,* default_gateway, interface_status, timestamp.
gsa_host_netshares	ip_address, nodename, host_id, share_name, share_ type, share_path, filesystem name, options, timestamp.
gsa_ini_control-2_0	ip_address, port, domain, parameter, value, status, timestamp
gsa_logical_volume_config-2_1	ip_address, nodename, host_id, lvm, logical_device_ group, logical_device_name, type, device_layout, capacity, blocksize, logical_device-status, timestamp.
gsa_logical_volume_relation	ip_address, nodename, host_id, lvm, logical_device_ group, logical_device_name, uses_lvm, uses_logical_device_group, uses_ logical_device name, timestamp.
gsa_parm_info	ip_address, port, object, parm_name, value_syntax, description, required
gsa_physicalvolume_config	ip_address, nodename, host_id, physical_device name, vendor, product, serialnum, volume_id, array_ id, physical_device_status, timestamp.
gsa_physical_volume_path-2_1	ip_address, nodename, host_id,, physical_device _name, path_device_name, ctrl_instance, ctrl_number, channel, target, LUN, array_wwpn, array_port_id, path_status, path_ software_name, path_software_version, timestamp.

Table 2 - Host Agent Objects

Windows Local Manager Installation CD - InstallShield

1. Insert the Windows Local Manager CD into the CD-ROM drive.

2. Click **Next** on the **Welcome** menu to continue the installation.

3. Click **Yes** to accept the terms of the software license agreement.

4. Click **Next**.

5. Review/modify the informational **User Name** and **Company Name** and click **Next**.

6. On the screen that allows you to select agents to be installed, select **Host Agent** and click **Next**.

7. Review the settings and click **Next** to continue.

8. Click **OK** to acknowledge the message regarding the Microsoft Disk Management Diagnostic utility. See the **Sun StorageTek Business Analytic Support Matrix** for information on this requirement if you have dynamic disks.

9. If prompted, specify whether (yes/no) to install the new version of the Configuration Tool. The *Sun StorageTek Business Analytic Release Notes* will specify any agent whose configuration requires a new release of the Configuration Tool.

10. After the Configuration Tool is automatically launched, click **File->Edit->Smart Agent Configuration**.

11. Click the **HostAgent** tab in the main window, similar to the Configuration Tool window that appears below.
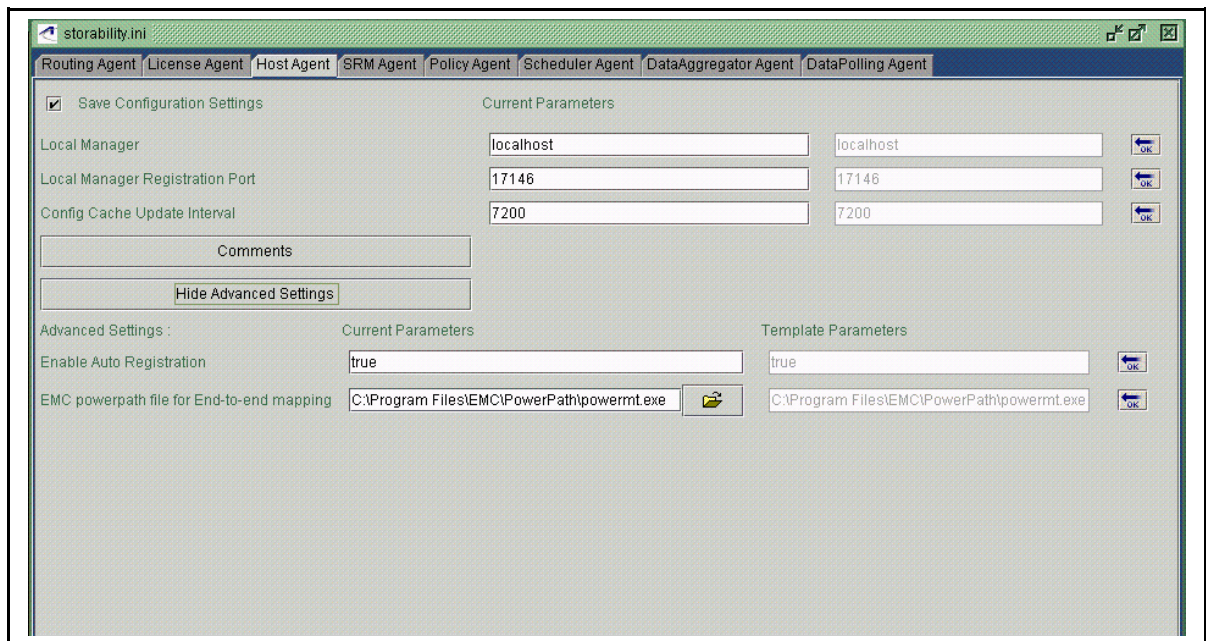
Figure 1 - Configuration Tool Host Agent Tab

12. In the **Local Manager** field, specify the IP address or host name of the Local Manager to be contacted for agent auto registration. The default value is "localhost".

13. In the **Local Manager Registration Port** field, specify the port number hat the Local Manager uses for agent auto registration. The default TCP port number is 17146.

14. In **Config. Cache Refresh Interval** field, review/modify how long the agent caches data. The default value is 6000 seconds.

15. Click **Show Advanced Settings**.

16. Review/modify the **Enable Auto Registration** configuration setting that turns auto discovery on (true) or off (false). The default value causes the agent to attempt to register with the Local Manager at start up. If registration fails, the agent will re-attempt registration every five minutes. If registration succeeds, the agent will "refresh" its registration every twenty-four (24) hours.

17. Review/modify the **EMC powerpath file for End to end mapping** setting. If the host server has EMC PowerPath software installed, use the **Browse** icon to locate and specify the location of the **powermt.exe** file.

