Sun StorageTek™ Business Analytics Library Agents Installation Guide

Release 5.0 SP1

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INTRODUCTION TO LIBRARY AGENTS

Sun StorageTek Business Analytics provides tape library agents that support various models of IBM and STK libraries. The library agents report on a library's robot, slots, contents (i.e., tapes), interfaces, and drive interfaces. To obtain the latest information of agent support prerequisites:

- Refer to the *Sun StorageTek Business Analytics Support Matrix* for the latest information on supported libraries and their support prerequisites.

- Consult the *Sun StorageTek Business Analytics Agent Features Quick Facts Sheet* for a summary of the features supported by a particular agent, which may vary depending on data collection access method, platform or software components present.

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 5.0 SP1 provides three agent installation CDs: Windows Local Manager, Solaris Local Manager, and UNIX Agents (HP-UX and IBM AIX). To upgrade a Library Agent, uninstall the previously installed Library Agent before you install the Sun StorageTek Business Analytics 5.0 Library Agent. The decision to upgrade an existing Library Agent may be performed because:

- The Sun StorageTek Business Analytics Release Notes indicate a problem has been fixed or a new feature added (e.g., SMIS Tape Library Agent).
- The upgrade is recommended by Sun.

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 Library 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

LIBRARY AGENT OBJECTS

Table 1 lists the objects that all Sun StorageTek Business Analytics Library Agents publish.

Table	Columns
gsa_alerts-3-0	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_control-2_0	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_tlib_alias	ip_address, agent, lib_id, lib_index, type, id-1, id_2, alias_source, alias_type, alias_id, timestamp
gsa_tlib_cell_statistics	Not currently populated
gsa_tlib_config	ip_address, agent, lib_id, lib_index, vendor, model, serial_no, lib_count, drive_cap, hw_version, fw_version, build_date, alias, url, timestamp
gsa_tlib_contents	ip_address, agent, lib_id, lib_index, slot_type, component_id, media_type, media_id, media_class, timestamp
gsa_tlib_drives	ip_address, agent, lib_id, lib_index, component_id, vendor, model, serial_no, fw_version, media_type, timestamp
gsa_tlib_events	ip_address, agent, lib_id, lib_index, type, id_1, id_2, event_source, event_id, event_severity, event_msg, event_time, timestamp
gsa_tlib_ifaces	ip_address, agent, lib_id, lib_index, owner_type, owner_id1, owner_id2, if_type, if_index, if_addr, timestamp
gsa_tlib_slots	ip_address, agent, lib_id, lib_index, slot_type, component_id, panel, row, col, timestamp
gsa_tlib_statistics	ip_address, agent, lib_id, lib_index, type, id_1, id_2, start, end, interval, duration, stat_type, successes, retries, failures, timestamp
gsa_tlib_status	ip_address, agent, lib_id, lib_index, type, id-1, id_2, status, timestamp

Table 1 – Library Agent Objects

STK LIBRARY AGENT

The STK Library Agent supports STK L-Series libraries with the exception of the STK L5500 (also called PowderHorn) library. Refer to the *Sun StorageTek Business Analytics Support Matrix* for the latest information on supported libraries and support prerequisites.

This agent uses SNMP to collects its data. Therefore, SNMP must be enabled on the tape library.

STK LIBRARY AGENT MATRIX

Item	Description
Support Prerequisites	
Verify Version 2.0 (minimum) of the StorageTek SNMP MIB	
Verify SNMP is enabled on the library	`bulkall <IP Address>`
Verify Ethernet connectivity to the library	`ping <IP Address>`
Agent Installation	
Windows	• Windows Local Manager Installation CD (InstallShield) • Windows Administrator privileges
Solaris	• Unix Local Manager Installation CD (package installation) • root user account
AIX	• Unix Local Manager Installation CD (package installation) • root user account
Requirements	• The STK Library Agent (SNMP) and the ACSLS Agent should not be configured to report on the same tape library.
Configuration Parameters	
Local Manager	IP address or network-resolvable host name of the Local Manager to be contacted for agent auto registration. The default value is local host.
Local Manager Registration Port	TCP port number the Local Manager uses for agent auto registration. The default port number is 17146.
Enable Auto Registration	Turns agent auto registration on (default) or off.
SNMP	The address of the SNMP agent for the STK L-Series Library. This is identified through a combination of host, port, and read community.

Item	Description
TRUST_LXX_CAP_STATS	Specify whether or not to report Cartridge Access Port (CAP) statistics.
IGNORE_OOR_CAP_STATS	Specify whether or not to ignore "out of range" CAP statistics.
TLIB_STATUS_AGE	Data collection and cache refresh interval (seconds) for the status tables; default is 300 (five minutes).
TLIB_STATS_INTERVAL	Statistics and events collection interval (seconds); default is 300 (five minutes).
TLIB_STATS_RETENTION	Statistics retention period (seconds) default is 8600 (one day).
STK_SNMP_AGENT	Data collection and cache refresh interval (seconds) for the configuration tables; default is 3600 (one hour).

Table 2- Library Agent Matrix

INSTALLING THE STK LIBRARY AGENT - WINDOWS

The following section describes how to install and configure the STK L-Series Library Agent on a Windows platform.

1. Insert the Sun StorageTek Business Analytics Windows Local Manager Installation 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. Check the **STK Library Agent** checkbox on the screen that lists Smart Agents for installation.

