Sun StorageTek™ Business Analytics Backup Agents Installation Guide

Release 5.1

Sun Microsystems, Inc.
www.sun.com

Part No. 819-7185-10
November 2006, Revision 01

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Contents

Introduction to Backup Agents

Sun StorageTek Business Analytics provides three backup agents supporting the Symantec NetBackup, IBM Tivoli Storage Manager (TSM), and EMC Legato NetWorker backup products.

Note – Sun StorageTek Business Analytics was formerly called Global Storage Manager (GSM). While the agents share broad areas of similarity, each agent has unique attributes that are based on the differences among the product lines and interfaces. Refer to the *Sun StorageTek Business Analytics Support Matrix* to obtain the latest information on supported backup products and support prerequisites. In addition, consult the *Sun StorageTek Business Analytics Backup Reports Quick Facts Sheet* to obtain an overview of the Sun StorageTek Business Analytics reports supported by a particular Backup Agent.

Sun StorageTek Business Analytics provides three agent installation CDs: Windows Local Manager, Solaris Local Manager, and UNIX Agents (HP-UX and IBM AIX). If you are upgrading a backup agent on a Windows server, proceed as follows:

- Uninstall the backup agent. Using a text editor, verify that all the configuration settings f**or the backup agent** have been removed. If not renoved, manually remove these settings.
- Install the Version 5.1 backup agent and specify to install the new version of the Configuration Tool becasuse all Version 5.1 backup agents have new configuration settings.

Backup Reporting Concepts

Business Analytics backup reporting utilizes data that can be accessed from a backup application server. We gather information using data collection software (agents) that are installed on either the backup server, such as the NetBackup master server, or a separate host. The backup agents collect data through the use of vendor-supported means of gathering backup data.

Because Business Analytics is designed for multi-vendor reporting, it is necessary to standardize the data obtained from the different backup applications into a common data model. Within this process, the individual concepts and terminology used by the different backup applications are normalized into a single set of concepts and terms, including:

- **Job** - Refers to a backup application transaction for a specific purpose. These are normally called jobs in NetBackup, save sets in Legato NetWorker, and events in TSM. Jobs have a number of attributes associated with them - type, properties, status, and so forth.
- **Job Type** - Consists of a vendor-specific, naming convention for various operations. For example, NetBackup has a job type, called tpreq , where as TSM has a job type that is called TAPE MOUNT. Both perform the same function , but the backup applications designate different names for them.
- **Job Properties** - May be characterized as administrative or non-administrative, configured or non-configured, client-side or server-side, or synthetic backup.
- **Administrative Job** - Performs some administrative task on the repository. These are clientless jobs.
- **Non-Administrative Job** - Performs some non-administrative task. These jobs may or may not be clientless.
- **Configured Job** - Refers to a job where the backup server (e.g., master server) has all the necessary information to run a job without human intervention.
- **Non-Configured Job** - Refers to a job that is not run by the backup scheduler within the backup software. This job may have been run manually by a user or by an external scheduler package (Cron, Maestro, etc)
- **Client-side Job** - Refers to a job that is associated with a particular client.
- **Server-Side Job** - Refers to a job that does not directly involve a client, only the master/media server is required to run these jobs.
- **Synthetic BackUp** - Is a NetBackup-specifc job type. It is the combination of multiple incremental backup jobs, creating together a full backup job.
- **Client** - Is the source (location) of the data that is backed up.

- **Group** - Refers to a logical set of clients that have been structured so that jobs can run against them using the same set of setup properties. For NetBackup, this is a *policy* and for NetWorker this is a *group*. For TSM, this is a *policy domain*.
- **Schedule** - Determines how often a job will be run. For NetBackup, it is associated with a *policy*, whereas a schedule is associated with a client for Legato NetWorker. For TSM, a schedule is associated with a *policy domain*.

Client-side and Server-Side Jobs

Business Analytics provides the following support for job reporting:

- Server-side job reporting is supported for three backup applications.
- Client-side job reporting is supported for NetBackup and TSM but not for Legato NetWorker.

The client-side limitiation stems from the fact that Buisness Analytics can only report on client-side jobs known to the backup server.

Standarizing Job Status

The following table describes how Business Analytics standardizes the status of jobs.

TABLE 1 Standardizing Job Status

Job Status	Status Code
Success	0
Partial	1
Failure	>1 (NetBackup), 9100 (NetWorker), and 8100 (TSM)
Missed	Not applicable for TSM or Netbackup, 9200 (NetWorker)

Backup Jobs Table

The Business Analytics 5.1 database includes a new backup table, gsa_backup_jobs. This transactional jobs table holds all information about a backup job, and is used by all the currently supported backup products. By unifying the jobs table, we have simplified the database insertion process and the database structure, resulting in faster data loading and reporting.

The new jobs table includes fields from the following Business Analytics Version 5.0 tables:

- gsa_backup_master used by NetBackup and NetWorker
- gsa_backup_filelist-2_2 used by NetBackup and NetWorker
- gsa_backup_status_NEW used by NetBackup and NetWorker
- gsa_backup_summary used by TSM
- gsa_backup_events used by TSM

These legacy tables are not used in Business Analytics Version 5.1.

Backup Agent Characteristics

All backup agents support the data model changes that were describedin the preceding sections. In addition, changes have been made to the agents to make them more consistent with other Business Analytics data collectors, including:

- Removal of agent-specific table caching; the common cache refresh parameter is now used.
- Suport for reporting on non-configured backup jobs. If no specific schedule or policy is associated with a client, the policy will be presented as "NON-CONFIG".
- Support for six data groups, described below, whose data collection can be turned on or off using several new configuration settings.
- Support for populating the new object gsa_backup_jobs object.

Backup Data Collection

In Business Analytic 5.1, data collection on backup data is grouped into a total of six data groups:

- Config
- Jobs
- Media
- Schedule
- TSMOptional
- NetbackupOptional

In your backup environment, you may only be interested in some of this data. Business Analytics addresses this requirment by allowing you to “turn off” data collections as follows:

- Stop collection entirely for a specified group.
- Stop collection during a specified time interval for a group. If the time of the data collection is outside of this range, the data collection will occur.

The following new configuration settings (storability.ini) have been added to support this functionality:

- **NON_COLLECTION_DURATION**= <Comma separated list of Data Group Names | 'ALL'> | <Start Time>|<Finish Time> where time is specified in 24 hour format (i.e. 12:45:50). The <Start Time> specifies the start time of when the collection for the group is blocked. The <Finsish Time> specifies the time when the blocked data collection is lifted. During this time interval, cache is not cleared and cache age continues to grow. It will be reset with the first collection after the Finish time has passed.
- **NO_COLLECTION**=<List of Data Group Names|"ALL">. In conjunction with this setting, each collection attempt results in the cache being cleared and setting the cache age back to zero.

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 Backup 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.

Solaris Local Manager Installation Script

The setup script on the Solaris Local Manager Installation CD provides the following features:

- Provides a command line interface for the user to perform Business Analytics Local Manager (Solaris) installation.
- Validates that the user is root to perform the installation.
- Validates that the Solaris server is equipped with a supported Operating System, which includes between Solaris 5.7 and Solaris 5.10.
- Provides a list the agents available, depending on the platform, for the user to choose to install or uninstall (setup -u).
- Performs agent installation depending on the user's selection.
- Performs agent upgrade for existing SUNWbizan packages.
- Automatically installs the SUNWbizanbase and SUNWbizanlmutil packages where required and not already installed.

Backup Agent Objects

All Business Analytics backup agents publish the same objects. If a particular agent does not support a particular object, it publishes an empty object.

TABLE 2 lists the objects that all Sun StorageTek Business Analytics backup agents publish.