18. With the "Save Configuration Settings" check box enabled (check mark), click **File->Save** and then confirm saving the storability.ini file.

19. If you have made any configuration changes, select **Tools->Restart Service** to restart the Host Agent.

20. Click **File->Exit** to close the Configuration Tool.

21. View and then close the **Readme** file and click **Finish**.

22. Proceed to the **Verifying Host Agent** section.

Standalone Installation - InstallShield

1. Insert the Sun StorageTek Business Analytic Local Manager CD into the CD-ROM drive. If the InstallShield-based installation program is automatically launched, close the program.

2. Open a DOS Command Window.

3. Change directory to Win32\HostAgentSetup.

4. Type **setup.exe** and press **Enter**. The **Storability Host Agent Welcome** screen appears.
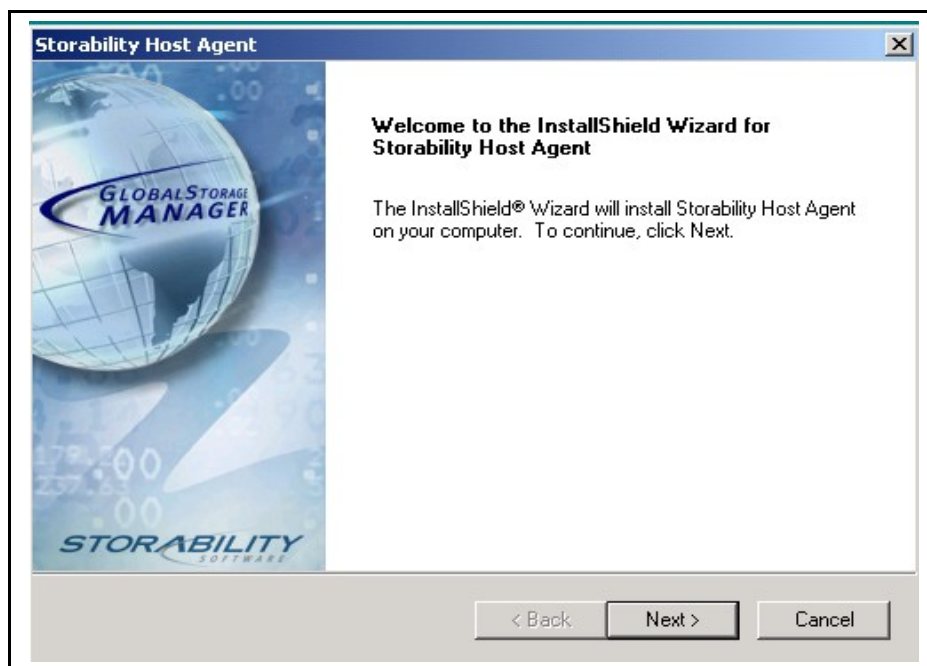
Figure 2 - Storability Host Agent Welcome Screen

5. Click **Next>** to continue.

6. Click **Yes** to accept the terms of the software license agreement.

7. Review/modify the informational User Name and Company Name and click **Next>**.

8. Click **Next>** to accept the default destination folder (i.e., <drive>:\Program Files\Storability) or click **Browse** to select another destination folder. Note that the \GSM folder will be created under the destination folder that you specify.

9. Review the settings and click **Next>** to continue.

10. Read the information concerning the Microsoft Disk Management Diagnostic Utility that appears in the **Information** dialog and click **OK** to continue. The Installation in progress splash screen appears.

11. When the **InstallShield Wizard Complete** screen appears, click **Finish**. At this point, the Storability Host Agent is installed and running on the Windows server.

12. Use the Configuration Tool on a Windows Local Manager to add the Host Agent as a SUB_AGENT entry in the desired Local Manager/Central Manager storability.ini file.
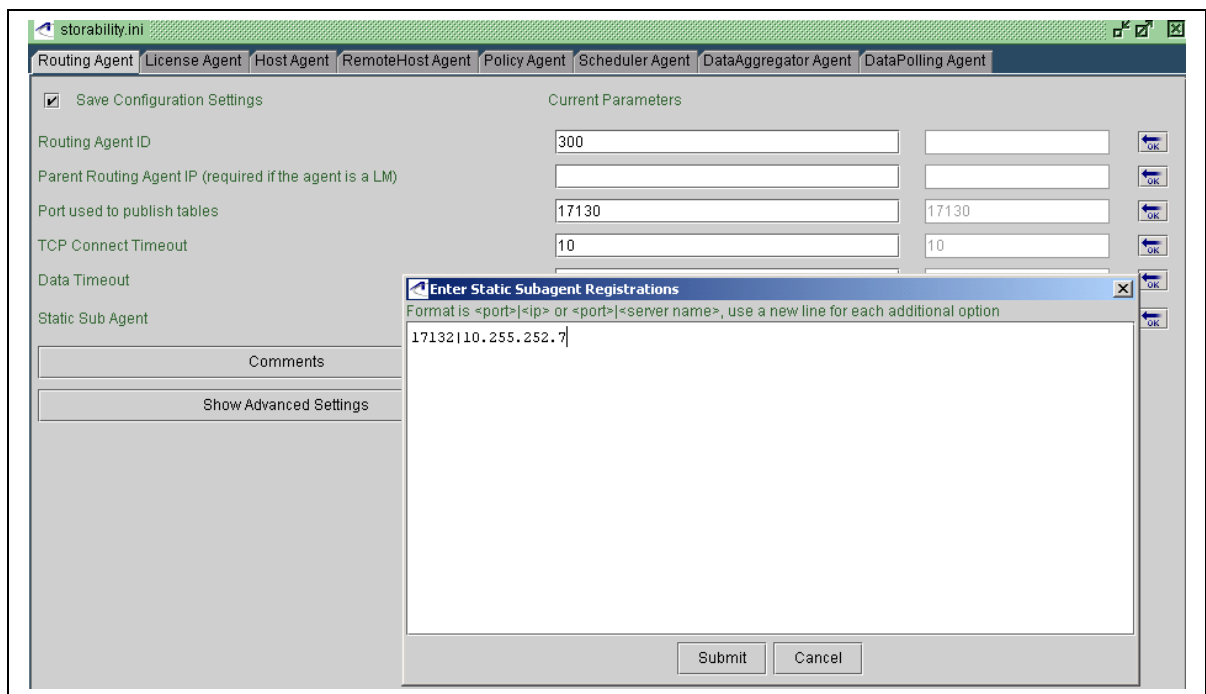
Figure 3 - Adding Sub Agent Entry Using Configuration Tool