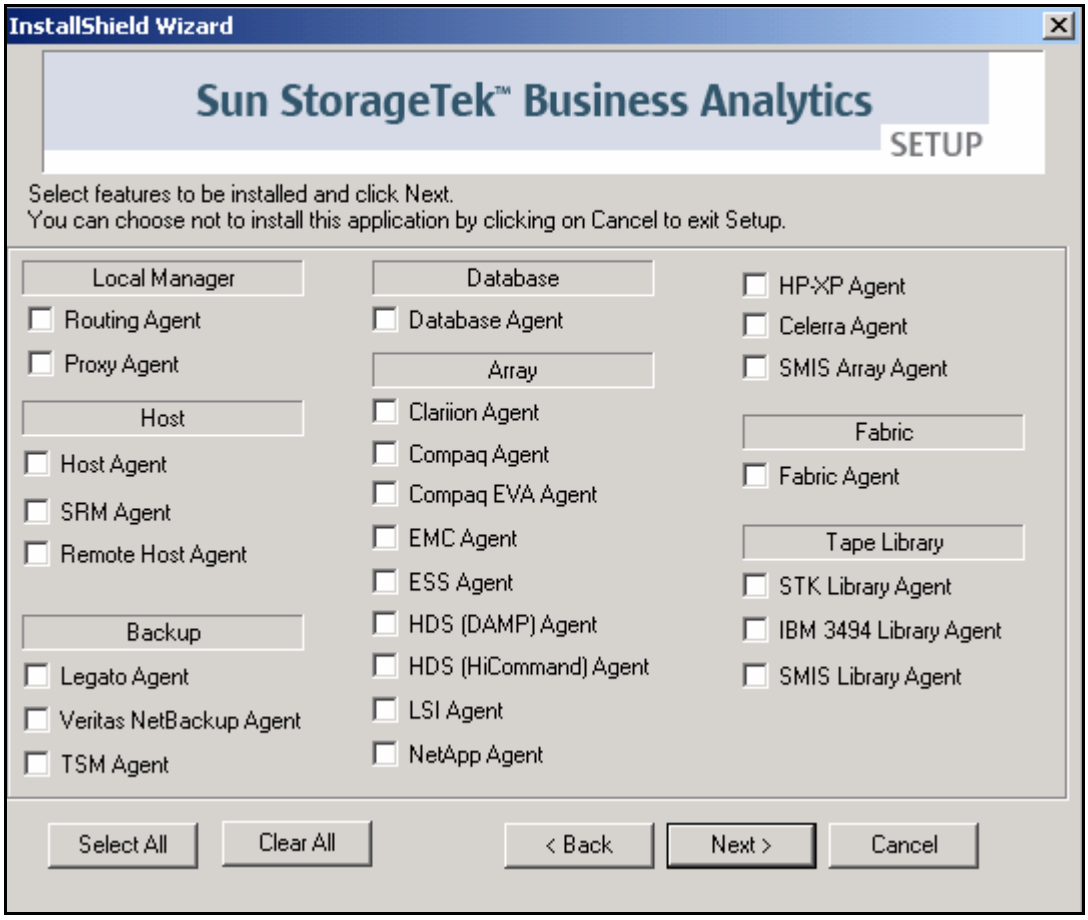

Figure 1 - Select Features To Be Installed

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

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 **STK L-Series Agent** tab and click **Add**.

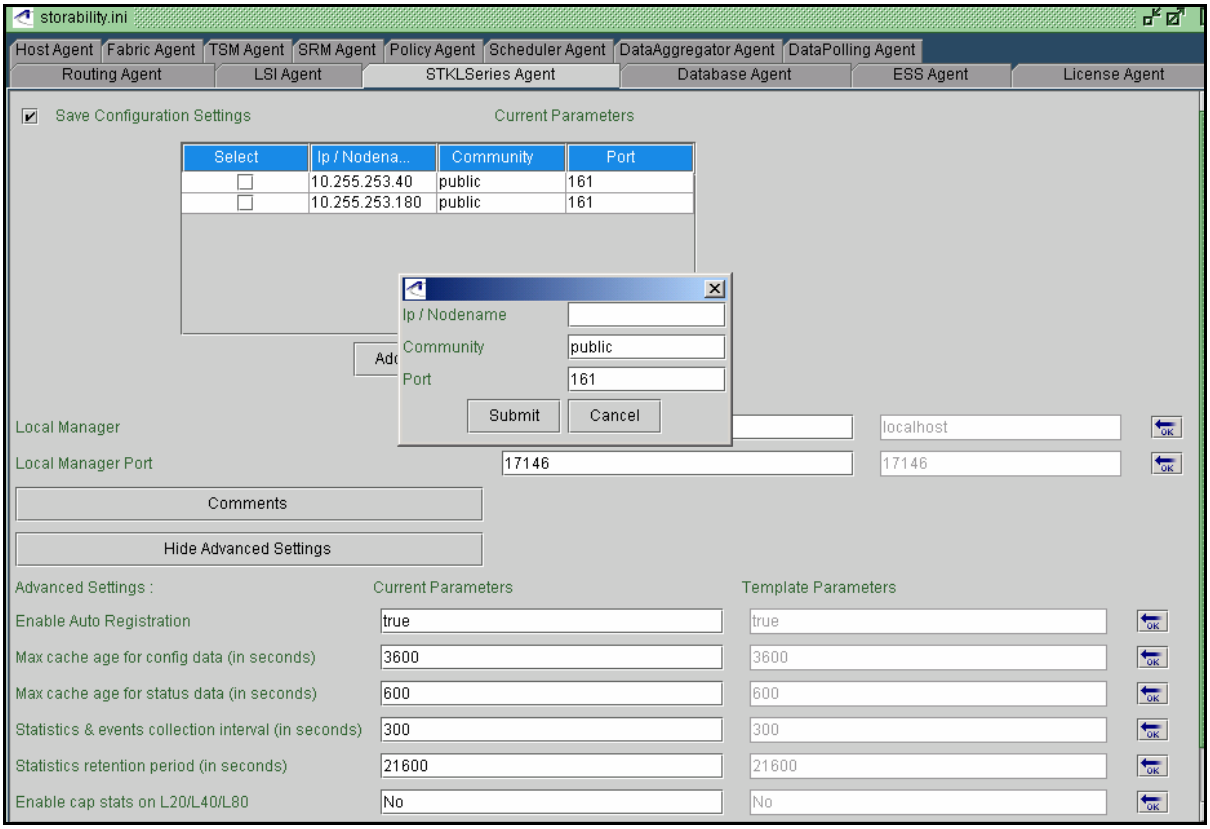

Figure 2 - STK L-Series Agent Configuration Window

- **IP Address** – Specify the IP address for the STK L-Series library.
- **Community** – Specify the SNMP read string; the default Read community is public.
- **Port** – Specify the port number where the default port is 161.

Note: The configuration settings for two STK L-Series Libraries in the above screen are for illustrative purposes only; these will not display when you configure libraries for your environment.

10. Repeat this procedure for each STK L-Series Library that the agent will collect data.
11. Click **Submit**.
12. For **Local Manager**, specify the IP address or network resolvable host name of the Local Manager to be contacted for agent auto registration.
13. For **Local Manager Port**, specify the TCP port number the Local Manager uses for agent auto registration. The default port number is 17146.
14. Click **Show Advanced Settings** and review/modify the following:
    - **Enable Auto Registration –** Turns agent auto registration on (default) or off.
    - **Max cache age for config data –** Specify how long library configuration data is cached. The default value is 3600 seconds.

- **Max cache agent for status data -** Specify how long library status data is cached. The default value is 600 seconds.

- **Statistics & events collection interval –** Specify the frequency that statistics and events data is collected. The default value is 300 seconds.

- **Statistics retention period –** Specify how long library statistics are cached. The default interval is 21600 seconds.

- **Enable cap stats on L20/L40/L80** – Turn collection of CAP statistics on or off (default) for the specified model libraries.

15. With "Save Configuration Settings" enabled (check mark), select **File->Save** and then confirm saving the changes to the storability.ini file.
16. Select **File->Exit** to close the Configuration Tool.
17. Use the Windows **Services** panel to start the STL L-Series Agent before you verify agent functionality.

INSTALLING THE STK LIBRARY AGENT - SOLARIS

1. Mount the Sun StorageTek Business Analytics Solaris Local Manager Installation CD on the Solaris server. For example:

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

2. Change directory to the UNIX directory for the Solaris operating system.

3. Run the pkgadd command. The main package installation menu is displayed.

```
pkgadd –d .
```

4. Press **Enter** to scroll through the packages and then Ctrl-D to stop scrolling.

5. Select to install the STK Library Agent (GSMstk) and press **Enter**.

6. Enter the IP address or host name for the STK library.

7. Enter the TCP port number or press **Enter** to accept the default port (161).

8. Enter the SNMP Read community string or press Enter to accept the default Read community string (public).

9. Repeat the above steps to configure SNMP read access to all libraries.

```
IP address or hostname of STK library? [done] 10.255.253.40

Library data port? [161] [?]
SNMP read community string? [public]
Confirm community string?
```

Figure 3 - Configure STK L-Series Agent on Solaris

10. Press **Enter** on an empty IP Address or Host Name prompt to indicate you are finished configuring libraries and to continue.