TABLE 2 Backup Agent Objects

Table	Column
alerts-3_1	sourceip, priority, alert_id, progname, alert, time, firsttime, refreshedtime, int1, text1, text2.
gsa_agent_version-2_0	ip_address, agent_name, version, compile_time, managed_entities, tz_name, tz, timestamp
gsa_cache_contro0l-2_1	ip_address, port, table_name, cache_age, last_update_request_length, update_request_pending, group_name, group_master,timestamp
gsa_ini_control-2_0	ip_address, port, domain, parameter, value, status, timestamp
gsa_parm_info	ip_address, port, object, parm_name, value_syntax, description, example
gsa_backup_calendar	ip_address, master_server, policy, schedule, backup_type, schedule_type, value_1, value_2, value_3, timestamp
gsa_backup_cat_usage-2_3	ip_address, server_name, product, cat_path, blocks_used, blocks_available, filesystemid, timestamp
gsa_backup_client_policy-2_1	ip_address, master_server, policy, active_status, effective_date, timestamp
gsa_backup_detail_new	ip_address, backup_id, copy_number, frag_number, kilobytes, remainder, media_type, density, file_number, media_id, block_sz, offset, media_date, dev_written_on, flags, timestamp
gsa_backup_device_class	ip_address, server_name, devclass_name, access_strategy, stgpool_count, devtype, format, capacity, mountlimit, mountwait, mountretention, prefix, library_name, directory, servername, retryperiod, retryinterval, shared, last_update_by, last_update, timestamp
gsa_backup_events	ip_address, job_id, class, client, schedule, schedule_type, storage_unit, volume_pool, status, error_msg, host_id, error_explanation, error_recommendation, timestamp

TABLE 2 Backup Agent Objects *(Continued)*

Table	Column
gsa_backup_filelist-2_2	ip_address, backup_id, job_id, client, slave, master, storage_unit, class, file_list, job_type, kilobytes, files, status, message, start_time, timestamp
gsa_backup_frequency	ip_address, master_server, policy, schedule, backup_type, retention_level, frequency, day_of_week, open_window, close_window, timestamp
gsa_backup_jobs	ip_address, job_id, backup_id, parent_job_id, scheduled_start_time, actual_start_time, end_time, elapsed_time, comm._wait, media_wait, type, type_code, status, status_code, master, source, number_of_tries, media_server, kb_transferred, destination_storage_unit, destination_drive, affected_file_count, examined_file_count, failed_file_count, schedule, schedule_type, expiration_date, error_message, data_set, class, class_type, product, backup_software, compresse, encrypted, reconcile_status, reconcile_note, reconcile_user, window_status, window_id, timestamp
gsa_backup_legato_err_msg	ip_address, backup_id, job_id, sequence_num, error_msg, timestamp
gsa_backup_libraries	ip_address, server, library_name, library_type, acs_id, private_category, scratch_category, external_mgr, shared, lanfree, obeymntretention, primary_lib_mgr, last_update_by, last_update, timestamp
gsa_backup_library_volumes	ip_address, server, library_name, volume_name, status, owner, last_use, home_element, cleanings_left, timestamp
gsa_backup_master	ip_address, backup_id, client, class, class_type, proxy_client, creator, schedule, schedule_type, retention_level, start_date, elapsed_time, expiration_date, compressed, encrypted, backed_up_kb, backed_up_files, number_of_copies, number_of_frags, db_compressed, catalogue_file_name, status, timestamp
gsa_backup_status_new	ip_address, time, netbackup_version, message_type, message_severity, server, job_id, job_group_id, client, class, schedule, error_ms, timestamp
gsa_backup_storage_pools	ip_address, server, stgpool_name, pooltype, devclass, est_capacity_mb, pct_utilized, pct_migr_pct_logical, highmig, lowmig, migproess, nextstgpool, maxsize, access, description, ovflocation, collocate, reclaim, maxscratch, reusedelay, migr-running, migr_mb, migr_seconds, recl_running, recl_volume, chg_time, chg_admin, reclaimstgpool, mig_delay, migcontinue, dataformat, copystgpools, copycontinue, crcdata, timestamp

TABLE 2 Backup Agent Objects *(Continued)*

Table	Column
gsa_backup_volhist	ip_address, server, date_time, unique, time, backup_series, backup_operation, volume_seq, volume_name, location, command, timestamp
gsa_backup_volume_info-2_1	ip_address, media_id, media_type_desc, media_type, barcode, description, volume_pool_type, rebot_type_desc, robot_type, robot_number, robot_slot, robot_host, volume_group, creation_date, assigned_date, last_mount_date, first_mount_date, expiration_date, number_of_mounts, max_mounts_allowed, timestamp, status, status_flags
gsa_backup_volumes	ip_address, server, volume_name, stgpool, devclass_name, est_capacity_mb, pct_utilized, status, access, pct_reclaim, scratch, error_state, num_sides, times_mounted, write_pass, last_write_update, last_read_date, pending_date, write_errors, read_errors, location, chg_time, chg_admin, timestamp
gsa_media_list-2_2	ip_address,media_id, partner_id, version, density, allocated_date, last_written_date, expiration_date, last_read_date, bu_Kbytes, bu_images, bu_unex_images, retention_level, volume_pool, num_restores, status, media_type, status_flags, bu_server, timestamp
gsa_backup_drives	ip_address, server, library_name, drive_name, device_type, online, element, acs_drive_id, drive_state, allocated_to, last_update_by, clean_freq, timestamp
gsa_backup_filespaces	ip_address, server, nodename, filespace_name, filespace_id, filespace_type, capacity, pct_util, backup_start, backup_end, delete_occurred, unicode_fiilespace, filespace_hex_name, timestamp
gsa_backup_occupancy	ip_address, server, nodename, type, filespace_name, stgpool_name, num_files, physical_mb, logical_mb, filespace_id, timestamp
gsa_backup_paths	ip_address, server,source_name, destination_name, destination_type, library_name, node_name, device, ext_manager, lun, initiator_id, directory, online, last_update_by, last_update, timestamp
gsa_backup_sched_events	ip_address, server, scheduled_start, scheduled_end, actual_start, domain_name, schedule_name, status, result, reason, timestamp
gsa_backup_summary	ip_address, server, start_time, end_time, activity, number, entity, address, schedule_name, examined, affected, failed, bytes, idle, mediaw, processes, successful, volume_name, drive_name, library_name, last_use, comm._wait, timestamp

NetBackup Agent Version 5.1

The following changes have been made to the NetBackup Agent in Version 5.1

- No longer uses the external executable DBImport. The agent now executes CLI commands directly. There is no longer a data collection dependency on the DBImport schedule.
- Data collection" is controlled by the CACHE_REFRESH_INTERVAL variable that is defined in the NetBackup section of the storability.ini file.
- The agent collects data required to populate the new gsa_backup_jobs object.

Note – The Sun StorageTek Business Analytics NetBackup Agent must be installed on the NetBackup Master server.

NetBackup Agent Matrix

TABLE 3 NetBackup Agent Matrix

Feature	Description
Support Prerequisites	
Verify supported version of NetBackup product	See the current version of the Sun StorageTek Business Analytics Support Matrix
Verify Ethernet connectivity to Master Servers	ping <IP Address>
Base Package (SUNWbizanbase)	Required on Solaris server
Host Agent	Required to support the Meta Database Capacity report for NetBackup.
Agent Installation	
Windows	Windows Local Manager Installation CD (InstallShield) Windows Administrator privileges
Solaris	Installation script (setup) on Local Manager Install CD root user account privileges
HP-UX	UNIX Agent Installation CD root user account privileges
Job History Retention	Sun Storagetek recommends retaining this information for a minimum of three (3) days, which is the Symantec NetBackup default value.
ntegration with SNMP Extension for the Real Time Event report	Requires installation and configuration of the SNMP Extension for Symantec NetBackup (NBU). For more information about functionalities, you may email: vxsnmp@veritas.com.

