



# Sun StorageTek™ Business Analytics Remote Host Agent Installation Guide

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Release 5.1

Sun Microsystems, Inc.  
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# Preface

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Sun StorageTek Business Analytics software enables you to visualize and manage multi-vendor, multi-site storage environments. From one central location, you can discover storage assets, track storage utilization, recover lost capacity, and verify that data is protected, thereby reducing storage costs and improving operational efficiency.

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## How This Document Is Organized

[Chapter 1](#) introduces the Sun StorageTek Business Analytics Remote Host Agent (RHA).

[Chapter 2](#) explains how to install and uninstall the RHA using the Window Local Manager install shield.

[Chapter 3](#) provides verification and troubleshooting instructions for the RHA.

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# Typographic Conventions

Typeface*	Meaning	Examples
AaBbCc123	The names of commands, files, and directories; on-screen computer output.	Edit your <code>.login</code> file. Use <code>ls -a</code> to list all files. % You have mail.
<b>AaBbCc123</b>	What you type, when contrasted with on-screen computer output.	% <b>su</b> Password:
<i>AaBbCc123</i>	Book titles, new words or terms, words to be emphasized. Replace command-line variables with real names or values.	Read Chapter 6 in the <i>User's Guide</i> . These are called <i>class</i> options. You <i>must</i> be superuser to do this. To delete a file, type <code>rm filename</code> .

\* The settings on your browser might differ from these settings.

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## Related Documentation

The documents listed as online are available at:

<http://www.sun.com/products/storage>

Application	Title	Part Number	Format	Location
Installation of the main product	<i>Sun StorageTek Business Analytics Installation Guide</i>	819-7181-10	Printed PDF HTML	Shipping kit Online
	<i>Sun StorageTek Business Analytics Getting Started Guide</i>	819-7190-10	Printed PDF HTML	Shipping kit Online
Use of the Management Console administrative menu	<i>Sun StorageTek Business Analytics Administration Guide</i>	819-7183-10	Printed PDF HTML	Shipping kit Online
Late-breaking information not included in the information set	<i>Sun StorageTek Business Analytics Release Notes</i>	819-7203-10	PDF HTML	Online

<b>Application</b>	<b>Title</b>	<b>Part Number</b>	<b>Format</b>	<b>Location</b>
Planning for customized implementations	<i>Sun StorageTek Business Analytics Concepts and Planning Guide</i>	819-7188-10	PDF HTML	Online
Use of standard reports and reporting wizards	<i>Sun StorageTek Business Analytics Management Console User's Guide</i>	819-7209-10	PDF HTML	Online
Use of the database tables	<i>Sun StorageTek Business Analytics Application Developer's Guide</i>	819-7182-10	PDF HTML	Online
Installation of agents	<i>Sun StorageTek Business Analytics Array Agents Installation Guide</i>	819-7184-10	PDF HTML	Online
	<i>Sun StorageTek Business Analytics Backup Agents Installation Guide</i>	819-7185-10	PDF HTML	Online
	<i>Sun StorageTek Business Analytics Library Agents Installation Guide</i>	819-7186-10	PDF HTML	Online
	<i>Sun StorageTek Business Analytics Database Agent Installation Guide</i>	819-7187-10	PDF HTML	Online
	<i>Sun StorageTek Business Analytics Host Agent Installation Guide</i>	819-7189-10	PDF HTML	Online
	<i>Sun StorageTek Business Analytics Fabric Agent Installation Guide</i>	819-7205-10	PDF HTML	Online
	<i>Sun StorageTek Business Analytics NAS Agent Installation Guide</i>	819-7206-10	PDF HTML	Online
	<i>Sun StorageTek Business Analytics Host Statistics Agent Installation Guide</i>	819-7207-10	PDF HTML	Online
	<i>Sun StorageTek Business Analytics SRM Agent Installation Guide</i>	819-7208-10	PDF HTML	Online
	<i>Sun StorageTek Business Analytics Host and SRM Agent Release Note for Self Extracting Agent Install CD</i>	819-7204-10	PDF HTML	Online

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## Documentation, Support, and Training

Sun Function	URL
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*Sun StorageTek Business Analytics Remote Host Agent Installation Guide*, part number 819-7201-10



# Introducing the RHA

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This chapter introduces the Sun StorageTek Business Analytics Remote Host Agent (RHA). It contains the following sections:

- [“Overview” on page 1](#)
- [“Automatic and Static Agent Registration” on page 2](#)
- [“RHA Matrix” on page 3](#)

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## Overview

The Sun StorageTek Business Analytics Remote Host Agent (RHA) provides an interface to collect data from different Windows servers through the Windows Management Instrumentation (WMI)/Web Based Enterprise Management (WBEM) protocol.