11. Type **y** and press **Enter** to review/modify the **Advanced Settings**.

12. The installation program prompts to enter the installation path.

```
Modify advanced settings? [n] [y,n,?] y

Automatically restart this agent from agentMonitor? [y] [y,n,?]

Maximum library configuration cache age? [3600] [?]

Maximum library status cache age? [600] [?]

Library stats collection interval? [300] [?]

Library stats retention period? [21600] [?]

Enable cap stats from Lxx libraries? [n] [y,n,?]

Ignore out-of-range cap stats? [n] [y,n,?]

Enable automatic agent registration? [y] [y,n,?]

Local Manager address for agent registration? [localhost]

TCP port for agent registration? [17146] [?]
```

Figure 4 - STK L-Series Advanced Settings

- Specify whether (y/n) to have the Agent Monitor restart the agent if it is detected as not running.

- For **Maximum library configuration cache age**, specify how long library configuration data is cached. The default value is 3600 seconds.

- For **Maximum library status cache age**, specify how long library status data is cached. The default value is 600 seconds.

- For **Library stats collection interval**, specify the frequency that statistics and events data is collected. The default value is 300 seconds.

- For **Library stats retention period**, specify how long library statistics are cached. The default interval is 21600 seconds.

- For **Enable stats from Lxx libraries**, turn collection of CAP statistics on or off (default) for the L20/L40/L80 model libraries.

- For **Ignore Out of Range Cap Stats**, Specify whether or not to ignore "out of range" CAP statistics.

- For **Enable Auto Registration**, agent auto registration is turned on by default, but can be disabled by specifying "false".

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

- For **Local Manager Port**, specify the TCP Port Number the Local Manager uses for agent auto registration. The default port number is 17146.

13. Specify whether (y/n) to restart the agents after the installation has completed.

14. Type **y** and press **Enter** to restart the agents after installation.

15. When prompted, type **y** to allow the installation script to run with super-user permissions.

16. The installation will complete and return you to the main package installation menu.

17. Enter the number for any other package you wish to install, or **q** or to quit.

ACSLS AGENT

The Sun StorageTek Business Analytics ACSLS Agent supports STK PowderHorn libraries (including the L5500). Refer to the *Sun StorageTek Business Analytics Support Matrix* for the latest information on supported libraries and support prerequisites,

The ACSLS Agent uses the STK ACS API to collect its data. On UNIX servers, the ssi process is the ACS API software.

Item	Description
Support Prerequisites	
Verify Ethernet connectivity to the server running the ACSLS API.	`ping <IP Address>`
Verify separate server available to accommodate the agent	The Storability ACSLS Agent must be installed on a separate Solaris or AIX server from the one running the ACSLS API and the backup server. SSI is the interface to the ACS API. In effect, the library-monitoring configuration requires three separate servers: ACSLS API server, backup server, and Library Agent server. Use the process status (ps) command to ensure that the ACS software is not already running on the server where you plan to install the ACSLS Agent. Remember that the ssi process is the ACS API software. `ps –ef | grep ssi`

RPC Binding Turned On	RPC binding must be running on the machine that the ACSLS Agent (acslsAgent) is installed on. Many companies do not turn this on by default.
	
	The process status (ps) command may be used to verify this requirement.
	
	`root@mymachine# ps -ef | grep rpc`
	`root 493 1 0 May 06 ? 0:00 /usr/sbin/rpcbind`
	`root 29612 29603 0 12:14:10 pts/4 0:00 grep rpc`

Item	Description
Agent Installation	
AIX	• UNIX Agent Installation CD • root user account
Solaris	• Solaris Local Manager Installation CD (package installation) • root user account
Restrictions	
Single ACS API client per machine	You may only run one application that uses the ACS API per machine. Be aware that SSI is the Storability ACSL Agent's interface to the ACSLS API. You can use the process status command to verify whether the SSI process is running on a UNIX server for an existing ACS API application (e.g., NetBackup Master Server). For example: `ps –ef | grep ssi`
Best Practices	
Library Agent Deployment	• Sun recommends the use of the STK Library Agent for tape libraries that support SNMP because the ACSLS Agent only collects Enters/Ejects (puts/gets) for statistics. Using the STK Library Agent and the ACSLS Agent to both monitor a particular tape library is not supported. • When restarting the ACSLS Agent, ensure the ssi process has been stopped before you attempt to restart the ACSLS Agent.
Configuration Parameters	
Local Manager	IP address or host name of the Local Manager to be contacted for agent auto registration. The default value is local host.
Local Manager Registration Port	TCP port the Local Manager uses for agent auto registration. The default port number is 17146.
Enable Auto Registration	Turns agent auto registration on (default) or off.
TRUST_LXX_CAP_STATS	Specify whether or not to report Cartridge Access Port (CAP) statistics.
IGNORE_OOR_CAP_STATS	Specify whether (y/n) to ignore "out of range" CAP statistics.

Item	Description
TLIB_STATUS_AGE	Data collection and cache refresh interval (seconds) for the status tables; default is 300 (five minutes).
TLIB_STATS_INTERVAL	Statistics and events collection interval (seconds) ; default is 300 (five minutes).
TLIB_STATS_RETENTION	Statistics retention period (seconds) default is 8600 (one day).

Table 3 –ACSLS Agent Matrix

INSTALLING THE STORABILITY ACSLS AGENT – SOLARIS

1. Mount the Sun StorageTek Business Analytics Solaris Local Manager Installation CD on the Solaris server. For example:

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

2. Change directory to the UNIX directory for the Solaris operating system. Solaris 7 or 8 packages are located in /Unix/Solaris/9.

3. Run the pkgadd command. The main package installation menu appears.

```
pkgadd –d .
```

4. Type **Ctrl-D** to stop scrolling and select GSMacsls (Option 1). You will be presented with a blank line for the ACSLS server name.

5. Type the IP address or network resolvable host name of the Solaris server equipped with the ACSLS API and press **Enter**.

6. Type **y** and press **Enter** to a review/modify the following configuration settings:

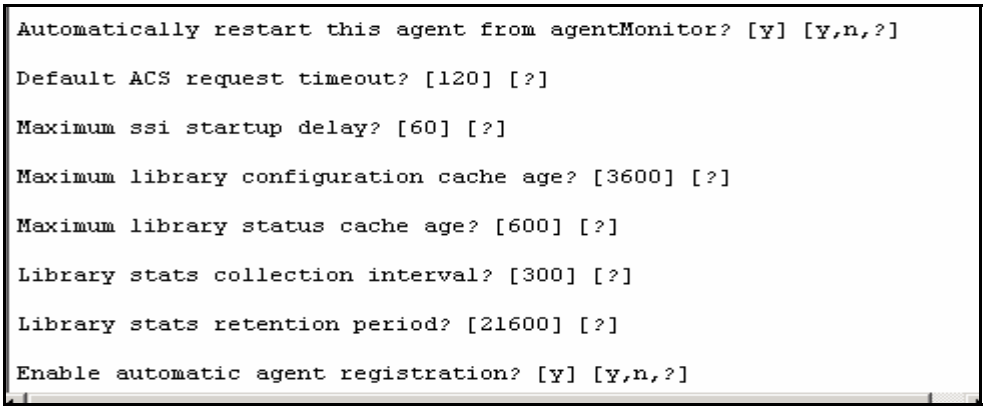

Figure 5 - ACSLS Library Agent Advanced Settings

- Specify whether (y/n) to have the Agent Monitor restart the agent if it is detected as not running.