TABLE 3 NetBackup Agent Matrix *(Continued)*

Feature	Description
NetBackup Agent Trap Settings	• NETB_SNMP_PORT- Default value is 1100 seconds. Specifies the port that will be used to listen for SNMP traps. • NETB_TRAP_VERITAS_SUCCESS- Default value is 1.3.6.1.4.1.1035.1.1.251.0.2S. Specifies the trap value that indicates success. • NETB_TRAP_VERITAS_FAIL- Default Value is 1.3.6.1.4.1.1035.1.1.251.0.1. Specifies the trap value that indicates failure. • NETB_TRAP_CLASS_ID- Specifies the SNMP trap binding for the class id. Allows non-standard values in the MIB • NETB_TRAP_CLIENT_ID - Specifies the SNMP trap binding for the client id. Allows non-standard values in the MIB. • NETB_TRAP_JOB_SCHEDULE - Specifies the SNMP trap binding for the job schedule. Allows non-standard values in the MIB. • NETB_TRAP_JOB_SCHED_TYPE - Specifies the SNMP trap binding for the schedule type. Allows non-standard values in the MIB. • NETB_TRAP_JOB_STU - Specifies the SNMP trap binding for the storage unit. Allows non-standard values in the MIB • NETB_TRAP_JOB_POOL - Specifies the SNMP trap binding for the job pool. Allows non-standard values in the MIB
Common Configuration Settings	• CACHE_REFRESH_INTERVAL- Specifies how often the 'table cache' should be refreshed. The default value is 14400 seconds. • CMD_EXECUTION_TIMEOUT - Specifies how long the backup agent will wait for the successful execution of a CLI command and the successful read of the CLI output. The default value is 600 seconds. • NO_COLLECTION - Specifies blocking data collection for specified data collection groups or for all groups (ALL). • NON_COLLECTION_DURATION - Specifies a time interval during which data collection for a data group or groups is blocked.

TABLE 3 NetBackup Agent Matrix *(Continued)*

Feature	Description
Agent Parameters	• VERITAS_CATALOG_DIR - The default value for Windows is :C:\Program\Files\VERITAS\NetBackup\db\Images. For UNIX servers, the default value is usr/openv/netbackup/db/images. It specifies the root directory of the NetBackup catalog. This directory controls where the Netbackup Agent begins its filesystem walk that calculates the size if the NetBackup catalog. • NBU_CMD_PATH - Specifies the Netbackup installed directory on the server and is used to determine the path to the bpXXXXXXX CLI commands. The default value for Windows is C:\Program Files\VERITAS\NetBackup. For UNIX, it is /usr/openv/netbackup. • NBU_VOLMGR_PATH - Specifies the directory where the volume manager is located on the server. Is used to determine the path to the vmquery CLI command.The default parameter for Windows is C:\Program Files\ VERITAS\VolMgr. For UNIX servers, it is /usr/openv/volmgr • NBU_REPORT_PERIOD- This value, sometimes called the 'look back' period, is used as a parameter that is passed to the bperror and bpimagelist CLI commands. The default value is 72 hours.

NetBackup Agent Installation

The following sections provide instructions on installing the Sun StorageTek Business Analytics NetBackup Agent on supported platforms.

Installing NetBackup Agent – Windows

1. Insert the Sun StorageTek Business Analytics 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. Review/modify the **User Name** and **Company Name** and click **Next**.

5. Select the **Veritas NetBackup Agent** checkbox on the screen that lists agents for installation.

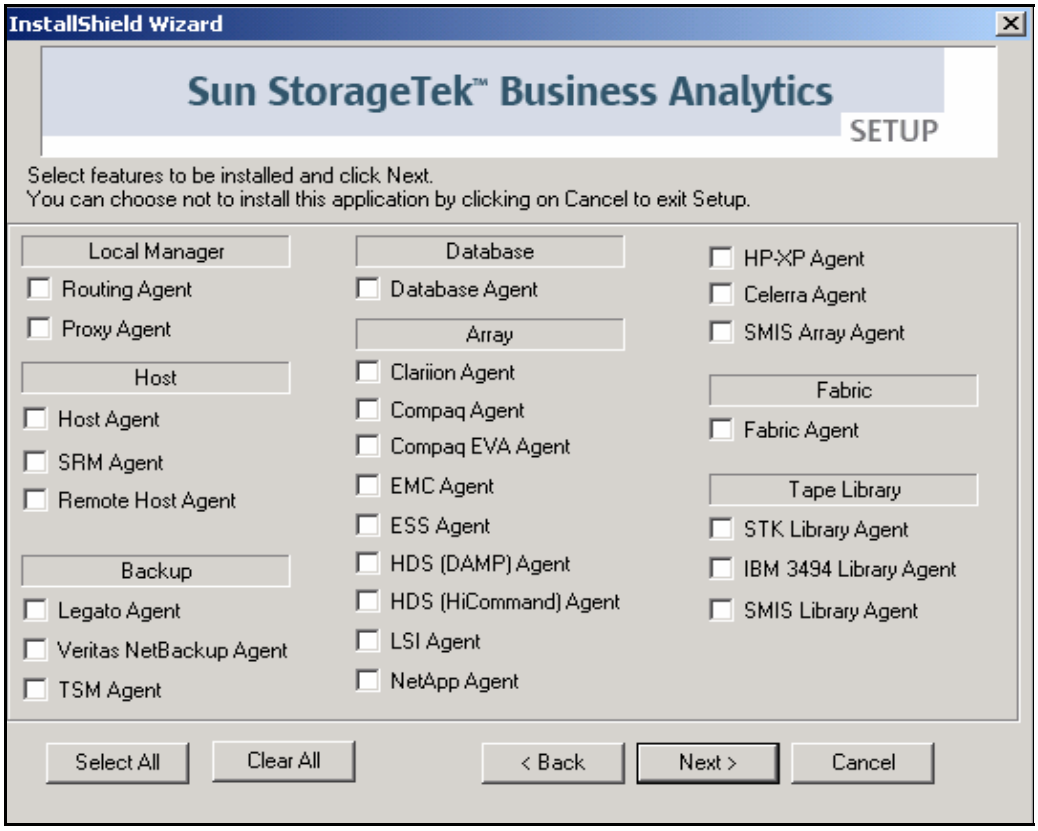

FIGURE 1 Select Features to Be Installed

6. Review the settings and click **Next>** to continue.
7. Specify whether or not to install the new version of the Configuration Tool, if prompted.
8. When the Configuration Tool is automatically launched, select **File** -> **Edit** -> **Smart Agent Configuration**.
9. Click the **NetBackup Agent** tab.
10. Review/modify the following configuration parameters:

Note – For the parameters that require specifying a folder/directory, you can click the Folder icon to browse your system, or click the template-supplied value to move that value into the respective input field.

- Local Manager - Specify the IP address or host name for the Local Manager to be contacted for agent auto registration. The default value is localhost.
- Local Manager Registration Port - Specify the TCP port number the Local Manager uses for agent auto registration. The default TCP port number is 17146.
- Cache Refresh Interval - Specifies how long backup information remains in table cache. The default value is 14000 seconds.
- Event Cache Duration - The default value is 14400 (same as CACHE_REFRESH_INTERVAL).
- Command Execution Timeout - Specifies how long the agent will wait for the successful execution of a CLI command and the successful read of the CLI output. The default value is 600 seconds.
- NetBackup Command Path - Specify the fully qualified path to the NetBackup software that provides the CLI commands. The default value is C:\Program Files\VERITAS\NetBackup.
- NetBackup Report Interval - Enter the NetBackup Agent report interval that specifies the time range (e.g., last 72 hours) for backup data reporting. Sun Microsystems recommends that you do not set this parameter to a value less than the default interval (72 hours).
- NetBackup VolMgr Install Path - Specify the fully qualified to the NetBackup Volume Manager. The default value is C:\Program Files\VERITAS\VolMgr.
- Full path to NetBackup catalog directory - Enter the directory that will be the target of the cat_usage command. The default value is C:\Program\Files\ VERITAS\NetBackup\db\Images.