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**Note** – Sun StorageTek Business Analytics was formerly called Global Storage Manager (GSM).

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WBEM (Web Based Enterprise Management) is an industry initiative to provide management of systems, networks, users and applications across multiple vendor environments. WBEM simplifies system management, providing better access to both software and hardware data that is readable by WBEM compliant applications. WMI is Microsoft’s implementation of WBEM.

WMI is a component of the Windows operating system. The WMI uses a proprietary protocol whereas WBEM uses xml over http protocol. The following notes apply to installing and configuring the RHA:

- Refer to the *Sun StorageTek Business Analytics Support Matrix* located on the Documentation CD to confirm the latest features and support requirements.

- Is provided on the Sun StorageTek Business Analytics Central Manager and Local Manager Installation Media.
- The RHA and Host Agent can be installed on the same Windows computer.

To upgrade the GSM RHA, uninstall the previously installed GSM RHA before you install the Sun StorageTek Business Analytics 5.0 RHA. The decision to upgrade an existing RHA to the Sun StorageTek Business Analytics 5.0 RHA 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.

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## 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 RHA 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

# RHA Matrix

TABLE 1-1 lists the RHA matrix.

TABLE 1-1 RHA Matrix

Tag Name	Description
HBAs	Currently the Storability RHA does not report on Host Bus Adapters.
Operating Systems	
Windows	<ul style="list-style-type: none"><li>• InstallShield-based installation.</li><li>• Required Server Access: Administrator privileges</li></ul>
Configuration Parameters	<ul style="list-style-type: none"><li>• <b>Local Manager</b> – 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).</li><li>• <b>Local Manager Registration Port</b> – Specifies the TCP port number used by the Local Manager for auto registration. The default port number is 17146 for agent auto registration.</li><li>• <b>IP</b> – Specifies the IP address of the remote machine the agent is to connect to.</li><li>• <b>Port</b> - Defines the TCP port number of the CIM (Common Information Model) server running on the remote host machine. The default port number for CIM is 5988.</li><li>• <b>Namespace</b> – Specifies access to the default namespace on the remote computer. For example, root/cimv2 for Windows 2000 or Solaris 9 or root\cimv2 for Windows 2003.</li><li>• <b>Domain</b> – Specifies the domain name of the remote computer.</li><li>• <b>Enable Auto Registration</b> – Turns agent auto registration on (default) or off.</li></ul>

## RHA Requirements for Windows 2003

Whenever the RHA is installed as a service, by default it runs with the privilege of Local System Account. On Windows 2003, this account does not have privileges to connect to a remote machine using the Distributed Common Object Model (DCOM) which is required by WMI. As a result, you need to set up the RHA to run under a user account having privileges to connect to other machines.

To do so, proceed as follows:

1. Select Start->Settings-> Control Panel -> Administrative Tools -> Services applet.

2. Select the service named "Storability Remote Host Agent".
3. Right click and select Properties.
4. Select "Log On" tab.
5. Select "This Account".
6. Enter the username and password whose privilege the RHA service should run.  
This can be system administrator or any other user of the machine.
7. Click OK.
8. Record the user account for convenient reference when you configure the RHA to connect to remote machines.

## RHA Objects

TABLE 1-2 describes the relational objects that the Sun StorageTek Business Analytics RHA publishes. You can use the Agent Diagnostic Tool (gsmdiag.exe) to collect any and all of these objects. See [“Verifying and Troubleshooting the RHA” on page 13](#) for more information.

Currently, the Remote Host Agent does not report HBA, Logical Volume Manager (LVM), or end-to-end mapping data because of WMI/WBEM limitations..