- For **Default ACS request timeout,** specify how long the ACSLS Agent waits to communicate with the ACSLS server. The default value is 120 seconds.

- For **Maximum ssi startup delay,** specify how long to wait for SSI startup. The default value is 60 seconds.

- For **Maximum library configuration cache age**, specify the maximum cache age for configuration data in seconds. The default cache refresh is 3600 seconds.

- For **Maximum library cache status**, specify the maximum cache age for status data in seconds. The default value is 600 seconds.

- For **Library stats collection interval**, specify the statistics and events collection interval in seconds. The default value is 300 seconds.

- For **Library stats retention period**, specify the statistics retention period in seconds. The default value is 21600 seconds.

- For **Enable Auto Registration,** accept that agent auto registration is enabled (true) or set this configuration parameter to false to disable agent auto registration.

- For **Local Manager**, specify the network-resolvable host name or IP Address of the Local Manager to be contacted for agent auto registration. The default value is local host,

- For **Local Manager Registration Port**, specify the TCP port number the Local Manager uses for agent auto registration. The default TCP port number is 17146.

7. The installation prompts you to specify whether or not to restart the agents after installation.

8. Type **y** and press **Enter** to restart the agents after installation.

9. When prompted, type **y** and press **Enter** to confirm continuing the installation of the ACSLS Library Agent.

10. When prompted, type **y** to allow the installation script to run with super-user permissions.

11. The installation will complete and return you to the main package installation menu.

12. Enter the number for any other package you wish to install, or **q** or to quit.

13. Use the process status command to verify the ACSLS library agent is running. The following screen shows the command output when both the Routing Agent and ACSLS Agent are running.

```
Select package(s) you wish to process (or 'all' to process
all packages). (default: all) [?,??,q]: q
root@symmsun01# ps -ef | grep storability
    gsm 10243     1  0 14:57:22 ?       0:00 /app/storability/bin/routingAgent -w /app/storability/bin -msgdir /app/storabil
    gsm 10371     1  0 15:00:31 ?       0:00 /app/storability/bin/acslsAgent -w /app/storability/bin -msgdir /app/storabilit
root@symmsun01#
```

Figure 6 - Verifying ACSLS Library Agent Running

INSTALLING THE ACSLS AGENT - AIX

All currently supported AIX agents are provided as a zipped tar archive with an installation script. To install the agent, simply ensure that archive (acslsAgent-AIX.tgz) and the install script (acslsAgent-install.sh) reside in the same location, and run the script.

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

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

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

```
cd /cdrom/Unix/AIX/5.2
```

3. Run the installation script:

```
./acslsAgent-install.sh
```

AIX ACSLS Agent Configuration

The installer is prompted to supply the following information to configure the ACSLS Agent for AIX:

- **Default ACS Request Timeout** – How long the ACSLS Agent waits to communicate with the ACSLS server; default is 30 seconds.
- **Maximum SSI startup delay** – How long to wait for SSI startup.
- **Maximum library configuration cache age** – Maximum cache age for configuration data in seconds; default is 3600.
- **Maximum library cache status** – Maximum cache age for status data in seconds; default is 600.
- **Library stats collection interval** – Statistics and events collection interval in seconds; default is 300.
- **Library stats retention period** – Statistics retention period in seconds; default is 21600.

Agent Auto Registration
To configure agent auto registration, you can add the ACSLS Agent to a Local Manager Routing Agent configuration as a SUB_AGENT entry or manually add the required entries to the storability.ini file. Sample storability.ini settings for the agent appear below.

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

IBM 3494 AGENT

The IBM 3494 Agent supports IBM 3494 libraries. Refer to the *Sun StorageTek Business Analytics Support Matrix* for the latest information on supported libraries and support prerequisites.

The IBM ATL Agent uses IBM ATL drivers and SNMP to collect its data.

Item	Description
Support Prerequisites	.
IBM ATL drivers	Must have supported IBM ATL driver installed and configured for the server platform.
Verify Ethernet connectivity to the library	`ping <IP Address>`
SNMP Enabled	Verify that SNMP is enabled on the library. `bulkall <IP Address>`
Agent Installation	
AIX	• UNIX Agent Installation CD • root user account
Solaris	• Solaris Local Manager Installation CD (package installation) • root user account • GSMbase
Windows	• Windows Local Manager Installation CD (InstallShield) • Windows Administrator privileges
Linux	• UNIX Agent Installation CD • root user account
Configuration Parameters	
Local Manager	IP Address or host name of the Local Manager to be contacted for agent auto registration. The default value is local host.
Local Manager Registration Port	TCP port number the Local Manager uses for agent auto registration. The default port number is 17146.
Enable Auto Registration	Turns agent auto registration on (default) or off.

Item	Description
IBM_ATL_LIBRARY	Identifies the IBM 3494 Library to be monitored. The Library parameter is specified using a symbolic name for the library (device file). On non-Windows servers, all ATL device files will be specified similar to lmcp<#> (e.g., lmcp0).
Max. Cache Age for Configuration Data	Specify the frequency that the agent refreshes the library configuration data (seconds). The default value is 3600 seconds.
Max. Cache Age for Status Data	Specify the frequency that the agent refreshes the library status data. The default value is 600 seconds.
Statistics and Events Collection Interval	Specify the frequency that the agent collects statistics and events data. The default value is 300 seconds.
Statistics Retention Period	Specify how long the agent retains statistics. The default value is 86400 seconds (one day).

Table 4 – IBM 3494 Agent Matrix

OBTAINING THE SYMBOLIC DEVICE NAME FOR WINDOWS ATL

Before you install the IBM 3494 Agent, obtain the configured symbolic library device name.