11. Click **Show Advanced Settings** to review/modify the following configuration parameter:
    - **Enable Auto Registration** – Turns agent auto registration on (default) or off.
12. With "Save Configuration Settings" turned on (check mark), select **File->Save** and confirm saving changes to the storability.ini file.
13. Select **File->Exit** to close the Configuration Tool.
14. Use the Windows **Services** panel to start the Storability NetBackup Agent before you verify agent functionality.

Installing NetBackup Agent on HP-UX

All currently supported HP-UX agents are provided as zipped tar archives with installation scripts. To install an agent, simply ensure that the archive (netBackupAgent-hpux.tgz) and the install script (netbackupAgent-install.sh) reside in the same location, and run the script.

```
./netbackupAgent-install.sh
```

HP-UX supports neither Rock Ridge nor Joliet extensions to the ISO 9660 filesystem specification. As a result, support for long filenames may not be available.

During the installation, the installer must specify the following information:

- The location of NetBackup if not detected
- The location of NetBackup vmquery if not detected
- The location of the NetBackup catalog if not detected

To configure agent auto registration on an HP-UX server, you can add the NetBackup Agent to a Local Manager Routing Agent configuration as a SUB_AGENT entry or manually add the required entries to the agent storability.ini file. Sample storability.ini file entries appear below.

- `GSM_LM_HOST = 192.168.1.132`
- `GSM_LM_PORT = 17146`
- `GSM_ENABLE_LM_REGISTRATION = true`

Installing NetBackup Agent - Solaris

The Solaris Local Manager Installation CD provides the installation script that is used to install the NetBackup Agent. If not already installed, the base package (SUNWbizanbase) will also be installed by the script. The following installation procedure assumes the SUNWbizanbase package has already been installed.

In addition, you may want to install the Host Agent package to enable collecting data for the Meta Database report.

Proceed as follows.

1. Open a terminal window on the desktop of the Solaris host.
2. Mount the installation CD in your CD-ROM drive.

   For example:

   ```
   mount -o ro -F hsfs /dev/dsk/c0t6d0s0 /mnt
   ```

Note – The device path used for the CDROM device may vary.

3. Change to the CD-ROM mount point. For example:

   ```
   cd /mnt/cdrom/cdrom0
   ```

4. Run the install script to obtain a list of available Sun StorageTek Business Analytics software packages to install.

   ```
   ./setup
   ```

5. Select the Veritas Backup Agent from the agents in the list and press Enter.

6. Type zero and press Enter to specify that you have completed the selection of agents to be installed.

7. Type the fully qualified directory path where the NetBackup software is installed and press Enter.

8. When prompted, type **y** and press **Enter** to review/modify the 'advanced settings' for the NetBackup Agent. As the installation script describes, all advanced settings have reasonable default values.

   - automatically restart this agent from the agent monitor - Type y and press Enter to have the agent monitored by the agent monitor or press Enter to not have the agent monitored (default).
   - netbackup agent collection period - Enter the NetBackup Agent report interval that specifies the time range (e.g., last 72 hours) for backup data reporting. Sun Microsystems recommends that you do not set this parameter to a value less than the default interval (72 hours).
   - Enable Auto Registration – Turns agent auto registration on (default) or off.
   - Local Manager – Specify the IP address or host name of the Local Manager to be contacted for agent auto registration.
   - Local Manager Registration Port – Specifies the TCP port number the Local Manager uses for auto registration; the default port number is 17146.
   - Cache Refresh Interval - Specifies how long backup information remains in table cache. The default value is 14000 seconds.
   - Event Cache Duration - The default value is 14400 (same as CACHE_REFRESH_INTERVAL).
   - Command Execution Timeout - Specifies how long the agent will wait for the successful execution of a CLI command and the successful read of the CLI output. The default value is 600 seconds.
   - NetBackup Command Path - Specify the fully qualified path to the NetBackup software that provides the CLI commands. The default value is C:\Program Files\VERITAS\NetBackup.

- NetBackup Report Interval - Enter the NetBackup Agent report interval that specifies the time range (e.g., last 72 hours) for backup data reporting. Sun Microsystems recommends that you do not set this parameter to a value less than the default interval (72 hours).
- NetBackup VolMgr Install Path - Specify the fully qualified to the NetBackup Volume Manager. The default value is C:\Program Files\VERITAS\VolMgr.
- Full path to NetBackup catalog directory - Enter the directory that will be the target of the cat_usage command. The default value is C:\Program\Files\VERITAS\NetBackup\db\Images.

9. The installation will then prompt to start the agent after the installation. Enter **y** to start the agent after the installation completes.
10. The installation of the NetBackup Agent will complete and the installation script returns control to the command line.

Legato Agent Version 5.1

The following functional changes have been made to the Legato NetWorker Agent in Business Analytics 5.1:

- Data collection is controlled by the CACHE_REFRESH_INTERVAL variable defined in the Legato section of the storability.ini file.
- The agent collects data required for the new gsa_backup_jobs object.

Note: The Legato Agent must be installed on the Legato NetWorker backup server.

NetWorker job reporting in Business Analytics 5.1 has the following limitations:
- Clone jobs are not supported.
- Retrieve jobs are not supported.
- Client-side jobs are not supported (they are not reported on the backup server)

Legato Agent Matrix

TABLE 4 Legato Agent Matrix

Feature	Description
Support Prerequisites	
Verify supported version of Legato NetWorker product	Sun StorageTek Support Matrix
Verify Ethernet connectivity to Backup Servers	ping <IP Address>
Agent Installation	
Windows	Windows Local Manager Installation CD (InstallShield) Windows Administrator privileges
Solaris	Solaris Local Manager Installation CD (installation script) root user account privileges
Common Configuration Parameters	• CACHE_REFRESH_INTERVAL- Specifies how often the 'table cache' should be refreshed. The default value is 14400 seconds. • CMD_EXECUTION_TIMEOUT - Specifies how long the backup agent will wait for the successful execution of a CLI command and the successful read of the CLI output. The default value is 600 seconds.
Agent Parameters	• LEGATO_HEADER_TERMINATOR - When parsing the messages log file, the string value specified by this entry indicates the start location for parsing each line within the file. If the string value is not found within the line being searched, the whole line is treated as an error string. • LEGATO_MESSAGES_FILE - Specifies a fully qualified name to the Networker's messages log file, which the Legato Agent searches to extract failed backup jobs information. • LEGATO_LOG_START_TIME - Specifies the 'look back' interval; the default value is 24 hours. This time interval is passed as a parameter to the mminfo command to query back the specified time interval for successful jobs. The format is defined in UNIX strftime() as follows: %b %e %T %Y OR in English: Mmm [d]d HH:MM:SS YYYY • LEGATO_CATALOG_DIR - Specifies the fully qualified name of the Networker's catalog index file. • NO_COLLECTION - Specifies blocking data collection for specified data collection groups or for all groups (ALL). • NON_COLLECTION_DURATION - Specifies a time interval during which data collection for a data group or groups is blocked.

Installing Legato Agent – Windows

1. Insert the Sun StorageTek Business Analytics 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. Review/modify the User Name and Company Name and click **Next**.
5. Click the **Legato Agent** checkbox on the screen that lists agents for installation and click **Next**.