13. Proceed to the **Verifying the Host Agent** section.

Silent Installation - InstallSheild

A silent installation of the Windows Host Agent enables you to perform multiple installations of the Host Agent using the same parameters, which are recorded during a reference installation into a setup.iss file. The high-level procedure is summarized as follows:

1. Record a reference installation session of the Windows Host Agent into the **setup.iss** file.
2. Execute the Host Agent's installation using the recorded session on as many Local Managers, as needed.

During a silent installation, the InstallShield installation reads the necessary input from the response file that you created.

Proceed as follows:

1. Copy the contents of **HostAgentSetup** from the Storability Local Manager and Smart Agent CD (d:\Win32\HostAgentSetup) onto the hard drive of the Windows Local Manager.
2. From a command prompt, change to that directory. For example:
   ```
   C:\>cd "Program Files\HostAgentSetup"
   ```

3. Run the following command:

   ```
   C:\Program Files\HostAgentSetup> setup.exe -r -f1"C:\Program
   Files\HostAgentSetup\setup.iss"
   ```

   Notes:

   a. Enter no space after **-f1**, quotation marks ("") are required.
   b. The setup command with the above options will create the response file in the same directory that contains all the required software to do a remote installation.
   c. While creating the response file, you are installing the Host Agent. As a result, you do not perform Step 4 below on that machine.
   d. If you press the **Back** button while you are creating the response file, the reference file is not set up correctly. In this case, remove the existing setup.iss file and start Step 3 again.

4. Copy the contents of this directory (e.g., c**:**Program Files\HostAgentSetup) with the setup.iss to any other Windows Local Managers on which you will install the Host Agent.
5. Run the following command:

   ```
   C:\Program Files\HostAgentSetup> setup.exe -s -v"/qn"
   ```

   Notes:

   • Enter no space after the -v option, and quotes are required. You must enter a space after **qn**.
   • A silent installation takes less than two minutes on Windows 2000 and Windows NT platforms.
   • After the installation is completed, a Storability Host Agent service is installed and running.
   • Proceed to the **Verifying the Host Agent** section.

Note: If the Host Agent and SRM Agent were **previously installed using InstallShield**, uninstall these agents before installing them using the Self-Extracting Install CD.

1. Select **Start->Program Files->Storability->Uninstall->Uninstall Local Manager**

   Or:

   Start->Program Files->Storability->Uninstall->Uninstall Host Agent. The Storability **Uninstall** dialog appears.

2. Click the checkbox for the Host Agent and SRM Agent.
3. Click **Next>**. The **Question** dialog appears.
4. Click **Yes** to confirm uninstalling the software. An uninstalling agent splash box appears as each selected agent is uninstalled.
5. When the InstallShield Wizard Complete dialog box appears, click **Finish**.

Solaris Installation

The installation procedure for the Storability Host Agent follows. The installation script (setup) is supplied on the Solaris Local Manager Installation CD.

1. Open a terminal window on the desktop of the Sun host.

2. Mount the Local Manager installation CD in your CD-ROM drive. For example:

```
mount –o  ro  –F hsfs /dev/dsk/c0t6d0s0 /cdrom
```

3. Change directory to the CD directory (e.g., /cdrom)

4. Run the installation script to access the main agent installation main menu.

5. Select to install the **Host Agent** and press **Enter**.

6. Type zero (0) and press Enter to end the selection of agents for installation.

7. If EMC PowerPath is installed but not in the default directory, type **y.** You are prompted to specify the fully qualified path to the PowerPath software.

   If it is not installed, type **n** and press **Enter**.

8. When prompted, enter **y** and press **Enter** to review/ modify the **Advanced Settings** or **n** to accept the default values. For the **Advanced Settings**.

   - Specify whether (y/n) to start the Host Agent (if down) using the agentMonitor. Agent Monitor will send an SNMP trap and restart an agent if it is detected as not running.

   - Review/modify the data collection interval that specifies how long the Host Agent caches data; the default value is 7200 seconds.

   - Review/modify the **HOST_SLEEP_TIME** parameter in the range of 1 to 600 seconds. This setting specifies the interval for checking whether the HBA is online. The default value is 600 seconds.

   - Review/modify the enable agent auto registration; agent auto registration is enabled by default.

   - Enter the IP address/network resolvable host name of the Local Manager to be contacted for agent auto registration. In the above screen, the Local Manager's IP address is 10.250.2.11.

   - Review/modify the TCP port number the Local Manager uses for agent auto registration; the default port number is 17146.

- Specify (y/n) whether to restart the agents after installation. If the agent is already running, the install script displays this operational status when the agents are restarted, if applicable.

9. Enter **y** to confirm continuing with the installation of the Host Agent (GSMhost), when prompted.

10. The installation will complete and return you to the command line.

11. If you restarted the agents, use the process status (ps) command to verify they are running.

12. Proceed to the **Verifying the Host Agent** section.

IBM AIX Host Agent Installation

All currently supported AIX agents are provided with both the hostAgent-AIX.tgz (gzipped tar) file and the install script. Ensure that the "hostAgent-install.sh" and hostAgent-AIX.tgz files reside in the same location.