1. Locate and open the ibmatl.conf file on the server equipped with the IBM 3494 ATL device drivers. On a Windows server, for example, the ibmatl.conf is located in the <drive>:\WINNT folder.
2. Open the ibmatl.conf file using a system text editor. A sample configuration file is shown below. In this sample configuration file, note that:

    - The IP address for the library is 10.255.253.94
    - The library symbolic device name is L12.

```
#
#   (C) COPYRIGHT International Business Machines Corp. 1993, 1998
#   All Rights Reserved
#   Licensed Materials - Property of IBM
#
#   US Government Users Restricted Rights - Use, duplication or
#   disclosure restricted by GSA ADP Schedule Contract with IBM Corp.
#
#
#   This is the file which defines the 3494 libraries and how they are attached.
#   The format of this file is:
#
#   Library name      address         identifier      <address2>
#
#   Where library name is a symbolic name of the library, address is the
#   internet address of the Library Manager for a TCP/IP connection, and
#   the identifier to be used in conjuction with the Library Manager.  It
#   is common practice to use the hostname of the machine for the identfier.
#   The address2 field after the identifier is the second internet address
#   for a 3494 HA (High Availability) library.
#
#   Notes: There is a 32 character limit for symbolic names.
#          There is an 8 character limit for the identifier.
#          Any line beginning with # is treated as a comment.
#
#
#   Example for TCP/IP connected library:
#
#     3494a           9.115.32.21     myhost
#
#   Example for TCP/IP connected 3494 HA library:
#
#     3494b           9.115.64.15     myhost    9.115.64.16
L12  10.255.253.94    instructor3w2k  192.168.1.136
```

Figure 5 - IBM ATL Configuration File

INSTALLING THE IBM 3494 AGENT - WINDOWS

The following section describes how to install and configure the IBM 3494 (ATL) Agent on a Windows platform.

1. Insert the 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. Check the **IBM 3494 Library Agent** checkbox on the screen that lists agents for installation.

6. Review the settings and click **Next>**.

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 **ibmATL Agent** tab and click **Change Option Values**.

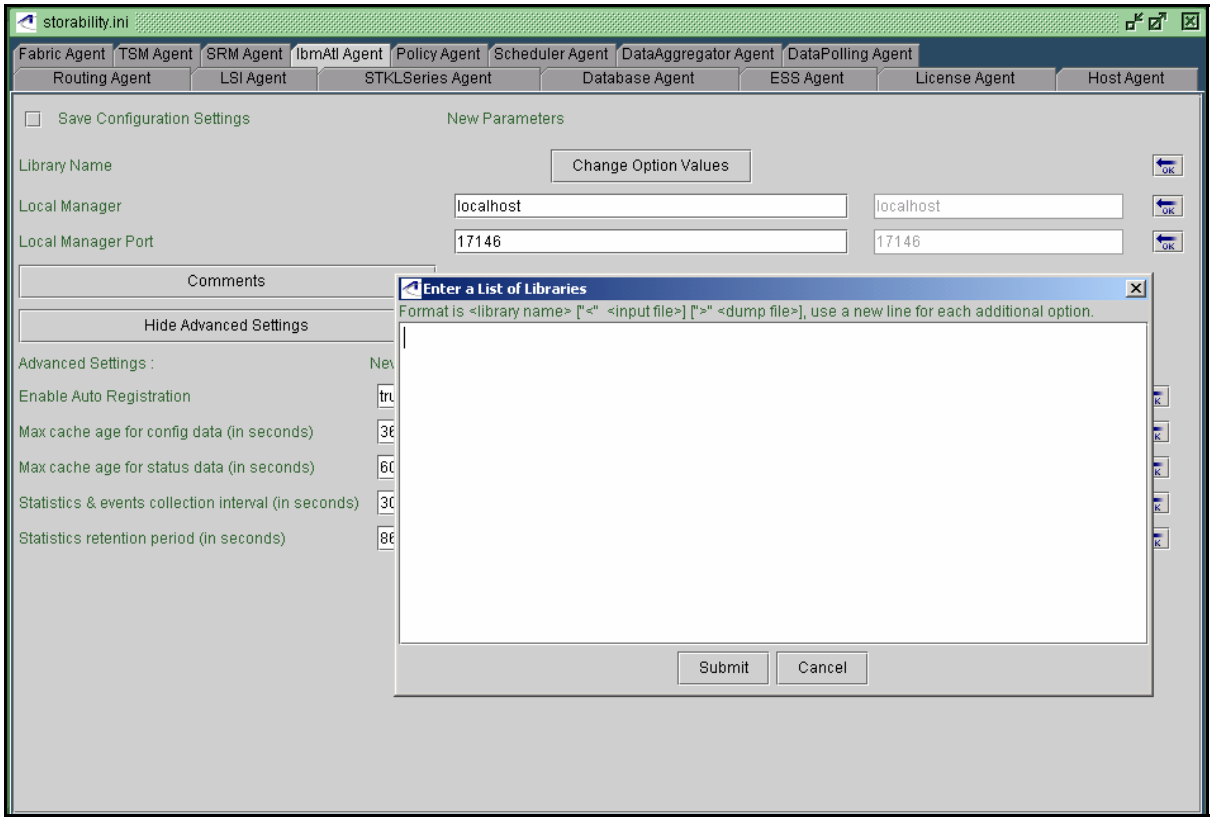

Figure 6 - IBM Configuration Tool: ATL Agent

10. For each library, enter on a line:

    - The symbolic name of the library (device) (from ibmatl.conf file):

11. Click **Submit** after you have entered the list of libraries.

12. For **Local Manager**, specify the IP address or network resolvable host name of the Local Manager the agent will contact for agent auto registration.

13. For **Local Manager Port**, specify the TCP port number that the Local Manager uses for agent auto registration). The default port number is 17146.

14. Click **Show Advanced Settings** to review/modify the following configuration variables:

    - **Enable Auto Registration –** Accept that auto registration is enabled (true) or set this configuration parameter to false to disable auto registration.

- **Max. Cache Age for Configuration Data –** Specify the frequency that the agent refreshes the library configuration data (seconds). The default value is 3600 seconds.

- **Max. Cache age for status data (seconds) –** Specify the frequency that the agent refreshes library status data. The default value is 600 seconds.

- **Statistics & events collection interval (seconds) -** Specify the frequency that the agent collects statistics and events data. The default value is 300 seconds.

- **Statistics retention period** - Specify how long the agent retains statistics. The default value is 86400 seconds (one day).

15. With "Save Configuration Settings" turned on (check mark), select **File->Save** and then confirm saving changes to the storability.ini file.
16. Select **File -> Exit** to close the Configuration Tool.
17. Use the **Windows** Services panel to start the Library Agent before you verify agent functionality.

INSTALLING THE IBM 3494 AGENT - SOLARIS

1. Mount the Solaris Local Manager Installation CD on the Solaris server. For example:

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

2. Change directory to the UNIX directory for the Solaris operating system.

3. Run the pkgadd command.

```
pkgadd –d .
```

4. Type the package selection number for the IBM ATL Library Agent and press **Enter** to select installing this agent.

5. If a UNIX group does not exist for the agent to run under, you will be prompted to create a group, called gsm, for the application. Press **Enter** to create the group using the default group ID (1090) or enter another one.

6. When prompted, specify the following:

7. For each library, enter:

   - The library device symbolic name (obtained from the `ibmatl.conf` file)

8. For **Local Manager**, specify the IP address or network resolvable host name of the Local Manager the agent will contact for agent auto registration.

9. For **Local Manager Registration Port**, specify the TCP port number that the Local Manager uses for agent auto registration. The default port number is 17146.

10. For **Enable Auto Registration**, accept that auto registration is enabled (true) or set this configuration parameter to false to disable auto registration.

11. For **Library**, enter the symbolic name of the device file (e.g., lmcp0) on the Solaris server.

12. **For Max. Cache Age for Configuration Data, s**pecify the frequency that the agent refreshes the library configuration data (seconds). The default value is 3600 seconds.

