



SGI Trusted Edge User's Guide

Publication Number
007-6326-001

Release 2.0

November 21, 2013



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Publication Number: 007-6326-001

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Welcome

Welcome to SGI Trusted Edge, intelligent content migration management software that transfers files from local or network-attached devices to a location managed by StorHouse/RFS. StorHouse/RFS subsequently groups the files and transfers them in collection format to any StorHouse-managed media, including tape.

SGI Trusted Edge supports such features as copy/migrate, multi-format hash verification, extensive include/exclude file filtering, bidirectional synchronization of source and destination locations, data analysis/report generation, audit trails, and a report-only mode.

Purpose of This Manual

This manual explains how to install the SGI Trusted Edge software on a Windows server and use the SGI Trusted Edge administration interface to create and schedule jobs from local or NAS storage to StorHouse/RFS. It also explains pre-installation steps and user/system requirements.



Audience

This document is for StorHouse system administrators responsible for StorHouse and StorHouse/RFS operation and NAS storage managers. It assumes these people know how to configure NAS devices, StorHouse, and StorHouse/RFS. It also assumes they are familiar with StorHouse and StorHouse/RFS concepts and theory of operation.

Contents

This manual contains seven chapters and five appendices:

- Chapter 1, “Introducing SGI Trusted Edge,” defines SGI Trusted Edge and explains how it works. It also describes software and user login requirements.
- Chapter 2, “Installing SGI Trusted Edge,” explains how to install the SGI Trusted software on a Windows Server.
- Chapter 3, “Using the SGI Trusted Edge Server Administration Interface,” describes how to use the SGI Trusted Edge graphical user interface to copy and migrate files, schedule jobs, verify hashes, synchronize source and destination directories, run in simulation mode only, create shortcuts, and generate reports.
- Chapter 4, “Using the SGI Trusted Edge Server Administration Interface with a Linux Server,” describes how to create Linux connection, define a Linux-to-Linux job, and work with Trusted Edge-created symlinks for Linux files.
- Chapter 5, “Using the SGI Trusted Edge Enterprise Edition Console,” explains how to use and configure the Enterprise Edition console, including adding/deleting servers and groups and managing remote Trusted Edge servers.
- Chapter 6, “Configuring SGI Trusted Edge Email Alerts,” describes how to configure email alerts and triggers.



- Chapter 7, “Using CaminoSoft to Create Trusted Edge Recallable Symbolic Links for Windows,” explains how to install, configure, and verify the CaminoSoft software.
- Appendix A, “About Symbolic Links,” contains important information about symbolic links and discusses symbolic link evaluation.
- Appendix B, “Sorting Data in the User Interface Display,” explains how to customize the job name display and filter job run results manually.
- Appendix C, “Using PowerShell Options to Manage SGI Trusted Edge,” explains the various PowerShell commands and how to execute them.
- Appendix D, “Performing a Silent Installation,” explains how to execute a silent installation of the SGI Trusted Edge software.
- Appendix E, “Technical Notes,” provides technical information about Trusted Edge operation.



Welcome

C H A P T E R 1

Introducing SGI Trusted Edge

This chapter introduces the SGI Trusted Edge software and provides pre-installation and system/user requirements.

About SGI Trusted Edge

SGI Trusted Edge intelligent migration management software simplifies moving forever-read data to a StorHouse repository for storage, retrieval, backup, and data protection throughout the content lifecycle. The product copies/moves files from local or NAS storage to a location managed by StorHouse/RFS according to administrator-specified policies. StorHouse/RFS subsequently groups the files and transfers them in collection format to any StorHouse-managed media, including tape.

SGI Trusted Edge features include:

- Connectivity to both Windows and Linux servers
- An intuitive, easy-to-use administrator interface

■ ■ ■ ■ Chapter 1 – Introducing SGI Trusted Edge

- Policy-driven data migration operations
- Extensive file filtering characteristics
- Multi-format hash verification to ensure data integrity throughout the migration process
- Bidirectional synchronization of multiple source and target locations
- Target location analysis and reporting
- Ability to run in report-only (simulation) mode to confirm policy settings prior to running jobs in a production environment
- Intelligent file stubbing that enables direct user access to files without the need to re-stage data
- Policy-driven deletes of source files and shortcuts
- Detailed reporting capability
- Ability to send email alerts and set up job triggers

SGI Trusted Edge uses SQL local database files to store information about job parameters, job runs, file and folder hash values, and other logging information.. The software executes as a service on the Windows server and spawns a new process for each job that runs.

Figure 1-1 illustrates a sample SGI Trusted Edge architecture.

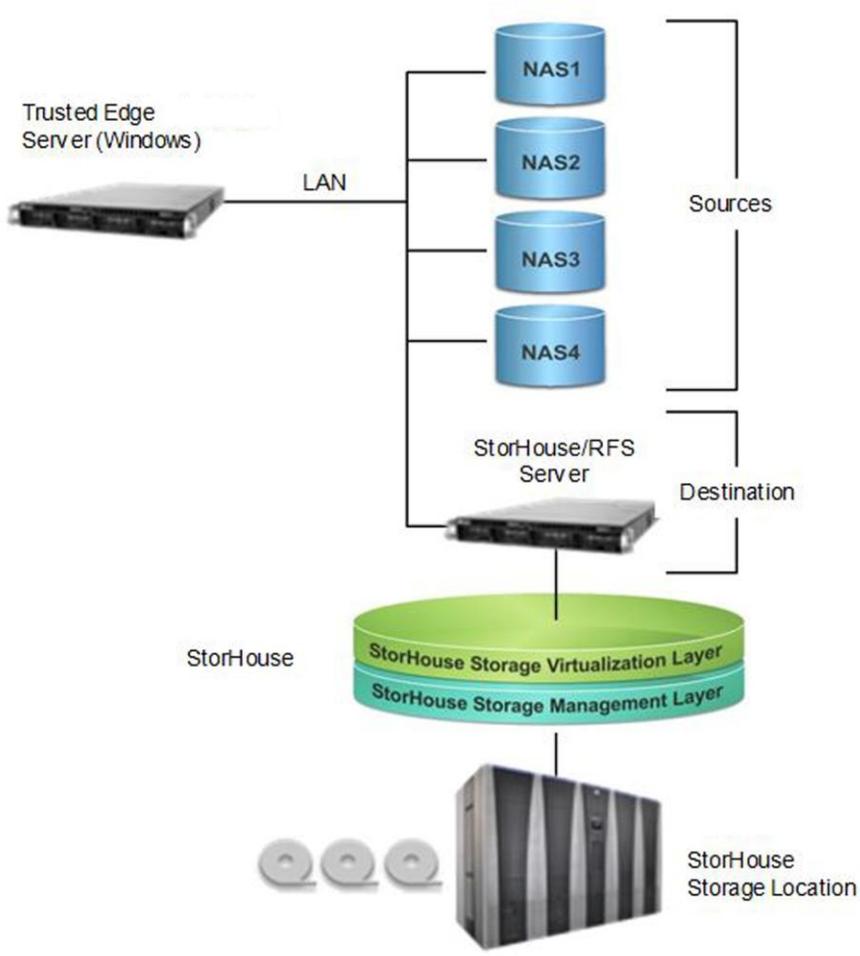


Figure 1-1: Sample SGI Trusted Edge Architecture

In this example, SGI Trusted Edge executes on a separate Windows server. It can also run on a StorHouse/RFS Windows server if your system uses that type of StorHouse/RFS configuration.

About the SGI Trusted Edge Enterprise Edition Console

The SGI Trusted Edge Enterprise Edition console enables you to manage multiple Trusted Edge servers from a single graphical user interface. You determine whether a particular server has Enterprise Edition console privileges during Trusted Edge installation. Your customer license agreement controls the number of servers you can manage through this interface.

Note the following:

- If a Trusted Edge server is Enterprise Edition-console enabled, Trusted Edge displays the Enterprise Edition console Main window at startup. Refer to Chapter 5 for an example of this window and for information about how to use the Enterprise Edition console.
- For all other servers, Trusted Edge displays the server administration interface Main window at startup. Refer to Chapter 3 for an example of this window and for information about how to use it.

Software Requirements

For installation, the SGI Trusted Edge software requires:

- The full version of Microsoft .NET Framework Version 4. This is available from:

<http://www.microsoft.com/download/en/details.aspx?id=17851>

- An SqlLocalDB database. You can download the Sqllocaldb.msi that is specific to your system platform (x86/x64) at:

<http://www.microsoft.com/en-us/download/details.aspx?id=35579>

SqlLocalDB (and therefore SGI TE) is supported on these Operating Systems: Windows 7, Windows 8, Windows Server 2008 R2 SP1, Windows Server 2012, Windows Vista Service Pack 2, and Windows Server 2008 SP2.



- Update 4.0.2 for Microsoft .NET Framework 4 – Runtime Update (KB2544514) in order for SGI Trusted Edge to use SqlLocalDB. This update is available from:

<http://www.microsoft.com/en-us/download/details.aspx?id=27756>

- Windows Installer 4.5, which is available from:

<http://www.microsoft.com/download/en/details.aspx?id=8483>

Note: You must reboot your system after you install Windows Installer 4.5.

In addition, if you are using Trusted Edge in a Workgroup rather than a Domain environment, the account running the Enterprise Edition Console interface must have a corresponding local account with a matching user name and password on the remotely-administered server(s). This account must also belong to the defined SGI Trusted Edge Write User's group. The default membership for this group is the BUILTIN\Administrators group.

General User Login Requirements

During installation, you specify the account that will be used to run the local SGI Trusted Edge Service. You must define this account prior to installation as:

- Being a member of the local Administrators group on the Windows machine
- Having the local security User right to "Log on as a service" (this right is not assigned to the Administrators group by default on Windows 2008 servers)
- Having permission to access/read from job sources
- Having write access to the job destination directories

In addition, you must assign the following rights to the account from the Local Security Policy screen in Admin Tools.

■ ■ ■ Chapter 1 – Introducing SGI Trusted Edge

- Back up files and directories
- Create symbolic links (if you desire this capability)
- Log on as a batch job

Refer to the highlighted sections of Figure 1-2.

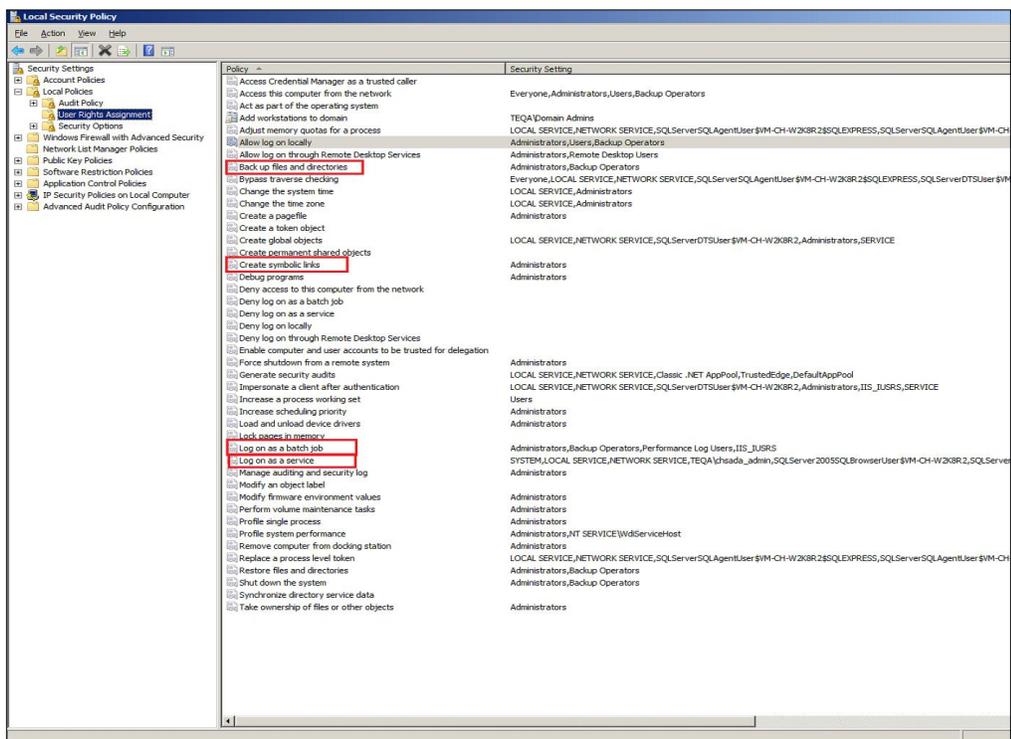


Figure 1-2: Local Security Policy

Additional User Login Requirements When Installing SGI Trusted Edge on a Workgroup Machine

To install SGI Trusted Edge on a machine that belongs to a workgroup (for example, a non-domain or test environment for proof of concept purposes), you must add the following credentials during installation on the service account details window (Figure 1-3):

```
.\LocalUserAccount or MachineName\LocalUserAccount
```

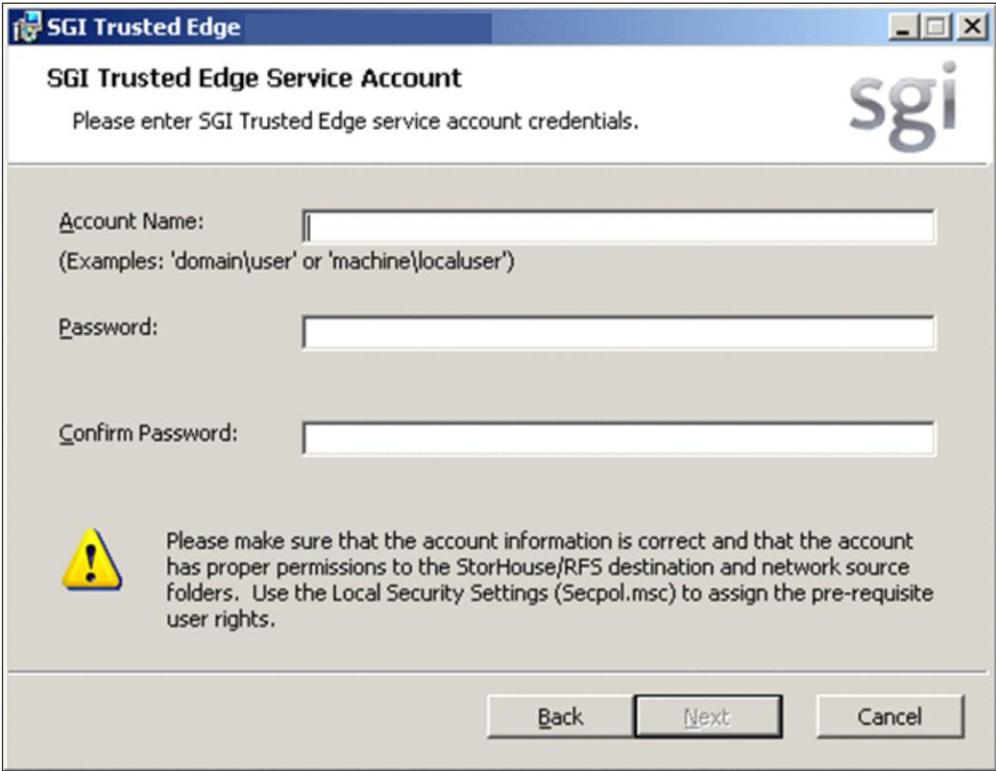


Figure 1-3: Service Account Details Window

Local accounts still require the standard local User right of “Log on as a service.” If you add this permission for a local account, the account user must log off and then re-log on to the computer to initiate the account change.

If there are multiple machines in a workgroup and SGI Trusted Edge must write to files on a remote machine, you must also create the SGI Trusted Edge service account credentials on the remote machine. In other words, you must add the same user name and password on the remote machine for SGI Trusted Edge to function in a workgroup.

Miscellaneous Information

SGI Trusted Edge:

- Supports migrating files with names greater than 256 characters
- Copies 0-byte files
- Performs MD5 and SHA1 hash verification for files and folders
- Runs as a background Windows service
- Copies NTFS file streams
- Deletes all instances of a job that already ran (job history) when you delete a job definition from the SGI Trusted Edge left main window pane
- Refreshes the user interface every 30 seconds by default
- Uses SFTP to copy data between Linux servers
- Uses Rsync (if available) to copy data between local folders on the same Linux server

C H A P T E R 2

Installing the SGI Trusted Edge Software

This chapter explains how to install an evaluation edition or a full edition of the SGI Trusted Edge software on a Windows Server. The installer Welcome screen specifies which edition you are installing. Both versions have the same Trusted Edge functionality. The difference is that the evaluation edition will expire 90 days from the date of installation. There is no expiration date for the full edition.

Use the following procedure to install the SGI Trusted Edge software.

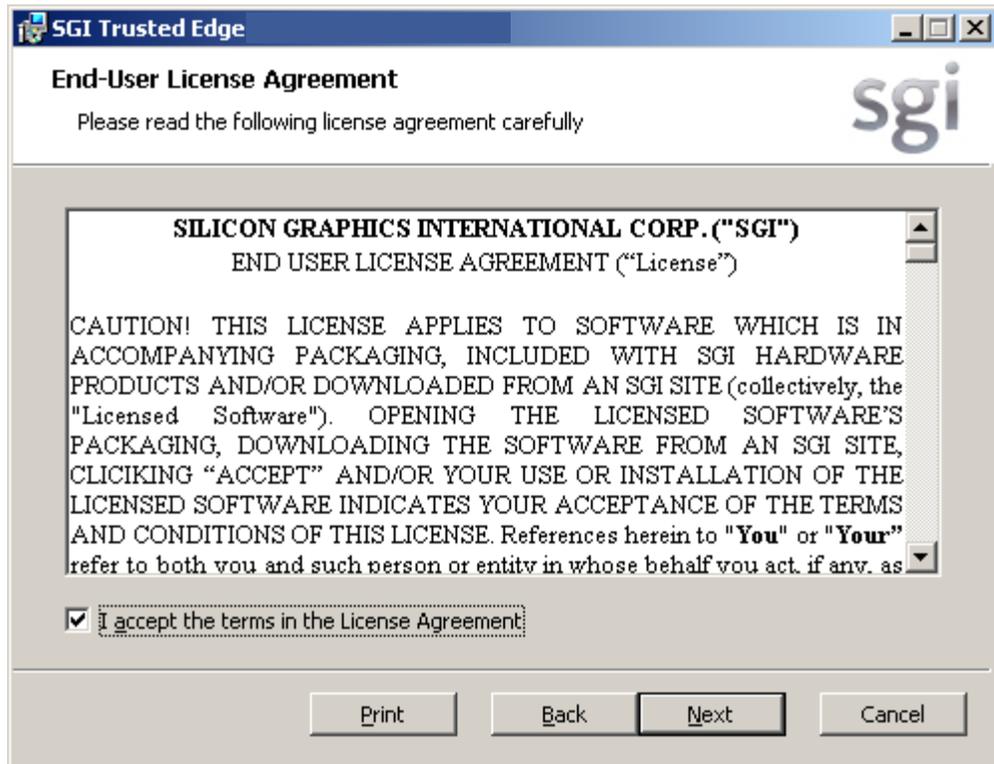
▼ To install the SGI Trusted Edge software on a Windows Server

1. Depending on your processor, double-click **SGI Trusted Edge-x64.msi** or **SGI Trusted Edge-x86.msi**.

■ ■ ■ ■ Chapter 2 – Installing the SGI Trusted Edge Software



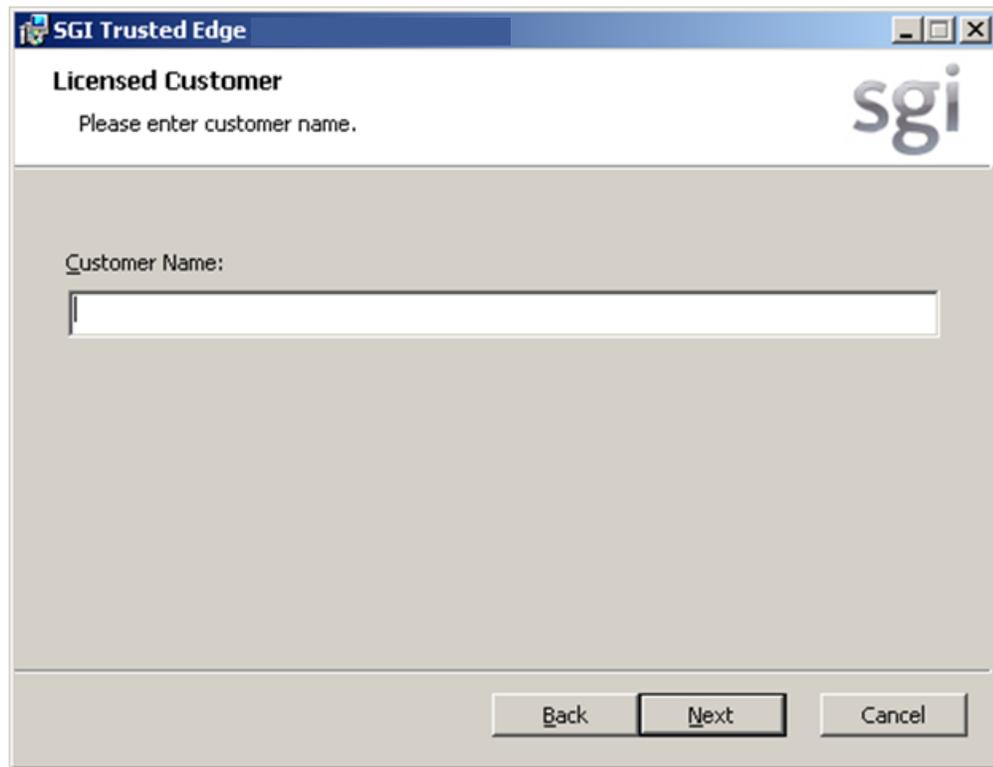
2. Click **Next**.



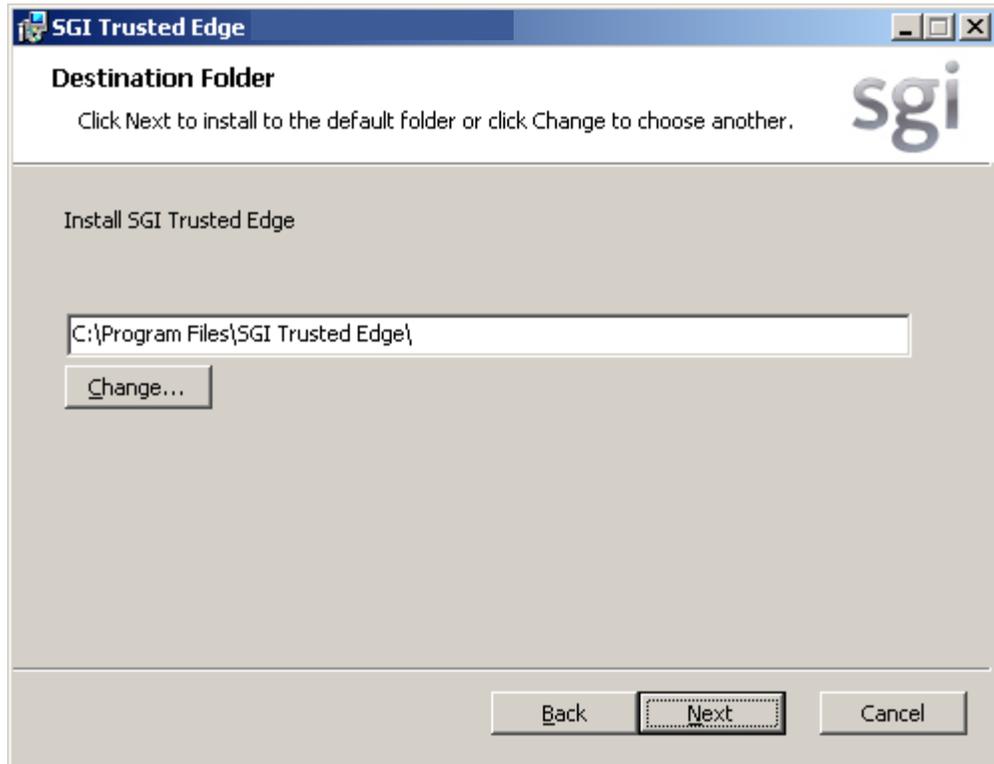
3. Select the checkbox to accept the License Agreement, and then click **Next**.

SGI Trusted Edge displays the following Licensed Customer window.

■ ■ ■ ■ Chapter 2 – Installing the SGI Trusted Edge Software



4. On the **Licensed Customer** window, type your customer name, and then click **Next**.



5. On the **Destination Folder** window, accept the default location, or click **Change** to browse to another directory to store installation and database files. Then click **Next**.

SGI Trusted Edge Service Account

Please enter SGI Trusted Edge service account credentials.

Account Name:
(Examples: 'domain\user' or 'machine\localuser')

Password:

Confirm Password:

 Please make sure that the account information is correct and that the account has proper permissions to the StorHouse/RFS destination and network source folders. Use the Local Security Settings (Secpol.msc) to assign the pre-requisite user rights.

6. On the **SGI Trusted Edge Service Account** window, type the Windows user credentials (**Account Name** and **Password**) that will be used to run the local SGI Trusted Edge Service. Re-enter the password for confirmation, and then click **Next**.

The screenshot shows a Windows-style dialog box titled "SGI Trusted Edge". The main heading is "SGI Trusted Edge Service Account" with the SGI logo on the right. Below the heading, it says "Please enter SGI Trusted Edge service account credentials." There are three input fields: "Account Name:" with the text "teqa\jhowley_admin" and examples "(Examples: 'domain\user' or 'machine\localuser')"; "Password:" with a masked field of 10 dots; and "Confirm Password:" with a masked field of 10 dots. At the bottom left, there is a yellow warning triangle icon and a message: "Please make sure that the account information is correct and that the account has proper permissions to the StorHouse/RFS destination and network source folders. Use the Local Security Settings (Secpol.msc) to assign the pre-requisite user rights." At the bottom right, there are three buttons: "Back", "Next", and "Cancel".