1. Mount the installation CD in the CD-ROM drive of the AIX server. For example:

        mount -v cdrfs -r /dev/cd0 /mnt # /mnt must exist

2. Change directory to the software installation directory. For example:

    cd /mnt/Unix/AIX/5.x

3. Run the installation script:

        ./hostAgent-install.sh

4. The installation script installs and starts the Host Agent.

Agent Auto Registration on IBM AIX
To configure agent auto registration after installation, you can add the Host Agent to a Local Manager Routing Agent configuration or manually add the required entries to the storability.ini file. Sample storability.ini entries for the Host Agent appear below.

        GSM_LM_HOST = 10.192.1.15
        GSM_LM_PORT = 17146
        GSM_ENABLE_LM_REGISTRATION = true

HP-UX Host Agent Installation

The following notes apply to installing Sun StorageTek Business Analytic agents on this platform:

- The Sun StorageTek Business Analytic Agent installation must be carried out locally by root.

- You may mount the software media directly using the local CD-ROM drive or copy the CD contents to some location on the server.
    - o # ioscan -funC disk # Identifies cdrom device
    - o Sample mount command:
        # pfs_mount -o xlat=unix /dev/rdsk/cXtXd0 /SD_CDROM

```
                    (where /dev/rdsk/cXtXd0 is the cdrom device)
```

- Depending on which filesystem extensions are recognized by the host, the location, relative to the CD root, will be:

```
        UNIX/HP-UX/<version>     (basic ISO 9660 filesystem)
        Unix/HP-UX/<version>     (ISO 9660 with extensions)
```

- The software installation directory contains both the .tgz (gzipped tar) file and the install script.
- To install individual agents, simply run the corresponding installation script:

```
    HOSTAGEN.SH;1               (basic ISO 9660 filesystem)
    hostAgent-install.sh        (ISO 9660 with extensions)
```

- The agent should be started and stopped using the init scripts in the /sbin/init.d directory.
- Use the following command to confirm which agents are running:

```
    $ ps -ef | grep Agent
```

- Refer to the READ.TXT file on the installation CD for additional information on installing Sun StorageTek Business Analytic agents on a HP-UX server.

- The Host Agent must be installed before any other Sun StorageTek Business Analytic agent on a HP-UX server.

1. Mount the installation CD in the CD-ROM drive of the HP-UX server.
2. Change directory to the software installation directory. For example:

```
        cd /cdrom/UNIX/HPUX/11.00
```

3. Run the Host Agent installation script. For example:

```
        ./hostAgent-install.sh
```

The installation script installs and starts the Host Agent. A sample output follows.

```
    x opt/storability/bin/hostAgent, 3379200 bytes, 6600 tape blocks
    x opt/storability/etc/storability.ini, 43 bytes, 1 tape blocks
    x opt/storability/etc/HBAmanufacturers.dat, 303 bytes, 1 tape blocks
    x opt/storability/GSM-license.txt, 9930 bytes, 20 tape blocks
    x opt/storability/lgpl-license.txt, 26532 bytes, 52 tape blocks
    x opt/storability/openssl-license.txt, 6279 bytes, 13 tape blocks
    x opt/storability/pcre-license.txt, 1944 bytes, 4 tape blocks
    x opt/storability/snia-license.txt, 23716 bytes, 47 tape blocks
    x opt/storability/snmp++-license.txt, 1238 bytes, 3 tape blocks
    x opt/storability/xercesc-license.txt, 2697 bytes, 6 tape blocks
    x sbin/init.d/hostAgent, 1615 bytes, 4 tape blocks
    x sbin/rc1.d/K250hostAgent symbolic link to ../init.d/hostAgent
    x sbin/rc3.d/S120hostAgent symbolic link to ../init.d/hostAgent
    Starting Storability host agent:              hostAgent started
```

Agent Auto Registration on UNIX Servers (non-Solaris)
To configure agent auto registration after installation, you can manually add the Host Agent to a Local Manager Routing Agent configuration as a SUB_AGENT entry or add the

required entries to the storability.ini file. Sample storability.ini entries for the Host Agent appear below.

```
GSM_LM_HOST = 10.192.1.15
GSM_LM_PORT = 17146
GSM_ENABLE_LM_REGISTRATION = true
```

Red Hat Linux Host Agent Installation

On Red Hat Linux, the Host Agent is provided as a simple "Tarball" or zipped tar archive. To install the agent, simply unpack the "Tarball" (<agent>-rh<version>.tgz) and start the agent using the startup script (located in /etc/rc.d/init.d on Red Hat servers).

1. Mount the Sun StorageTek Business Analytics UNIX Agent Installation CD to cdrom. For example:

    /mount/mnt/cdrom

2. Change directory to the Linux directory:

    /mnt/cdrom/Unix/Linux

    ```
    [root@Linux]# ls -al
    total 10
    dr-xr-xr-x   5 root    root       2048 Nov  1 03:24 .
    dr-xr-xr-x   6 root    root       2048 Oct 13 16:47 ..
    dr-xr-xr-x   2 root    root       2048 Oct 25 00:28 RedHat-7.2
    dr-xr-xr-x   2 root    root       2048 Nov  1 03:24 RedHat-EnterpriseEdition
    dr-xr-xr-x   2 root    root       2048 Oct 25 00:25 Suse-8.0
    ```

3.   The installation files are listed as follows:

    RedHat-7.2: hostAgent-install.sh   hostAgent-rh72.tgz
    RedHat Enterprise Edition 3.0 or 4.0: hostAgent-install.sh   hostAgent-rhee.tgz

  4. To install the agent, simply run the installation script hostAgent.sh as shown below.

    ```
    ./hostAgent-install.sh
    ```

    This script will look for the "Tarball" in its current directory default or in the path specified as the first argument.