13. For **Max. Cache age for status data**, specify the frequency that the agent refreshes library status data. The default value is 600 seconds.

14. For **Statistics & events collection interval**, specify the frequency that the agent collects statistics and events data. The default value is 300 seconds.

15. For **Statistics retention period**, specify how long the agent retains statistics. The default value is 86400 seconds (one day).

16. The installation prompts you to specify whether or not to restart the agents after installation.

17. Type **y** and press **Enter** to restart the agents after installation.

18. When prompted, type **y** to allow the installation script to run with super-user permissions.

19. The installation will complete and return you to the main package installation menu.

20. Enter the number for any other package you wish to install, or type **Ctrl-D** and **q** to exit.

Installing the IBM 3494 Agent – HP-UX

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

By default, 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, you are prompted to specify the following configuration parameters:

- **Library** – Enter the symbolic device file name (e.g., lmcp0).
- **Max. Cache Age for Configuration Data** - The frequency that the agent refreshes the library configuration data (seconds). The default value is 3600 seconds.
- **Max. Cache age for status data** - The frequency that the agent refreshes library status data. The default value is 600 seconds.
- **Statistics & events collection interval** The frequency that the agent collects statistics and events data. The default value is 300 seconds.
- **Statistics retention period** How long the agent retains statistics. The default value is 86400 seconds (one day).

Agent Auto Registration

To configure agent auto registration, you can add the IBM ATL Agent to a Local Manager Routing Agent configuration or manually add the required entries to the storability.ini file. Sample storability.ini settings appear below.

```
GSM_LM_HOST = 10.255.252.99
```

```
GSM_LM_PORT = 17146
GSM_ENABLE_LM_REGISTRATION = true
```

Installing the Storability IBM 3494 Agent - AIX

All currently supported AIX agents are provided as a "Tarball" with an installation script. To install the agent, simply ensure that the "Tarball" ibmAtlAgent-AIX.tgz) and the install script ibmAtlAgent-install.sh) reside in the same location, and run the script.

1. Mount the UNIX Agent Installation CD. For example:

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

2. Change to the appropriate directory on the installation media. For example:

```
cd  Unix/AIX/5.1
```

3. Run the install script for the agent.

```
./ibmAtlAgent-install.sh
```

```
IBM Tape Lib install Script
Script started on Wed Dec  8 09:43:42 2004# ./ibmAtlAgent-install.sh
Storability agent shutdown:
Stopping Storability host agent:        hostAgent 21494 killed
Storability agent shutdown complete.
x opt/storability
x opt/storability/bin
x opt/storability/bin/ibmAtlAgent, 8544128 bytes, 16688 tape blocks
x opt/storability/bin/ibmAtlDump, 8615132 bytes, 16827 tape blocks
x opt/storability/data
x opt/storability/etc
x opt/storability/lib
x opt/storability/tmp
x opt/storability/tmp/request, 6179 bytes, 13 tape blocks
x opt/storability/tmp/agents, 103 bytes, 1 tape blocks
x opt/storability/tmp/libC.a, 5912953 bytes, 11549 tape blocks
x opt/storability/tmp/install.sh, 665 bytes, 2 tape blocks
x opt/storability/tmp/i.cfg, 1956 bytes, 4 tape blocks
x opt/storability/tmp/i.touch, 343 bytes, 1 tape blocks
x opt/storability/tmp/i.libC, 763 bytes, 2 tape blocks
x opt/storability/tmp/storability.ini, 350 bytes, 1 tape blocks
x opt/storability/GSM-license.txt, 10110 bytes, 20 tape blocks
x opt/storability/STK-license.txt, 12005 bytes, 24 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/pegasus-license.txt, 1500 bytes, 3 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 etc/rc.ibmAtlAgent, 1372 bytes, 3 tape blocks
GSMibmatl was built on AIX 4.3.
IBM 3494 tape library device file?      # Example: /dev/lmcp
IBM 3494 tape library device file?   # Done specifying libraries
(Re-)start agents after install [y] y
/opt/storability/etc/storability.ini:   updated.
/opt/storability/etc/agents:    updated.
/opt/storability/data/Message.log
Storability agent startup:
```

```
Starting Storability host agent:        hostAgent started
Starting Storability IBM 3494 Library agent:    ibmAtlAgent started
Storability agent startup complete.
# process
sh: process:  not found
# top
sh: top:  not found
# exit
```

Agent Auto Registration
To configure agent auto registration, you can add the IBM ATL 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 settings appear below.

```
GSM_LM_HOST = 10.192.1.153
GSM_LM_PORT = 17146
GSM_ENABLE_LM_REGISTRATION = true
```

SMIS Tape Library Agent

The Sun StorageTek Business Analytics SMIS Tape Library Agent collects data from SMI-S compliant CIM Providers supporting the Storage Library profile, as described in the *Sun StorageTek Business Analytics Support Matrix*. **Note**: In general, SMIS and non-SMIS agents collecting information from the same device is not supported.

Item	Description
Support Prerequisites	
Verify SMI-S 1.1 compliant CIM Provider	Vendor documentation
Agent Installation	
Solaris	• Solaris Local Manager Installation CD (package installation) • root user account • GSMbase
Windows	• Windows Local Manager Installation CD (InstallShield) • Windows Administrator privileges
Limitations	The following tape library agent objects are not populated: • gsa_tlib_statistics • gsa_tlib_alias
Configuration Parameters	
Local Manager	IP Address or host name of the Local Manager to be contacted for agent auto registration. The default value is local host.
Local Manager Registration Port	TCP port number the Local Manager uses for agent auto registration. The default port number is 17146.
Enable Auto Registration	Turns agent auto registration on (default) or off.

Item	Description
CIM_IP	CIM_IP = provider ip|provider port (5988)|namespace| username|password One entry is required per SMIS CIMOM (Common Information Model Object Manager) provider. The first field is the IP address of a CIMOM provider. This may be an individual array that supports the CIMOM natively, or a CIM proxy reporting on one or more libraries. The second field is the CIMOM provider port, which is TCP port number 5988 by default. The third field, the namespace value, must be obtained from the vendor documentation for the CIMOM provider. The Username and password must be configured for an account that grants access to the CIMOM provider.
Max. Cache Age for Configuration Data	Specify the frequency that the agent refreshes the library configuration data (seconds). The default value is 3600 seconds.
Max. Cache Age for Status Data	Specify the frequency that the agent refreshes the library status data. The default value is 600 seconds.

INSTALLING THE SMIS TAPE LIBRARY AGENT - WINDOWS

The following section describes how to install and configure the IBM 3494 (ATL) Agent on a Windows platform.

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. Check the **SMIS Library Agent** checkbox on the screen that lists agents for installation.

6. Review the settings and click **Next>**.

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 **SMISTlib Agent** tab and click Add.

10. For each library, enter:

    - IP or Host Name – Enter the IP address or network resolvable host name to connect to the CIM provider. This may be an individual library that supports CIM natively, or a CIM proxy reporting on one or more libraries.

    - Port – Is the TCP port number to connect to the provider; the default TCP port number is 5988.

    - Interop Namespace – Specify the interoperability namespace, which implies where the CIMOM interoperability classes are stored.