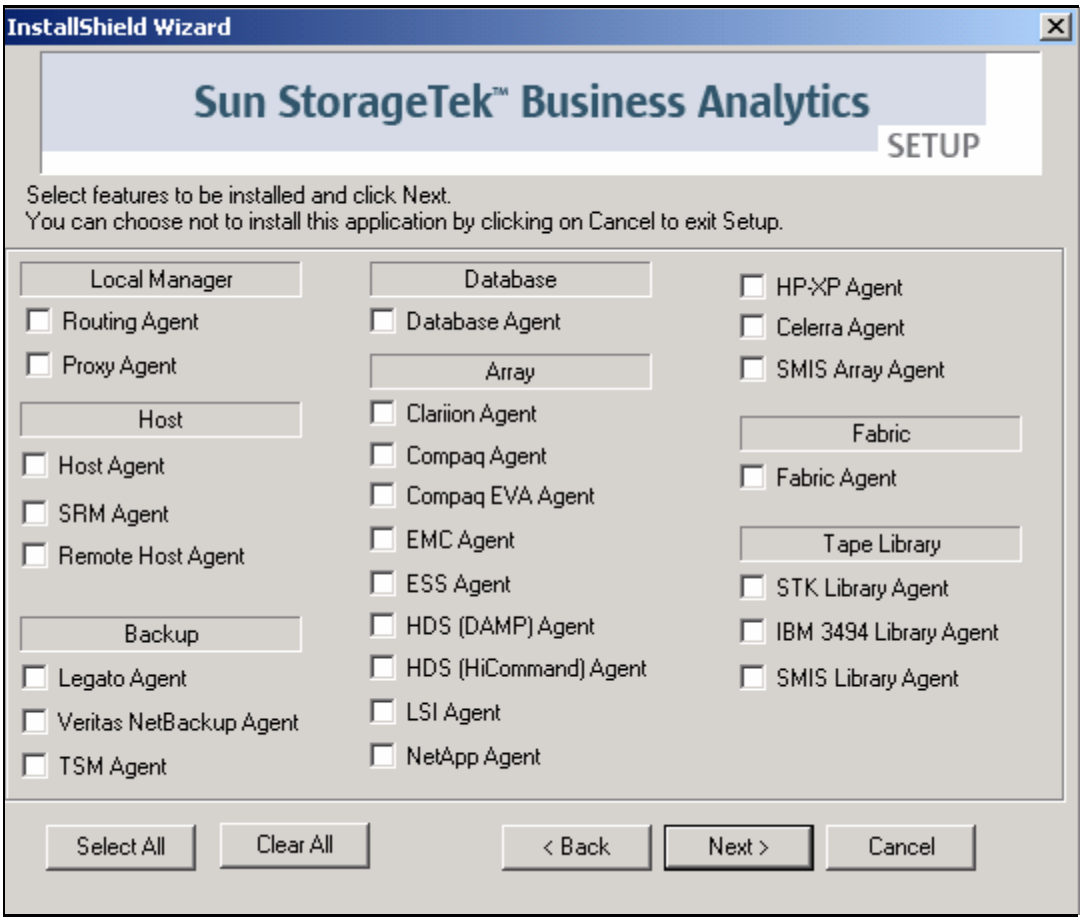

FIGURE 2 Select Features To Be Installed

6. Review the settings and click **Next** to continue with the installation.

7. When the dialog box appears, specify where the required **mminfo.exe** program is located. You can click the **Browse** button to locate it.

8. Specify whether or not to install the new version of the Configuration Tool, if prompted.

9. When the Configuration Tool is automatically launched, select **File** -> **Edit** -> **Smart Agent Configuration**.

10. Click the **Legato Agent** tab and review/modify the following settings
    - For Local Manager, specify the IP address or the host name of the Local Manager to be contacted for agent auto registration.
    - For Local Manager Registration Port, specify the TCP port number the Local Manager uses for agent auto registration. The default port number is 17146.
    - "For Legato Header Terminator, specify the text string that marks the end of the syslog stamp and the start of real data. The default value is "[".

11. Click **Show Advanced Settings** and review/modify the following configuration parameters:
    - Enable Auto Registration turns agent auto registration on (default) or off.
    - Legato Networker Message File - Enter the fully qualified file name (e.g., c:\ Program Files\nsr\logs\messages) for the file that provides the list of messages contained within the Legato completion reports.
    - Command Execution Timeout - Specifies how long the agent waits for a command to complete execution.
    - Directory containing Legato binaries - Enter the full path to the folder where the Legato Networker software is installed.
    - Legato Agent Collection Interval - Enter the polling interval in seconds to scan for new completions of server backups in the Execution Interval column. This parameter is optional. If not specified it defaults to one half hour (14400 seconds).
    - Legato Index Directory - Enter the full path to the Legato index directory.
    - Legato Log Start Time - Specifies the time the agent looks back for backup data. There is no default value. If blank, the agent looks back 24 hours.

12. With “Save Configuration Settings” turned on (check mark), select **File->Save** and then close the storability.ini window.

13. Select File->Exit to close the Configuration Tool.

14. Use the Windows Services panel to start the Legato Agent before you test agent functionality.

Installing the Legato Agent – Solaris

The installation script (setup) is used to install the Legato Agent on a Solaris server. The installation script will verify that the required base (SUNWbizanbase) package is already installed. If it is not installed, the script will automatically launch its installation before proceeding to that for the Legato Agent.

1. Open a terminal window on the desktop of the Sun host.
2. Mount the installation CD in your CD-ROM drive.
3. Change to the mount CD-ROM directory. For example:

   ```
   cd /mnt/cdrom/cdrom0
   ```

4. Run the installation script and display a list of agents that may be installed.

   ```
   ./setup
   ```

5. Select the Legato Agent from themain installation
6. Type zero and press Enter to specify that you have concluded selecting agents for installation.
7. Type the install path for the agent or press Enter to accept the default install path (/opt/storability).
8. Specify the following required information:
   - Local Manager - Enter the network resolvable host name or IP address of the Local Manager that the Legato Agent will contact for agent auto registration, if enabled.
   - Local Manager Port - Specify the TCP port number the Local Manager uses for agent auto registration. The default TCP port number is 17146.
   - Location of nsradmin - Specify the fully qualified path to directory where the nsradmin binary is located.
   - Command Execution Timeout - Specifies how long the agent waits for a command to complete.
   - Legato Catalog Directory - Specify the fully qualified path to the NetWorker index directory.
   - Legato Messages File - Specify the fully qualified path to the Legato NetWorker messages log.
   - Legato Log Start Time - Specifies how long the agent looks back for historical data. The agent looks back 24 hours if no value is specified.
   - Legato Header Terminator - Specify the text string that marks the end of the syslog stamp and the start of real data. The default value is "[".
   - Legato Command Path - Specifies the fully qualified path to the file containing commands used to gather client data.

9. Type **y** and press Enter to review/modify the Advanced Settings:
   - **Enabled Auto Registration** – Turns agent auto registration on (default) or off.
   - Enter the **MAXIMUM_CACHE_AGE** (in seconds).
   - Enter the **Data Collection Interval** (in seconds).
10. Enter **y** to restart the agents after installation.
11. The installation will complete and return you to the command line.

Installing Legato Agent on HP-UX

All currently supported HP-UX agents are provided as zipped tar archives with installation scripts. To install an agent, simply ensure that the archive (legatoAgent-hpux.tgz) and the install script (legatoAgent-install.sh) reside in the same location, and run the script.

```
./legatoAgent-install.sh
```

HP-UX supports neither Rock Ridge nor Joliet extensions to the ISO 9660 filesystem specification. As a result, support for long filenames may not be available.

During the installation, the installer must specify the following information:

- The fully qualified path to the nsradmin binary
- The fully qualified path to the Networker index directory
- The fully qualified path to the Networker messages log
- Legato log start time
- Table cache refresh interval (default value is 14400 seconds)
- Timeout for execution of a CLI command (default value is 600 seconds)
- Whether to re-start the agents after the install?