**TABLE 1-2** Host Agent Objects

Table	Description
alerts-3_1	ip_address, port, when, application, severity, id, description
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, 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
gsa_host_filesystem-2_3	ip_address, nodename, host_id, device, filesystem name, filesystem_type, blocksize, total_blocks, blocks_ used, blocks_ available, files_used, files_available, filesystem_id lvm, logical_device_group, logical_device_name, timestamp

**TABLE 1-2** Host Agent Objects

Table	Description
gsa_host_interfaces	ip_address, nodename, host_id, interface_name, mac_address, interface_ip, interface ip_name, subnet <i>mask</i> , 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_configuration-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
gsa_physicalvolume_configuration	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, path_status, path_software_name, path_software_version, timestamp



## Installing and Uninstalling the RHA

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This chapter explains how to install and uninstall the RHA using the Window Local Manager install shield. It contains the following sections:

- [“Installing the RHA” on page 7](#)
- [“Uninstalling the RHA” on page 10](#)

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### Installing the RHA

To install the RHA, use the Windows Local Manager Installation CD InstallShield as follows:

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 Remote Host Agent and click Next> (FIGURE 2-1).

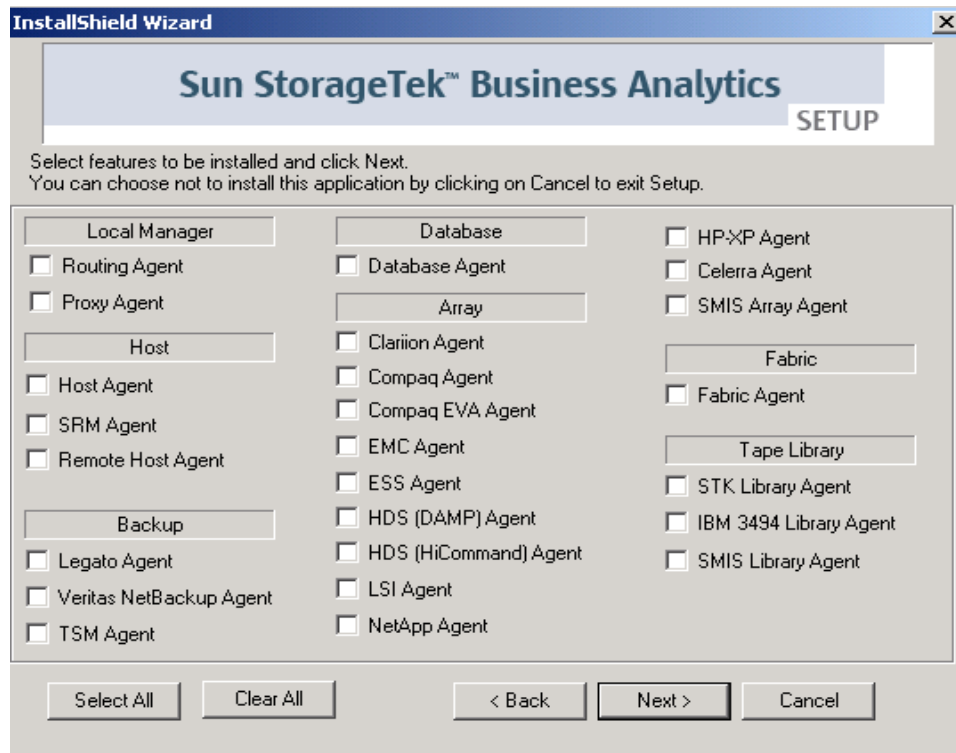


FIGURE 2-1 Agent Selection Dialog

7. Review the settings and click Next> to continue.
8. If prompted, specify whether (yes/no) to install the new version of the Configuration Tool. The *Sun StorageTek Business Analytics Release Notes* will specify any agent whose configuration requires a new release of the Configuration Tool.
9. After the Configuration Tool is automatically launched, click File->Edit->Smart Agent Configuration.