    - Namespace – Is the Provider namespace; must be obtained from the vendor documentation for the CIM provider.

    - Username – User name of an account that grants access to the CIM provider.

    - Password – Password of the above specified user.

11. Click **Submit** after you have entered the list of libraries.

12. For **Local Manager**, specify the IP address or network resolvable host name of the Local Manager the agent will contact for agent auto registration.

13. For **Local Manager Port**, specify the TCP port number that the Local Manager uses for agent auto registration). The default port number is 17146.

14. Click **Show Advanced Settings** to review/modify these optional configuration variables.

    - Enable Auto Registration - Turns agent auto registration on (default) or off.

    - CONFIG_CACHE_REFRESH_INTERVAL – Specifies the interval to collect configuration data. The default interval is 3000 seconds.

    - Maximum Execution Threads – Specify the number of threads the agent uses. The default value is five (5).

    - CMD_EXECUTION_TIMEOUT – Specify how long the agent waits for the execution of a command. The default value is 60 seconds.

    - Maximum library configuration cache age – Specify the maximum amount of time the agent caches configuration data. The default value is 600 seconds.

    - Maximum library status cache agent - Specify the maximum amount of time the agent caches library status information. The default value is 600 seconds.

    - Library stats collection interval – Specify the interval to collect library statistics. The default value is 300 seconds.

    - Library stats retention period – Specify how long statistics are retained. The default value is 21600.

15. With "Save Configuration Settings" turned on (check mark), select **File->Save** and then confirm saving changes to the storability.ini file.
16. Select **File -> Exit** to close the Configuration Tool.
17. Use the **Windows** Services panel to start the Library Agent before you verify agent functionality.

INSTALLING THE SMIS TAPE LIBRARY AGENT - SOLARIS

1. Mount the Solaris Local Manager Installation CD on the Solaris server. For example:

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

2. Change directory to the UNIX directory for the Solaris operating system (e.g., /Solaris/9).

3. Run the pkgadd command.

```
pkgadd –d .
```

4. Choose the SMIS Tape Library Agent (Option 26).

5. At the "Input the CIMOM IP Address or hostname:" prompt, enter the IP address or network resolvable name to connect to the CIMOM provider and press Enter.

6. At the "Input the CIMOM TCP port#: [5988]" prompt, enter the TCP port number to connect to the CIMOM or press Enter to accept the default value (5988).

7. At the "Input the CIMOM user name:" prompt, type the user name of an account that grants access to the CIM provider.

8. At the "Password for <user_name>:" prompt, enter the user's password.

9. When prompted, retype the password to confirm the password.

10. At the "Input the CIMOM provider's namespace:" prompt, enter the provider namespace that must be obtained from the vendor documentation for the CIMOM provider.

11. At the "Input the CIMOM interop namespace:" prompt, enter the interoperability namespace, which implies where the CIMOM interoperability classes are stored.

12. At the "Do you want to input another CIMOM? [n] [y,n,?]" prompt, type y or n to specify whether you want to configure another CIMOM.

13. Type y and press Enter to review/modify the advanced settings.

    - Automatically restart this agent from agentMonitor – Type y(es) or n(o) to specify whether the SMIS Tape Library Agent will be restarted by the Agent Monitor.

    - Intervals of updating configuration information? [3600] – Specify the frequency to refresh library configuration information. The default value is 3600 seconds.

- Maximum number of execution threads – Enter the maximum number of execution threads; the default value is five (5).

- Timeout on execution a single CIM read command – Enter the command execution timeout. The default value is 60 seconds.

- Maximum library configuration cache age? [600] – Enter the maximum amount of time to cache library configuration data. The default value is 600 seconds.

- Maximum library status cache age? [600] - Enter the maximum amount of time to cache library status information. The default value is 600 seconds.

- Library stats collection interval – Specify the frequency to collect library statistics. The default value is 300 seconds.

- Library stats retention period – Specify how long library statistics are retained. The default value is 21600 seconds.

- Enable agent auto registration, accept that auto registration is enabled (true) or set this configuration parameter to false to disable auto registration.

- Local Manager address for agent registration – Enter the IP address or network resolvable name of the Local Manager with which to register. The default value is localhost.

- TCP port for agent registration - Specify the TCP port number that the Local Manager uses for agent auto registration. The default port number is 17146.

- (Re-)start agents after install – Type y or n to specify whether to re(start) agents after the installation is completed.

14. When prompted, type **y** to confirm that you want to proceed with the agent installation.

15. The installation will complete and return you to the main package installation menu.

16. Enter the number for any other package you wish to install, or type **Ctrl-D** and **q** to exit.

VERIFYING THE LIBRARY AGENT

1. Use the GSM Agent Diagnostic Tool (GSMdiag) to verify agent functionality.
2. Enter the **IP Address** or **Hostname** of the server where the agent is installed in the **Agent location** window, and select the agent (e.g., ACSLS Agent) from the drop down list of service names.
3. Click the **Get Object List** button and you should receive a list of objects published by the Library Agent.
4. Collect the **gsa_ini_control** object and review the agent's storability.ini settings.