To configure agent auto registration on an HP-UX server, you can add the NetBackup Agent to a Local Manager Routing Agent configuration as a SUB_AGENT entry or manually add the required entries to the agent storability.ini file. Sample storability.ini file entries appear below.

- `GSM_LM_HOST = 192.168.1.132`
- `GSM_LM_PORT = 17146`
- `GSM_ENABLE_LM_REGISTRATION = true`

Tivoli Storage Manager Version 5.1 Agent

The following sections describe the installation and configuration of the Sun StorageTek Business Analytics Tivoli Storage Manager (TSM) Agent. Currently, the TSM Agent must be installed on a supported Windows server. See also the *Sun StorageTek Business Analytics Support Matrix*.

The following functional changes have been made to the TSM Agent in Business Analytics 5.1:

- The TSM agent no longer uses IBM's TSM ODBC driver. Instead, it uses an external executable, odbc.exe.
- "Data collection is controlled by the CACHE_REFRESH_INTERVAL variable that is defined in the NetBackup section of the storability.ini file.
- The agent collects data required for the new gsa_backup_jobs object.
- Supports the NO_COLLECTION configuration setting that specifies blocking data collection for specified data collection groups or for all groups (ALL).
- Supports the NON_COLLECTION_DURATION parameter that specifies a time interval during which data collection for a data group or groups is blocked.

TSM Agent Matrix

TABLE 5 TSM Agent Matrix

Feature	Description
Support Prerequisites	
Verify supported version of TSM product	
Verify Ethernet connectivity to Windows 2000 server	ping <IP Address>
Verify supported version of TSM ODBC Driver	See the TSM ODBC System DSN Prerequisite section that follows
Verify customer-supplied login/password with query privileges or higher for each TSM database connection	

TABLE 5 TSM Agent Matrix

Feature	Description
Agent Installation	
Windows 2000/2003	• Windows Local Manager Installation CD (InstallShield) • Windows Administrator privileges
Configuration Parameters	See required configuration parameters in the Installation section that follows.

TSM ODBC System DSN Prerequisite

The procedure to create the **required** System Data Source Name is outlined as follows:

1. Select Start->Settings->Control Panel -> Administrative Tools from the Windows desktop.
2. Select **ODBC Data Sources** to launch the ODBC Data Source Administrator.
3. Click the **System DSN** tab.
4. Click **Add** and the **Create Data Source** screen appears**.**

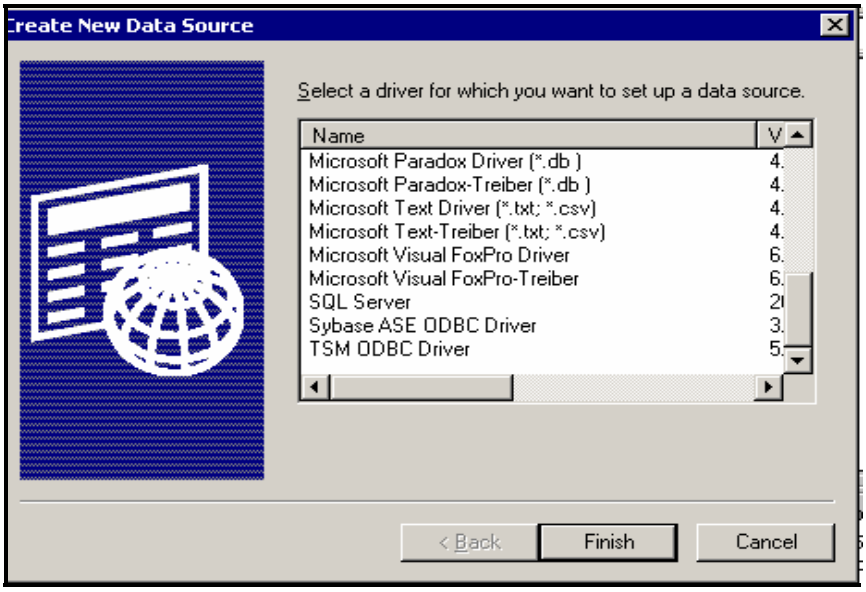

FIGURE 3 Create New Data Source for TSM ODBC Driver

5. Use the scroll bars to verify a supported version of the TSM ODBC Driver is installed, and select the TSM ODBC Driver for the data source you are creating. The Configure a Data Source screen appears.

6. Enter a descriptive name for the System DSN that will be used to connect to a TSM database server in the **Data source name** field.

7. Enter the TCP/IP address to connect to the TSM database server in the **TCP/IP address** field.

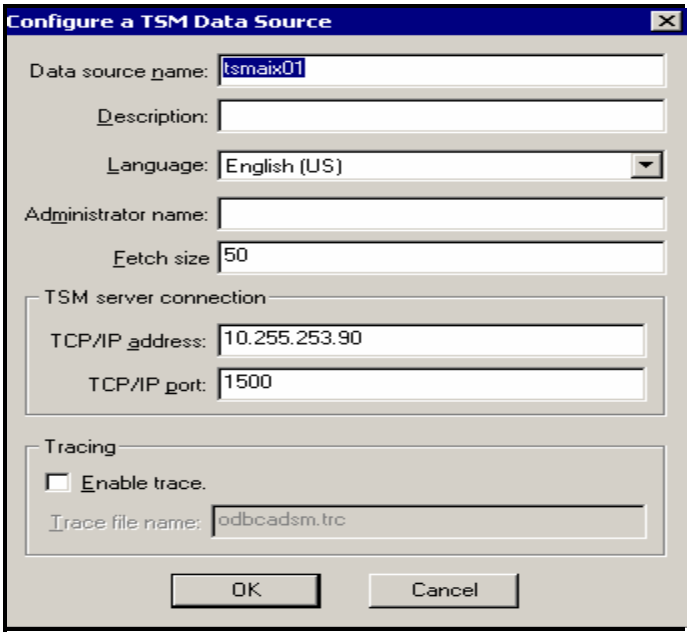

FIGURE 4 Configure a TSM Data Source

Note – Sun StorageTek highly recommends that you use a third party ODBC query tool (e.g., QTADO) to verify the System DSN before you deploy it with a TSM Agent.

Installing the TSM Agent – Windows

The following section describes how to install and configure the TSM Agent on a Windows platform.

1. Insert the 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. Review/modify the User Name and Company Name and click **Next**.
5. Click the **TSM Agent** checkbox on the screen that allows you to select agents for installation and click **Next**.