10. Click the Remote HostAgent tab in the main window (FIGURE 2-2).

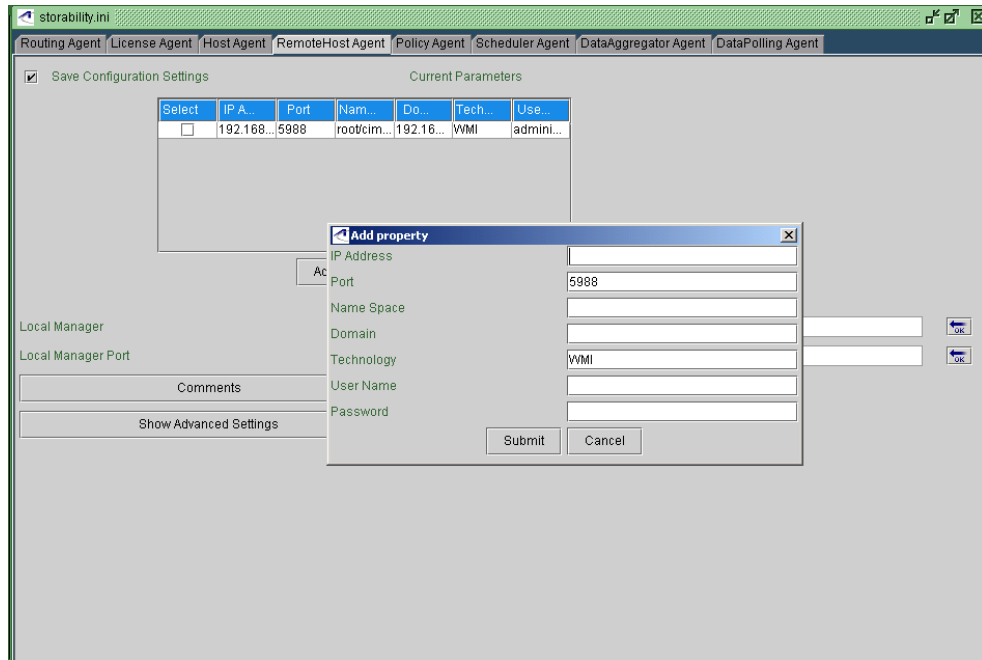


FIGURE 2-2 Remote Host Agent Configuration Window

11. Click Add and the Add property dialog opens. Enter the following information for each server connection:

- **IP Address**

Specify the IP address of a remote host machine that the RHA connects to.

- **Port**

Specify the TCP port number of the CIM (Common Information Model) or WBEM server running on the remote host machine. The default port number for CIM is 5988.

- **Namespace**

Specify access to the default namespace on the remote computer. For example: `root/cimv2` for Solaris 9 or Windows 2000 or `root\cimv2` for Windows 2003.

- **Domain**

Specify the domain name of the remote computer.

- **Technology**

Specify WMI or WBEM.

- **User Name**

Enter the user name used by the agent for authentication. By default, users that are members of the **administrators** group have full local and remote access to WMI.

- **Password**

Enter the above user's password.

12. Click **Submit** after you have finished configuring the remote server.
13. Repeat the above procedure until you have added all the desired remote servers.
14. For **Local Manager**, enter the IP address or host name of the Local Manager to be contacted for agent auto registration.
15. For **Local Manager Registration Port**, specify the TCP port number the Local Manager uses for agent auto registration.
16. Click **Show Advanced Settings** to review/modify these configuration parameters.  
  
For **Enable Auto Registration**, accept that agent auto registration is turned on (default) or disable it by setting this configuration parameter to false.
17. With the "Save Configuration Settings" check box enabled (check mark), click **File->Save** and then confirm saving the **storability.ini** file.
18. Click **File->Exit** to close the Configuration Tool.
19. View and then close the Readme file and click **Finish**.

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## Uninstalling the RHA

To uninstall the RHA, use the Windows Local Manager InstallShield as follows:

1. Select **Start->Program Files->Storability->Uninstall->Uninstall Local Manager**  
  
Or:
2. **Start->Program Files->Storability->Uninstall->Uninstall Remote Host Agent**. The **Storability Uninstall** dialog appears.
3. Click the checkbox for the **Remote Host Agent**.
4. Click **Next>**. The **Question** dialog appears.
5. Click **Yes** to confirm uninstalling the agent. An uninstalling agent splash box appears as each selected agent is uninstalled.

At this point, you may update your existing RHA version by installing the RHA supplied with your version of Sun StorageTek Business Analytics.