    Note: The same installation files are used to support RedHat Edition 3.0 and RedHat Edition 4.0.
5. Verify the hostAgent started.
6. To start/stop the agent, simply run the startup script as shown below.

    ```
    etc/rc.d/init.d/hostAgent    start
    etc/rc.d/init.d/hostAgent    stop
    ```

Uninstalling/Upgrade Storability Host Agent Linux Host

1. Backup the Storability Initialization File if upgrading.

   /opt/storability/etc/storability.ini

2. Stop the currently installed Host Agent (hostAgent).

   /etc/rc.d/init.d/hostAgent stop

   [root@Linux opt]# /etc/rc.d/init.d/hostAgent stop
   Stopping Storability host agent: hostAgent 927 killed

   Note: If the SRM Agent (srmAgent) is installed, please refer to backing up and stopping srmAgent first.

3. Manually remove the storability directory under /opt

   rm -rf storability

4. Verify the storability directory under /opt is deleted

Suse Linux Host Agent Installation

On Suse Linux, the Host Agent is provided as a simple "Tarball" hostAgent-[suse version].tgz. For Suse 8.0, the installation files are hostAgent-install.sh and hostAgent-suse80.tgz.

```
The command:

        tar –zhvf  <tarball-name>

will untar the package.

To install the agent, simply run the installation script hostAgent.sh as
shown below.

        ./hostAgent.sh [<tarfile-path>]
```

This script will look for the "Tarball" in its current directory default or in the path specified as first argument.

To start the agent, simply run the startup script as shown below.

```
        /etc/rc.d/init.d/hostAgent   start
```

Host Agent for Novell NetWare

Follow these instructions to properly install and configure the agent on this operating system:

1. Copy hostAgent.nlm, clibnetware.nlm & storability.ini to the desired folder on the host machine. We recommend that you create a folder called storability in the SYS volume, and copy the .nlm and .ini files into this directory

   It is possible to access the Novell Host from a Windows box, using UNC paths (eg: \\192.168.1.1\sys). To do this, you must first install the Novell Client for Windows available from the Novell web site at http://www.novell.com/products/clients/.

2. The storability.ini file provided on the CD has the following default entries:

```
#GSMhost
:hostAgent.nlm
GSM_LM_HOST = localhost
GSM_LM_PORT = 17146
CONFIG_CACHE_REFRESH_INTERVAL = 7200
GSM_ENABLE_LM_REGISTRATION = false

EOF
```

Modify these parameters as follows:

- For **GSM_LM_HOST**, enter the IP Address of the local manager routing agent that will collect the host data
- There is no need to change the setting for **GSM_LM_PORT**.
- By default the agent will refresh its cache every 2 hours. Change the setting for **CONFIG_CACHE_REFRESH_INTERVAL** if desired.
- To have the host agent automatically register with the local manager, change the **GSM_ENABLE_LM_REGISTRATION** setting to the following:

```
GSM_ENABLE_LM_REGISTRATION = true
```

If you choose to manually register the agent, be sure to enter the IP address of the Novell host as a static subagent in as part of the Local Manager routing agent configuration. Restart the routing agent after configuring the static subagent.

3. Use the NetWare load command to start the Novell host agent:

   a. Launch the System Console on the Novell host.
   b. Run the following command:

```
load sys:\storability\hostAgent.nlm
```

This will automatically load the dependent clibnetware.nlm.

4. When necessary, use the unload command to stop the Novell host agent. Run following commands in order specified below:

```
unload hostAgent.nlm
unload clibnetware.nlm
```

If it is necessary to update the host agent, be sure to stop it first.

Information Gathered by the Novell NetWare Host Agent

The Novell NetWare host agent gathers less information than some of the other host agents. In particular, it does not collect HBA information. This section explains the information not supported by the host agent and in host reports for this environment.

Information not Supported in Reports

Detailed Host Configuration and Utilization Reports:

General Tab:

- HBA Interfaces, including Vendor/Model, Efective Speed, Status, WW Node Name/Port Name, and Driver/Firmware, are not collected.

- In the Physical Devices section, Vendor, Array and Volume are not reported. End to end mapping is not supported for this host type.

Filesystem Tab:

- Filesystem Access statistics are not supported because there is no SRM agent for Novell NetWare.

Allocation Tab, Fabric Tab, Topology Tab:

- These reports will always be blank because they are dependent upon HBA support.

Volume Management reports:

- The Logical Volume report Logical Devices Listing and Device Detail reports show LV Mgr. and LV Grp. as "N/A".

- Only devices and logical volumes with an "Okay" status are reported.

- For PDISKs, Vol. ID, Arr.ID Vendor, and Ser.# are not reported.

Data fields not collected by Novell NetWare agent

- The gsa_hba_config object is not populated with any data

- In gsa_host_filesystem-2_3, values for "device", "lvm" and "logical_device_group" columns are reported as "N/A".

- In gsa_logicalvolume_config-2_1, values for "lvm" and "logical_device_group" columns are reported as "N/A". The name used in the "logical_device_name" column for partitions is the Partition Name and Object ID published by the Novell NetWare API. Agent will report a POOL as a Logical Volume (LVOL) in the "type" column.

- In gsa_logicalvolume_relation, values for "lvm", "logical_device_group", "uses_lvm" and "uses_logical_device_group" will show "N/A" as LVM is native on Netware NSS filesystem. A POOL as a Logical Volume (LVOL) in the "type" column.

- In gsa_physicalvolume_config, values for "vendor", "serial_num", "volume_id", and "arrayid" are not reported. The "physical_device_status" column will always shows status as "Okay" because NetWare does not report devices that have failed.