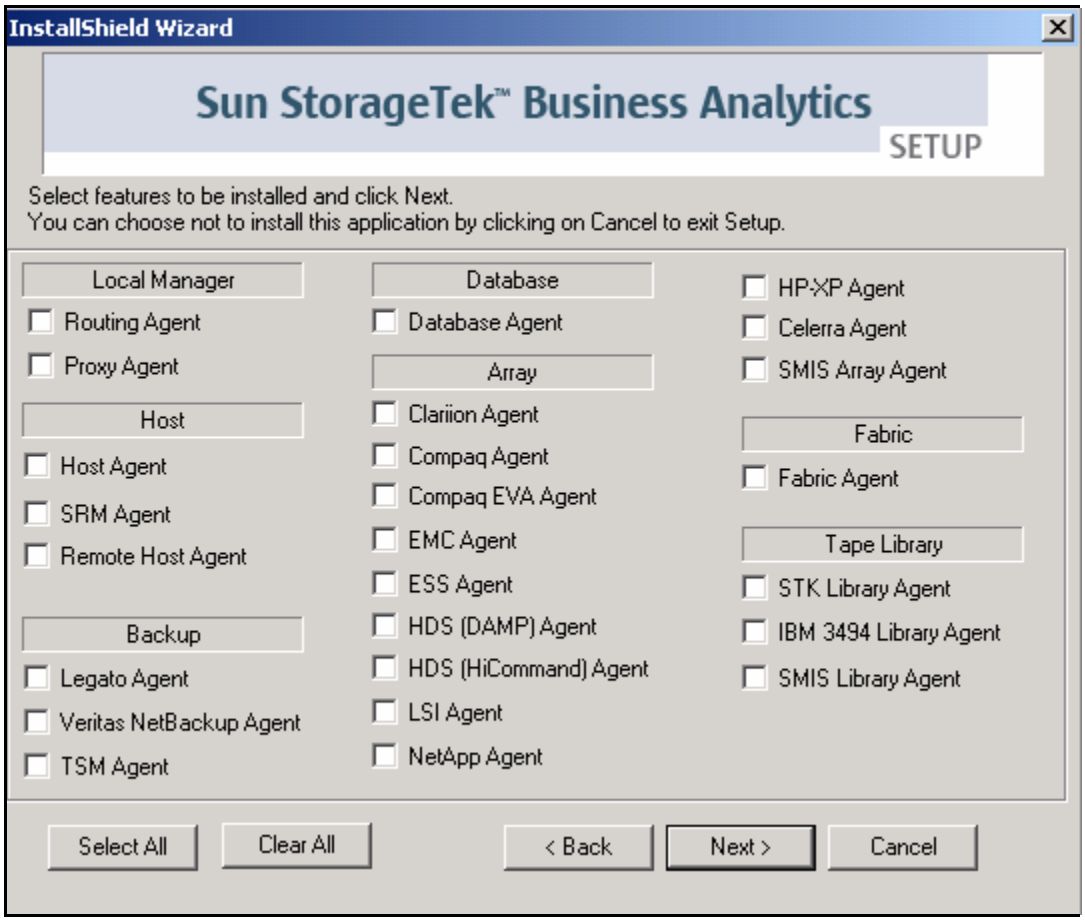

FIGURE 5 Agent Selection Dialog

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

Note – Installation checks for an instance of the TSM ODBC driver. If one is not detected, a dialog box appears that asks the installer to specify whether or not to continue the installation.

---

7. Specify whether or not to install the new version of the Configuration Tool, if prompted.
8. When the Configuration Tool is automatically launched, select **File** -> **Edit** -> **Smart Agent Configuration**.

9. Click the **TSM Agent** tab and click **Add**..

10. Review/modify the following variables:
    - **DSN** - The data source name that you configured when you created the System DSN
    - **TSM Server Prefix**- Optional string to be pre-pended to the server name TSM returns for this DSN. For example, host_name_servername.
    - **User ID** - User name to log into the TSM database
    - **Password** – Password for the user to log into the database
    - **Period for Queries** – Time interval (in seconds) that the agent should look back for historical queries. The default value is 86400 seconds (1 day).

11. For **Local Manager**, enter the network resolvable host name or IP address of the Local Manager to be contacted for agent auto registration.

12. For **Local Manager Registration Port** – Specifies the TCP port number the Local Manager uses for agent auto registration. The default port number is 17146.

13. Click **Show Advanced Settings** to review/modify**:**
    - **Enable Auto Registration** - Turns agent auto registration on (default) or off.
    - **Data Collection Interval** (seconds) – Specifies how long agent data is cached; the default interval is 2400 seconds.
    - **Enable Auto Registration** - Turns agent auto registration on (default) or off.
    - **Agent Command Timeout Interval** (seconds) - Controls how long the agent will wait for a single SQL statement that is sent to the command line interface to return with data. The value is 600 seconds (10 minutes).
    - **Cache Refresh Interval** - Specifies the frequency to refresh the agent's cache; the default interval is 14400 seconds.
    - **TSM_SERIALIZE_CACHE_UPDATE** - This configuration setting controls whether or not the data object cache updates occur one-at-a-time (default) or in parallel. The agent will allow for the updates to each happen in their own thread concurrently (false) with other data object cache updates. However, be aware that while the TSM Agent can handle this, the TSM Server could be heavily taxed by this setting if the data load is large. As a result, it is recommended that you accept the default value (true).
    - **TSM_LOCAL_DATE_FORMAT** - Specifies the TSM local date format. The default value is Year/Month/Day/Time.

14. With "Save Configuration Settings" turned on (check mark), select **File->Save** and confirm saving changes to the storability.ini file.

15. Select **File->Exit** to close the Configuration Agent.

16. Use the Windows **Services** panel to start the Storability TSM Agent before you verify agent functionality.

Starting the agent will initiate a data collection. Depending on the size of your backup environment, this can utilize a significant amount of memory.

Verifying Backup Agent

Use the Sun StorageTek Business Analytics Agent Diagnostic Tool to verify the Backup Agent functionality. This tool is installed as part of the Central Manager or Local Manager software installation in the Storability Local Manager Utilities folder. It represents the primary tool to verify agent functionality or troubleshoot agent problems.

Proceed as follows:

1. Wait approximately 30 seconds after the particular Backup Agent (e..g., NetBackup Agent) has started to allow it to initialize before querying it with the Agent Diagnostic Tool.

   a. 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.

   b. Select the backup agent (e.g., Storability NetBackup 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 agent.

   d. Check the agent configuration settings in the storability.ini file; collect the **gsa_ini_control-2_0** object.

   a. Select the **gsa_backup_client_policy-2_2** object and verify that data is returned including IP Address, client, and policy.

   a. Proceed to verify all other objects published by the agent.

2. To verify the Backup Agent 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.

   b. Set the port to 17146 (or select the Storability Routing 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 Routing Agent.

   d. Select the **gsa_agent_register** table.

e. Verify this collected object reports the Backup Agent in the “active_peer” field by IP address (where the agent is installed) and appropriate port number:

NetBackup Agent – TCP port number is 17133.

Legato Agent – TCP port number is 17149

TSM Agent – TCP port number is 17156

Verifying Management Console Functionality

The following procedure describes how the administrator verifies the Backup 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 **Polling** and **Change Dashboard** menus.

Note – **Note**: You must be assigned Backup Administrator privileges to have access to the Backup Exceptions, Meta Database Capacity, Real Time Events, Backup Exposure, and TSM Daily Administration reports. Refer to the User Administration section of the **Administration** documentation to obtain additional information.

---

1. Log in to the Management Console as an administrative user (e.g., gsmuser) whose view provides access to the desired assets (e.g., sites).
2. Verify that your customized Home Page includes the **Backup Status Summary** dashboard or the **TSM Summary Report** pane as appropriate (or use **Change Dashboard** to choose one).
3. Select **Tools->Polling**. In the **Data Polling Schedule** menu, locate appropriate Collection Type and Collection Metric polling schedules for the backup product. Business Analytics 5.1 segments data into six data collection groups: Config, Jobs, Media, Schedule, TSMOptional, and NetbackupOptional.
4. Click the **Collect Now** for the first on-demand agent data request for a Collection Type and Collection Metric related to the Backup Agent.
5. Repeat the above step until you have collected all the desired data. Wait approximately thirty seconds between each on-demand agent data collection request.

Note – The actual time it takes to collect backup information will vary depending on the size of the backup environment.

6. Close the **Polling Schedules** window.
7. Select **Database Administration** from the Tools menu.
8. Select **Refresh Management Console Homepage** cache and click Submit..
9. Use the **Backup Status Summary** pane for Veritas/Legato or the **TSM Summary Report** pane to determine if collected data is visible through the Management Console. It is normal for the **Backup Status Summary** pane to not display information if no failures occurred over the past 24 hours.
10. Close the browser session with the Management Console as the above steps complete verifying basic Management Console functionality.