## Verifying and Troubleshooting the RHA

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This chapter contains verification and troubleshooting instructions for the RHA. Specifically, it contains the following sections:

- [“Verifying the RHA” on page 13](#)
- [“Verifying Management Console Functions” on page 15](#)
- [“Troubleshooting the RHA” on page 16](#)

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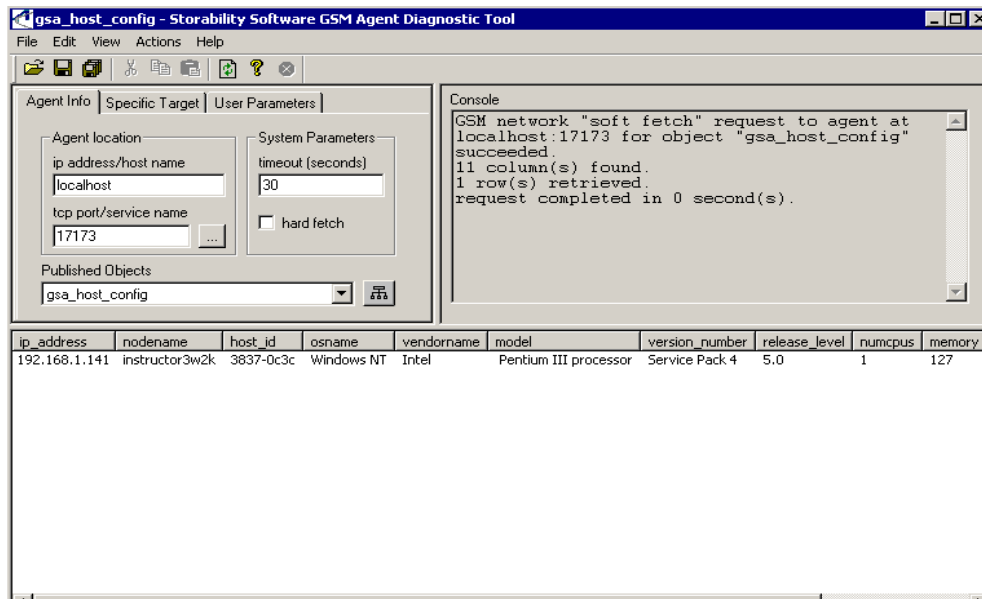
### Verifying the RHA

Use the Agent Diagnostic Tool to verify that the RHA functions properly. 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.

Proceed as follows:

1. **Wait approximately 30 seconds after you start the Sun StorageTek Business Analytics RHA to allow it to initialize before querying it with the Agent Diagnostic Tool.**
  - a. **Launch the Agent Diagnostic Tool from the Storability Program Folder.**
  - b. **In the Agent location window, 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.**
  - c. **Set the port to 17173 (or select the Remote Host Agent from the drop down list of service names).**

- d. Click the Get Object List button and you should receive a list of objects published by the Host Agent.
- e. 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 (FIGURE 3-1).



**FIGURE 3-1** Sample Host Configuration Object

- f. Proceed to collect all other objects published by the agent keeping in mind some objects (e.g., `gsa_hba_config`) will not be populated with data because of WMI/WBEM limitations.
2. To verify the RHA has registered successfully with its configured Local Manager:
    - a. In the Agent location window, 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 – 17173 (RHA 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'

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## Verifying Management Console Functions

The following procedure describes how the Sun StorageTek Business Analytics administrator verifies the server reports in the Management Console. Refer to the *Sun StorageTek Business Analytics Administration Guide* to obtain information on the administrative menus you can access from the **Tools** pull down menu, including the **Polling** and **Change Dashboard** menus. (Question: Is this a valid cross-reference?)

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**Note** – The same Server reports are used both for the RHA and the Host Agent. Similarly, both agents use the same polling schedules.

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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).
3. Select Tools->Data Polling Schedule.
4. Use the Collect Now button to collect the Host (collection type) Filesystem (Collection Metric) data using a polling schedule that includes all sites.
5. Wait approximately thirty seconds and then use the Collect Now button to collect the Host (collection type) Configuration (Collection Metric) data using a polling schedule that includes 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 using a polling schedule that includes all sites.
7. Close the Data Polling Schedule window.
8. Verify the Host Filesystem Utilization dashboard reports information on the server whose installed RHA you are verifying.
9. Click the Host Name link in the pane and the Detailed Host Configuration and Utilization report appears.