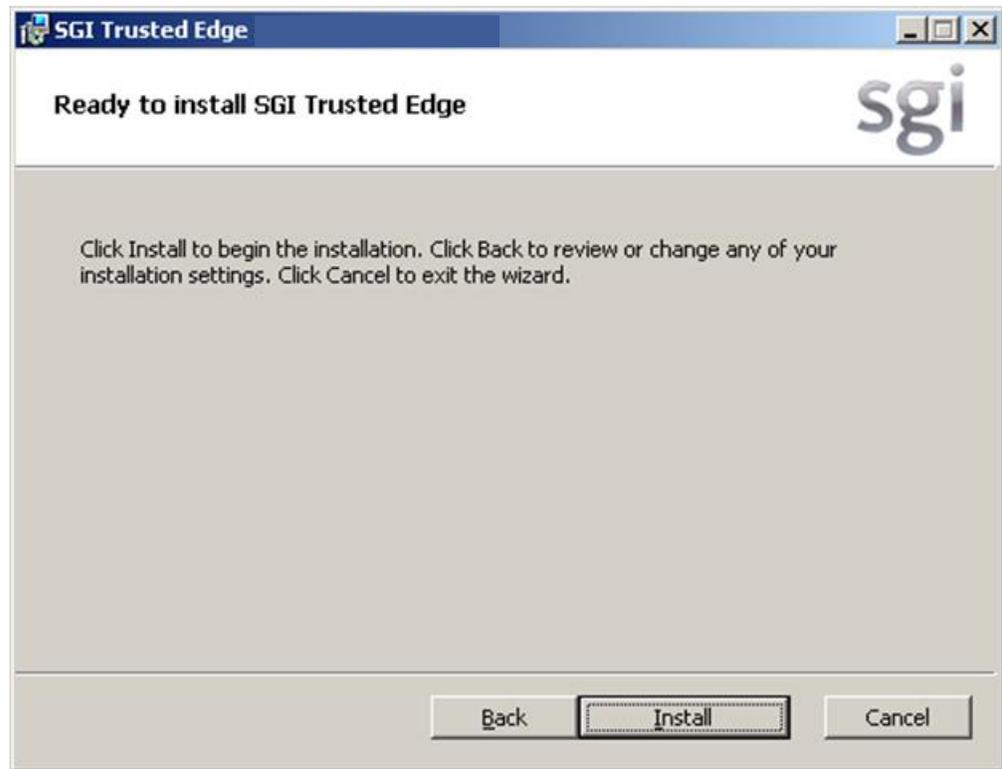
7. On the **SGI Trusted Edge Enterprise** screen, select one or both checkboxes or leave both checkboxes empty:
 - Select the **Enable Remote Administration** checkbox to allow the local instance of Trusted Edge to be managed remotely. Otherwise, leave the checkbox empty.

If you selected the checkbox, accept the default port number of 16016 or type a different port number.
 - Select the **Enterprise Administration Console** checkbox to allow multiple Trusted Edge servers to appear in a single user interface on the current server for ease of administration. Otherwise leave the checkbox empty.



Note that the installation will automatically open the local port specified to enable remote administration.

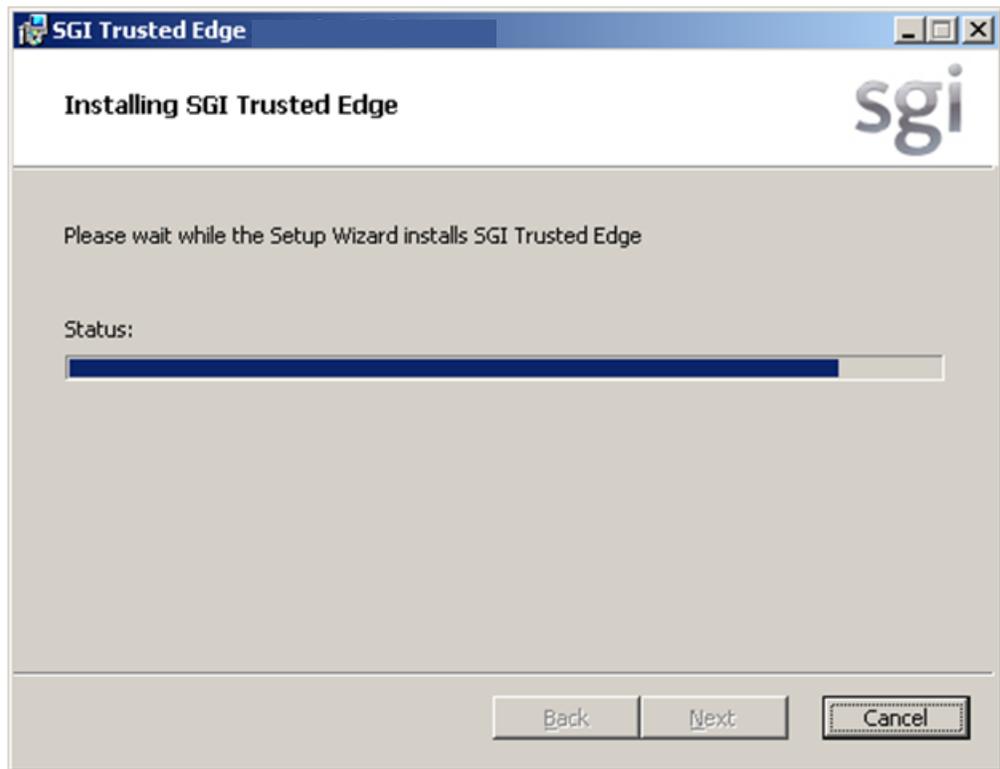
8. Click **Next**.



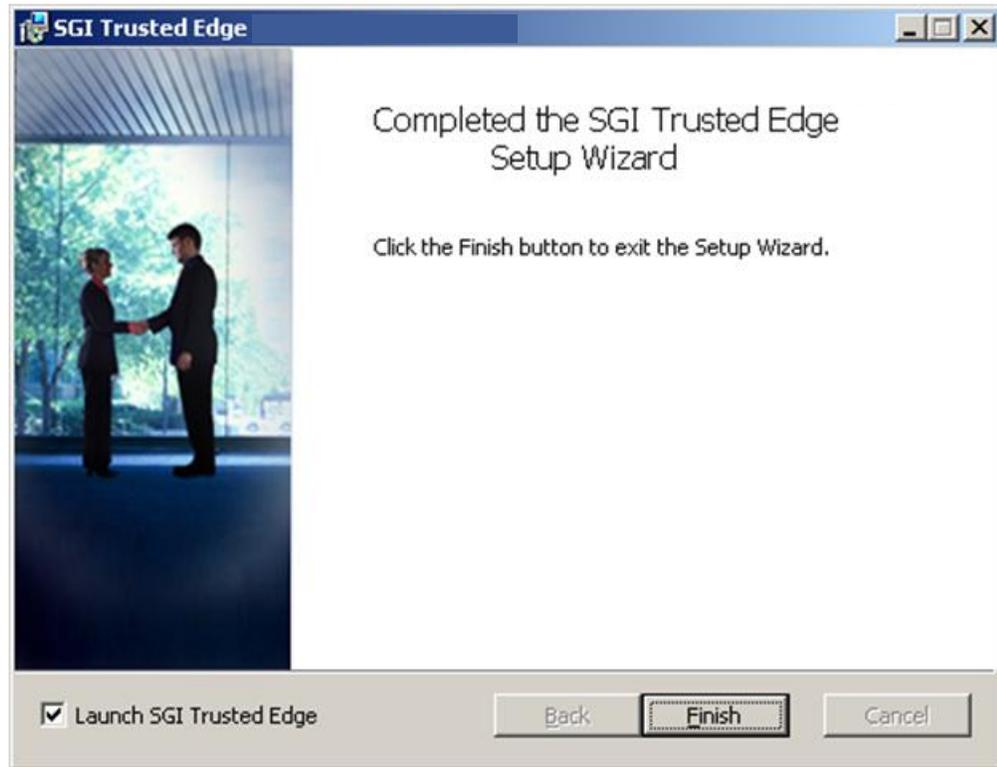
9. On the **Ready to install SGI Trusted Edge** window, click **Install** to proceed with the installation, or click **Cancel** to quit.

Allow the installer to run.

■ ■ ■ ■ Chapter 2 – Installing the SGI Trusted Edge Software



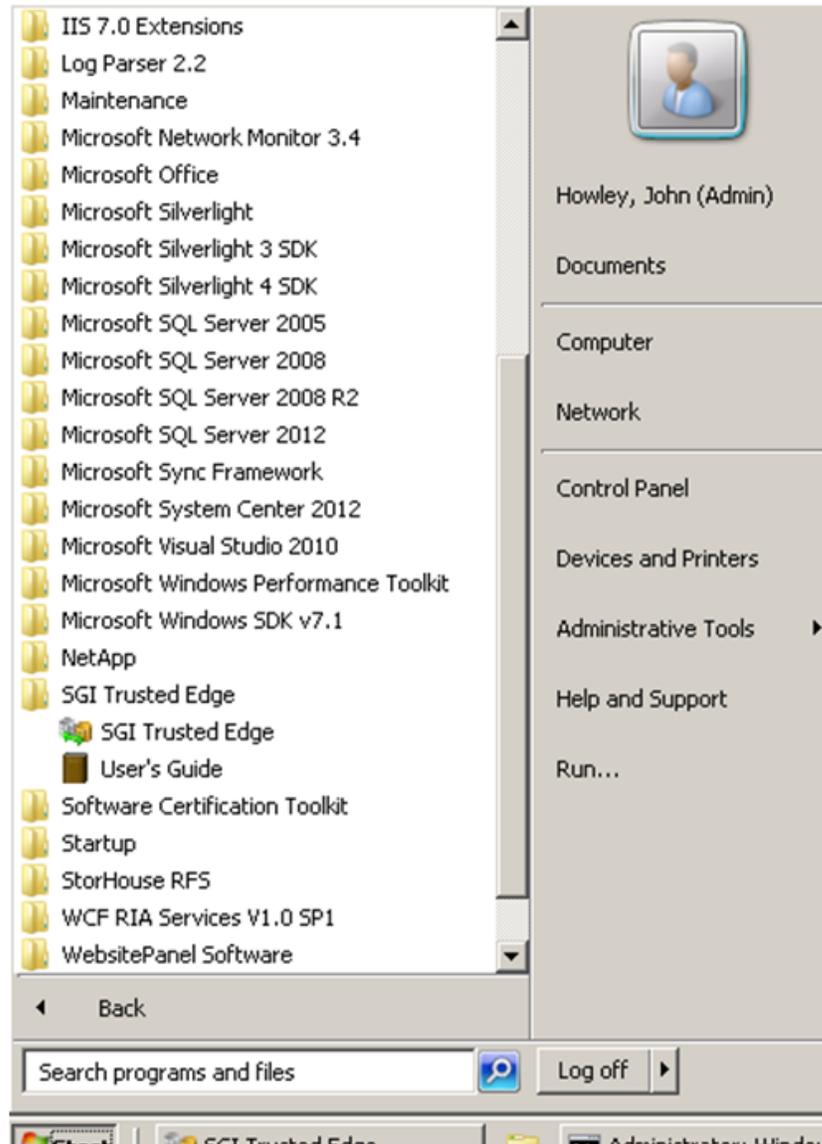
10. On the **Completed the SGI Setup Wizard** window, accept the default selection to launch SGI Trusted Edge after clicking Finish, or deselect the **Launch SGI Trusted Edge** checkbox.



11. Click **Finish** to finalize the installation.

By default, the SGI Trusted Edge Service will be started automatically on boot. The service will run under the credentials provided during software installation.

After installation, SGI Trusted Edge is available from **Start->Programs->SGI Trusted Edge-> SGI Trusted Edge**.



You can change or repair the SGI Trusted Edge installation or uninstall the software using the Add/Remove Programs applet (or Programs and Features applet) in the Windows Control Panel. Additionally, you can use the Change operation or the Windows Services applet to update the account that runs the SGI Trusted Edge service.



Using the SGI Trusted Edge Server Administration Interface

This chapter explains how to use the SGI Trusted Edge server administration interface to implement the SGI Trusted Edge intelligent migration management software. It explains the basic interface layout and design as well as interface features.

NOTE: Trusted Edge supports both Windows and Linux connections. Refer to Chapter 4, “Using the SGI Trusted Edge Server Administration Interface with a Linux Server,” for information specific to connecting to a Linux server, including configuring Linux connections, creating Linux job definitions, and using symbolic links with Linux.

About the SGI Trusted Edge Server Administration Interface

You access SGI Trusted Edge through the SGI Trusted Edge server administration interface. Using this interface, you can create and schedule new jobs; modify

existing jobs; delete existing jobs; edit the job schedule; start and stop jobs; generate activity, schedule, summary, hash, error, and statistics reports; view the product documentation, and import/export job information.

Job runs are incremental. If a job executes multiple times and job parameters have not been changed, the software processes only new and modified files.

Left and Right Window Panes

The SGI Trusted Edge server administration interface consists of two main window panes. The left window pane lists all defined jobs. Active jobs display as an open blue file cabinet. Inactive jobs display as a yellow closed file cabinet. You can right-click on any job name to modify or copy job parameters, inactivate the job, view job statistics, start/stop the job, or start the job in report-only mode.

Once a job executes, SGI Trusted Edge displays statistics about the job run in the right window pane. Statistics consist of job name; status; start/end date; duration, schedule, report, and user information; and total number of files, processed files, bytes, and processed bytes. From the right window pane you can:

- Right-click on any job name to view information according to these criteria: currently running, by today, by yesterday, by last seven days, by last 30 days, by job selected, or by all criteria
- Right-click on any job name and then select Go to Job to focus on the selected Job Run Job Definition in the left panel tree view. This selection will automatically expand a Job Group if required.
- Right-click the name of a running job to pause it, then subsequently right-click the job name again to resume, restart, or delete the job
- Generate reports, delete job information, and sort or delete columns (To view all sorting options, right-click a column header)

Note the following:

- If you double-click on a completed Hash job run, SGI Trusted Edge will open the Hash report for that job run.



- If you double-click on a completed Statistics report, SGI Trusted Edge will open the Statistics report for that job run.
- If you double-click on any other job type run, SGI Trusted Edge will open the Summary report for that job run.
- You can select multiple job entries simultaneously using the CTRL or Shift keys (for example, to delete more than one job at one time).
- You can use the CTRL+C keys to copy multiple selections and subsequently paste them into another format (for example, Excel).

Figure 3-1 illustrates the main interface window panes.

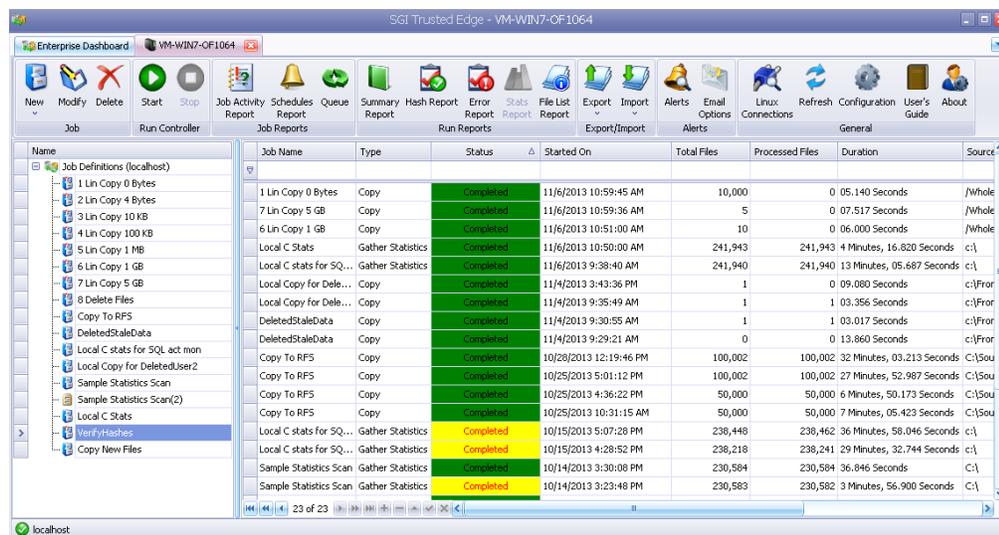


Figure 3-1: SGI Trusted Edge Main Window

Top Header Menu

The SGI Trusted Edge server interface also consists of a top header menu with a row of convenience buttons for creating, modifying and deleting a job definition; manually starting and stopping a specific job; generating and viewing reports; exporting/importing job, alert, and configuration information; configuring alerts and

email options; specifying Linux connections and configuration information, launching the *SGI Trusted Edge User's Guide*; and refreshing the main user interface window. In addition, clicking the About button in the top header menu displays product release information and enables you to browse to a new license file. If you subsequently change the license information, you must manually restart the Trusted Edge service.

Figure 3-2 illustrates the top header menu.



Figure 3-2: Top Header Menu

Job Statuses

Table 3-1 defines SGI Trusted Edge job statuses.

Table 3-1: Job Statuses

Status	Definition
Completed (highlighted in green)	The job ran successfully without errors.
Completed (highlighted in yellow)	<p>The job completed with a hash mismatch between the Source and Destination. Often this occurs when files are added or removed to/from the Source while the job is in progress. This causes the actual number of source files to differ from the expected number.</p> <p>For more information, highlight the Completed job run, and click Error report in the header. The error report for Completed jobs typically provides a message similar to:</p> <p style="padding-left: 40px;">Totals Files (326724) mismatched with processed files (328545) count.</p> <p>Subsequent job runs will pick up any differences in the file system.</p>
Running	The job is still in progress. While a job is in the Running state, SGI Trusted Edge increments the number of processed files and the amount of processed bytes every 30 seconds to indicate job progress.

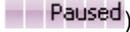
Paused (shown as )	A user paused the job manually. To resume a paused job, right-click the job name.
Stopped (no highlight)	A user manually stopped the job in progress.
Failed (highlighted in red)	SGI Trusted Edge detected errors during the job run. For more information, click the job run with the error status, and then click Error report in the header.

Figure 3-3 illustrates the different job statuses.

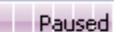
Job Name	Type	Status
		
Gather Stats C:	Gather Statistics	 Paused
Exclude this year	Copy	Failed
Gather Stats C:	Gather Statistics	Stopped
 Gather Stats C:	Gather Statistics	Completed
Gather Stats C:	Gather Statistics	Completed
Exclude this year	Copy	Completed
Exclude this year	Copy	Completed

Figure 3-3: Job Statuses

Defining a New Job

There are eight types of jobs (see Table 3-4). You define parameters for these jobs with the Job Editor. Using the editor window, the workflow for creating a new job or modifying an existing job is:

- Set/change basic job parameters
- Optionally define/modify include and/or exclude filters based on file, folder, date, and file attribute information
- Optionally configure/modify scheduling parameters
- Review job summary information.

- Save job information or start the job immediately

Figure 3-4 illustrates the Job Editor window for Windows servers. Refer to Chapter 4 for information about the Job Editor window for Linux servers.

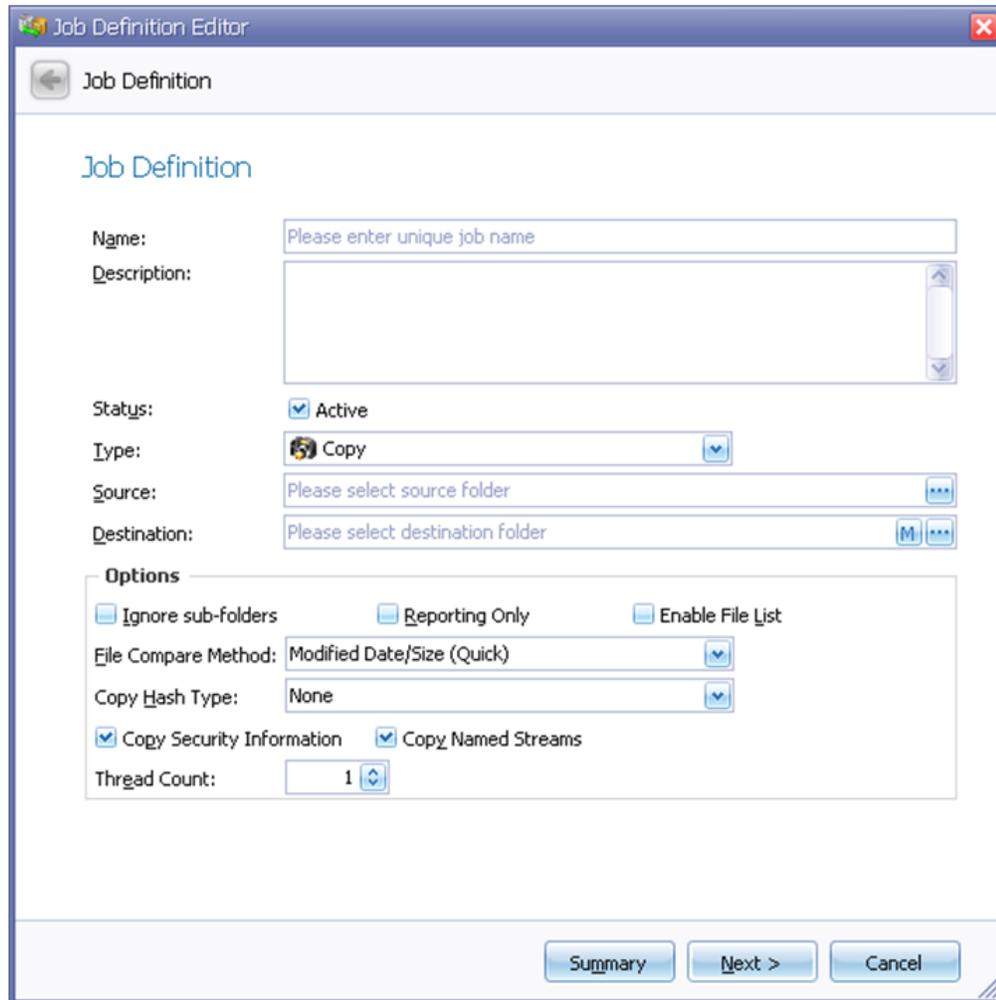


Figure 3-4: Job Editor Window

Clicking the Summary button (Figure 3-5) on any Job Editor window bypasses any additional job definition windows (for example, filtering or scheduling information) and skips to the Completing the Wizard summary page.

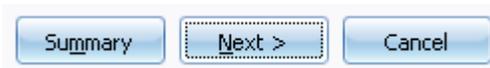


Figure 3-5: Summary Button

Setting Basic Job Parameters

Table 3-2 defines the job parameters on the Job Editor window.

Table 3-2: Job Editor Fields

Field	Definition
Name	Unique name of the job. SGI recommends that you make each job name as descriptive as possible (for example, Move files from Server03).
Description	Description of the job.
Status	Status of the job. <ul style="list-style-type: none"> ■ Selecting the checkbox indicates a status of “active.” ■ You cannot start inactive jobs manually or through scheduling.
Type	Type of job. Valid values are: <ul style="list-style-type: none"> ■ Copy ■ Gather Statistics ■ Migrate ■ Two-way Synchronization (Source ↔ Destination) ■ Source to Destination (Source → Destination) ■ Destination to Source (Source ← Destination) ■ Verify Hashes ■ Delete Files and Folders ■ Delete Stale Links Refer to Table 3-4 for a detailed description of each job type.
Source	Path to the source location. You can browse this location or enter it manually. For remote locations, use a UNC path in the form of \\ServerName\ShareName to specify the directory. If you enter a locally mapped drive, SGI Trusted Edge automatically converts

	the path to UNC format.
Destination	<p>Path to the destination location. You can browse this location or enter it manually. For remote locations, use a UNC path in the form of \\ServerName\ShareName to specify the directory. If you enter a locally mapped drive, SGI Trusted Edge automatically converts the path to UNC format.</p> <p>For Windows RFS, the Destination share name begins with \\servername\V\. It does NOT begin with \\servername\V\$. In other words, do not include the \$ in the Destination share path for Windows RFS.</p> <p>Clicking the Macro button  displays a list of macros supported within the destination path. Refer to “Using Macros” in this chapter for more information.</p>
Options	<p>Choice to:</p> <ul style="list-style-type: none"> ■ Ignore sub-folders ■ Run in report mode only (no activity occurs) ■ Copy security information with the files ■ Copy Named Streams <p>The default is to include sub-folders, run in copy mode, copy security information, and copy named streams for Windows jobs.</p>
<p>Create Shortcuts</p> <p><i>This information pertains to Windows only. For information about Trusted Edge-created symbolic links for Linux, refer to Chapter 4.</i></p> <p><i>For information about using CaminoSoft to create recallable symbolic links for Windows, refer to Chapter 7.</i></p>	<p>For Windows Migrate jobs only, the option to create symbolic links or Internet shortcuts in the source file location when migrating files. This feature enables transparent access to files on the destination location. When you create shortcuts, the software does not recall files to the source directory on access.</p> <ul style="list-style-type: none"> ■ The default value for Create Shortcuts is None – Remove Source Files and Folders. ■ Only Windows 2008, Windows 7, and Vista support symbolic links (also known as soft links). Symbolic links are displayed as having 0 KB on the file system. (These operating systems also support Internet URL shortcuts). <p>Because Symbolic links are non-proprietary, they require no additional software to recall files.</p> <p>Refer to Appendix A, “About Symbolic Links,” for important information about symbolic links and symbolic link evaluation as well as to this web page:</p> <p>http://technet.microsoft.com/en-us/library/cc754077(WS.10).aspx</p> <p>When Symbolic Links are created, the target file is marked as Read Only.</p> <ul style="list-style-type: none"> ■ Windows 2003 supports only the creation of Internet URL



	<p>Shortcuts. Shortcuts are displayed as having 1 KB on the file system.</p>
Copy Hash Type	<p>Option to select hash processing. By default, both MD5 and SHA1 hashing occur. You may experience increased performance (although with less secure data transfer) by using only one hash value or by turning off hashing.</p> <p>Valid choices are:</p> <ul style="list-style-type: none">■ None – Remove Source files and Folders (the default value for newly created jobs).■ MD5■ SHA1■ MD5 and SHA1 <p>Not hashing files for a job run increases performance. However, if you require hashing, change the Copy Hash Type from None to the hashing scheme of your choice. Alternately, you can run a second “Verify Hashes” job to confirm data validity after the initial Copy job has completed.</p>
File Compare Method	<p>Determines how SGI Trusted Edge compares previously copied destination files for accuracy verses the current source files. The default is Modified Date/Size (Quick). You can adjust file compare methods as necessary.</p> <p>Valid options are:</p> <ul style="list-style-type: none">■ Modified Date/Size (Full)■ Modified Date/Size (Quick)■ Hash (MD5)■ Hash (SHA1)■ Hash (MD5 and SHA1) <p>Modified Date/Size (Full) processes secondary copy jobs as follows:</p> <p>Each file and directory is compared in real time to its Source/Destination counterpart based upon the Modified Date and Size. If the modified date and size of the destination file matches that of the source file, then the item is ignored rather than recopied. The Full method traverses symbolic link files and offers the greatest degree of integrity checking possible because it performs a one-to-one comparison for all data when deciding which files may need updating. While the Full option may take longer to run, it is the most accurate.</p> <p>Modified Date/Size (Quick) also processes secondary copy jobs by modified Date and Size. However, this method initially generates an enumerated list of source data and compares that list to a similar list of destination data. Because this comparison</p>

	<p>occurs based on these lists, it does not occur in real time as a one-to-one comparison of the data. (For subsequent job runs after the initial job run, the Quick File Compare method outperforms the Full File Compare method.)</p> <p>Given this difference, the Quick option may be less accurate than the Full method. Moreover, the Quick method does not traverse symbolic links that could impact the integrity of the destination data. The benefit to the Quick method is that it allows secondary jobs to run noticeably faster than Full jobs.</p> <p>The same Full and Quick file compare methods are also available for Synchronize jobs. The logic is the same for these jobs except that Synchronize jobs compare only the Modified Date for files and ignore any Size comparison.</p> <p>If time is not a concern, SGI recommends using the default option for jobs that will be run multiple times against the same source and destination directories.</p> <p>File Compare Method differs from Copy Hash Type, which determines hashing for files that are actually copied. For example, SGI Trusted Edge might hash the first run of all copied files. On a second job run pass on the same data, the software reviews only the Modified date to confirm that the data has not changed.</p>
<p>Enable File List</p>	<p>If unchecked (the default value), instructs Trusted Edge not to store information for the processed file/folder in the Job Run database. This option decreases the number of writes to a job run database, and therefore results in noticeable improved performance.</p> <p>If you select Enable File List, each job run database can accept approximately 44 million files per job run. Conversely, it allows a list of processed files to be generated.</p> <p>This feature is available for Copy, Migrate, Synchronize, Delete, and Delete Stale Links job types but not for Statistics and Verify Hash job types. Disabled is the default.</p> <p>If you accept the Enable File List default, you cannot generate a File List Report for that job run. To view a File List report for any job run, select Enable File List for the run.</p>
<p>Thread Count</p> <p>For information about how to use Thread Count in Linux job definitions, refer to Chapter 4.</p>	<p>Specifies the number of threads to be used during a job run.</p> <p>SGI highly recommended that you use small increments to fine tune your system for the optimal number of threads that are appropriate for your environment. In other words, start with a known dataset, use two threads, and note the job run speed. Then run the same job with four threads. Increase the thread count until you achieve the desired performance while not overloading the system.</p>



The value configured for “Thread Count” becomes effective at the next job run start. Changing the value does not affect jobs currently in progress. You do not need to restart the SGI Trusted Edge service to change this value.