Backup Agent Troubleshooting

1. **Verify system/agent prerequisites** – Refer to *Sun StorageTek Business Analytics Support Matrix* to verify the most recent support requirements for the Backup Agent.
2. Use the Sun StorageTek Business Analytics Agent Diagnostic Tool to save the output for all the agent published objects if escalating a problem to Sun Technical Support.
   a. Run the agent diagnostic tool from its installed program folder.
   b. Enter the **IP Address** or **Hostname** of the server where the agent is installed and set the port by selecting the Backup 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 Backup Agent. If unsuccessful, verify the Ethernet connectivity to the server running the Backup Agent and that the 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 agent's Message.log file that can contain information on startup errors, configuration errors, or errors regarding accessing data or parsing output.

   For Windows:

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

   For 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 Backup Agent section of the storability.ini file (if Sun Support requests it).

4. **Verify Local Manager Registration -** The configured Local Manager **gsa_agent_register** table should be reviewed to verify a registration type (STATIC or AUTO_NET) is reported for the backup agent. If static registration is being used and no agent registration is reported, verify the necessary SUB_AGENT entry has been added to the Routing Agent's storability.ini file and restart the Routing Agent.

   If agent auto registration is being used and no registration is reported in gsa_agent_register, proceed as follows:

   ☐ Routing Agent's storability.ini file has "Activate Agent Registration" turned on.

   ☐ Backup Agent is configured for agent auto registration:

   – Valid Local Manager IP address/host name

   – Local Manager TCP port number is 17146 (default port number)

   – Enable auto registration is turned on (true)

5. **Review the Routing Agent Message Log** – Review/collect the configured Routing Agent's Message Log to check for errors related to Ethernet connectivity problems contacting the Backup Agent.

6. **Confirm Polling Schedules** – Using the Management Console's **Polling Schedules** window, review/modify the existing Polling Schedules for the Collection Type and Backup product. Clicking the **Job ID** link on the Polling Schedules window opens the Add a New Polling Job window where changes can be made.

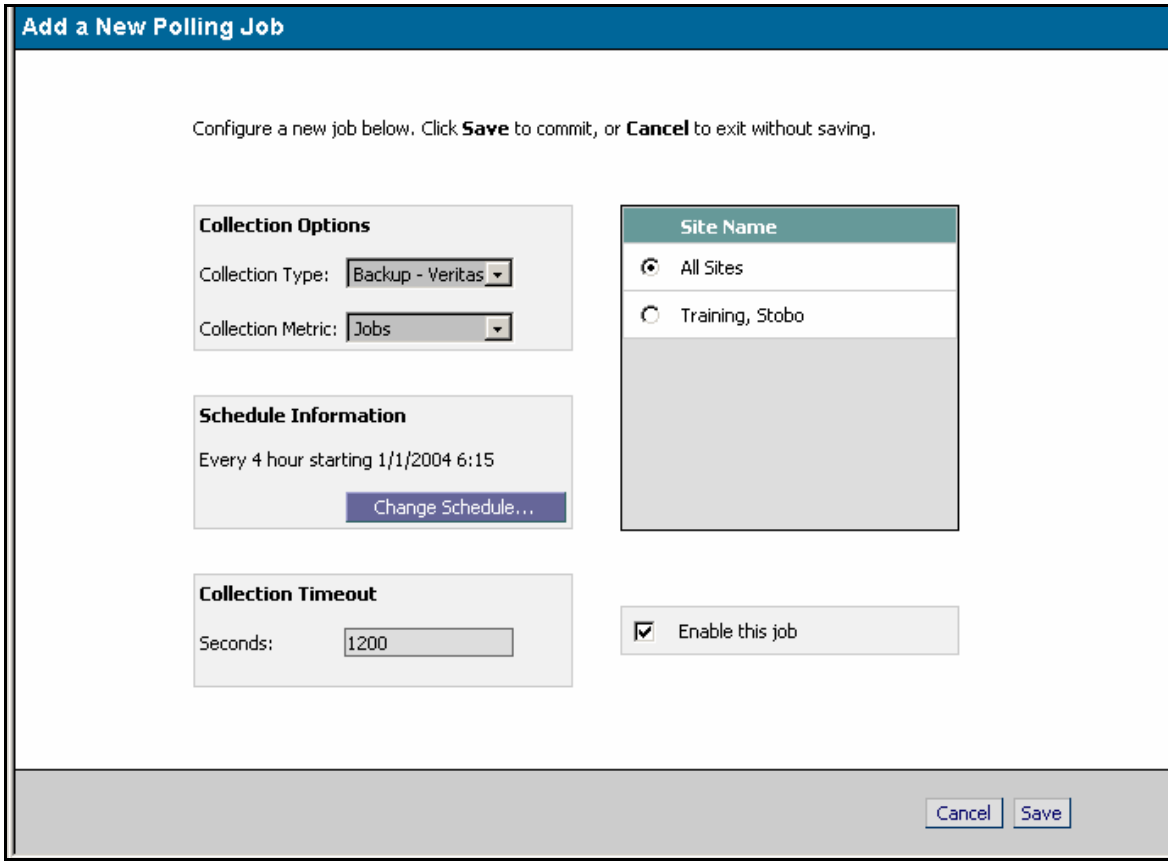

FIGURE 6 Add a New Polling Job

7. **Review Aggregator Message Log** – Open the Aggregator's Message Log in a text editor and validate that the Backup Tables are being requested and that rows are being inserted into the database.

   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 GSM application. For the Backup Agent, use any MS SQL Query interface, such as isql, to verify rows have been inserted into the Backup-related tables for the particular backup product. Refer also to Table 2 - Populated Tables Matrix.

9. **Verify Management Console Functionality** – As a final step in the agent troubleshooting procedure, minimally verify that the **Backup Status Summary** or **TSM Summary Report** dashboard pane works properly.

Upgrade Requirements

In order to take advantage of the new features described in this manual, it is necessary to upgrade to Business Analytics 5.1. At a minimum, the following components must be upgraded:

- Central Manager database
- Central Manager agents
- Management console
- All backup agents

Be aware that:

- Business Analytics 5.1 will not collect data from earlier backup agents.
- Business Analytics 5.0 will not collect data from 5.1 backup agents.
- As part of the database upgrade to Version 5.1, data will be moved from the legacy backup tables to the new jobs table for reporting.

Upgrade Backup Agent

To upgrade a Sun StorageTek Business Analytics Backup Agent, you perform the following procedure:

1. Uninstall the previously installed Backup Agent.
2. Upgrade by installing the latest Sun StorageTek Business Analytics Backup Agent.

Uninstall Backup Agent – InstallShield

1. Do one of the following:
   - Select **Start->Program Files->Storability->Uninstall->Uninstall Local Manager**

- **Start->Program Files->Storability->Uninstall->Uninstall <Backup Agent Name>.** The Storability Uninstall dialog appears.

2. Click the checkbox for the particular agent (e.g., NetBackup Agent).
3. Click **Next>**. The **Question** dialog appears.
4. Click **Yes** to confirm the 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 Backup Agent – Solaris

1. Create a backup copy of the existing storability.ini file.
2. Mount the installation CD in the CD-ROM drive.
3. Change directory to the CD-ROM directory.
4. Type:

   ```
   setup -u
   ```

5. Type the number of the agent to be uninstalled and press Enter.
6. Type zero and press Enter to specify that you have completed specifying agents to be uninstalled.
7. At the "do you want to remove this package" prompt, enter **y** and press **Enter**.
8. At the "do you want to continue the removal of the package?" prompt, type **y** and press **Enter**. The "Removal of Business Analytics <agent name>" agent was successful" message should appear to indicate the package was removed successfully.

Reinstall Backup Agent – Non-Solaris UNIX Host

The reinstallation procedure for all Business Analytics agents supported on non-Solaris UNIX hosts, such as the NetBackup Agent on a HP-UX 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.