10. Verify the Server, Platform, IP, and Site information is report with the General tab enabled.
11. Verify all the tabular device reports by clicking the respective tabs.

---

**Note** – Keep in mind that some device-specific tabs may display no report data because they do not apply (e.g., Topology tab) for that server. For example, since the RHA does not collect HBA information, selecting the Topology tab will not display data. In these instances, the window typically displays the *No Data Found* informational text.

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

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## Troubleshooting the RHA

Use the following instructions to troubleshoot any potential RHA problems:

1. **Verify system/agent prerequisites.**

Refer to the *Sun StorageTek Business Analytics Support Matrix* that is located on the Documentation CD to verify the most recent support requirements for the agent. The main requirement is to have WMI support on the remote Windows servers from which RHA will collect data.

2. **Verify Remote Server Authentication.**

If the RHA is unable to authenticate to the remote computer, verify that the domain administrator account has privileges to the WMI namespace to which you are trying to connect on the agent computer.

To configure WMI security using the WMI Control, follow these instructions.

- a. Open a DOS command Window.
- b. Type `wmimgmt.msc` and press Enter.
- c. Right-click WMI Control.
- d. Click Properties.



- e. You can verify or configure namespace-specific security from the Security tab (FIGURE 3-2).

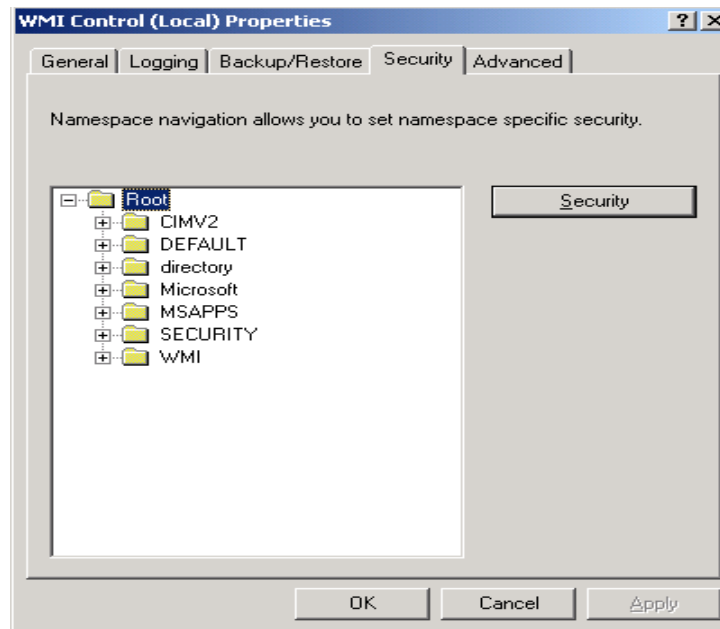


FIGURE 3-2 WMI Control

For a Solaris 9 (or higher) machine:

3. Verify with the Solaris administrator that the WBEM package is installed and running.
4. Use GSMdiag to save the output for all the tables if escalating a problem to StorageTek Support (Technical Excellence Center).
  - a. Run the Agent Diagnostic Tool from the Storability 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 Remote 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 RHA and also verify that the RHA 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.

h. Enter the desired file name and click OK.

#### 5. Review the Message Log.

Review/collect the Message.log file that contains information on startup errors, configuration errors, or errors regarding accessing data or parsing output.

##### For a Windows machine:

- 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 Storability Support requests it).

#### 1. Verify Local Manager Registration.

The configured Routing Agent's gsa\_agent\_register table displays Storability 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".

#### 2. Review the Routing Agent Message Log.

Review/collect the Routing Agent Message Log to check for errors related to Ethernet connectivity problems contacting the RHA.

#### 3. Confirm Polling Schedules.

Using the Management Console's Data Polling Schedule menu, review/modify the existing Polling Schedules for the Collection Type of Host and the Filesystem, LVM, and Configuration metrics for the specific site (or all sites).

#### 4. 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 perform 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.

**5. Check the assured database.**

The assured database is the data repository for your Sun StorageTek Business Analytics application. For the RHA, 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.

**6. 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.