- In gsa_physicalvolume_path-2_1, data is not reported for "path_device_name", "ctrl_instance", "ctrl_number", "channel", "target", "lun", "array_wwpn", "array_port_id", "path_software_name" and "path_software_version" because values for these fields require. Only devices with a "path_status" of "Okay" are reported.

Verifying Host Agent

Use the Sun StorageTek Business Analytics Agent Diagnostic Tool to verify the Host Agent functionality. GSMdiag is installed in the Storability Local Manager Utilities folder as part of the Sun StorageTek Business Analytics Central Manager or Local Manager software installation. It represents the primary tool to verify agent functionality or troubleshoot agent problems. The GSMdiag utility runs only on Microsoft Windows.

Proceed as follows:

1. Wait approximately 30 seconds after the Host Agent has started to allow it to initialize before querying it using the Business Analytics Agent Diagnostic Tool.

a. In the **Agent location** input box, enter the IP Address or network resolvable Host Name of the server where the agent is installed in the **ip address/host name** input box.

b. Set the port to 17132 (or select the Host agent from the drop down list of service names).

c. Click the **Get Object List** button and you should receive a list of objects published by the Host Agent.

d. Select the **gsa_host_config** object and it should list the IP address, node name, host ID of the host server as well as additional fields. Refer also to *Table 2 – Host Agent Objects*.
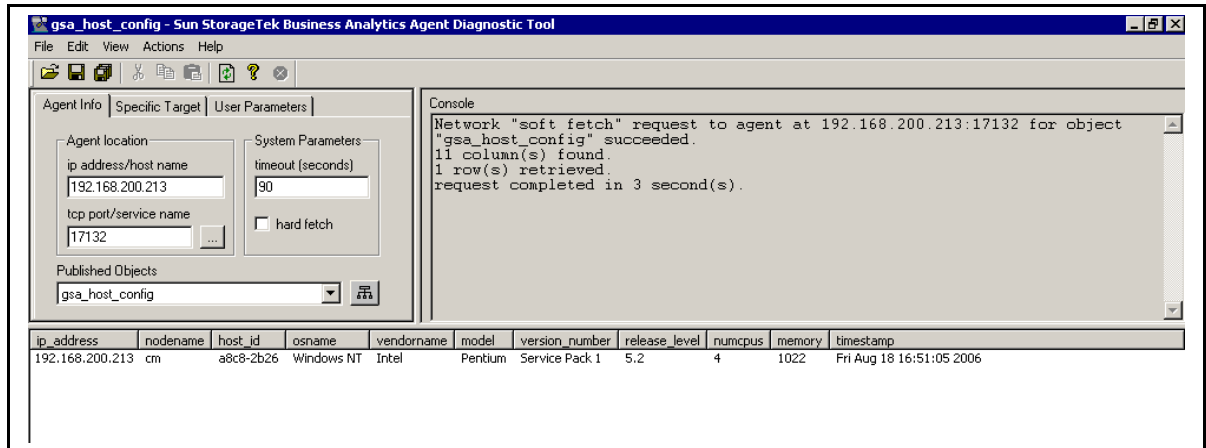
Figure 4 – Sample Host Configuration Object

e. Proceed to collect all other objects published by the agent.

2. To verify the Host Agent has registered successfully with its configured Local Manager:

    a. In the **Agent location** input box, enter the IP Address or network resolvable Host Name of the Local Manager in the **ip address/host name** input box and set the port to 17146 (or select the Storability Routing Agent from the drop down list of service names).

    b. Click the **Get Object List** button and you should receive a list of objects published by the Routing Agent.

    c. Select the **gsa_agent_register** table.

    d. Verify this collected object reports the Host Agent using the following fields:

        •   port – 17132 (Host Agent default TCP port number)

        •   peer_list – IP Address or Host Name of the server where the Host Agent is running

        •   last_freshened – Date/time agent last registered

        •   application_status – Should be 'ACTIVATED'

- network_status – Should be 'Up'

Verifying Management Console Functionality

The following procedure describes how the administrator verifies the Sun StorageTek Business Analytics Host Agent's reports in the Management Console. Refer to the *Administration* chapter to obtain information on the administrative menus you can access from the **Tools** pull down menu, including the **Data Polling Schedule** and **Change Dashboard** menus.

1. Log in to the Management Console as an administrative user (e.g., gsmuser) whose views provide access to the desired assets (e.g., sites).
2. Verify that your customized Home Page includes the **Host Filesystem Utilization** pane (or use **Change Dashboard** to select one that includes this pane).
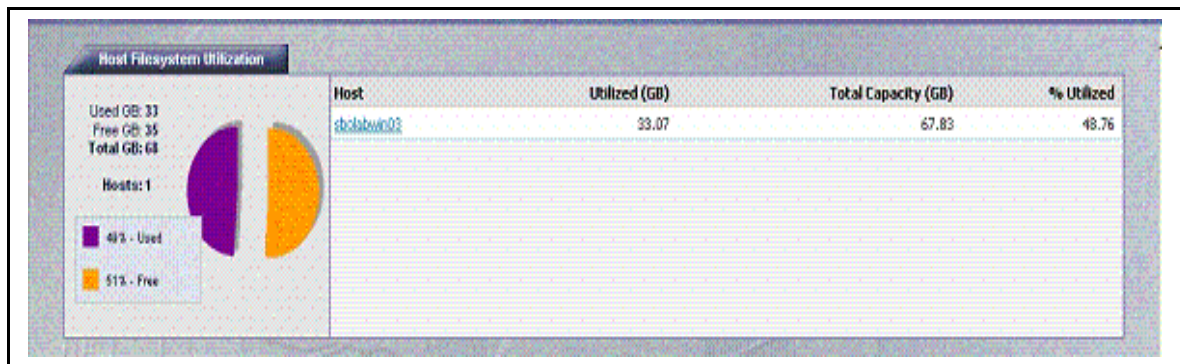