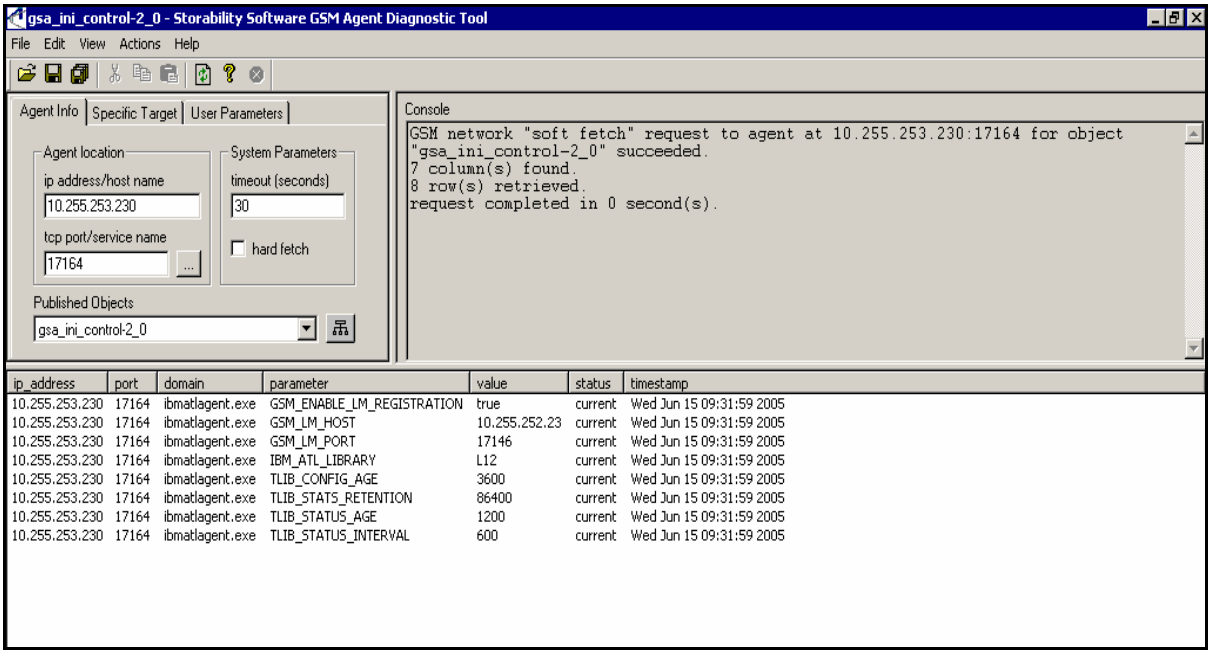

Figure 7 – Sample IBM 3494 Agent Configuration Settings

5. Select the **gsa_tlib_config** object published by the agent and verify data is returned.

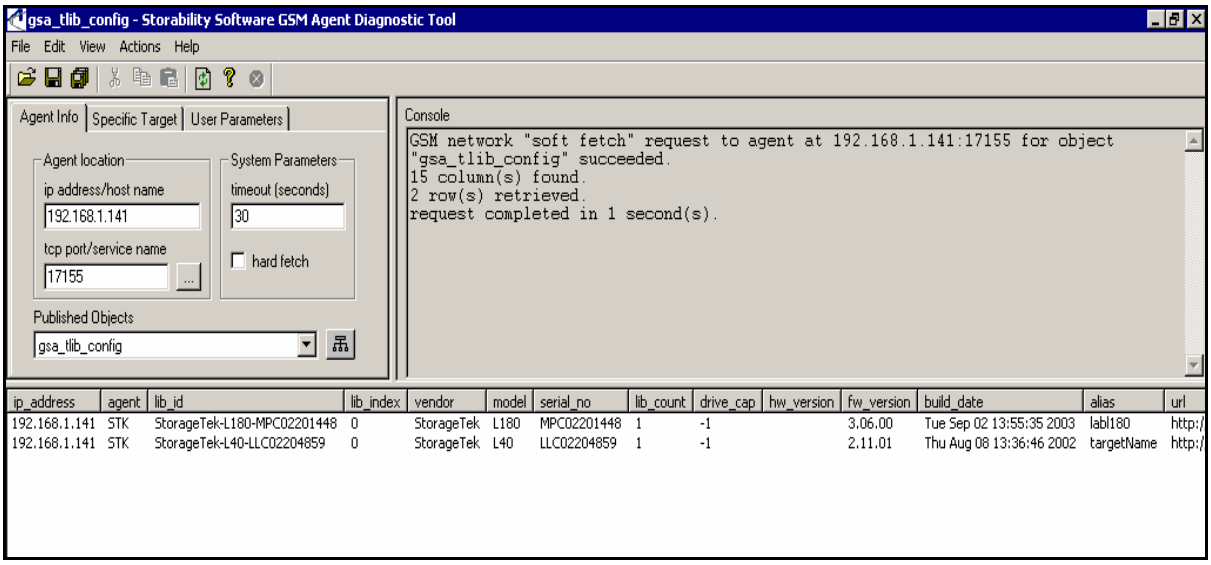

Figure 8 – Sample Tape Library Configuration Object

6. Collect and verify all other tables published by the agent.
7. To verify the Library Agent has registered successfully with its configured Local Manager:

    - 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.
    - Set the port to 17146 (or select the Storability Routing Agent from the drop down list of service names).

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

- Select the **gsa_agent_register** object.

- Verify this collected object reports the Library Agent in the "active_peer" field by IP address and in the port field by agent port number. The port numbers for Library Agents are listed as follows:

    - STK L-Series Agent – TCP port number is 17155

    - ACSLS Library Agent – TCP Port Number is 17157

    - IBM 3494 Agent – TCP Port Number is 17164

    - SMIS Library Agent – TCP Port Number is 17161

VERIFYING MANAGEMENT CONSOLE FUNCTIONALITY

The following procedure describes how the administrator verifies the Sun StorageTek Business Analytics Library 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** 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 **Tape Library Overview** pane (or use **Change Dashboard** to assign one).
3. Select **Tools->Data Polling Schedule**.
4. Use the **Collect Now** button to collect the Library (collection type) Configuration (Collection Metric) data.
5. Use the **Collect Now** button to collect the Library (collection type) Jobs (Collection Metric) data.
6. Use the **Collect Now** button to collect the Library (collection type) Media (Collection Metric) data.
7. Close the **Data Polling Schedule** window.
8. Verify the **Tape Library Overview** pane reports information on the libraries being monitored by the specific library agent you are verifying.
9. Close the browser session with the Management Console as the above steps complete verifying the Management Console functionality.

LIBRARY AGENT TROUBLESHOOTING

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

2. Use the GSM Agent Diagnostic Tool (GSMdiag) to save the output for all the tables if escalating a problem to Sun Technical Support.
    a. Launch the GSM 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 number by selecting the particular Library Agent (e.g., Storability STK L-Series 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 agent. If unsuccessful, verify the Ethernet connectivity to the server running the agent and that the Array 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.
h. Enter the desired file name and click **OK**.

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.

   Windows

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

   Solaris

   - GSM agents' common Message.log file located by default in: /opt/storability/data.
   - Can enable debug level logging by appending LOG_SEVERITY=Debug to the <Library Agent> section of the storability.ini file (if Customer Support requests it).

4. **Verify Local Manager Registration -** The configured Routing Agent's **gsa_agent_register** table should be reviewed if the auto-registration feature is enabled (default). Otherwise, verify the necessary sub agent entry has been added to the Routing Agent's storability.ini file.
5. **Review the Routing Agent Message Log** – Review/collect the Routing Agent Message Log to check for errors related to Ethernet connectivity problems contacting that Library Agent.
6. **Confirm Polling Schedules** – Using the Management Console's **Data Polling Schedule** menu, review/modify the existing Polling Schedules for the Collection Type of Library for all sites.
7. **Review Aggregator Message Log** – Open the Aggregator's Message Log in a text editor and validate that the Library 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 Business Analytics application. For a Library Agent, use any MS SQL Query interface, such as osql, to verify rows have been inserted into the array-related tables, such as the **gsa_tlib_config** table.
9. **Verify Management Console Functionality** – As a final step in the agent troubleshooting procedure, minimally verify the monitored libraries now appear in

the **Tape Library Overview** dashboard pane or in the Asset Management report for the site.

Uninstall Library Agent - InstallShield

1. Select **Start->Program Files->Storability->Uninstall->Uninstall Local Manager**
   Or:
   Start->Program Files->Storability->Uninstall->Uninstall <Library Agent Name>. The Storability **Uninstall** dialog appears.
2. Click the checkbox for the appropriate Database 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 Library Agent – Solaris

1. Type:

   ```
   pkgrm GSM<Library_Agent_Name>
   ```

2. At the "do you want to remove this package" prompt, enter **y** and press **Enter**.

3. At the "do you want to continue the removal of the package?" prompt, type **y** and press **Enter**. The "Removal of GSM<Library_Agent_Name>" agent was successful" message.

Reinstall Library Agent – Non-Solaris UNIX Host

The reinstallation procedure for all Sun StorageTek Business Analytics agents supported on non-Solaris UNIX hosts, such as the IBM 3494 Agent on an 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 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.\