Using Macros

SGI Trusted Edge supports one source path macro and multiple destination path macros.

Source Path Macro

For Migrate jobs configured to leave symbolic links in the Source folder, the Source field on the Job Definition window accepts the SymLinkPrefix literal macro, which renames the original source file name with the specified symbolic link macro prefix. This macro is available for both Windows and Linux job types.

Note: If you use this macro in a Migrate job, you must set the File Compare Method to “Modified Date/Size(Quick)” and the Shortcut Type to “As symbolic Link.”

The format of the SymLinkPrefix macro is:

`||SymLinkPrefix=LiteralValue`

- The two pipe symbols `||` are required to separate the source path from the macro.
- The LiteralValue is the desired prefix name for the source file symbolic link. The specified literal value has the following restrictions:
 - It cannot be empty.
 - It has a maximum length of 50 characters.
 - It does not accept the following Invalid characters: Non-printable characters and the characters `\ ' / ' ! ' * ' ? ' " ' | ' \t ' \r ' \f ' \n`.

For example, to migrate files from C:\Folder1 to F:\MyDestination, and leave the renamed symbolic link “OnTape” in the Source folder, you would specify the Source configuration shown in Figure 3-6.

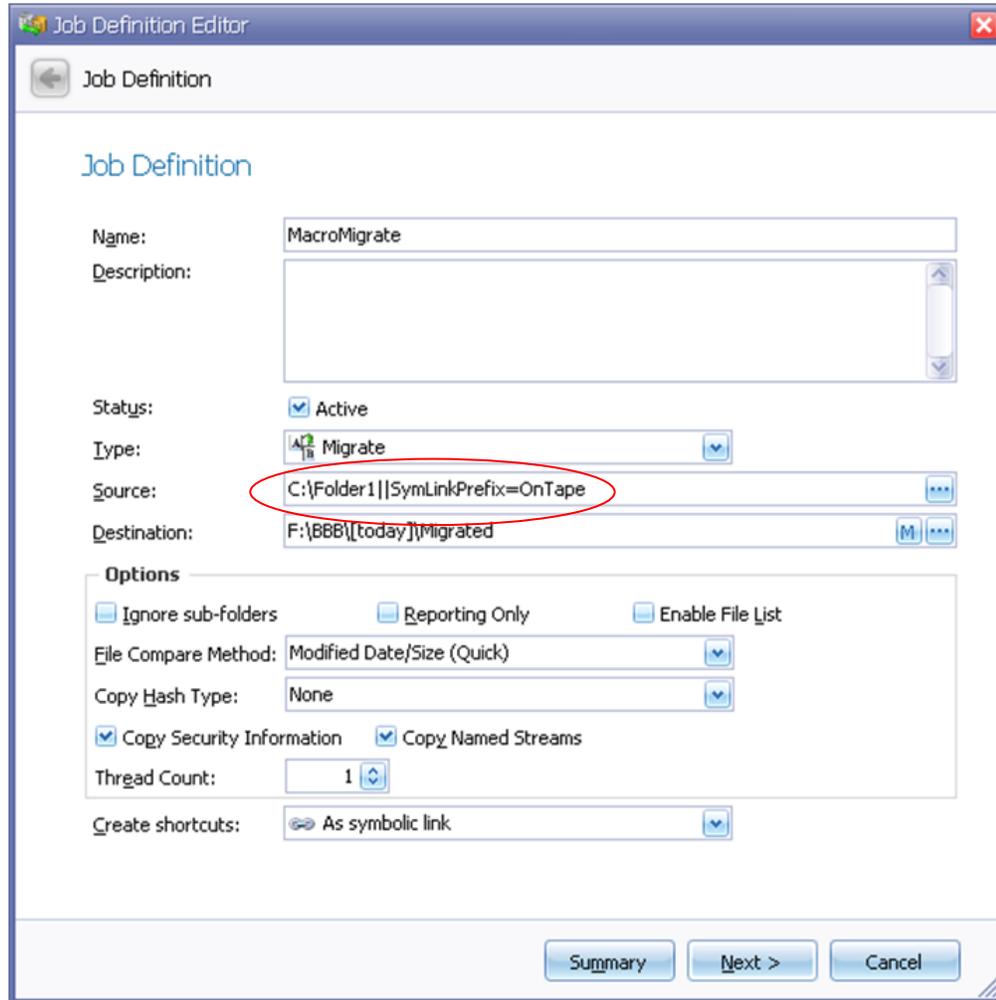


Figure 3-6: Sample SymLinkPrefix Macro

Once the Migrate job executes, the source files become symbolic links, and Trusted Edge renames the files to begin with the literal prefix “OnTape.”

Figure 3-7 illustrates the Source directory listing before the Migrate job run.

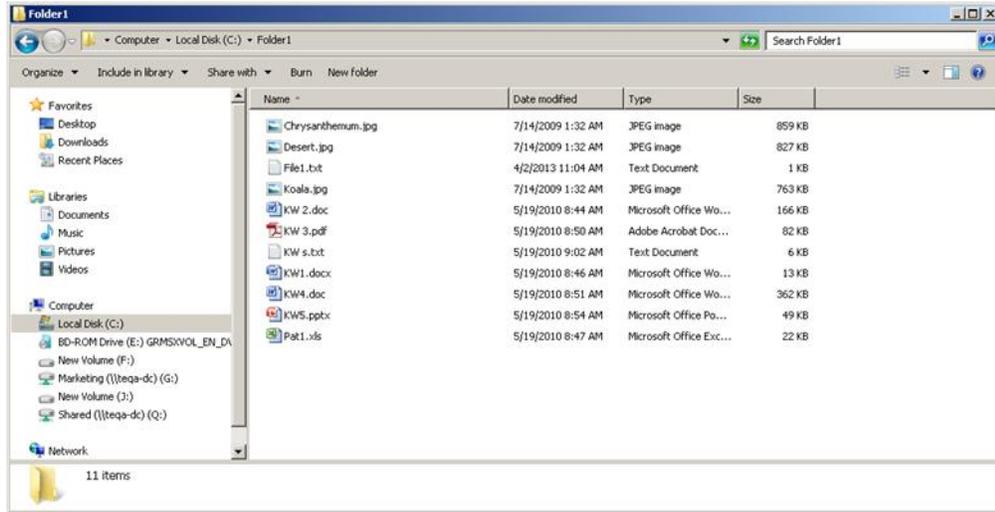


Figure 3-7: Source Directory Listing before the Migrate Job Run

Figure 3-8 illustrates the Source directory listing after the Migrate job run.

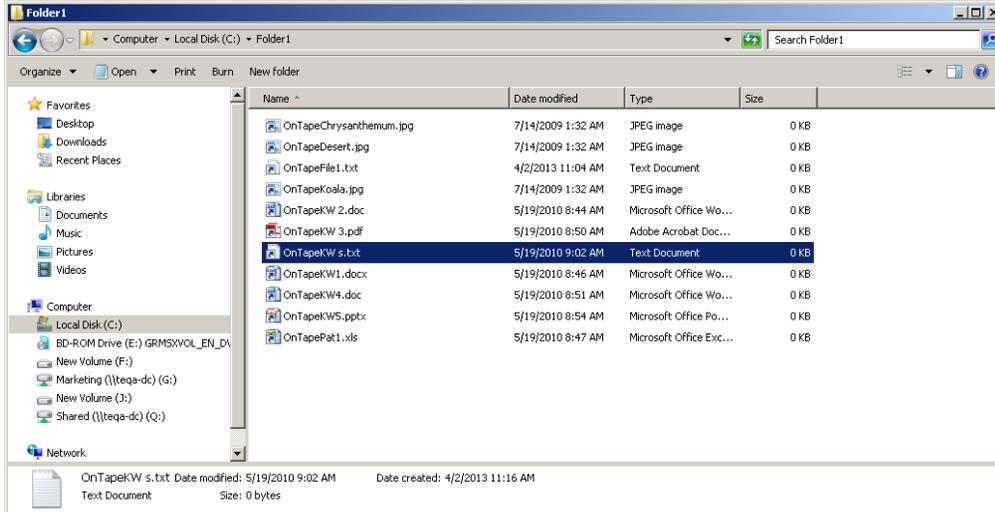


Figure 3-8: Source Directory Listing after the Migrate Job Run

Destination Path Macros

Clicking the  button, displays the macros supported within the destination path. Table 3-3 defines these macros.

Table 3-3: Supported Destination Path Macros

Field	Definition
[[Literal '[' character
]]	Literal ']' character
[Year]	Job Run start date Year value (Format: yyyy).
[Month]	Job Run start date Month value (Format: MM).
[Day]	Job Run start date Day value (Format: dd).
[YearMonth]	Job Run start date Year and Month value (Format: yyyy-MM).
[Today]	Job Run start date (Format: yyyy-MM-dd)
[ComputerName]	Computer name where the Job Run process executes.
[ServiceAccountName]	Name of the account that runs the SGI Trusted Edge service.
[DomainName]	Domain to which the Service Account belongs
[SourcePath]	Source Path
[SourceServer]	Source Server Name (for UNC paths)
[SourceShare]	Source Share Name (for UNC paths)
[SourceDriveLetter]	Source disk DriveLetter (for local disk source paths)
[SourcePathTipFolder]	Source Path Tip Folder
[Job.Id]	Job Definition ID (Guid) value
[Job.Name]	Job Definition Name



[JobRun.Id]	Job Run ID (unique ID of job run)
-------------	-----------------------------------

Using a macro in the Destination path allows you to generalize job definitions. Here are some examples.

Rather than specifying a particular destination path such as F:\ServerA\ShareB\2012, you could use the [SourceServer], [SourceShare], and [Year] macros to make the path more generic:

F:\[SourceServer]\[SourceShare]\[Year]

And, if you want to separate destination data by copy date, you could use the [Today] macro to create a new folder within the destination path for each daily job run.

Selecting a Job Type

SGI Trusted Edge supports nine job types as defined in Table 3-4.

Table 3-4: Available Job Types

Field	Definition
Copy	<p>Copies source files using standard Windows-based procedures to a specified destination. During the copy, the software compiles and verifies the source and destination file hashes and timestamps to ensure data is identical between source and target locations.</p> <p>Copy jobs can ignore subfolders, run in Report Only Mode, and copy security information. Refer to Table 3-1 for more information about these fields.</p>
Gather Statistics	<p>Based on the source files, gathers statistics against a particular folder and generates a report to display the type of data that exists in the source directory. You can use this information to determine specific job policies. Compiled statistics include file names, sizes, attributes, and timestamps. Subfolders can be included or ignored.</p>

<p>Migrate</p>	<p>Moves files to the destination location and completely removes the source folder and files after a successful transfer. The software calculates file timestamps and hashes to ensure data integrity. The removed files and folders are not sent to the recycle bin first. The remote source folders, even empty source folders, are migrated to the destination.</p> <ul style="list-style-type: none"> ■ Unlike the Copy job type, you can configure migrate to create shortcuts. ■ Migrate can ignore sub-folders, run in report-only mode, copy security information, and create shortcuts.
<p>Two-Way Synchronization – (Source ↔ Destination)</p>	<p>Works as follows:</p> <ul style="list-style-type: none"> ■ Copies any source files not residing on the destination to the destination and any destination files not residing on the source to the source. ■ Updates files, based on the date modified timestamp, that are newer in either location or its counterpart. Any files copied will be hashed for integrity.
<p>Source To Destination – (Source → Destination)</p>	<p>Works as follows:</p> <ul style="list-style-type: none"> ■ Checks that destination files match source files based on the Modified timestamp. Files are hashed on copy for integrity. ■ Copies non-migrated source files to the destination. ■ Copies source files with a more recent timestamp to the destination, overwriting the existing destination file if required. ■ Performs no activity if the file on the destination is newer than the source file.
<p>Destination To Source – (Source ← Destination)</p>	<p>Works as follows:</p> <ul style="list-style-type: none"> ■ Checks that source files match destination files based on the Modified timestamp. Files are hashed on copy for integrity. ■ Copies non-migrated destination files to the source. ■ Copies newer destination files with a more recently modified timestamp to the source overwriting the source files if necessary. ■ Performs no activity if the source file is newer than the destination file.



Verify Hashes	Reconfirms file integrity after migration. No actual copy or migrate function occurs during the verify operation.
Delete Files and Folders	Permanently deletes the source folder and files rather than just sending them to the recycle bin.
Delete Stale Links	Deletes stale symbolic links from the source directory. Stale links can occur when destination files are removed and symbolic link shortcuts to those files remain in the original source location, Delete Stale Links works for both Symbolic Link shortcuts and Internet URL shortcuts.

Defining Include and Exclude Filters

The information presented in this section applies to Windows files. Refer to Chapter 4, “Using the SGI Trusted Edge Administrative Interface with Linux Servers,” for information about which of these include/exclude filter options also applies to Linux files.

After specifying basic job parameters, you can configure include and exclude file filter settings based on four tabs: file, folder, date, and attribute information. Once you configure the include filters, you can set exclude filters. The options for both include and exclude filters are the same.

File Tab

The File tab enables you to filter files based on file extensions, names, and/or owners. Figure 3-9 illustrates the Include Filter by File tab.

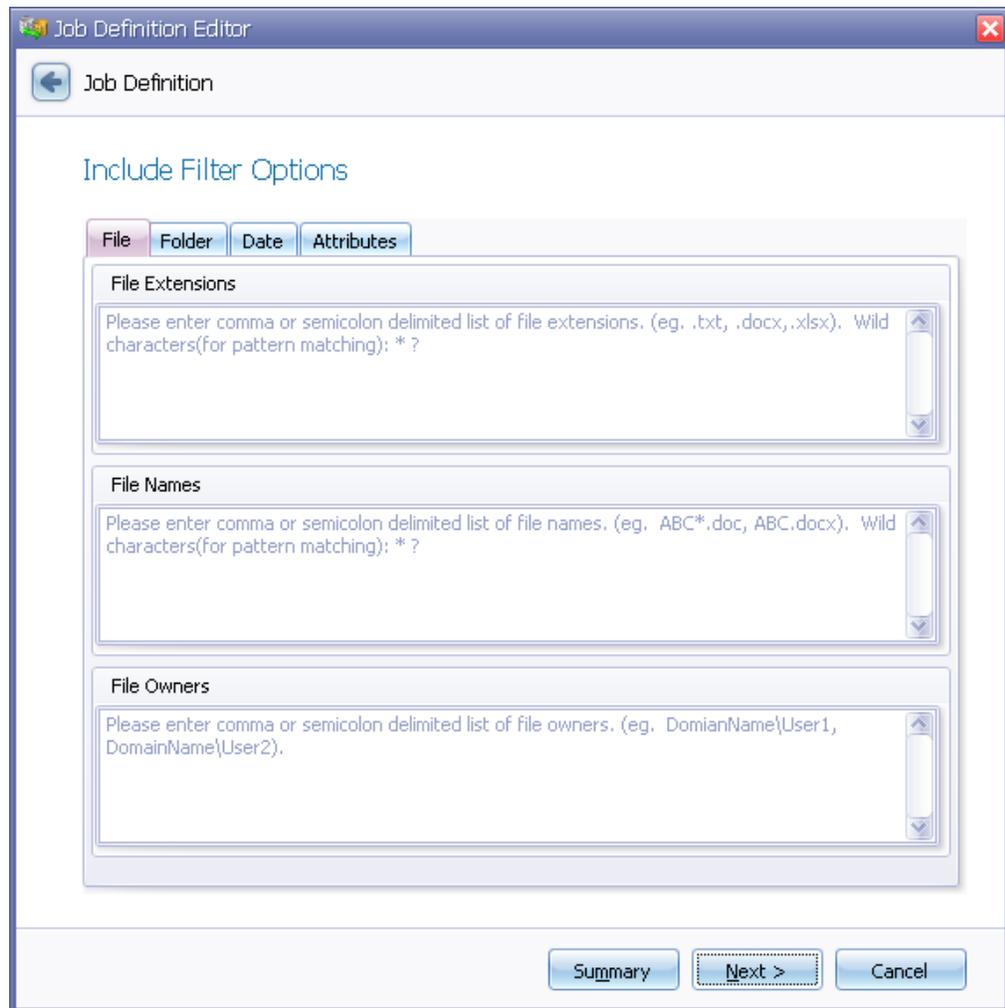


Figure 3-9: Include Filter File Tab Window

Table 3-5 defines the include filter options for the file tab. The software logically separates file extensions, file names, and files with an AND condition (for example, *.doc AND Owned by User1).

Table 3-5: Include Filter by File Tab

Field	Definition
File Extensions	<p>File extensions of included files.</p> <ul style="list-style-type: none"> ■ Separate file extensions with a comma or semicolon. ■ Asterisk (*) and question mark (?) are the only valid wildcard characters. ■ By default, the software includes all file types, so there is no need to specify “*.*” ■ The software logically separates multiple extensions by an “OR” condition. For example, if you specify: *.doc; *.pdf <p>SGI Trusted Edge includes all files with an extension of “.doc” OR all files with an extension of “.pdf”.</p>
File Names	<p>Names of included files. The same bullets that apply to file extensions also apply to file names.</p>
File Owners	<p>Owners of included files. The same bullets that apply to file extensions also apply to file owners.</p> <p>File Owners applies only to Windows (not Linux) job definitions.</p>

Folder Tab

The Folder tab enables you to filter files by folder name. Figure 3-10 illustrates the Include Filter by Folder tab.

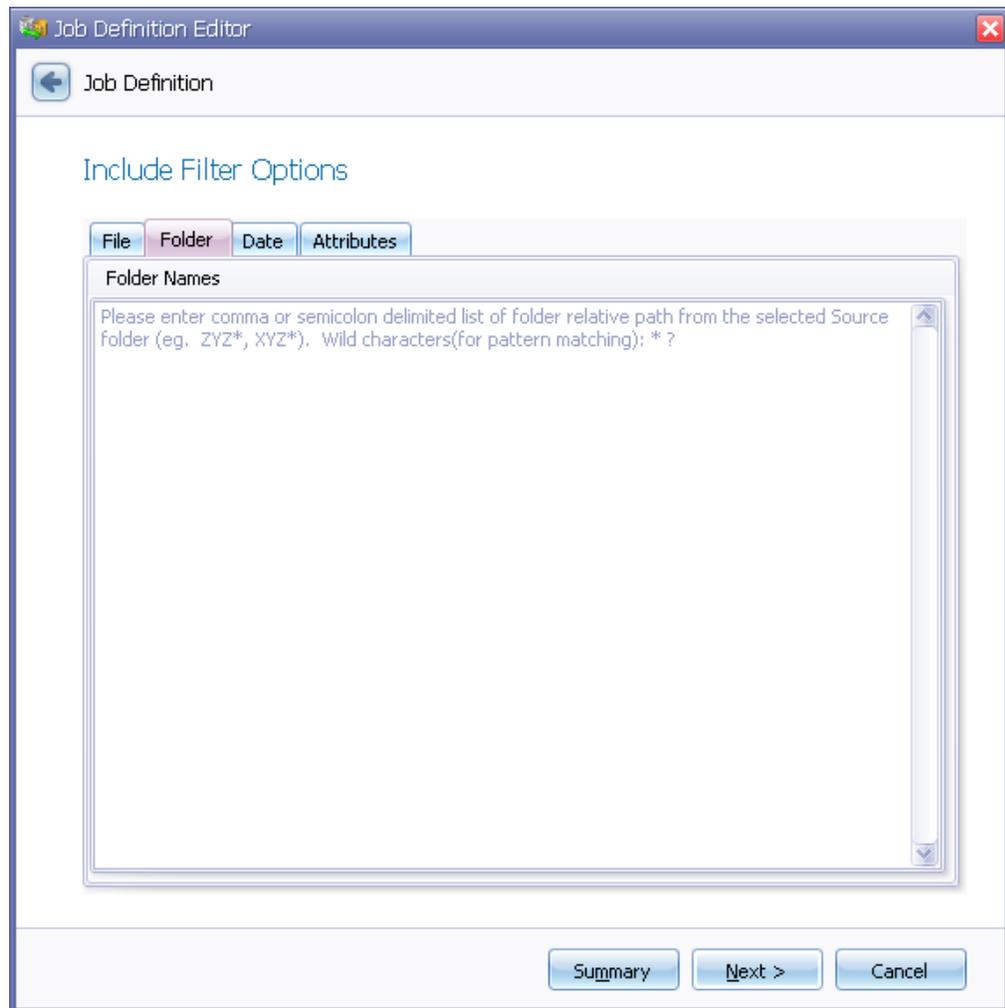


Figure 3-10: Include Filter by Folder Tab

Table 3-6 defines the include filter options for the Folder tab.

Table 3-6: Include Filter Options for the Folder Tab

Field	Definition
Folder Names	<p>The folders to be included in the specified job as the relative path to the source folder. (All specified entries are subfolders of the source folder.) For example:</p> <ul style="list-style-type: none"> ■ If the source folder is C:\MyData and you specify "Projects" for the folder name, the entire path to the Projects folder is C:\MyData\Projects. ■ If you specify "P*" for the folder name, all folders under C:\MyData\ that began with the letter "P" will be included in the job run (for example, C:\MyData\Presentations, C:\MyData\Pictures, C:\MyData\Projects). <p>Note the following:</p> <ul style="list-style-type: none"> ■ Separate folder names with a comma or semicolon. ■ Asterisk (*) and question mark (?) are the only wildcard characters.

Date Tab

The date tab enables you to filter files based on created, modified, and/or accessed date. If you specify multiple date constraints, SGI Trusted Edge separates them with an "AND" condition. For example, if you specify a "Date Created" value of "Last 7 Days" and a "Date Modified" value of "Today," then the software includes only files that were modified today and created within the last week.

Figure 3-11 illustrates the Include Filter by Date tab.

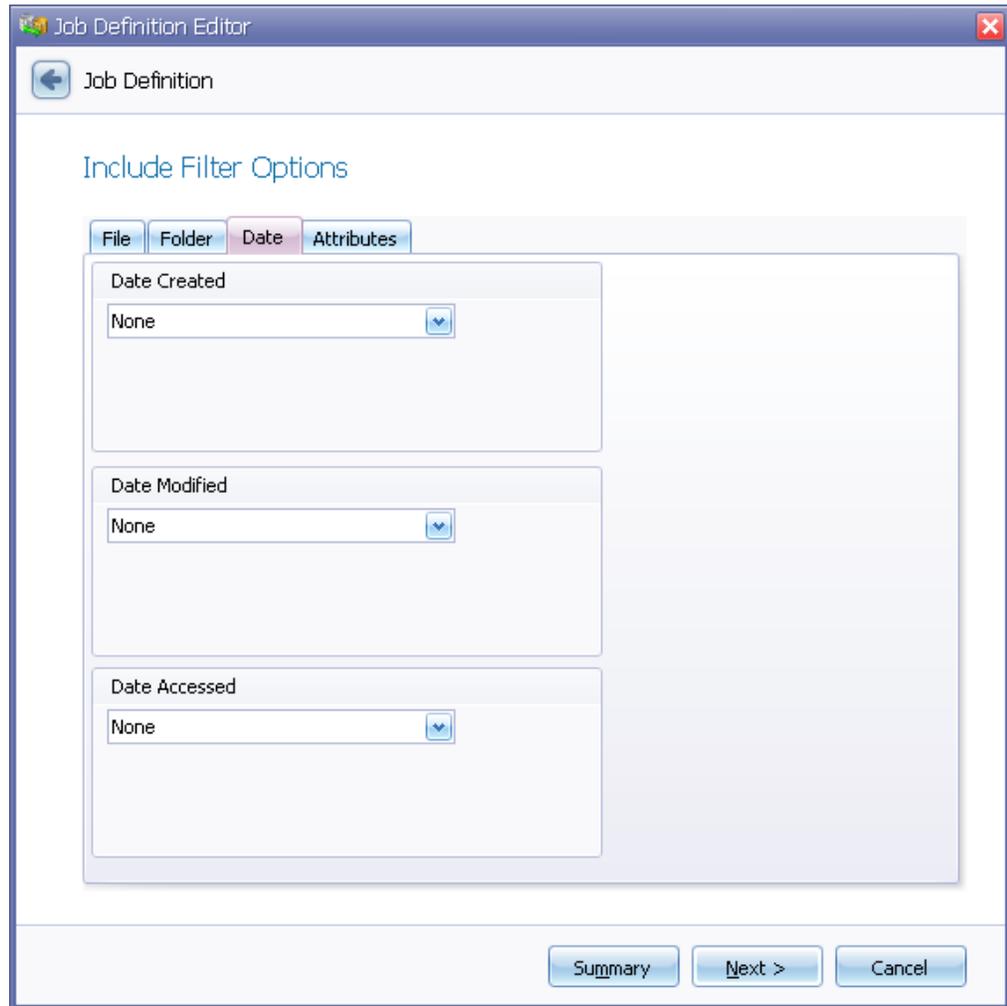


Figure 3-11: Include Filter by Date Tab

Table 3-7 defines the Include filter options for the date tab.

Table 3-7: Fields in the Include Filter Options by Date Tab

Field	Definition
Date Created	<p>Includes files based on creation data. Valid values are:</p> <ul style="list-style-type: none"> ■ None ■ Specific date range, which can be configured before or after a certain date, or it can be set between two dates. ■ Relative date range, which is used for relative dates (for example, Older than 7 days). It is useful for recurring job runs to collect data on an ongoing basis. ■ Today ■ Last 7 days ■ Last 30 days ■ This month ■ This year ■ Last 365 days <p>Date Created applies only to Windows (not Linux) job definitions.</p>
Date Modified	Includes files based on modified date. Valid values are the same as for Date Created.
Date Accessed	Include files based on accessed date. Valid values are the same as for Date Created.

Attributes Tab

The Attributes tab enables you to include files based on file attributes and size. SGI Trusted Edge separates multiple file attributes with an “OR” condition and combines file attribute and size selections with an “AND” condition.

Figure 3-12 illustrates the Include Filter by Attributes tab.