Figure 5 - Host Filesystem Utilization Pane

3. Select **Tools->Data Polling Schedule.**

4. Use the **Collect Now** button to collect the Host (collection type) **Filesystem** (Collection Metric) data for all sites.
5. Wait approximately thirty seconds and then use the **Collect Now** button to collect the Host (collection type) **Configuration** (Collection Metric) data for all sites.
6. Wait approximately thirty seconds and then use the **Collect Now** button to collect the Host (collection type) Logical VM (Collection Metric) data for all sites.
7. Close the **Polling Schedules** window.
8. Select **Tools-> Database Administration-> Refresh Homepage Cache** and then click **Submit**.
9. Verify the **Host Filesystem Utilization** dashboard reports information on the server whose installed Host Agent you are verifying. If the pane displays no data, refresh the browser window (press F5 or click the Refresh tab).
10. Click the **Host Name** link in the dashboard and the **Detailed Host Configuration and Utilization** report appears.
11. Verify the Server, Platform, IP, and Site information is reported with the **General** tab enabled.
12. Verify all the tabular device reports by clicking the respective tabs, including: Filesystem, Allocation, Fabric, Topology, Backup, Databases, Backup, and Asset.

   Note: Keep in mind that some device-specific tabs may display no report data because they do not apply (e.g., Topology tab for standalone server) for that server.

In these instances, the window typically displays the "No Data Found" informational text.

13. Close the browser session with the Management Console as the above steps complete verifying the Management Console functionality.

Host Agent Troubleshooting

1. **Verify system/agent prerequisites** – Refer to *Sun StorageTek Business Analytics Support Matrix* to verify the most recent support requirements for the agent.

2. Use the Business Analytics Agent Diagnostic Tool to save the output for all the tables if escalating a problem to support.

   a. Launch the Agent Diagnostic Tool from its Program Folder.

   b. Enter the **IP Address** or **Hostname** of the server where the agent is installed and set the port to 17132 (or select the Host agent from the drop down list of service names).

   c. Click the **Get Object List** button and you should receive a list of tables published by the Host Agent. If unsuccessful, verify the Ethernet connectivity to the server running the Storability Host Agent and that the Storability Host Agent is running.

   d. Select the **alerts-3_1** table and examine the **Description** column for each reported alert.

   e. Select **File->Save All** and the "This action will network fetch all objects published by the currently specified agent and save the data to a single file." Message appears.

   f. Click **OK** and the **Save As** dialog appears.

   g. Enter a meaningful file name and click **OK** to initiate the collection.

3. **Review the Message Log** – Review/collect the Message.log file that can contain information on startup errors, configuration errors, or errors regarding accessing data or parsing output. **Note**: The following messages specify that there was a rare host server state where the Host Agent should be restarted.

   ```
   --------------------------------------------------------------------------------
   <date/time>|WARNING|0|Invalidating instance -- constructor failed --
   pipe(afdPipe) failed -- 24|host
   Agent|SysChannelUnix.cc|327
   --------------------------------------------------------------------------------
   --------------------------------------------------------------------------------
   <date/time>|WARNING|0|SDSPipe in HostDiskPartitionGenerator
   failed|hostAgent|HostDiskPartitionGenera
   tor.cc|622
   --------------------------------------------------------------------------------
   ```

Windows

- Located by default in: <drive>:\Program Files\Storability\GSM\Agents\Storability Host Agent folder.
- Can enable debug level logging by appending **LOG_SEVERITY=Debug** to the Host Agent section of the storability.ini file (if your Sun support representative requests it).

Solaris

- The agents' common Message.log file located by default in: /opt/storability/data.
- Can enable debug level logging by appending LOG_SEVERITY=Debug to the Host Agent section of the storability.ini file (if your support representative requests it).

4. **Verify Local Manager Registration -** The configured Routing Agent's **gsa_agent_register** table displays agents that have registered with the Routing Agent.

   The **Type** field indicates the type of registration. If the agent registered using agent auto registration, "AUTO_NET" is displayed in the **Type** field. If the agent was defined manually as a SUB_AGENT entry in the Routing Agent's storability.ini file, the **Type** field will display "STATIC".
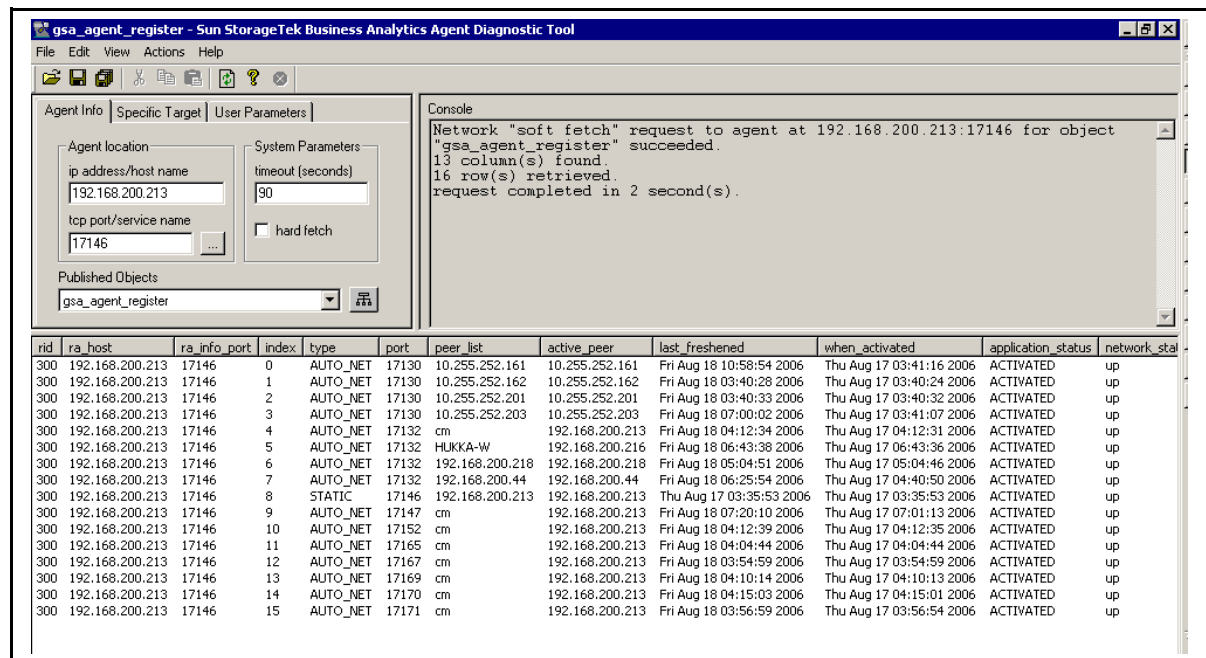
Figure 6 - Routing Agent's Agent Register Object

5. **Review the Routing Agent Message Log** – Review/collect the Routing Agent Message Log to check for errors related to Ethernet connectivity problems contacting the Storability Host Agent and registration details.
6. **Confirm Polling Schedules** – Using the Management Console's **Polling Schedules** window, review/modify the existing polling schedules for the **Collection Type** of Host and the three collection metrics (configuration, filesystem, logical VM).
7. **Review Aggregator Message Log** – Open the Aggregator's Message Log in a text editor. Verify that the Host Tables were requested and that rows were inserted into the database. If you performed an on-demand (Collect Now) request in the **Polling** menu, look for timestamps in the log that closely approximate when that request occurred.

   The log contains two entries, TID (Transaction ID) and SID (Session ID), which can help you locate (e.g., Find) and view relevant logged entries. For scheduled polling requests, the TID will be equal to the Job ID in the Polling menu. Each SID is a unique identifier for a particular agent data collection session. For on-demand polling requests, the TID is a uniquely generated TID (not the Job ID) and SID, and the TID and SID will be equal to the same integer value.

8. **Check the assurent database** – The assurent database is the data repository for your application. For the Host Agent, use any MS SQL Query interface, such as **isql**,

to verify rows have been inserted into the host-related tables, such as the **gsa_host_config** table.

9. **Verify Management Console Functionality** – As a final step in the agent troubleshooting procedure, minimally verify that the host server now appears in the Management Console's **Host Filesystem Utilization** dashboard on the Home Page.

UPGRADE HOST AGENT

To upgrade a previous release of a Host Agent, the procedure is to:

1. Uninstall the currently installed Host Agent.
2. Install the current Sun StorageTek Business Analytics Host Agent.

The following sections described the uninstallation procedures for various supported platforms.

UNINSTALL HOST AGENT - INSTALLSHIELD

1. Select **Start->Program Files->Storability->Uninstall->Uninstall Local Manager**
   Or:
   Start->Program Files->Storability->Uninstall->Uninstall Host Agent and Uninstall SRM Agent. The Storability Uninstall dialog appears.
2. Click the checkbox for the Host Agent and/or SRM Agent.
3. Click **Next>**. The **Question** dialog appears.
4. Click **Yes** to confirm uninstalling the agent. An uninstalling agent splash box appears as each selected agent is uninstalled.
5. When the InstallShield Wizard Complete dialog box appears, click **Finish**.

UNINSTALL HOST AGENT – SELF-EXTRACTING INSTALL

To uninstall the Host Agent, proceed as follows

1. Using Windows Explorer, select Program Files->Storability->hostAgentuninstall.exe. The Storability Host Agent Uninstall: Confirmation dialog appears.

2. Click **Uninstall**.

3. When the Storability Host Agent Uninstall: Completed dialog appears, click **Close**.

SILENT UNINSTALL HOST AGENT – SELF-EXTRACTING INSTALL

To uninstall the Host Agent, proceed as follows

1. From a command prompt, type:

   "<drive>:\Program Files\Storability\hostAgentuninstall.exe" /S

2. This will remove the Host Agent and returns you to the command prompt.

Uninstall Host Agent – Solaris

The installation script (setup) is used to uninstall agents on a Solaris server. The installation script is supplied on the Solaris Local Manager Installation CD.

1.   To view a list of installed agents, type:

```
setup -u
```

and press **Enter**.

2.   Type the number corresponding to the Host Agent and press Enter.

3.   Type zero (0) to end the selection of agents.

4.   When prompted, enter **y** and press **Enter** to confirm removing the agent.

Uninstalling Agents – Non-Solaris UNIX Host

1. Stop all Sun StorageTek Business Analytics Agents. For example:

```
/etc/rc.hostAgent stop
```

2. Refer to backing up Configuration files "Reinstalling Agents – Unix Host" below.

3. Remove the storability directory from /opt

```
rm -rf storability
```

4. Verify the storability directory has been deleted

Reinstalling Host Agent – Non-Solaris UNIX Host

The reinstallation procedure for all agents supported on non-Solaris UNIX hosts, such as the Host Agent on an IBM AIX server, requires that the installer perform the following steps **before** running the agent's installation script:

1. Make a backup copy of the existing agent configuration file (storability.ini).

2. Make a backup copy of the contents of /opt/storability/etc/agents.

3. Open the existing agent configuration file (storability.ini) in a system text editor.

4. Locate the configuration section for the agent to be reinstalled.

5. Delete all existing configuration settings for that Storability agent.

6. Save the modified agent configuration file.

7. Remove the existing /opt/storability/etc/agents directory.

At this point, you may reinstall the agent using the agent's installation script (e.g., hostAgent-install.sh).