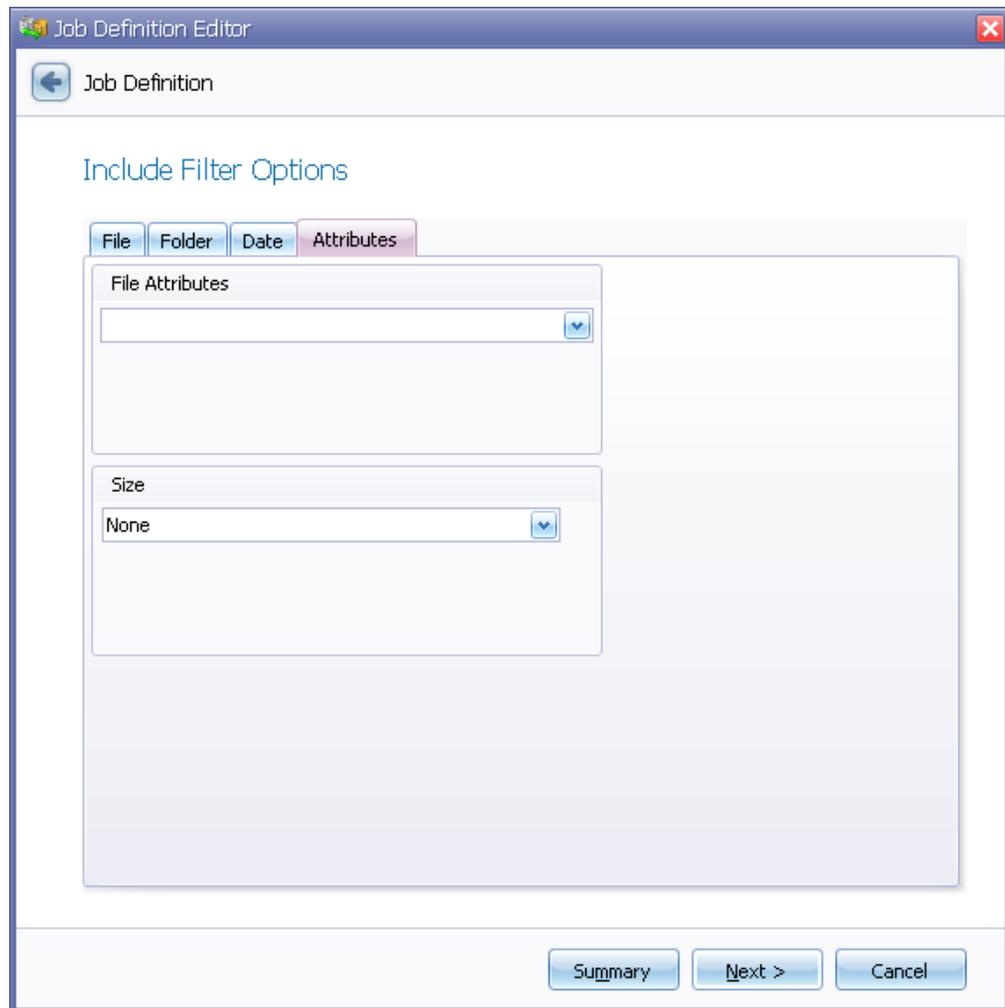


Figure 3-12: Include Filter by Attributes Tab



Table 3-8 defines the fields in the include filter by file attributes tab.

Table 3-8: Fields in the Include Filter by File Attributes Tab

Field	Definition
File Attribute	<p>Filters files by known NTFS file attributes. Valid values are:</p> <ul style="list-style-type: none">■ Read Only■ Hidden■ System File■ Encrypted■ Offline■ Archive■ Compressed■ Temporary■ Not content indexed (Microsoft Indexing Service has not indexed the file for fast searching) <p>File Attribute applies only to Windows (not Linux) job definitions.</p>
Size	<p>Filters files by file size (in bytes). Valid values are:</p> <ul style="list-style-type: none">■ None■ Equal■ Not equal■ Greater than■ Less than■ Between

How Filtering Works

Filtering works as follows.

- SGI Trusted Edge always honors exclusions before inclusions. In other words, if you do not enter any exclusions, nothing will be excluded by default, and the job run will target only the specified inclusions. For example, if you do

not change the exclusions list and the only inclusion is set for .doc files, then the job run will only process .doc files.

- Similarly, if the only exclusion is set to exclude .exe files and you do not make any changes to the inclusion list, then the job will target all non .exe files.
- Filter options within the same field are joined by an OR condition. For example, one filter list might be to include the File Extensions .doc OR .pdf OR .xlsx. In contrast, filter options within a separate field are joined by the AND condition. For example, the Owner of the files is Domain\User1 AND the Date Created is the Last 30 Days.

Putting these conditions together, a set of Include filter options could be to include the file extensions .doc OR .pdf OR .xlsx AND the Owner of the files is Domain\User1 AND the Date Created is the Last 30 Days AND the File Attribute is Read Only.

- The Exclude filters work exactly the same way and are processed before include filters.
- Recommended exclusions to use when running Copy and Migrate jobs are:
 - Extensions: exe, .dll, .lnk, .sys, .pf, .log, .tmp, .dot, .dat, .sdf, .config, .ini
 - Folders: \Program Files\, \Cookies\, \Windows\, \Temp\, \Internet Cache\, \Recycle\, \Recycle.Bin\, System Volume Information

Scheduling Jobs

To minimize administrative effort, you can schedule jobs to run one time or at a recurring interval. You can also configure multiple schedules for the same job. For example, you can configure a job to start on different days of the week, at different times of the day, and for a different number of occurrences.

Figure 3-13 illustrates the Job Schedule window. Figure 3-14 illustrates the Job Schedule Parameters window.

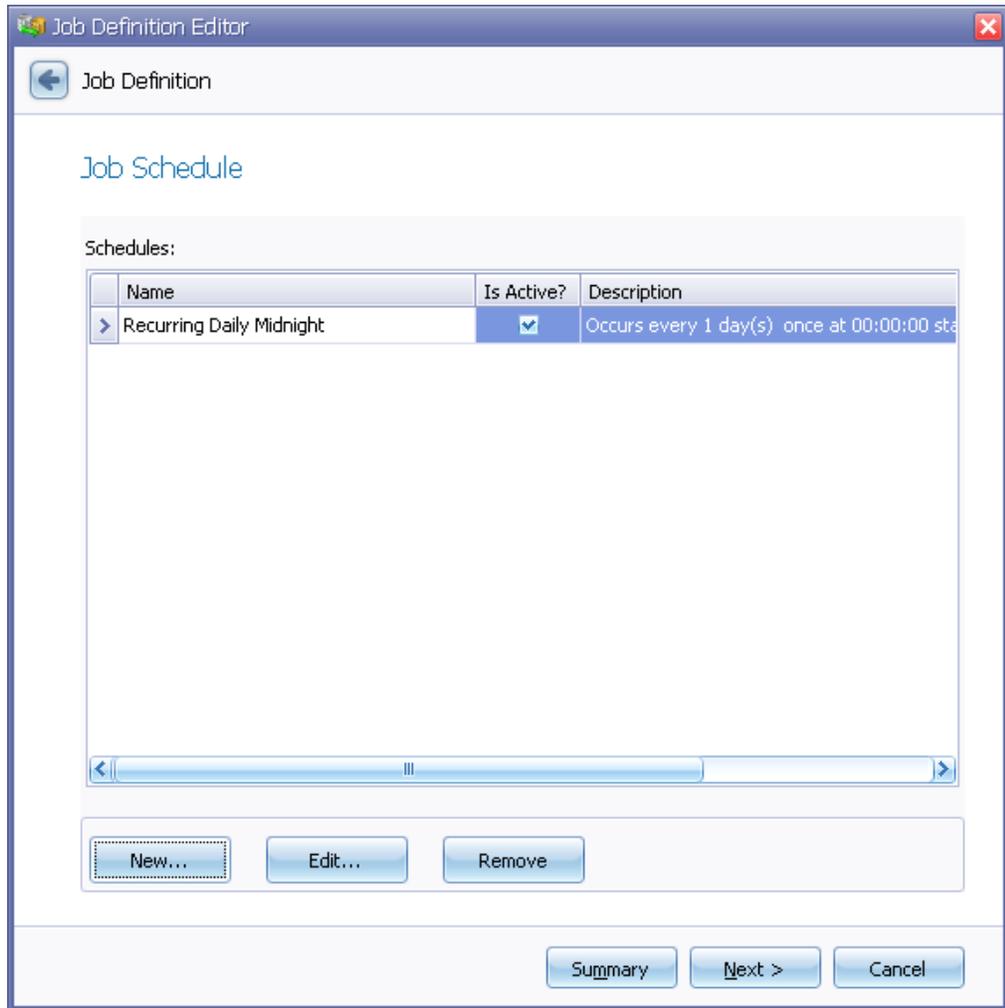


Figure 3-13: Job Schedule Window

Job Schedule

Name:

Schedule Type: Active

One-time occurrence

Date:

Frequency

Occurs: Daily Recurs every day(s)

Weekly

Monthly

Yearly

Daily frequency:

Occurs once at:

Occurs every: Hour(s) Starting at:

Ending at:

Duration

Start Date: End date:

No end date

OK Cancel

Figure 3-14: Job Schedule Parameters Window



Table 3-9 defines the fields in the Job Schedule definition window.

Table 3-9: Fields in the Job Schedule Definition Window

Field	Definition
Name	Unique and descriptive name of the scheduled job (for example, Daily at Midnight or Weekly on Sunday AM).
Schedule Type	Type of job schedule. Valid values are: <ul style="list-style-type: none">■ One time■ Recurring
Active	Schedule status for the job. A selected checkbox indicates an active status, which is the default. You can run inactive scheduled jobs manually.
One-time occurrence	Date/time the job will be run.
Frequency	For recurring scheduled jobs, the scheduled frequency. Valid values are: <ul style="list-style-type: none">■ Daily■ Weekly■ Monthly■ Yearly
Daily frequency	How often the job runs each day. Subfields are: <ul style="list-style-type: none">■ Occurs once at■ Occurs every■ Starting at■ Ending at
Duration	The length of time the schedule is valid. Valid values are: <ul style="list-style-type: none">■ Start date■ End date■ No end date

Reviewing Job Summary Information and Saving the Job Definition

Before you save a job definition, SGI Trusted Edge displays job summary information for your review on the Completing the Wizard window. Job summary information consists of job name, description, type, source and target directories, options, shortcuts, and include/exclude filter options. You can also:

- Click  in the upper left corner of the Completing the Wizard window (or press ALT+B) to move back through the job definition windows and make configuration changes
- Click Finish to save the job definition
- Select the Start Immediately checkbox to start the job immediately after you click Finish
- Click Cancel to delete the job definition

Figure 3-15 illustrates the Completing the Wizard window.

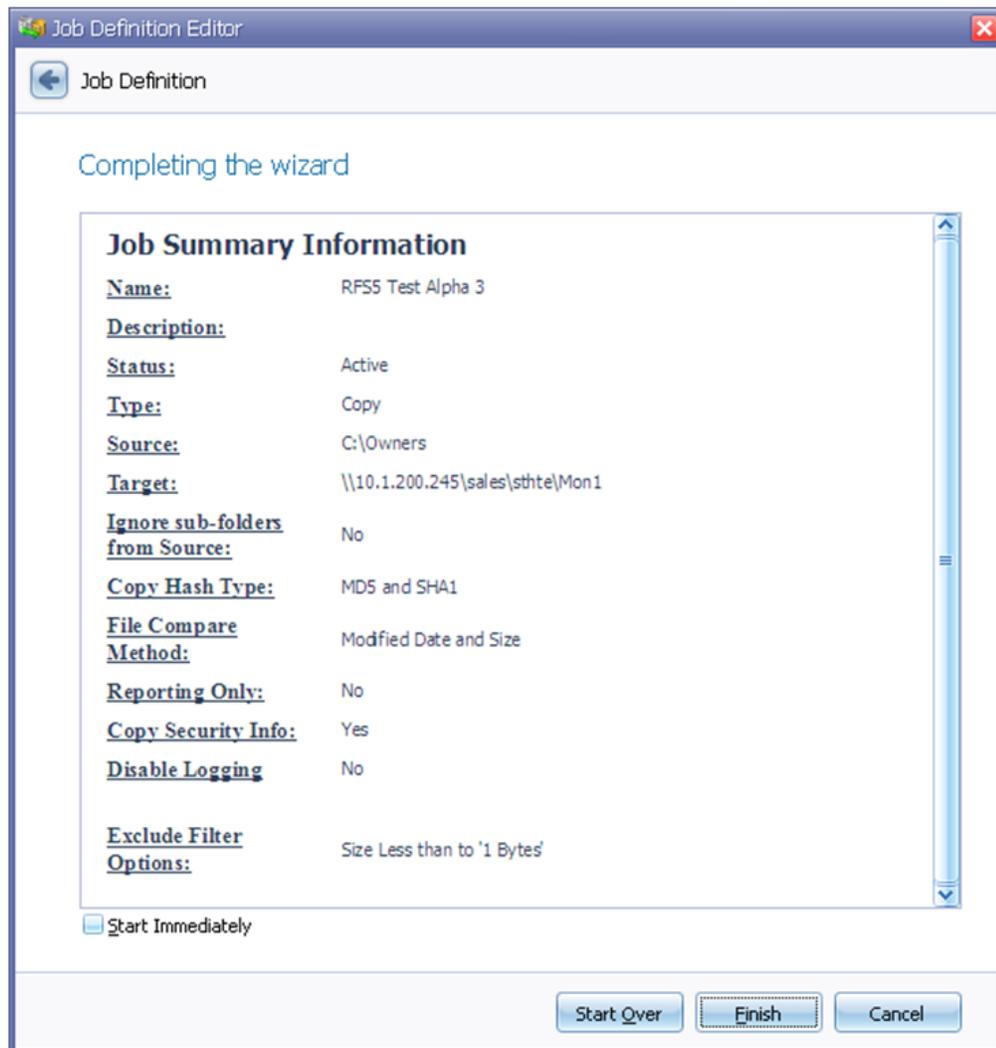


Figure 3-15: Completing the Wizard Window

Importing and Exporting Definitions, Settings, and Linux Connection Information

SGI Trusted Edge supports importing and exporting remote or local Job definitions, job groups, email server settings, alert definitions, overall configuration settings, and Linux connection information in .XML format. Exported components can subsequently be imported into the same or a different Trusted Edge server.

To implement an export, click on the Export button located in the top header menu on the SGI Trusted Edge main window, and select the component to be exported. Figure 3-16 illustrates the available choices.

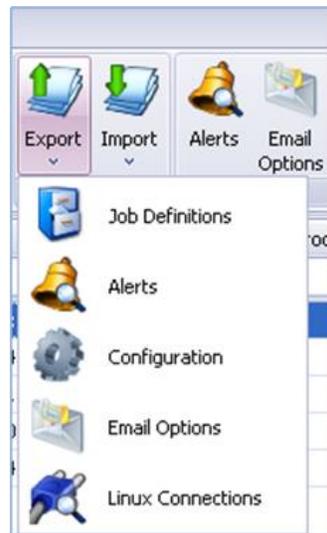


Figure 3-16: Expanded Export Button

When you select Job Definitions, SGI Trusted Edge selects all jobs for export by default. You can subsequently deselect any job from the export list. You can also include all job groups, include only the job groups of selected job definitions, or export job groups only.

Figure 3-17 illustrates a sample Job Definitions Export window.

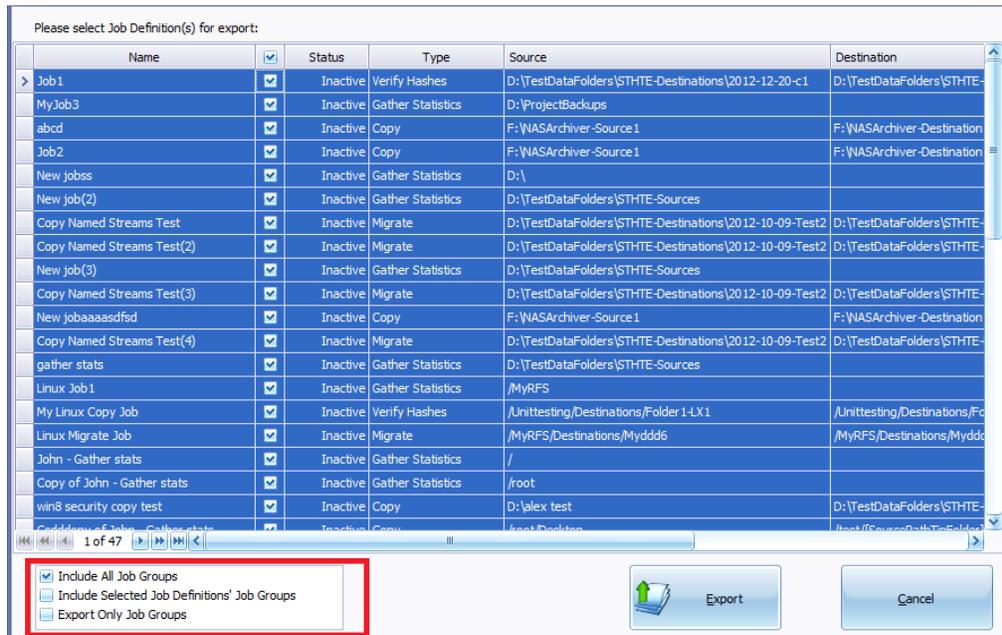


Figure 3-17: Job Export Window

The checkbox options on the Export Jobs Definitions window indicate the following:

- Include all Job Groups – Include all job groups in the exported data
- Include Selected Job Definitions' Job Groups – Include the job groups of only the selected job definitions in the exported data
- Export Only Job Groups – Include job groups only and no job definitions in the exported data

Once you export a file, you can import it into a new (or the same) SGI Trusted Edge system. The Import button is located next to the Export button in the top header menu on the SGI Trusted Edge main window.

Figure 3-18 illustrates the Import File Name window.

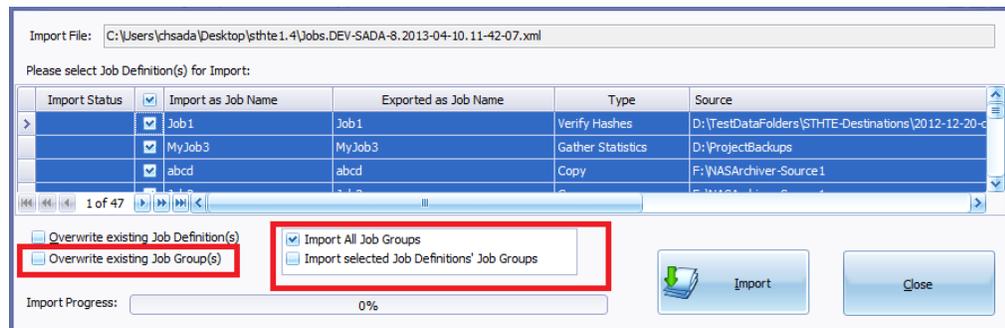


Figure 3-18: Import File Name Window

You must select one of these import options:

- **Import All Job Groups** – Imports all job groups irrespective of the job definition(s) selected for import
- **Import selected Job Definitions' Job Groups** – Imports only the job groups for the selected job definitions

By default, Trusted Edge marks imported job definitions as inactive. You must set them to an active status before they will execute. Once you activate an imported job, you may run the job manually or per schedule parameters according to the job configuration.

Overwriting Existing Job Definitions and Job Groups during Import

During an import, you can overwrite existing job definitions and/or job groups by selecting the Overwrite existing Job Definition(s) checkbox and/or the Overwrite existing Job Groups(s) checkbox on the Import Job Definitions window. When the Overwrite existing Job Definition(s) checkbox is enabled, SGI Trusted Edge marks the imported jobs as active by default and honors all schedule settings for the job. Figure 3-19 illustrates the Import Job Definitions Window with the Overwrite existing Job Definition(s) checkbox enabled.

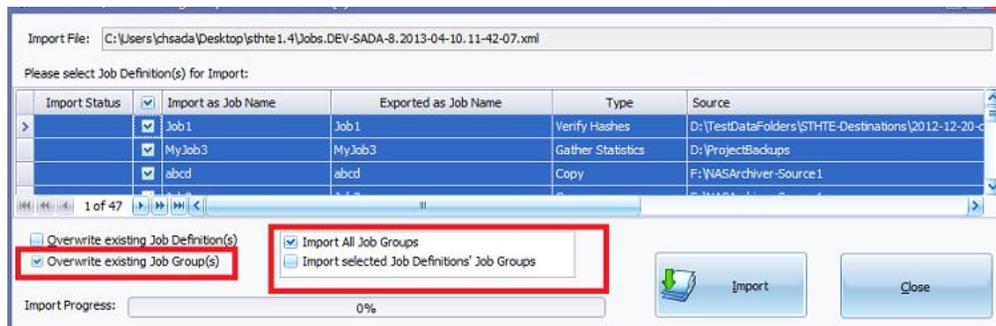


Figure 3-19: Overwrite Existing Job Definition(s) Checkbox Enabled

The overwrite feature works as follows. When set to enabled, if SGI Trusted Edge imports a job and/or job group with the same name as an existing job name/job group, the imported job/group will overwrite the settings for the existing job name/job group on the destination server. If the overwrite setting is disabled, SGI Trusted Edge appends the imported job name/job group with an incrementing number (2) for the first copy imported, (3) for the second copy, and so on.

If an imported XML file does not contain the name of an existing job or group, then all existing jobs/groups will remain unchanged. Consider the following scenarios.

- Server A has three jobs named Job1, Job2, and Job3.
- Server B has four jobs named Job3, Job4, Job5 and Job6.
- The Overwrite existing Job Definition(s) checkbox is selected.

If you import the job definitions XML file from Server B into Server A, Server A will have the following six jobs defined: Job1, Job2, Job3, Job4, Job5 and Job6. Note that Job3 now contains the settings from Server B rather than Server A.

In the same scenario, with the overwrite setting disabled, Server A will contain seven jobs. The existing Jobs 1-3 on Server A will remain in their current state. Jobs 4-6 will be imported from Server B and marked as inactive. The imported Job3 will be also be inactive, and its name will be appended with a (2) to mark it as a duplicate name (for example, Job3(2)).

Additional Information

Note the following:

- When Importing an Alerts.xml, Configuration.xml, or EmailOptions.xml file through the user interface, SGI Trusted Edge *will automatically overwrite the existing settings* on the importing server. The Alerts will be imported and set to the same state (Active/Inactive) they were on the Source/Exporting server.
- When Exporting Job Definitions, Email Options, Alert settings, or Configuration options, by default, SGI Trusted Edge exports the .XML file to the local file system. For example, assume you are logged into Server A and remotely managing Server B through the SGI Trusted Edge Enterprise Edition Console interface. If you initiate an Export from (remote) Server B, then the exported .XML file will be saved to Server A by default.
- When importing Linux connections, by default, Trusted Edge does not overwrite existing connection names. Instead, it appends the names of matching connections with a number in parentheses (for example, (2)). Moreover, Trusted Edge imports the connections in the state (Active/Inactive) that existed when they were exported.

Working with Reports

SGI Trusted Edge supports eight types of reports as defined in Table 3-10. Not all reports can be generated for all job types. For example, you can only run the Stats report for Gather Statistics jobs. Similarly, the Error report is only available if there were errors on a job run.

Table 3-10: SGI Trusted Edge Reports

Report Type	Definition
Summary	Displays details about a completed job, including number of copied, skipped, or mismatched files and directories and size of migrated files. Before you can generate a Summary report, you must first highlight a specific job in the left window pane.



Active Job Schedules	Displays a status history of active, pending, and completed job runs for a user-specified date. Only jobs marked Active display in the Schedule report. You do not have to highlight a specific job before generating a Schedule report.
Hash	Displays the source and destination file hash values for files copied or migrated and an indication that the file hashes match. Before you can generate a Hash report, you must first run a Verify Hashes job and then highlight it in the right window pane.
Job Activity	Displays a history of updates and comments made to stored jobs. Before you can generate a Job Activity report, you must first highlight a specific job in the left window pane.
Error	Displays any errors that were encountered during a job run. Before you can generate an Error report, you must first highlight a specific job in the right window pane.
Statistics	<p>Displays statistics about a source directory. The Stats report has the following formats:</p> <ul style="list-style-type: none">■ File Count by Age■ Storage Utilization by Age■ File Count by File Extension■ Storage Utilization by File Extension■ File Count by File Size Range■ Storage Utilization by File Size Range <p>Note the following:</p> <ul style="list-style-type: none">■ Stats reports list the 20 highest file type counts in the “File Count by File Extension” table and in the “Storage Utilization by File Extension” table.■ You must run a Gather Statistics job before you can generate a Statistics report.■ You read the File Count by File Size Range report as “All files that are 0-50 KB in size add up to/total X KB.”
File List Report	Displays files included in a completed job run.

Queued Jobs	<p>Lists queued jobs and/or job runs in process. SGI Trusted Edge removes jobs from the Queued Jobs list as soon as a job is run.</p> <p>Note the following:</p> <ul style="list-style-type: none">■ The job run queue is valid only for the current day.■ SGI Trusted Edge refreshed the queued jobs list every five seconds for the local server and every 15 seconds for a remote server in the Enterprise Edition console.■ You can refresh queued jobs manually, or you can manually delete items from the job queue using right-click options.
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Example Reports

This section contains examples of SGI Trusted Edge reports.

Stats Report Formats

Figures 3-20 through 3-25 illustrate the Statistics report formats.

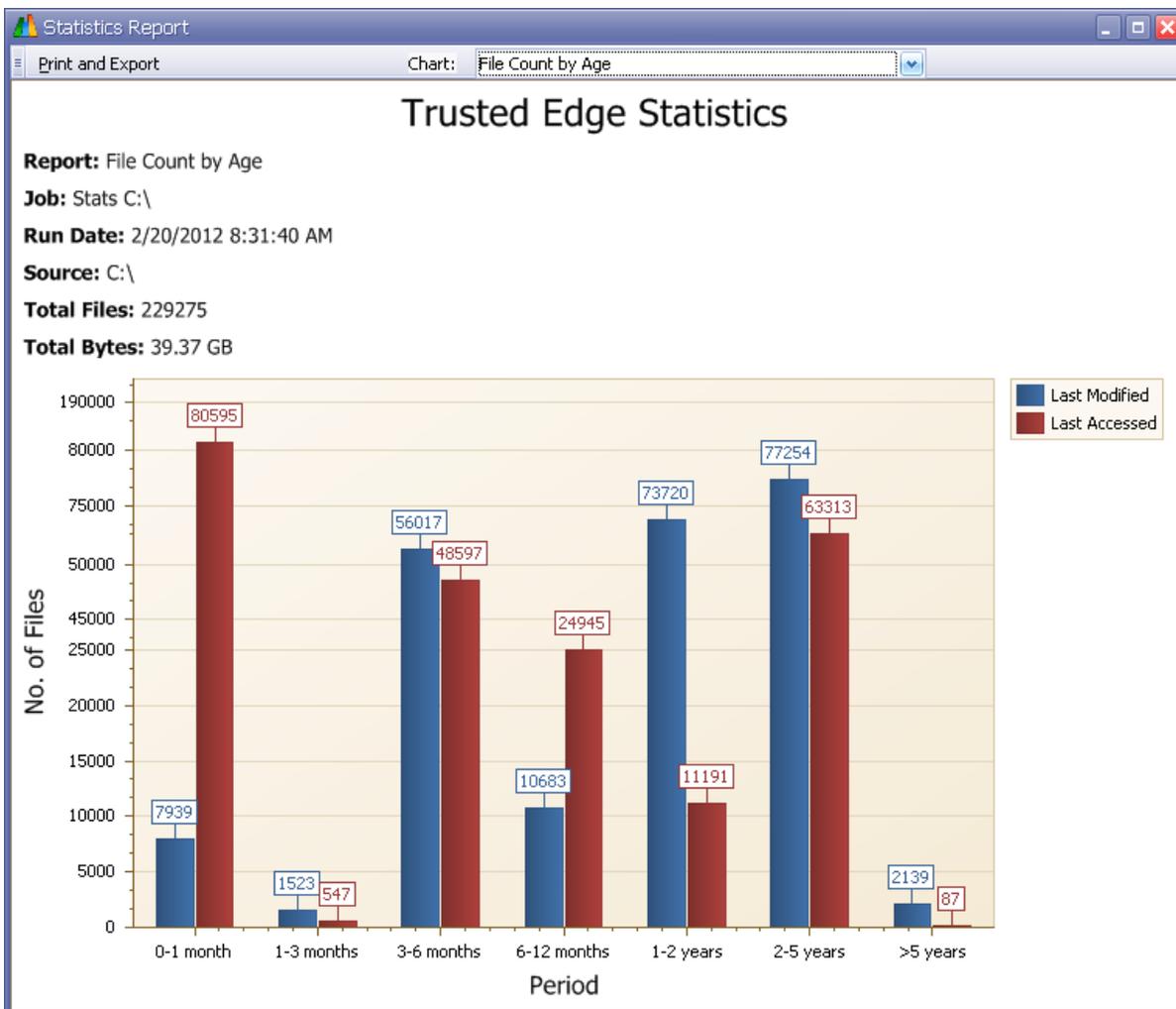


Figure 3-20: File Count by Age Format

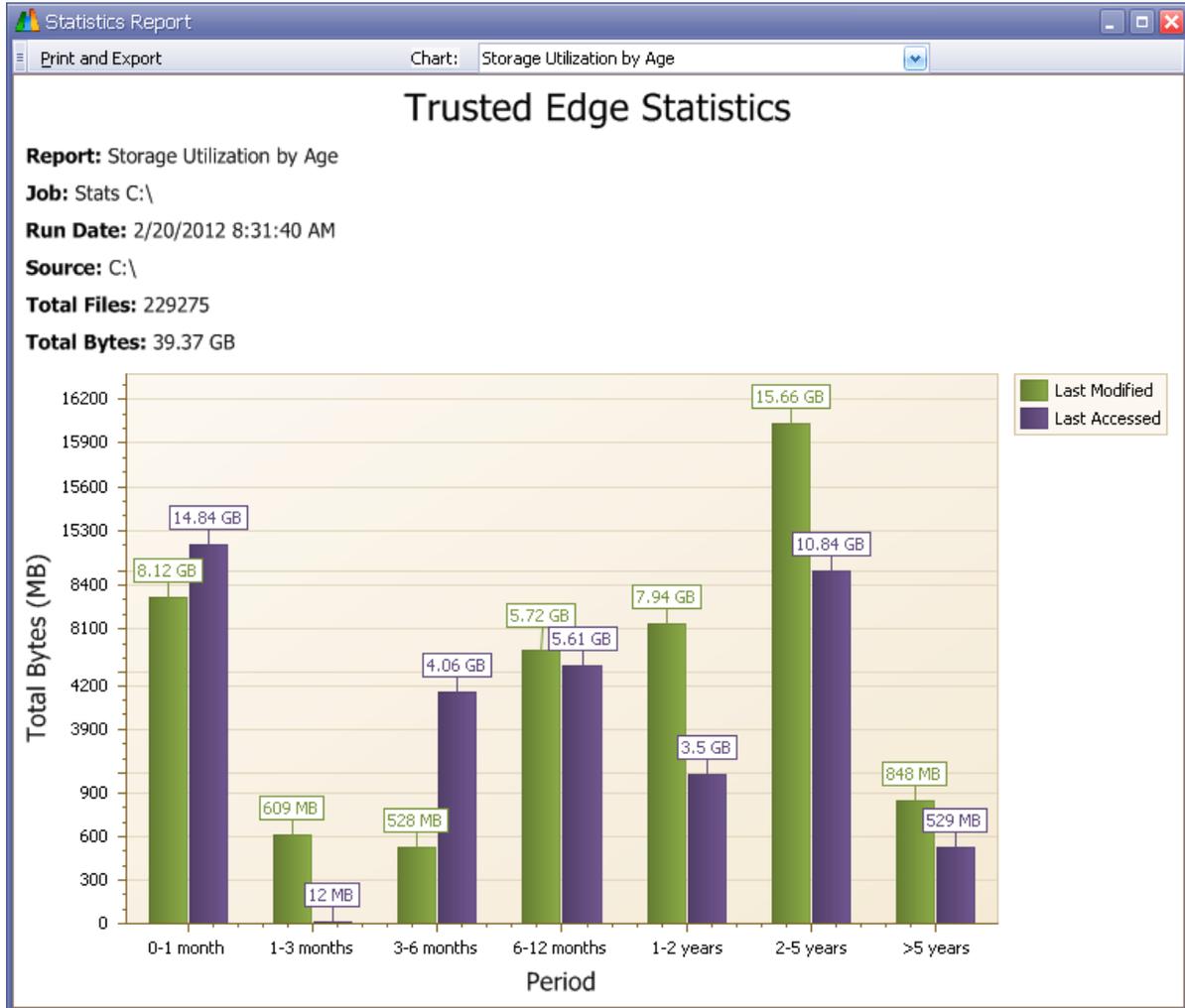


Figure 3-21: Storage Utilization by Age Format



Figure 3-22: File Count by File Extension Format



Figure 3-23: Storage Utilization by File Extension

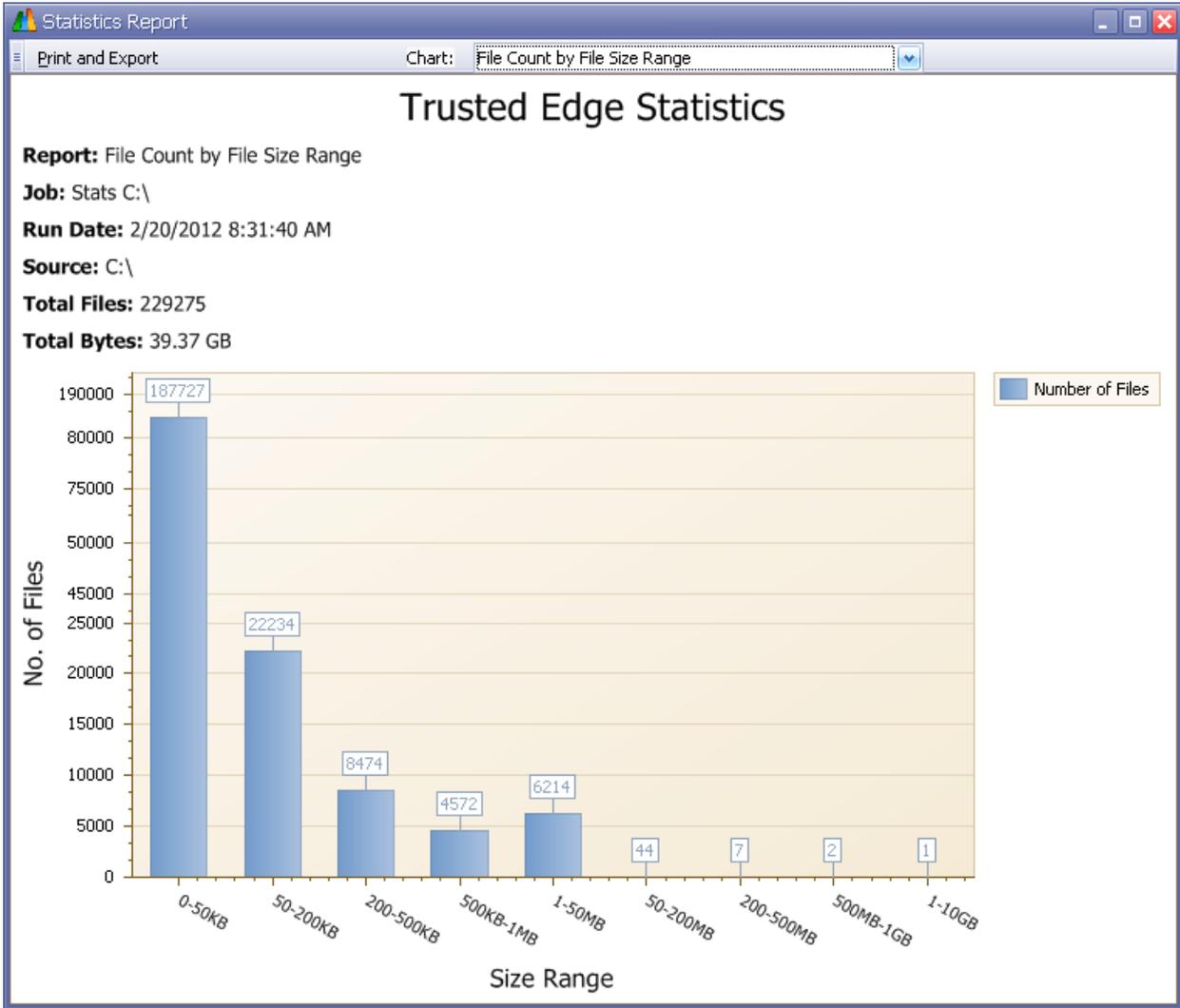


Figure 3-24: File Count by File Size Range Format

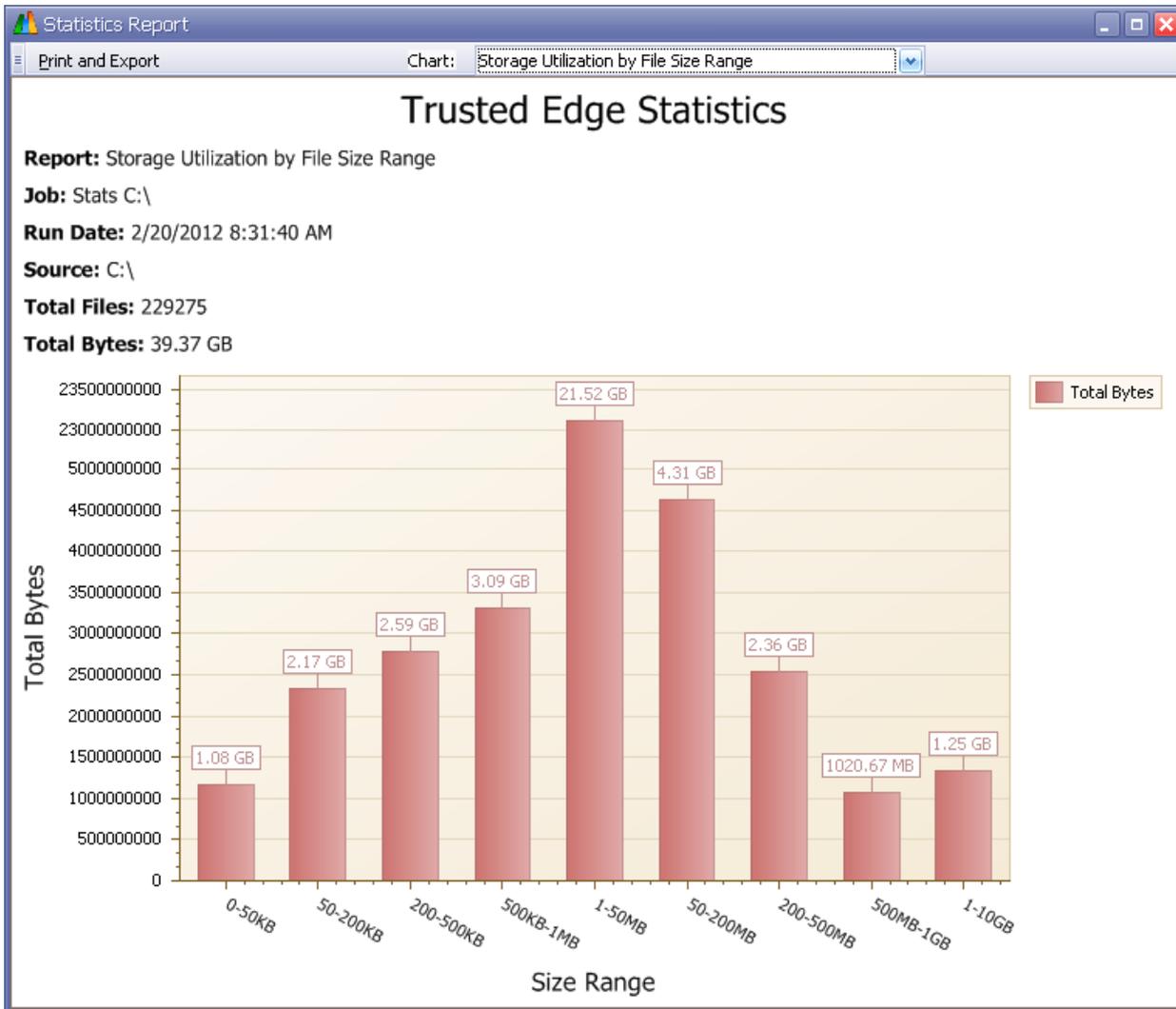


Figure 3-25: Storage Utilization by File Size Range Format

Job Activity Report

Figure 3-26 illustrates the Job Activity report.

Event Date	User	Event Name	Comments
> 02/13/2012 10:25:04 AM	TEQA\jhowley_admin	Update	Updated
02/13/2012 10:23:36 AM	TEQA\jhowley_admin	Update	Updated
02/09/2012 11:50:51 AM	TEQA\jhowley_admin	Update	Updated
02/09/2012 11:50:04 AM	TEQA\jhowley_admin	Adding	Adding new job with name: Exclude

Figure 3-26: Job Activity Report

Job Schedules Report

Figure 3-27 illustrates a sample Job Schedules report.

Scheduled Date	Job Name	Schedule Name	Status	Schedule Details
03/09/2012 12:...	Test Job	Recurring Daily Midnight	Schedu...	Occurs every 1 day(s) once at 00:00:00 starting fro...
03/09/2012 12:...	gather stats on...	Fridays	Schedu...	Occurs every 1 week(s) on Friday once at 00:00:00 ...
03/09/2012 12:...	Sync Src to Dest	Second Friday of the Month	Schedu...	Occurs every 1 month(s) on Second Friday once at 0...

Figure 3-27: Job Schedules Report

Summary Report

Figure 3-28 illustrates a sample Summary report, which displays the following columns:

- Total – Total number of files or folders processed
- Copied – Total number of files or folders copied



- Skipped – Total skipped files (when the same files reside in both the source and destination, SGI Trusted Edge does not recopy the files)
- Mismatch – Number of times a source file name matches a destination directory name, or vice-versa
- Failed – Number of copy/move/create shortcut/hash verification failures (for example, the number of files without identical hashes for a Verify Hashes job)
- Extras – Number of files and folders that are on the destination but not copied from source during a Copy or Migrate job
- Deleted – Number of files and folders deleted during a Delete Files and Folders job
- Delete Stale Stubs – Number of orphaned stubs deleted from a source directory during a Delete Stale Stubs job
- Stubs – Total number of stubs in the directory after stale links have been deleted
- Hash Verified – Number of files processed during a Verify Hashes job

■ ■ ■ ■ Chapter 3 – Using the SGI Trusted Edge Server Administration Interface

Job Run Summary Report (Job: "Sync Src to Dest" Run Date: 2/24/2012 11:53:32 AM)

Print and Export

Name	Total	Copied	Skipped	Mismatch	Failed	Extras	Deleted	Delete Stale Stubs	Stubs	Hash Verified
> Folder(s)	56	52								
File(s)	310	308	2							
Byte(s)	89.8 MB	89.8 MB	1.15 KB	0 Bytes	0 Bytes	0 Bytes	0 Bytes	0 Bytes	0 Bytes	0 Bytes

1 of 3

Figure 3-28: Summary Report

Hash Report

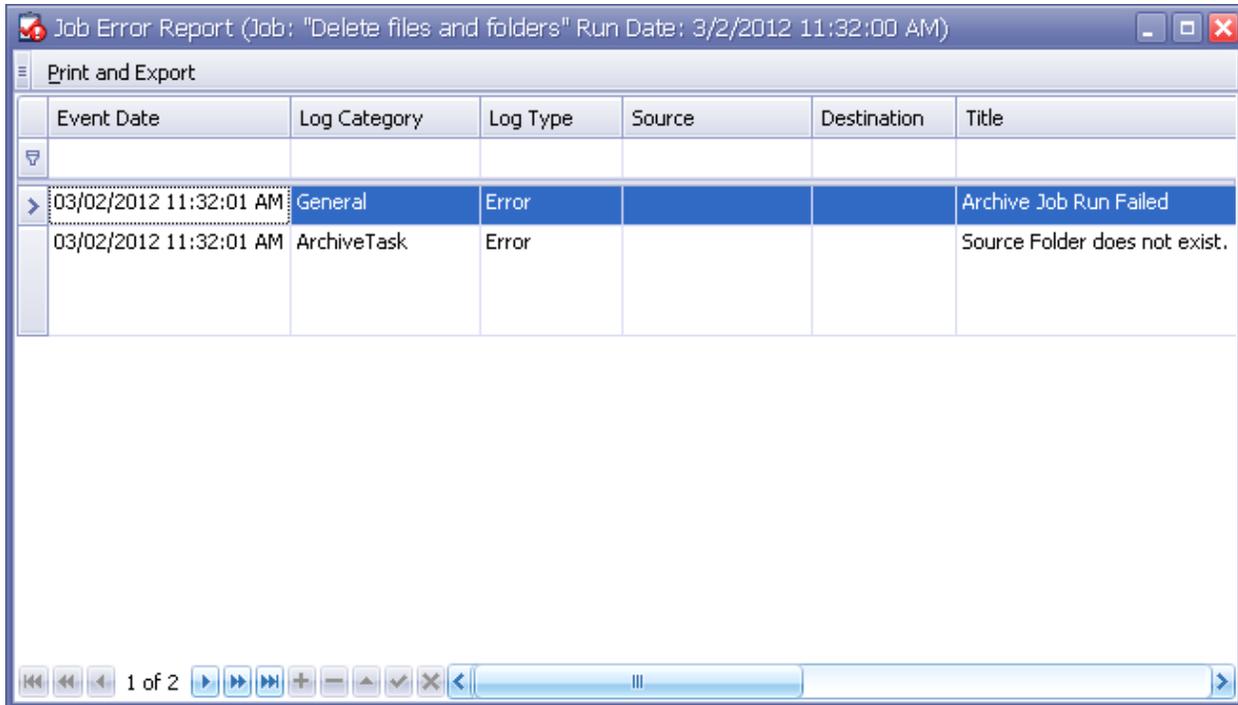
Figure 3-29 illustrates a sample hash report.

Name	Hash Match?	Source MD5	Source SHA1	Destination MD5	Destination SHA1
Temp	Identical	MjYtwFeAcn0Z3WD/3i...	NJ/mdCysYyf/5i5nLnc...	MjYtwFeAcn0Z3WD/3i...	NJ/mdCysYyf/5i5nLnc...
2011-09-12	Identical	BpvaVdbmFjMOHb/xY...	cF12cEM4gQ5dnHlflPp...	BpvaVdbmFjMOHb/xY...	cF12cEM4gQ5dnHlflPp...
Folder1	Identical	c9GLEA8nOLJct3g5i5...	6hBFJEwWp+hsJoFC...	c9GLEA8nOLJct3g5i5...	6hBFJEwWp+hsJoFC...
Fri	Identical	kk7wANLgGwaFaJipgh...	1d+KO+Okny055Kpm...	kk7wANLgGwaFaJipgh...	1d+KO+Okny055Kpm...
FromRFS	Identical	kk7wANLgGwaFaJipgh...	1d+KO+Okny055Kpm...	kk7wANLgGwaFaJipgh...	1d+KO+Okny055Kpm...
New Test Fri...	Identical	hNRyn7TuYYUvnd2wT...	JMbHux8IMaTM3uXBt...	hNRyn7TuYYUvnd2wT...	JMbHux8IMaTM3uXBt...
Test Friday1...	Identical	yv0gu3yonG0cxIF/Cc...	avminK1+OpntfT5YzN...	yv0gu3yonG0cxIF/Cc...	avminK1+OpntfT5YzN...
friday is kw ...	Identical	5mLRUwahBdZz/nWX9...	YppXLmuUrnKCdlh5ps...	5mLRUwahBdZz/nWX9...	YppXLmuUrnKCdlh5ps...
ToBeURLs	Identical	HatCOK+QOaAK3J3h...	W5CK20T23D4hu53TT...	HatCOK+QOaAK3J3h...	W5CK20T23D4hu53TT...
2	Identical	uc4JODZuvfrPw17PK9...	9AcikshP9onhUmFrcN...	uc4JODZuvfrPw17PK9...	9AcikshP9onhUmFrcN...
Copy of ...	Identical	HqpfoI/l45M2JuGsj60...	ikY012+L715bMc458v...	HqpfoI/l45M2JuGsj60...	ikY012+L715bMc458v...
Export2....	Identical	kMvBDdP6+MJX8ApW...	Xy6wqLzN9NVKFQUA...	kMvBDdP6+MJX8ApW...	Xy6wqLzN9NVKFQUA...
Copy of Boo...	Identical	HqpfoI/l45M2JuGsj60...	ikY012+L715bMc458v...	HqpfoI/l45M2JuGsj60...	ikY012+L715bMc458v...
Copy of Tes...	Identical	nDPU946p24kO3kM55...	koHlH5iMujoGorLvRzo...	nDPU946p24kO3kM55...	koHlH5iMujoGorLvRzo...
Export2.txt	Identical	kMvBDdP6+MJX8ApW...	Xy6wqLzN9NVKFQUA...	kMvBDdP6+MJX8ApW...	Xy6wqLzN9NVKFQUA...
ToRFS	Identical	kk7wANLgGwaFaJipgh...	1d+KO+Okny055Kpm...	kk7wANLgGwaFaJipgh...	1d+KO+Okny055Kpm...
friday is kw 1.txt	Identical	5mLRUwahBdZz/nWX9...	YppXLmuUrnKCdlh5ps...	5mLRUwahBdZz/nWX9...	YppXLmuUrnKCdlh5ps...

Figure 3-29: Hash Report

Error Report

Figure 3-30 illustrates a sample error report.



Job Error Report (Job: "Delete files and folders" Run Date: 3/2/2012 11:32:00 AM)

Print and Export

Event Date	Log Category	Log Type	Source	Destination	Title
03/02/2012 11:32:01 AM	General	Error			Archive Job Run Failed
03/02/2012 11:32:01 AM	ArchiveTask	Error			Source Folder does not exist.

1 of 2

Figure 3-30: Error Report



File List Report

Figure 3-31 illustrates a sample File List report.

Name	File Extension	File Size	Date Modified	Date Accessed
> /From18				
Sub1				
Test File Expected Results				
KW 3.pdf	.pdf	81.5 KB	5/19/2010 8:50:37 AM	1/30/2013 10:11:46 AM
Pat1.xls	.xls	21.5 KB	5/19/2010 8:47:37 AM	1/30/2013 10:11:57 AM
KW1.docx	.docx	12.03 KB	5/19/2010 8:46:14 AM	1/30/2013 10:11:55 AM
KW s.txt	.txt	5.08 KB	5/19/2010 9:02:39 AM	1/30/2013 10:11:45 AM
Phone Number.msg	.msg	117.5 KB	11/25/2009 11:38:32 AM	1/30/2013 10:11:45 AM
Thumbs.db	.db	10 KB	11/6/2012 10:37:02 AM	1/30/2013 10:11:45 AM
TestFile1.zip	.zip	602.72 KB	5/19/2010 8:57:01 AM	1/30/2013 10:11:58 AM
Patern 2.txt	.txt	1.33 KB	5/19/2010 8:48:53 AM	1/30/2013 10:11:45 AM
KW5.pptx	.pptx	48.82 KB	5/19/2010 8:54:18 AM	1/30/2013 10:11:59 AM
KW 2.doc	.doc	166 KB	5/19/2010 8:44:28 AM	1/30/2013 10:11:54 AM
Phone2.htm	.htm	34.28 KB	1/19/2010 7:21:32 AM	1/30/2013 10:11:45 AM
KW4.doc	.doc	361.5 KB	5/19/2010 8:51:53 AM	1/30/2013 10:11:55 AM
Sent Support Message.msg	.msg	241 KB	8/30/2010 4:41:35 PM	1/30/2013 10:11:45 AM
DEF.txt	.txt	13 Bytes	1/30/2013 9:56:27 AM	1/30/2013 9:56:27 AM
ABC.txt	.txt	13 Bytes	1/30/2013 9:56:27 AM	1/30/2013 9:56:27 AM

Figure 3-31: Sample File List Report

Queued Jobs Report

Figure 3-32 illustrates a sample Queued Jobs report with columns indicating applicable information for each job in the queue.

Queued On	Queued By User	Job Name	Status	Scheduled Date	Schedule Name	Schedule Details	Alert Name
11/6/2013 10:53:00 AM	Scheduler	VerifyHashes	Running	11/6/2013 10:53:00 AM	HashMonthly	Occurs every 1 month(s) on First We...	
11/6/2013 10:54:36 AM	SYSTEM_ALERT	7 Lin Copy 5 GB	Queued				6 Start7
11/6/2013 10:54:37 AM	SYSTEM_ALERT	1 Lin Copy 0 Bytes	Queued				CopyNewFilesStartLinJob
11/6/2013 10:56:00 AM	Scheduler	DeletedStateData	Queued	11/6/2013 10:56:00 AM	WeeklyWednesdays	Occurs every 1 week(s) on Wednesd...	
11/6/2013 10:57:00 AM	Scheduler	VerifyHashes	Queued	11/6/2013 10:57:00 AM	HashMonthly	Occurs every 1 month(s) on First We...	

Figure 3-32: Queued Jobs Report

How Trusted Edge Queues Jobs

The Concurrent Jobs Run (Max) setting on the Configurations settings → Job Run tab determines the maximum number of jobs that can run at one time. The default value for this configuration setting is 10. In other words, if you start several jobs manually or schedule jobs to run at the same time, Trusted Edge will not run more jobs simultaneously than the value specified by this setting.

Note the following:

- When the number of running jobs reaches the value of Concurrent Job Runs (Max), Trusted Edge queues subsequent jobs that were configured to start through the scheduler.
- Once the Concurrent Job Runs (Max) falls below the allowed number, Trusted Edge randomly selects another job in the queue to start processing next.
- When the number of running jobs reaches the number of Concurrent Job Runs (Max), Trusted Edge queues jobs started by Trusted Edge Alerts (Start Job Definitions).



- If you manually try to start a job when the number of running jobs reaches the value of Concurrent Job Runs (Max), Trusted Edge displays the following message:

```
Unable to start the job "TestJobName". Concurrent job runs  
(Max) count (n) limit reached.
```

- Job definitions cannot be modified or deleted while they reside in the queue.
- Once a job from the queue has completed, Trusted Edge automatically removes it from the queue list.

Job Queue Processing Examples

This section presents five job queue processing examples.

1. The system administrator scheduled three jobs, Job 3, Job 4 and Job 5, to run at 12:00 A.M. The Concurrent Job Runs (Max) value is 1.

However, at 12:00 A.M., another job, Job 6, is still executing. At midnight, Trusted Edge enters all three scheduled jobs into the queue. When Job 6 finishes, Trusted Edge executes one of the scheduled jobs (for example, Job 4). Once Job 4 finishes, Trusted Edge runs either Job 3 or Job 5. Once Job 3 or Job 5 finishes, Trusted Edge processes the remaining queue item.

2. A user schedules Job A to execute every five minutes starting at midnight. The Concurrent Job Runs (Max) value is 1.

However, at midnight, another job, Job C, is already processing. Job C completes at 12:14 A.M. During the Job C runtime, Trusted Edge removes the Job A queued start entries for 12:00, 12:05, and 12:10 from the job queue. The 12:15 A.M. Job A entry remains in the queue and executes at that time as expected.

In other words, a currently queued job run expires if the job scheduler queues another instance of the same job run. Although Job A is scheduled to run at 12:00 A.M., it cannot execute because Job C is already running and the Concurrent Job Runs (Max) value is 1. Therefore, Trusted Edge adds Job A into the job queue. At 12:05 A.M., Trusted Edge removes the Job A queued entry for 12:00 A.M. and adds the entry for 12:05 A.M. At 12:10 A.M., Trusted Edge

removes the entry for 12:05 A.M. and adds the entry for 12:10 A.M. At 12:15A.M, Trusted Edge removes the entry for 12:10 A.M. adds the entry for 12:15 A.M.

Similarly, if a currently queued Job A is running, and the job scheduler triggers another job run for Job A, Trusted Edge queues the newly triggered job run.

3. A user tries to start 15 jobs manually and the Concurrent Job Runs (Max) is set to 10. The first 10 jobs will execute, and no subsequent jobs can be started per the error:

```
Unable to start the job "TestJobName". Concurrent job runs  
(Max) count (n) limit reached.
```

4. The Concurrent Job Runs (Max) value is 1 and Job A is currently running. If a Job B is due to start because of a Start Job Definition Alert event, Trusted Edge will add Job B to the queue and eventually process it.
5. Job 1 is executing, and there are three jobs in the queue (Job 2, Job 3, and Job 4). The Concurrent Job Runs (Max) value is 1.

Job 1 runs from 10:30 P.M. until 12:10 A.M. the following morning. Because the job run queue is valid only for the current day, all three jobs that were in the queue are no longer present because Trusted Edge clears the job queue daily at midnight.

Printing and Exporting Report Data

You can print and export report data by clicking Print and Export on any report window. Figure 3-33 illustrates the file options for print and export.

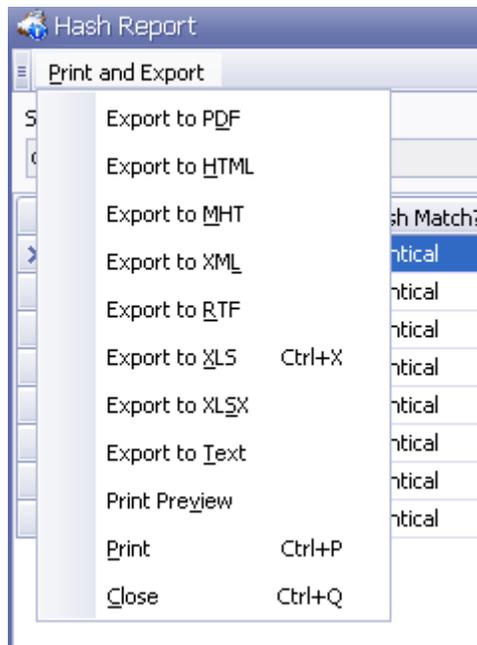


Figure 3-33: File Options for Print and Export

To export all Stats report formats, refer to the procedure, “Exporting All Stats Report Formats,” later in this chapter.

By default, SGI Trusted Edge exports only the currently expanded folders. When viewing larger reports such as the Hash report, you can expand all subfolders by right-clicking a top folder level on the report and choosing **Expand This and All Children** or **Expand Entire Tree**. Additionally, you can press the **F9** key (see Figure 3-34).

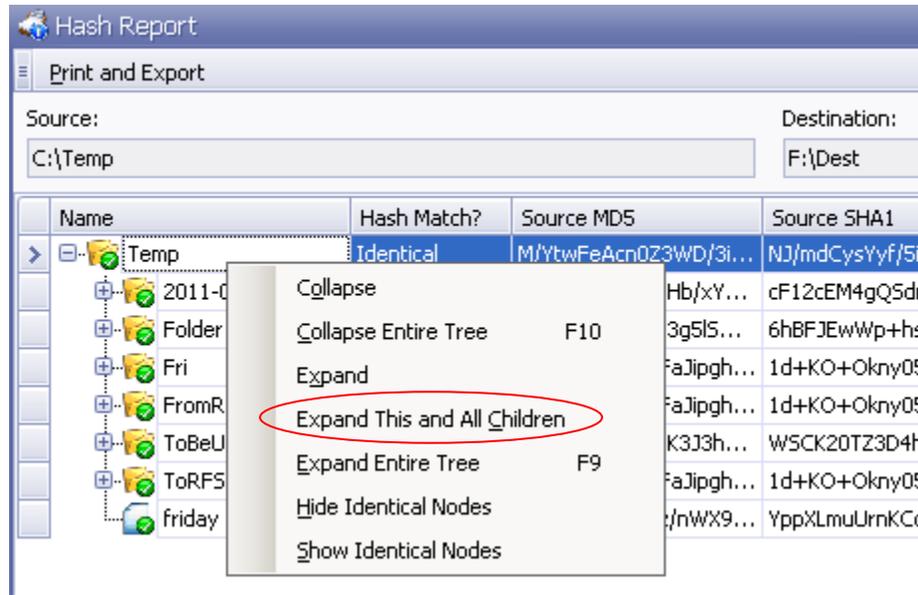


Figure 3-34: Expanding Subfolders when Exporting Reports

Sorting Reports by Columns

You can drag and drop report column headers to sort data on the Active Job Schedules and Job Activity reports. Here is an example.

The Active Job Schedules report displays scheduled jobs for a given date. Assume the following:

- Three jobs are scheduled to run on March 9, 2012.
- You select March 9, 2012 from the Schedule drop-down list.

As show in Figure 3-35 SGI Trusted Edge generates a report that displays information for all three jobs.



Scheduled Date	Job Name	Schedule Name	Status	Schedule Details
> 03/09/2012 12:...	Test Job	Recurring Daily Midnight	Scheduled to run	Occurs every 1 day(s) once a
03/09/2012 12:...	gather sta...	Fridays	Scheduled to run	Occurs every 1 week(s) on Fric
03/09/2012 12:...	Sync Src t...	Second Friday of the Month	Scheduled to run	Occurs every 1 month(s) on Se

Figure 3-35: Job Schedules Report for March 9, 2012

You can change the report format by dragging a column header to the area labeled “Drag a column header here to group by that column” at the top of the report. For example, Figure 3-36 illustrates the ensuing report format if you drag the column marked Job Name to the “Drag a column header here” location.

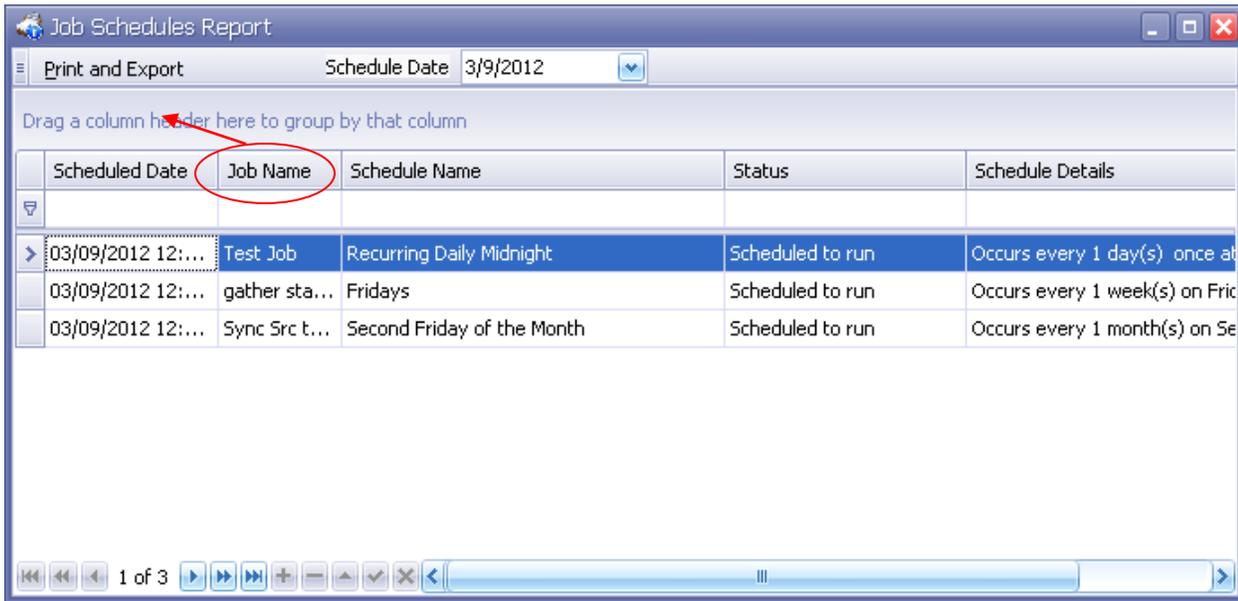


Fig 3-36: Sorting Report Data by Job Name

To reset the report to its original format, drag Job Name ▲ back to the row of columns as shown in Figure 3-37.

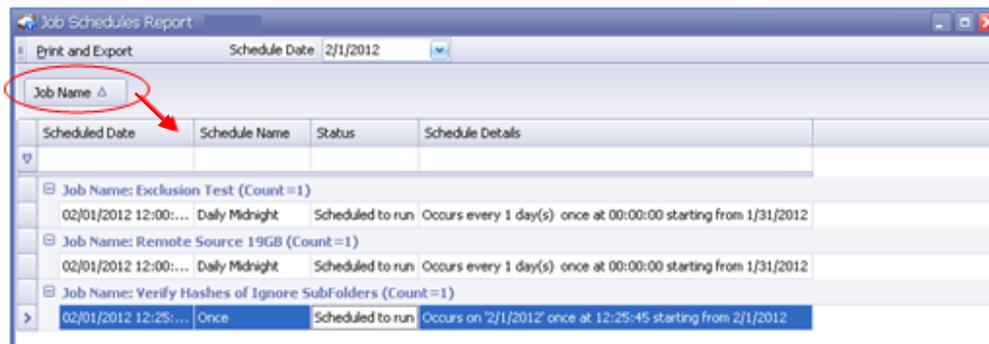


Figure 3-37 Restoring the Original Report Format

Modifying Configuration Information

You can change SGI Trusted Edge configuration settings for General, Job Run, and Security information by clicking the Configuration icon in the Main header bar. Figure 3-38 illustrates the location of the Configuration icon.

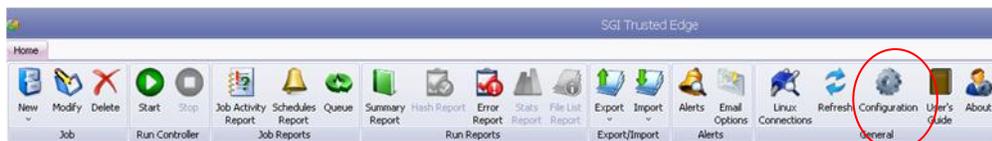


Figure 3-38: Configuration Icon

Figure 3-39 illustrates the Configuration window for these three tabs.

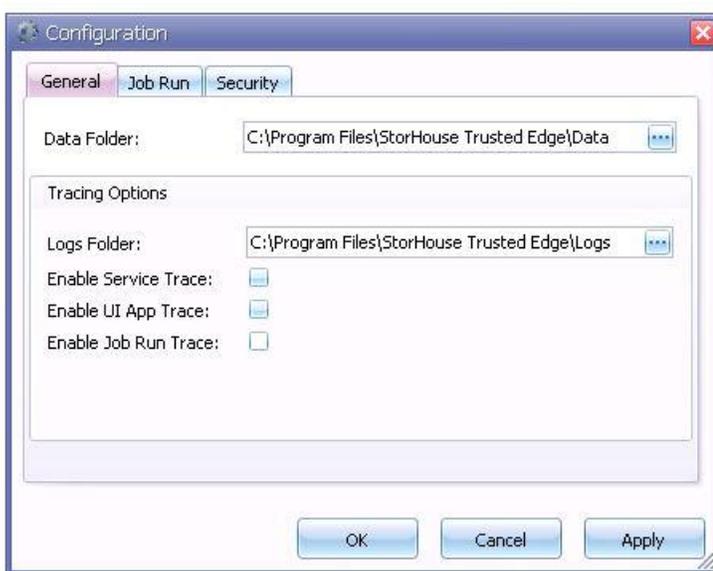


Figure 3-39: Configuration Window

General Configuration Options

By default, the Configuration window displays configuration options for the General tab. Table 3-11 defines these options.

Table 3-11: Configuration Options – General Tab

Option	Definition
Data Folder	<p>Path to the main application database and the individual Job Run databases. The default path is: C:\Program Files\SGI Trusted Edge\Data</p> <p>If you change this path, you must restart the SGI Trusted Edge service.</p>
Logs Folder	<p>Directory that stores the trace log files. The default location is: C:\Program Files\SGI Trusted Edge\Logs</p> <p>The Logs folder will not exist until tracing is enabled for the first time. Note that tracing is only necessary when troubleshooting a problem. Enabling this folder under non-troubleshooting conditions can slow down overall application performance.</p>
Enable Service Trace	<p>Switch to enable/disable a trace used for troubleshooting problems with the SGI Trusted Edge Service. This setting is disabled by default.</p>
Enable UI App Trace	<p>Switch used to enable/disable a trace used for troubleshooting problems related to the user interface. This setting is disabled by default</p>
Enable Job Run Trace	<p>Switch used to enable/disable a trace used for troubleshooting problems related to job runs. This setting is disabled by default.</p> <p>If Job Run tracing is enabled, every job that runs during the enabled period will create a Job Run trace log.</p> <p>Enabling this trace can affect job run performance. Therefore, SGI recommends that you enable this trace only when diagnosing a specific issue.</p>

Job Run Configuration Options

Figure 3-40 displays the configuration options for the Job Run tab, and Table 3-12 defines these options.

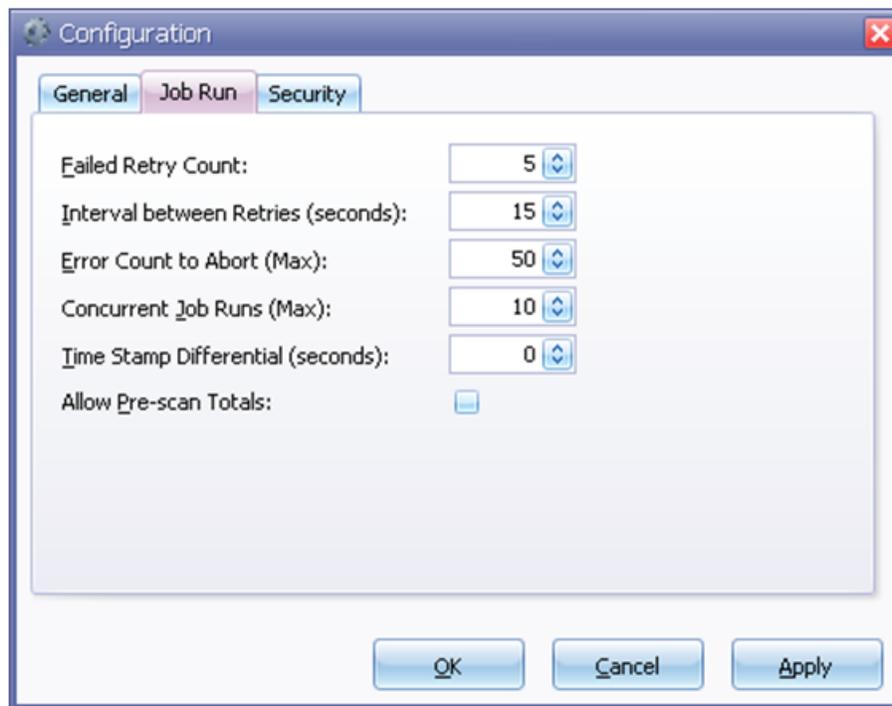


Figure 3-40: Configuration Options – Job Run Tab

Table 3-12: Configuration Options – Job Run Tab

Option	Definition
Failed Retry Count	Number of times SGI Trusted Edge will attempt to rerun an action against a problem file. If the file causes an error, the software will retry a default of five times before moving on to the next file.
Interval Between Retries (Seconds)	<p>Interval between retry attempts for files that SGI Trusted Edge fails to process on the first attempt. The default value is 15 seconds.</p> <p>If a particular data set is troublesome, it might be useful to speed up the job run time by lowering the values of the Failed Retry Count and Interval Between Retries. By default, a file that fails to process can take 75 seconds (15*5) before SGI Trusted moves on to the next file.</p>
Error Count to Abort (Max)	<p>Maximum number of failures that may occur on any single job run before SGI Trusted Edge marks the job as Failed. The default value is 50.</p> <p>This setting tells an administrator about problem data sets sooner than waiting for a job run to complete (and generate errors while executing).</p>
Concurrent Job Runs (Max)	<p>Maximum number of jobs that can run at one time. The default value is 10.</p> <p>SGI Trusted Edge spawns a new process for each job that runs. Using this setting, you can tune a server with multiple processors to achieve optimal performance.</p> <p>Refer to the “Queued Jobs Report” section previously in this chapter for information about how Concurrent Job Runs (Max) affects the list of jobs in the Trusted Edge jobs queue.</p>
Time Stamp Differential (Seconds)	<p>Number of seconds between the times that files were modified. This feature is designed for instances where files are seemingly identical, but were recopied due to some small/invalid time stamp difference. This condition may especially occur on older Linux systems.</p> <p>Providing a value for this option enables Trusted Edge to consider files identical if they were modified within “x” seconds of each other.</p>
Allow Pre-scan Totals	<p>Checkbox that determines whether the Total File count and Processed File count will run in parallel.</p> <ul style="list-style-type: none"> ■ If left empty, which is the default, the Total File count



and Processed Files count will run in parallel. In other words, SGI Trusted Edge job runs will not initially count the files from a given Source directory. This method saves time for the job run in that actual file copying can begin as soon as the job run starts. However, the Summary Report information will not be accurate because the total number of source files is unknown. Moreover, the Percentage Complete number in the Summary Report will likely remain in the 90+ percentile throughout the duration of the job run.

- If selected, Trusted Edge will begin a job run by counting the total number of files in a given source directory. While this initial processing will delay the time it takes to actually begin copying files, the Summary Report will contain the information required to properly calculate the actual Percentage Complete statistic for the job run.
 - Pre-scan totals are always calculated for “Delete” and “Delete stale links” job types irrespective of the configured value.
-

Security Configuration Options

Figure 3-41 illustrates the configuration options for the Security tab, and Table 3-13 defines these options.

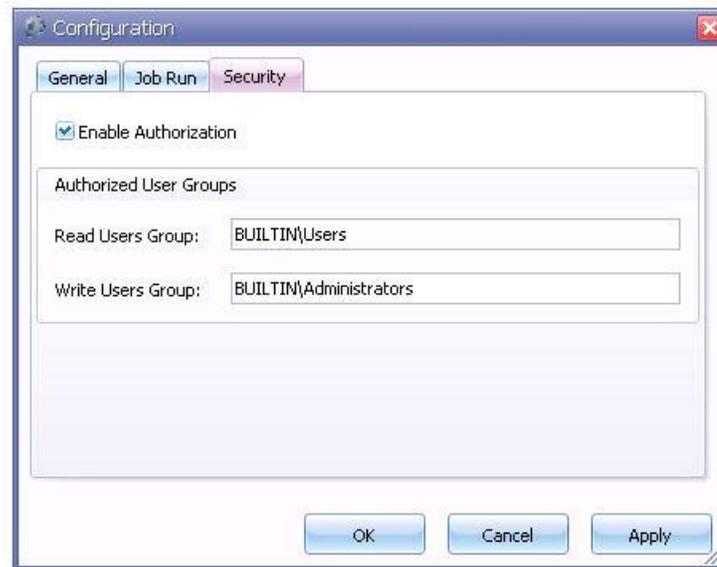


Figure 3-41: Configuration Information – Security Tab



Table 3-13: Configuration Settings – Security Tab

Option	Definition
Enable Authorization	Determines whether SGI Trusted Edge uses security when allowing access and changes within the user interface.
Read Users Group	By default, set so that the Read Users group has the BUILTIN\Users group Read access to the user interface.
Write Users Group	By default, set so that the Write Users group has the BUILTIN\Administrators group Write access to the user interface.

Note the following:

- By default, the local Windows BUILTIN Users group contains the Domain Users group, and the (local) BUILTIN Administrators group contains the Domain Administrators group.
- Users that are members of the defined Read Users group can launch the user interface, view reports, view job definitions, export job definitions, and export the configuration settings.
- The Read Users group cannot create or edit job definitions, activate or deactivate jobs, view or create alerts, import any .XML file exports, or change any Configuration settings.
- Read Users can connect to a remote user interface provided they have allowed access to that user interface from the Security tab on the remote machine.
- Members of the Write Users group have full access to all functionality.

To allow only a certain group to access and administer SGI Trusted Edge, use the same group name in both the Read Users group and the Write Users group.

Executing Procedures

This section provides procedures that explain how to:

- Define a new job definition for a Windows server (refer to Chapter 4 for information about how to define a new job for a Linux server)
- Modify an existing job definition
- Delete an existing job definition
- Export job information
- Import job information
- Pause and then resume a running job
- Create reports
- Print and export all Stats report formats
- Modify configuration settings

Creating a New Job Definition for a Windows Server

Use the following procedure to create a job definition for a Windows server. Note that clicking **Summary** instead of **Next** on any window advances you to the Completing the Wizard window to review job information.

▼ To create a new job definition for a Windows server

1. On the SGI Trusted Edge **Main** server interface window, click **New** in the top header menu, and select **Windows Job**.
2. On the **Job** window, type a unique, descriptive name for the job.
3. Type a description of the job.
4. Accept the active job status, or deselect the **Status** checkbox to assign an inactive status to the job.



5. Click the arrow next to **Type**, and select a job type in the **Type** dropdown list.
6. In the **Source** text box, type a source destination, or click ... to browse to the source directory.
7. In the **Destination** text box, type a destination directory, or click ... to browse to the destination directory.
8. Depending on job Type, select the available job options and hash type.
 - Select the **Ignore sub-folders** checkbox to activate this feature, or accept the default setting.
 - Select the **Reporting Only** checkbox to run the software in report-only mode, or accept the default setting.
 - Accept the **Enable File List** default, or select the **Enable File List** checkbox to enable logging.
 - Accept the **Copy Security Information** default to copy security information, or deselect the checkbox to deactivate this feature.
 - Accept the **Hash Type** default, or click the arrow next the **Hash Type** dropdown list and then select a different hash type.
 - Accept the **Copy Named Streams** default, or select the **Copy Named Streams** checkbox.
 - Accept the **Thread Count** default, or click the arrow next to the **Thread Count** dropdown list, and select the number of thread counts.
9. If you selected Migrate for Type, click the arrow next to **Create Shortcuts**, and select an option from the **Create shortcuts** dropdown list. Otherwise, proceed to step 10.
10. Click **Summary** to skip to the Completing the Wizard window (step 20), or click **Next** to proceed to the Include Filter Options window.

11. On the **Include Filter Options** window, type or select include filter options by file, folder, date, and/or attributes. (To bypass specifying include filter information, proceed to step 12.)
12. Click **Next**.
13. On the **Exclude Filter Options** window, type or select exclude filter options by file, folder, data, and/or attributes. (To bypass specifying exclude filter information, proceed to step 14.)
14. Click **Next**.
15. On the **Job Schedule** window, click **New** to specify scheduling information. Otherwise, click **Next** to bypass schedule information and go to step 20.
16. In the **Name** textbox, type the name of the scheduled job.
17. Click the arrow next to **Schedule type**, and select an option from the dropdown list.
18. Depending on the schedule type, the software displays other scheduling frequency options. Complete these options as required, and then click **OK** to proceed or **Cancel** to cancel the operation.
19. If you clicked OK, click **Next** to view the Job Summary Information on the Completing the Wizard window.
20. On the **Completing the Wizard** window:
 - Review the job summary information.
 - To change any parameters, click  to move backwards through the job definition windows.
 - Accept the default, or select the **Start Immediately** checkbox to start the job after you click Finish.
 - Click **Finish** to save the job definition.



- Click **Cancel** to cancel the job definition.

Modifying an Existing Job Definition

Use the following procedure to modify an existing job definition.

▼ To modify an existing job definition

1. On the SGI Trusted Edge **Main** server interface window, select a job in the left window pane.
2. Click **Modify** in the top header menu.
3. Make any necessary changes.
4. On the **Completing the Wizard** window, click **Finish** to save the modified definition.

Deleting an Existing Job Definition

Use the following procedure to delete an existing job definition. Deleting a job also deletes the job history (any prior job runs).

▼ To delete an existing Job Definition

1. On the SGI Trusted Edge **Main** server interface window, select a job in the left window pane, and click **Delete** in the top header menu.
2. Click **Yes** in response to the message, “Are you sure you want to delete <job name>.”

Exporting Job Information

Use the following procedure to export job information to an .xml file.

▼ To export job information to an .xml file

1. On the SGI Trusted Edge **Main** server interface window, click  in the top header menu.
2. In the **Export** dropdown list, select **Job Definitions**.
3. On the **Select Jobs for Export** window, accept the default to export information for all jobs, or deselect any job you do not want to export.
4. Click **Export**.
5. Browse to your export directory, and then click **Save** to save the exported information.

Importing Job Information

Use the following procedure to import job information from an .xml file.

▼ To import job information from an .xml files

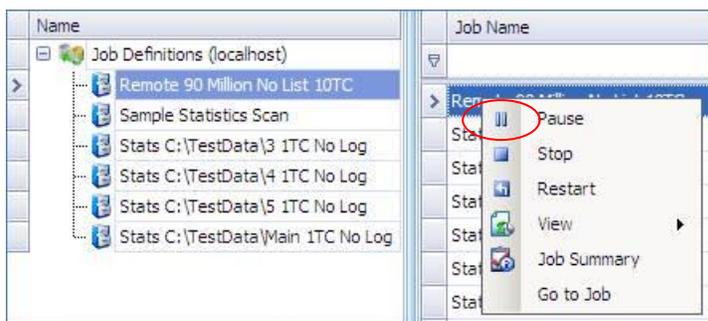
1. On the SGI Trusted Edge **Main** server interface window, click  in the top header menu.
2. On the **Job Import File Name** window, select the files to be imported, and click **Open**.
3. On the **Export Job(s)** window, select a job to import, and then click **Import**.

Pausing and Resuming a Running Job

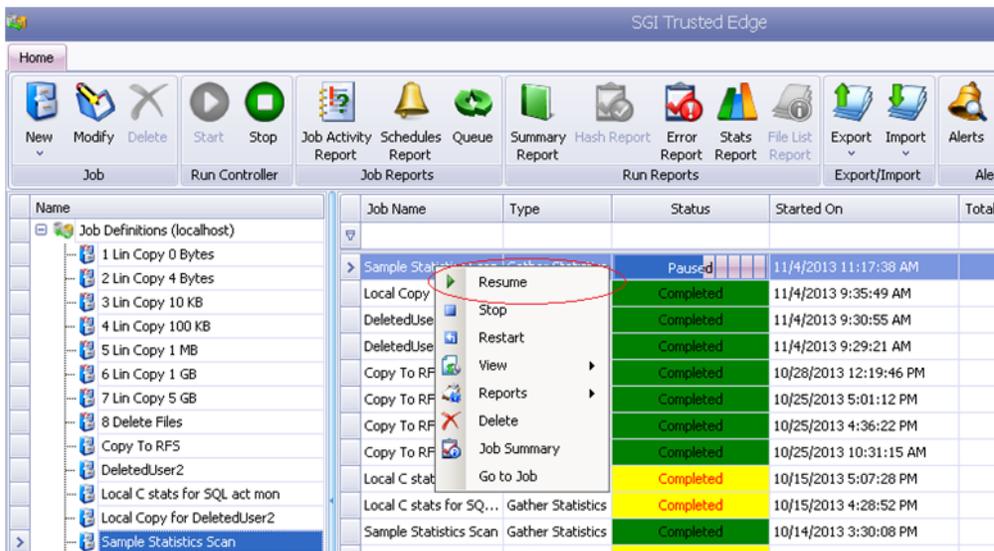
Use the following procedure to pause and resume a running job.

▼ To pause and resume a running job

1. On the SGI Trusted Edge **Main** server interface window, right-click a job with a status of Running in the right window pane, and select **Pause** from the options drop-down list.



2. To subsequently re-launch the paused job, on the **SGI Trusted Edge main** window, right-click the job name, and then select **Resume** from the options drop-down list.



To restart a job in progress from the beginning, select **Restart** from the right-

click menu. When SGI Trusted Edge restarts a running job, it marks the job **Stopped** and then launches a new instance of the same job.

Creating Reports

Use the following procedures to create a report.

▼ To create a SGI Trusted Edge report

For **Summary**, **Hash**, **Error**, and **Stats** reports, on the SGI Trusted Edge **Main** server interface window, click a job name in the left window pane, and then click the respective report icon in the top header menu bar.

For **Job Activity** reports, on the SGI Trusted Edge **Main** server interface window, click a job name in the left window pane, and then click the **Job Activity** icon in the top header menu bar.

For **Active Job Schedules** reports, on the SGI Trusted Edge **Main** server interface window, click the **Active Job Schedules** icon in the top header menu bar.

Printing and Exporting Reports

Use the following procedure to print and export reports.

▼ To print and export reports

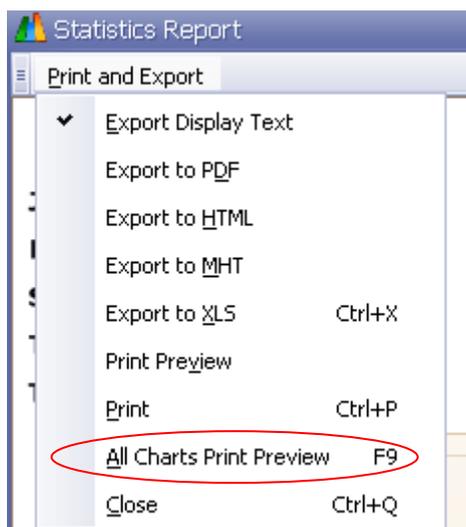
1. On the SGI Trusted Edge **Main** server interface window, for Summary, Hash, Job Activity, and Error reports, click a job name in the left window pane. For Active Job Schedules and Stats reports, proceed to step 2.
2. Click the icon for the report you want to generate.
3. Click **Print and Export**.
4. Select an option from the Print and Export list.
5. Browse to the destination directory, and then click **Save**.

Printing and Exporting All Stats Report Formats

Use the following procedure to print and export all Stats report formats. (You must have run a Generate Statistics job in order to generate a Statistics report.)

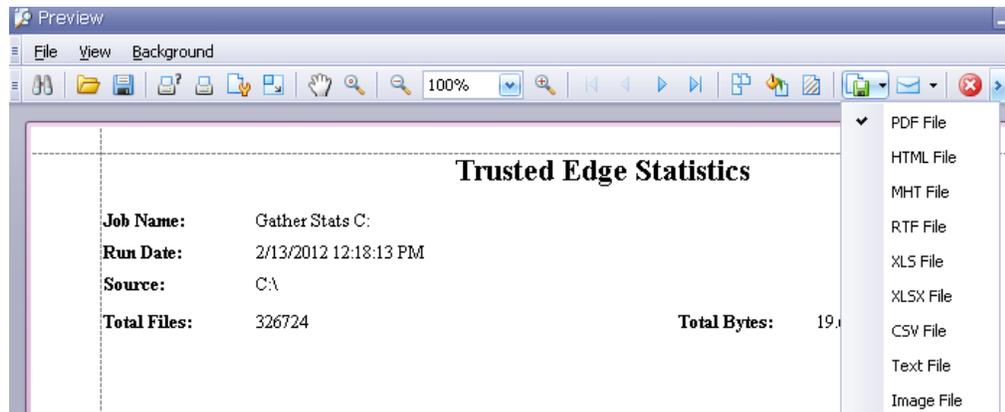
▼ To print and export all Stats report formats

1. On the **SGI Trusted Edge Main** server interface window, click  .
2. On the **Statistics Report** window, click **Print and Export**.
3. In the **Print and Export** options list, select **All Charts Print Preview**.



4. In the top header menu on the **Report Preview** window, click the arrow next to  (Export Document), and select an export file type.

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5. Complete the options for the selected export file format, and click **OK**.



6. Browse to a destination directory, and click Save.



Using the SGI Trusted Edge Server Administration Interface with a Linux Server

This chapter provides information about how to use Trusted Edge with a Linux server, including:

- Defining and configuring Trusted Edge Linux server connections
- Creating a Trusted Edge job definition for a Linux-to-Linux job
- Using Trusted Edge-created symlinks with Linux files

About Linux Connections

Before you can define Trusted Edge jobs for Linux servers, you must create connections to those Linux servers. You create these connections by clicking the Linux Connection button on the Trusted Edge top menu bar. Figure 4-1 illustrates the Linux Connection button.

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Figure 4-1: Linux Connection Button

Connection Parameters

When you create a Linux server connection, you must provide:

- A unique name for the connection within the connection list
- The host name or IP address of the Linux server
- The port used by SSH on that server
- A user name and password or a user name and private key that allows SSH connections to the defined remote Linux server

User Account

The user account that you specify may be non-root or root according to the following criteria:

- A non-root account used for the Linux Source connection must have R-X (aka 5) rights to the Source files as the defined Owner, a member of the defined group, or through Other access.
- A non-root account used for the Linux Destination connection must have RWX (aka 7) rights to the Destination files as the defined Owner, a member of the defined group, or through Other access.

During job runs, you have the option to Copy Security Information for copied/migrated files. To change an assigned group, an ordinary user must be the Owner of the Source file *and* a member of the file's newly assigned group. In other words, a non-root account cannot set the Group rights on a (destination) file if the

user does not belong to the group being set. On the other hand, the root user may change the Group access for any files.

Port Number

Trusted Edge uses SSH port 22 by default to connect to Linux servers. Therefore, if the Linux firewall is enabled, port 22 for SSH should be allowed as a Trusted Service. If the default port was altered on Linux, be sure to use the updated port number on the Linux Connection page.

You may use the `netstat -ntpl` command from a Linux terminal to view current port listings for the `sshd` process.

The screenshot shows a window titled "Linux Connection List" with a sub-header "Connections". It contains a table with the following data:

Name	Server	User	Status	Last Updated By	Last Updated On
vm-jh-cent19	10.1.200.249	root	Active	TEQA\jhowley_admin	1/21/2013 11:35:15 AM
vm-jh-cent18	10.1.200.248	root	Active	TEQA\jhowley_admin	1/24/2013 3:36:53 PM
vm-jh-cent20	10.1.200.253	root	Active	TEQA\jhowley_admin	1/23/2013 3:59:58 PM
Copy of vm-jh-cent20	10.1.200.253	bob	Active	TEQA\jhowley_admin	1/25/2013 12:29:26 PM

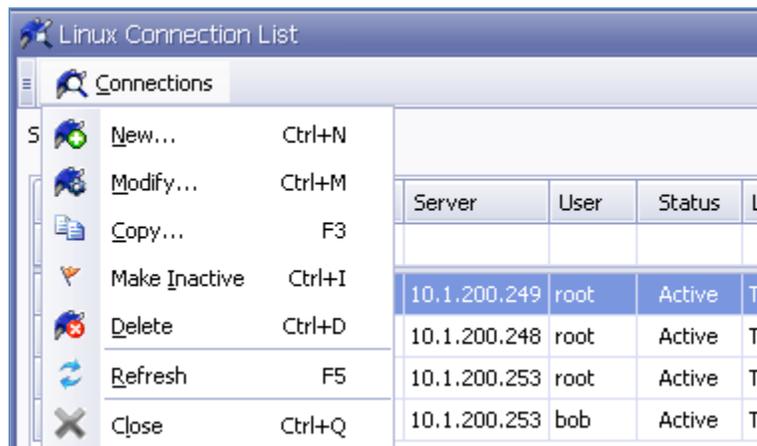
Figure 4-2: Port Listings for the sshd Process

Creating a Linux Connection

Use the following procedure to create a Linux connection. Note that the ellipses button  at the end of Source Path and Destination Path allows you to browse to the defined (remote) Linux server.

▼ To create a Linux Connection

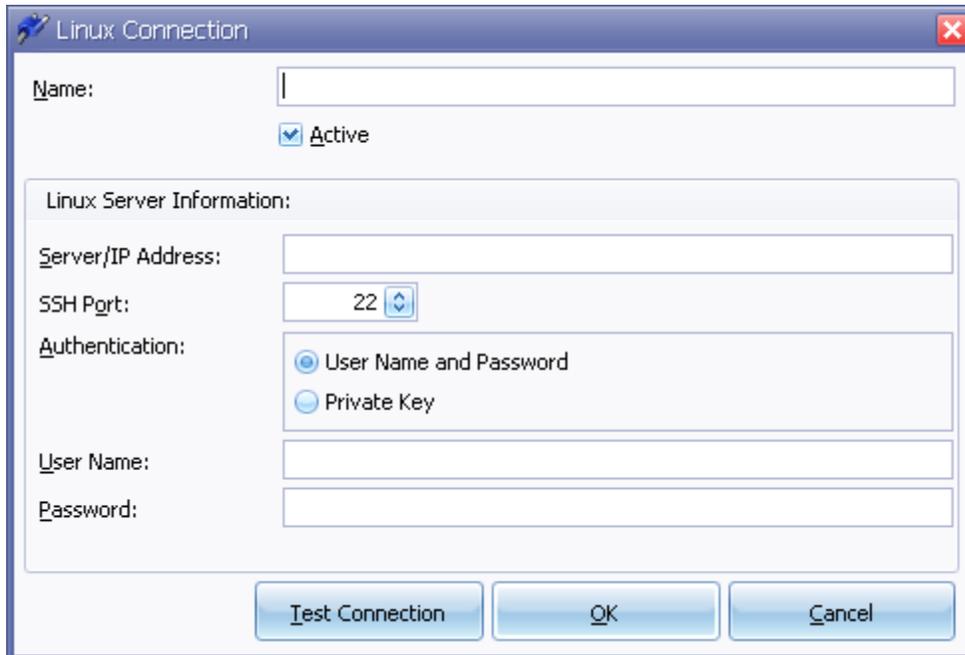
1. On the **Trusted Edge top header menu**, click the **Linux Connections button**, and then select **New**.



Once you create a connection, you can subsequently modify, copy, deactivate, or delete it. However, you may only delete Linux server connections that are not being used by existing job definitions. In addition, you can refresh the server list.

2. On the **Linux Connection** window, select the **Active** checkbox to make the connection active.
3. Type the following:
 - A unique name for the server connection
 - The Server/IP Address

- The SSH Port number (default 22)
4. Next, to establish authentication credentials, select **User Name** and **Password** or **User Name** and **Private Key**.



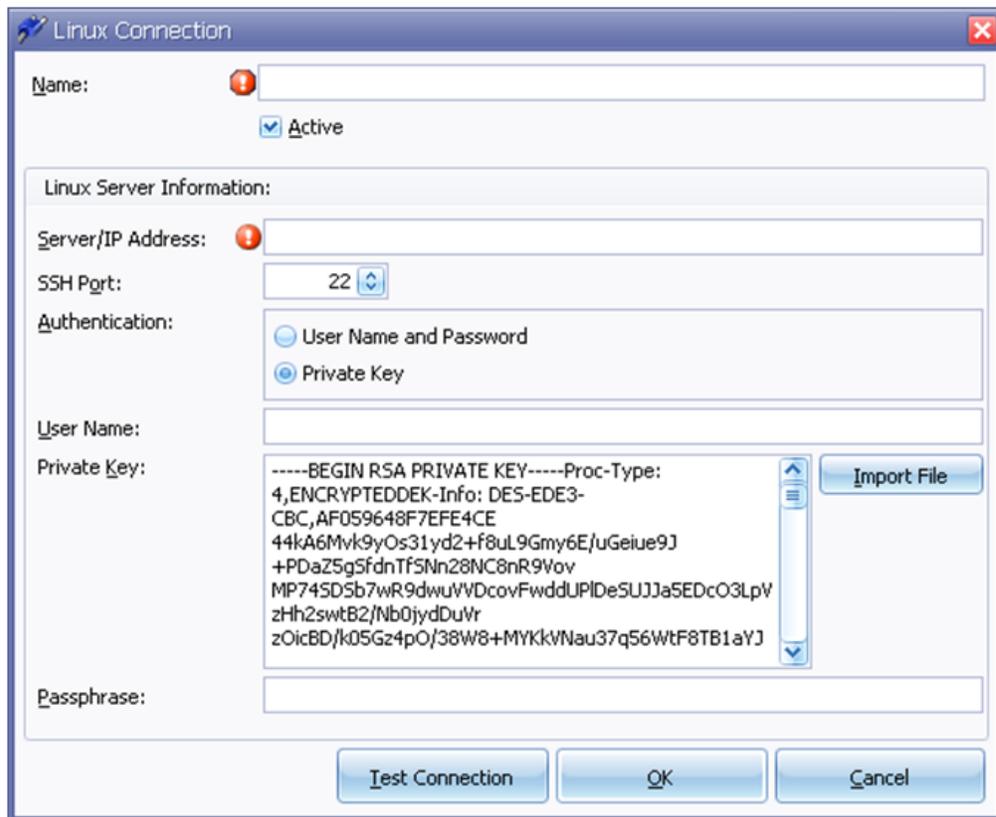
If you select the Private Key option, Trusted Edge expands the dialogue so that you can browse to and import the private key.

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- To import the private key, click **Import Key**.

The screenshot shows a 'Linux Connection' dialog box. It includes a 'Name:' field, an 'Active' checkbox, and a 'Linux Server Information:' section. Under 'Linux Server Information:', there is a 'Server/IP Address:' field with a red error icon, an 'SSH Port:' dropdown menu set to '22', and an 'Authentication:' section with radio buttons for 'User Name and Password' and 'Private Key'. Below these are 'User Name:' and 'Private Key:' fields, both with red error icons. The 'Private Key:' field has an 'Import File' button next to it. At the bottom of the dialog are 'Test Connection', 'OK', and 'Cancel' buttons.

- If the Private Key was generated along with a passphrase, Trusted Edge prompts you to enter the passphrase in the Passphrase text box.



5. Click **Test Connection** to confirm that Trusted Edge can communicate with the defined Linux server.
6. Click **OK** to save the information.

Once Trusted Edge validates the data, you may use the server connection in a Trusted Edge job definition.

About Job Definitions for Linux Servers

The process used to create a job definition for Linux servers is similar to the one used to create job definitions for Windows servers. Therefore, this section simply highlights the differences between the two job definition procedures. For more in

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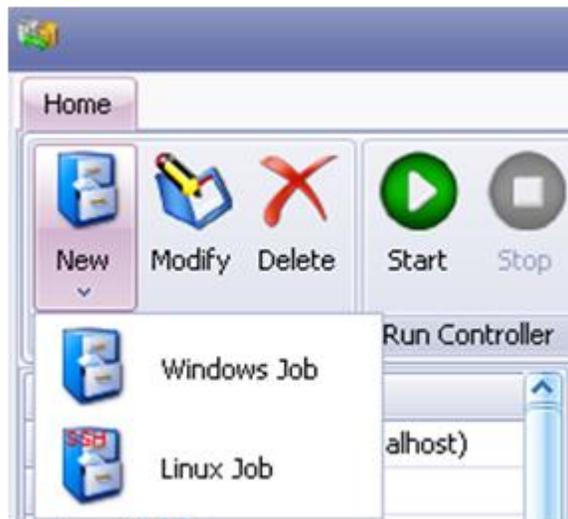
depth job definition information such as parameter and selection list definitions, refer to Chapter 3, “Using the SGI Trusted Edge Administration Interface.”

Creating a New Job Definition

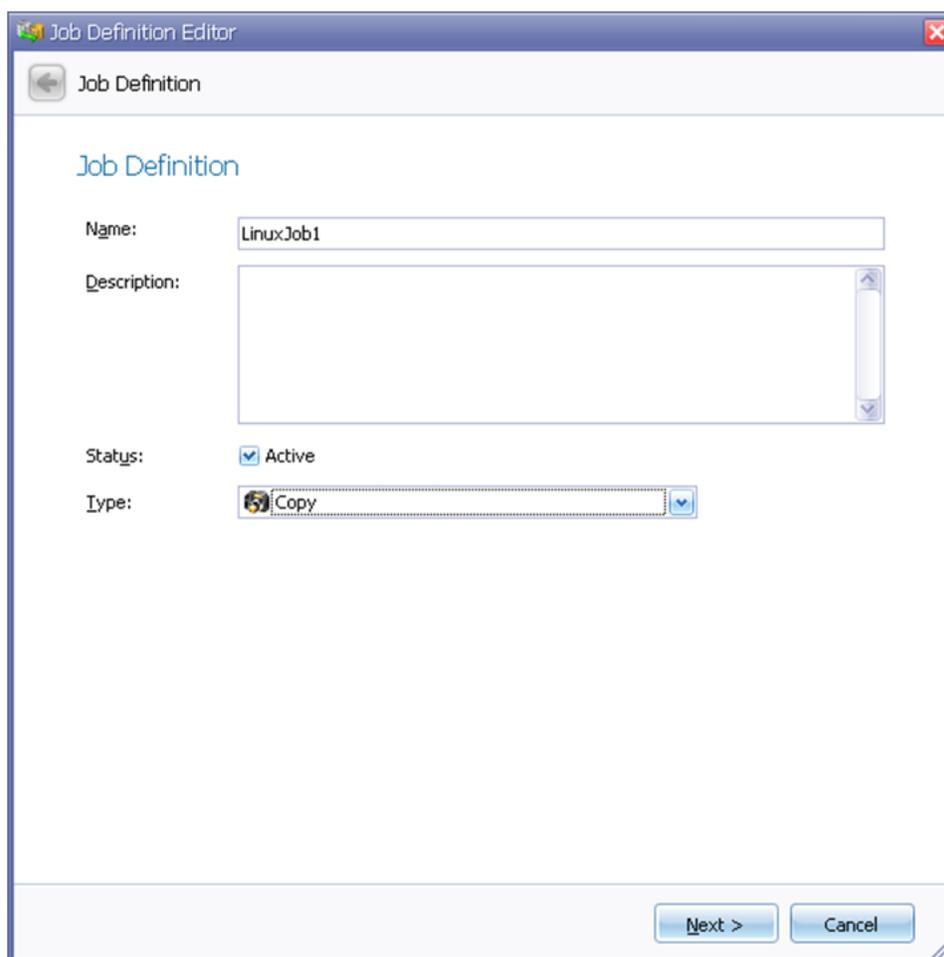
Use the following procedure to create a job definition for a Linux server.

▼ To create a job definition for a Linux Server

1. On the **SGI Trusted Edge top menu bar**, click **New**, and then select **Linux Job** to display the first Job Definition window.

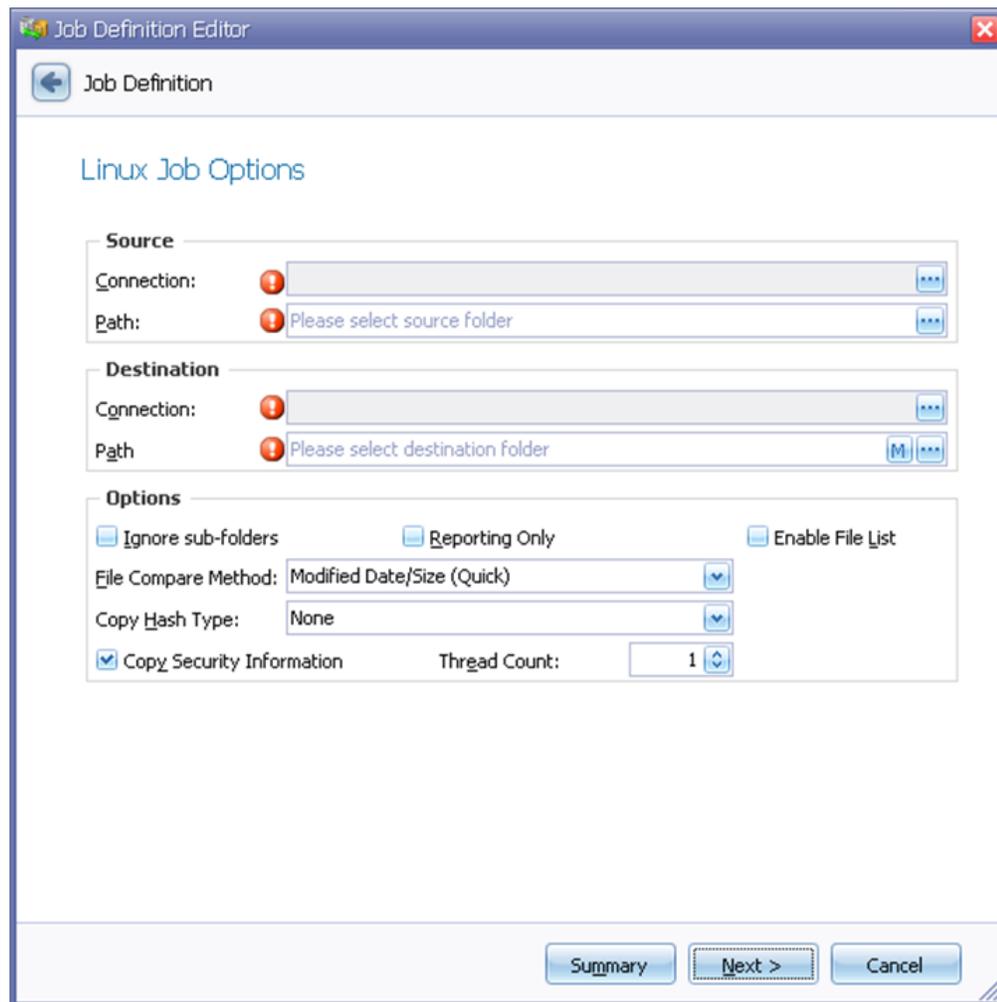


2. On the **Job Definition** window, type a unique job **Name** and **Description** (optional).
3. Leave the **Active** checkbox selected or uncheck the box to make the new job inactive.
4. Click the arrow next to **Type**, and select a job type from the Type drop down list.



5. Click **Next** to display the Linux Job Options window.

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When using multiple threads for local to local Linux based jobs, make sure that the value for MaxSessions within the /etc/ssh/sshd_config file is *at least double* the number of threads specified by the Thread Count. Otherwise, the Trusted Edge job may fail with the error “Failed to open a channel after 10 attempts.”



The SSH_MAXSESSION parameter within the C:\Program Files\SGI Trusted Edge\bin\SGI.TE.ArchiveProcess.exe.config file limits the number of SSH sessions allowed by the SSH server (based on the sshd_config file MaxSessions value).

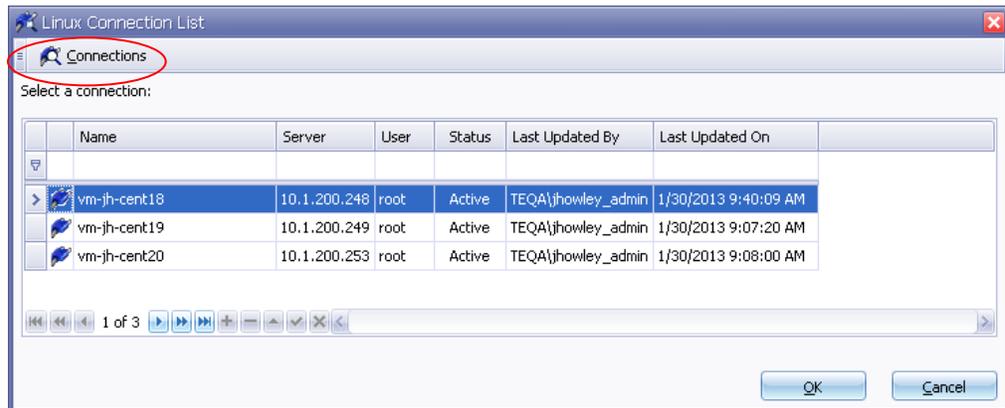
The three rules to follow when adjusting variables are:

- SSH_MAXSESSION must be less than or equal to (\leq) the sshd_config MaxSession value.
- MAX_RSYNC_COMMAND_SESSIONS must be less than ($<$) the value of SSH_MAXSESSION.
- SSH_MAXSESSION must be equal to or less than (\leq) the Thread Count value specified in the job definition.

Please refer to Appendix E, “Technical Notes,” section “Using Rsync for Local to Local Linux Copy Jobs Only,” for more information about changes you can make to the C:\Program Files\SGI Trusted Edge\bin\SGI.TE.ArchiveProcess.exe.config file.

6. On the **Linux Job Options** window, click the **ellipses (...)** next to Source Connection to browse to the Linux Server Connection List, which displays the Linux servers you defined for use by Trusted Edge.

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If the server you need does not appear in this list, click the Connections button in the upper left corner of the Linux Connection List window to add a new server definition.

7. In the server **Name** list, click the desired entry, and then click **OK** to set this server as the Linux Source server and return to the Linux Job Options window.
8. Define the path to the Linux Source server by either manually typing the path, or by clicking the ellipses button to browse the remote Linux server file system.
9. On the **Linux Job Options** window, similarly define the Destination server and Path to the desired Linux Destination server.
10. On the **Linux Job Options** window, complete the remaining parameter entries, and then click **Summary** to skip to the Completing the Wizard window, or click **Next** to proceed to the Include Filter Options window.
11. On the **Include Filter Options** window, type or select include filter options by file, folder, date, and/or attributes.
12. Click **Next**.
13. On the **Exclude Filter Options** window, type or select exclude filter options by file, folder, data, and/or attributes.
14. Click **Next**.

15. On the **Job Schedule** window, click **New** to specify scheduling information. Otherwise, click **Next** to bypass schedule information.
16. Enter the desired scheduling information, and click **OK** to proceed or **Cancel** to cancel the operation.
17. If you clicked OK, click **Next** to view the Job Summary Information on the Completing the Wizard window.
18. On the **Completing the Wizard** window:
 - Review the job summary information.
 - To change any parameters, click  to move backwards through the job definition windows.
 - Accept the default, or select the **Start Immediately** checkbox to start the job after you click Finish.
 - Click **Finish** to save the job definition.
 - Click **Cancel** to cancel the job definition.

Additional Information

Note the following:

- Linux folder names are case sensitive. So, when defining job definitions for Linux, make sure folder names are accurate. Path /ABC is completely different from path /abc.
- Include/exclude filter options for Linux jobs are File Extensions, File Names, Folder Names, Dates Modified, Date Accessed, and File Size. To skip hidden Linux files, you can simply exclude files whose names are *~ (asterisk followed by tilde).
- The Source and Destination servers do not have to reside on the same server. However, if you create a Migrate Job with symbolic links, both the Source and Destination directories **MUST** be mounted to a single server

(with the original Destination folder name) for the symbolic links to render properly. The next section explains more about symlinks.

About Trusted Edge and Symbolic Links (Linux)

When Trusted Edge creates symbolic links, the defined Source directory initially holds whole files. Trusted Edge copies the source files in their entirety to the Destination folder, and then creates symbolic links to those copied files within the source folders. The symbolic links in the source folders resolve to the files in the destination folders.

Depending on how you configure a Linux migration job, Trusted Edge can create “local-to-local” symbolic links or “local-to-remote” symbolic links.

- In the local-to-local scenario, both the Source and the Destination directories are native to or mounted to a single server.
- In the local-to-remote scenario, you mount a remote folder to the local Source server using the Mount Path and Export path values specified in the Trusted Edge administration interface Linux Job Options window.

Local-to-Local Scenario

Figure 4-3 illustrates a sample configuration for a local-to-local (mounted) migration job. Notice that both the Source connection and Destination connection servers are the same. The destination path, /ABCD, is the locally available mount path for a folder from a remote server.

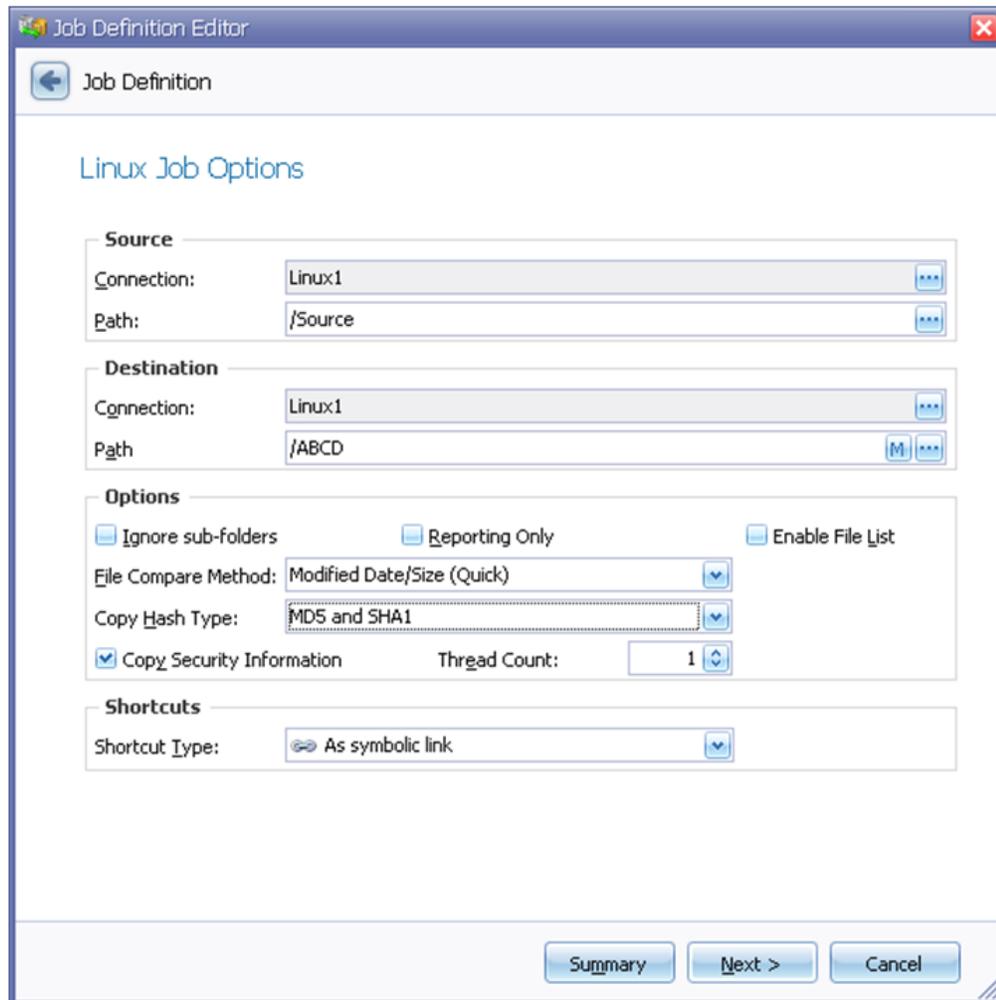
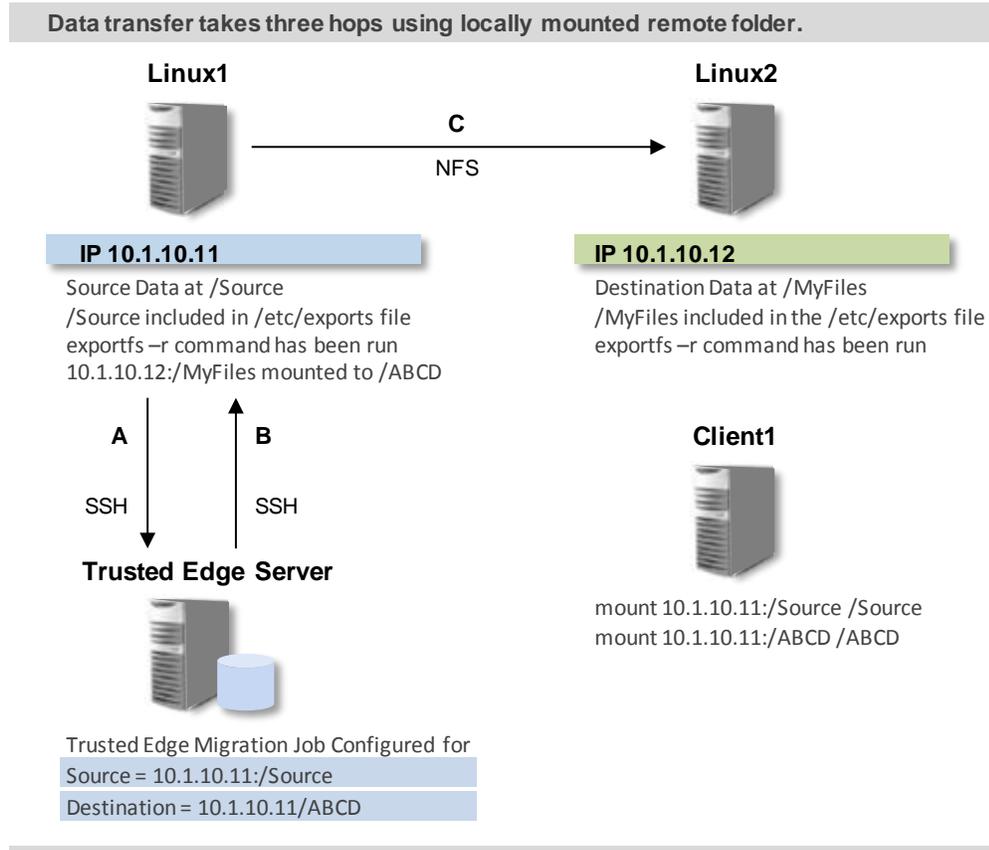


Figure 4-3: Local-to-Local Configuration

In the local-to-local scenario, the data transfer occur over three hops (A, B, and C) to the destination directory as depicted Figure 4-4.



Local-to-Remote Scenario

Figures 4-5 and 4-6 depict a sample Linux Job Options configuration and explanatory drawing using Mount Path/Export Path to set up StorHouse/RFS for a local-to-remote migration job. In this example, the Source and Destination servers are different. The path, /FileServerData, is the local (Source machine) mount path for the destination /RFS folder on the StorHouse/RFS server.

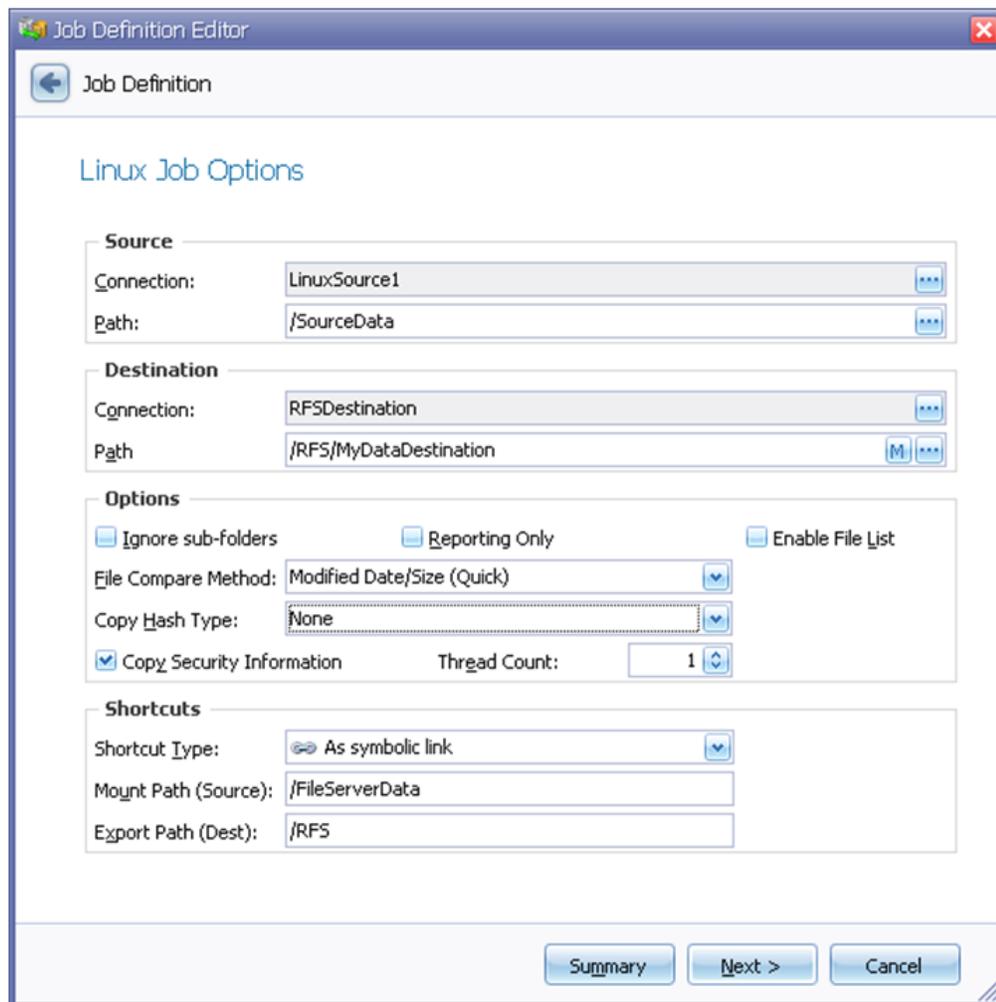


Figure 4-5: Local-to-Remote Configuration

Note the following:

- When the Source and Destination servers are different (local-to-remote configuration), the Shortcuts section of the Linux Job Options window contains two additional text boxes: Mount Path (Source) and Export Path (Dest).
- The Destination Path must begin with the Export Path folder. It can be the same exact path or a subfolder of the Export Path.
- By definition, Mount Path (Source) is the Source connection server path that points to the Destination connection.
- The Export Path (Dest) is the Destination connection server path that was exported and mounted on the Source connection server.

When creating a symbolic link, Trusted Edge replaces the Export Path (Dest) with the Mount Path (Source) in the actual target copy path that starts with the Destination Path.

Figure 4-6 illustrates a typical mount command and demonstrates the values required for the symbolic link Mount Path (Source) and Export Path (Dest).

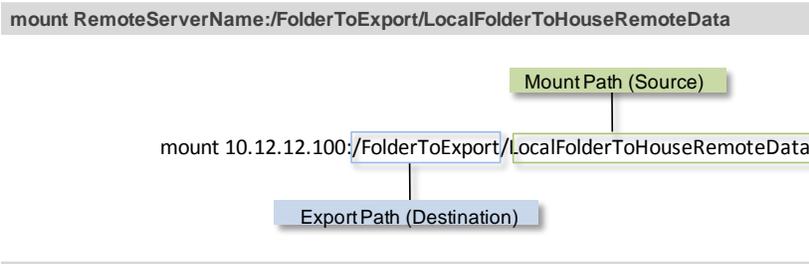


Figure 4-6: Typical Mount Command

The Destination Path must be same as or a subpath of the Export Path (Dest) to ensure that the symbolic link can be resolved correctly.



Note: The Trusted Edge job run *does not* execute the mount command or verify the mount paths. As Trusted Edge administrator, it is your responsibility to configure mounts correctly to resolve the links.

Here is how Trusted Edge creates the symbolic link for the sample source file `/SourceData/folder1/File1.txt`.

1. The file is copied to RFSERVER at */rfs_export/UserDir/folder1/File1.txt*.

The italicized text is the Export path (Dest).

2. The Symbolic link is created at the source and its Target Path is set to */RFS/UserDir/folder1/File1.txt*

The italicized text is Mount Path (Source).

In terms of the actual data transfer, using Mount Path/Export Path takes only two hops (A and B) to migrate the data as illustrated in Figure 4-7.

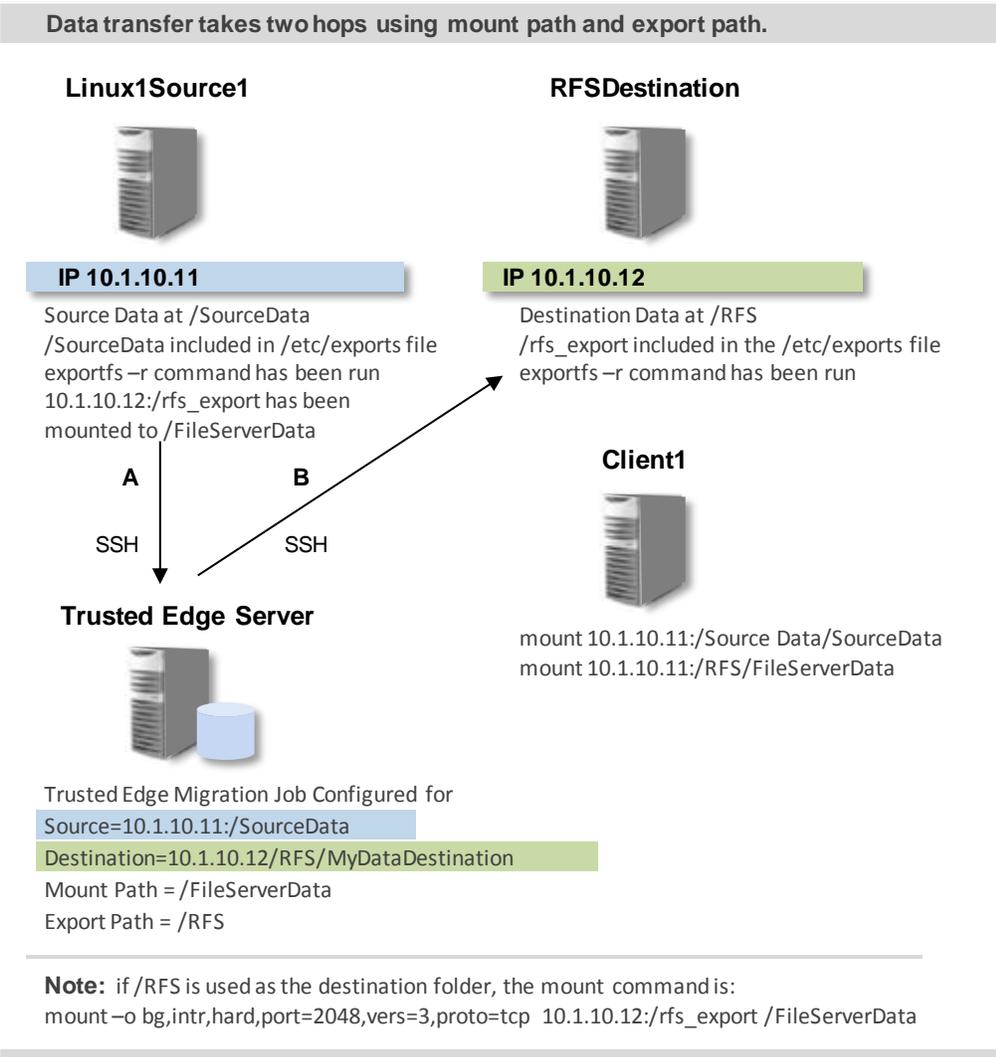


Figure 4-7: Local-to-Remote Configuration

To access the symbolic links created in Figure 4-7, remote clients must mount the LinuxSource1:/SourceData folder to a local folder (ideally also named /SourceData). At that point, the links are not valid. To validate the links, remote clients must then

mount the RFSDestination, which is /rfs_export, to a local /FileServerData folder. This action makes the target data present in the expected path.

By using the Mount Path/Export Path options (rather than performing a local-to-local migration), you can share the Destination path under a name that differs from the actual path name. The Mount Path is essentially a folder name mask, and the Export Path is the actual destination server path.

Consider this scenario:

- SRC1 and DEST2 are the Source and Target servers, respectively.
- DEST2 contains these folders: /Folder1/Folder2/A/B/C.

Depending on how you prefer to set the configuration, you can map the Export Paths in several combinations as shown in Table 4-1 below.

Table 4-1: Export Path Combinations

Mount Path (The folder where the remote data is actually mounted to the Source server)	Export Path (The actual physical path on the Destination server)
/AAA	/Folder1/Folder2
/BBB	/Folder1
/CCC	/Folder1/Folder2/A/B
/DDD	/Folder1/Folder2/A/B/C

For the first mount path (/AAA), remote clients would mount /AAA rather than /Folder1/Folder2.

By using the Mount Path and Export Path, you can confirm (from the Source machine) that the symbolic links are working. The links are viable on the local server because the paths are local to the Source machine.

Additionally, using a Mount Path and an Export Path limits the number of hops the data must take during processing. This minimizes network traffic and increases the speed of migration job runs.

Exporting Folders from a Linux Server

From a purely Linux perspective, to export folders on the Source server, edit the `/etc/exports` file on the Source server so that it includes entries for the Source and Destination directories.

1. Through a terminal, run:

```
vi /etc/exports
```

2. Then add an entry for the Source folder:

```
/Source *(rw,no_root_squash)
```

3. Or you could limit the exposure of the export by adding an entry like this:

```
/Source 10.1.200.123
```

4. Save changes to this file.

Step 2 above will allow any (*) client to mount the local `/Source` folder with Read and Write permissions. In addition, the remote root account will have its normal root account permissions.

Step 3 above allows only the client at `10.1.200.123` to mount the directory with Read access and no special root account permissions. Similarly, you must export destination directories for symbolic links.

5. Make the changes available to client machines by running:

```
exportfs -r
```

Mounting Remote Folders to a Local Linux Client Machine

When mounting remote folders to a local client machine, the intended mount point directories must exist locally before you can mount to them. For example, if the intention is to mount the remote `/Source` folder to a local `/ZZZ` folder, `/ZZZ` must exist before issuing the mount command.



The syntax to mount the folder is:

```
mount 10.1.99.100:/Source /ZZZ
```

The previous example mounts the folder `/Source` from the machine with the IP address `10.1.99.100` to the local folder `/ZZZ`.

Use similar syntax to locally mount the remote Destination directory:

```
mount 10.1.99.100:/Destination /Destination
```

From a remote client, the Source folder can be mounted to any folder name, although for clarity, SGI recommends that you mount the Source on the remote client with the same folder name. The Destination folder must be mounted on the remote client with the same name as the Destination folder on the source machine because a symbolic link created by Trusted Edge will be looking for a precise path to the destination file. If the exact destination path does not exist, the symbolic links will be broken and will not resolve to open the entire target file.

Automatically Mounting Remote Servers on Bootup

Use the following procedure to automatically mount remote server folders on bootup to an existing client source folder.

▼ To automatically mount remote server folders on bootup to an existing client source folder

1. On the remote servers, add an entry to the `/etc/exports` file that lists the folder that will be exported. For example, to export the folder `/Auto` from a server at `10.1.2.3`, include the following entry in that server's `/etc/exports` file:

```
/Auto          *(rw,no_root_squash)
```

2. Then, on the same server machine, make the export immediately available by running the following command from a terminal prompt:

```
exportfs -r
```

■ ■ ■ ■ Chapter 4 – Using the SGI Trusted Edge Server Administration Interface with a Linux Server

3. From the client machine, add an entry to the bottom of the `/etc/fstab` file so that the remote export is mounted to an existing local folder.

```
10.1.2.3:/Auto /LocalMount nfs4 defaults 0 0
```

In this example:

- The remote server IP address is 10.1.2.3.
- The shared/exported folder is `/Auto`.
- The local folder that will mirror the `/Auto` folder is `/LocalMount`.
- The file system is `nfs4`.
- The “defaults” setting describes the options for the mount. The first 0 implies that the file system does not need to be dumped. The second 0 implies that no file system check will be done on boot.

For more information, run `man fstab` from a terminal prompt or visit:

<http://en.wikipedia.org/wiki/Fstab>

If you have Trusted Edge create a new Destination folder during job runs, that folder will have permissions assigned based upon the account used by the Linux connect to that server.



Using the SGI Trusted Edge Enterprise Edition Console

This chapter explains how to configure and use the SGI Trusted Edge Enterprise Edition console.

About the Enterprise Edition Console

The SGI Trusted Edge Enterprise Edition console enables you to manage multiple Trusted Edge servers from a single graphical user interface. Your customer license agreement determines the number of servers you can manage through this interface.

You determine whether a given Trusted Edge server has Enterprise Edition console privileges and/or can be managed remotely through the Enterprise Console during software installation (refer to Chapter 2).

- Selecting the **Enterprise Administration Console** checkbox during installation enables you to use the Enterprise Edition console on the local Trusted Edge server to remotely manage multiple SGI Trusted Edge servers from a single

user interface. The servers eligible for management must be enabled for remote administration. (See next bullet.)

- Selecting the **Enable Remote Administration** checkbox during installation enables the local instance of SGI Trusted Edge to be managed remotely from a server that can access the Enterprise Edition console.

If your local server is Enterprise console-enabled, SGI Trusted Edge will display the Enterprise Edition console interface when you start Trusted Edge. You can switch to the Trusted Edge server administration interface for the local server by highlighting the server name and pressing the F8 key or double-clicking the server name in the Enterprise Edition Main window.

Enterprise Edition Console Main Window

The Enterprise Edition console Main window presents a view of all Trusted Edge servers under central management. Initially, by default, the Main window displays only the local Trusted Edge server. Figure 5-1 illustrates this window.

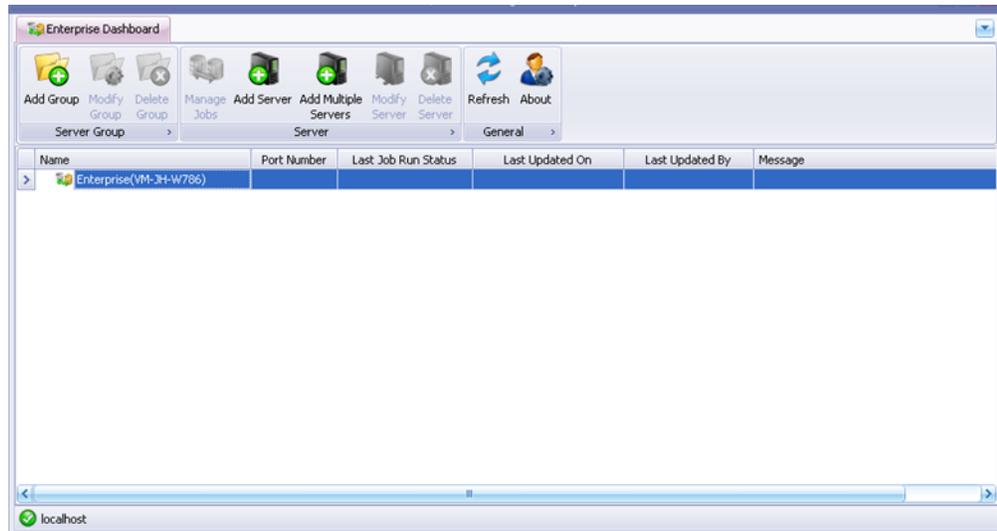


Figure 5-1: SGI Trusted Enterprise Console Main Window – Local Server

It is your responsibility to add the Trusted Edge servers to be centrally managed. As you add servers, you can logically organize them into a hierarchical folder (group) structure for ease of use. (Note that this document uses the words “folder” and “group” interchangeably.)

Figure 5-2 illustrates the Trusted Edge Main Window with multiple servers added.

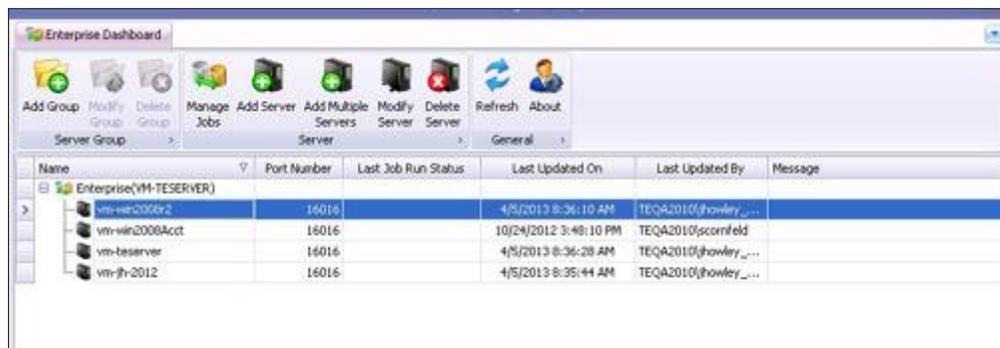


Figure 5-2: Trusted Edge Enterprise Edition Main Window – Multiple Servers

About the Main Window Header Bar

From the Main window header bar, you can add, modify, or delete a group (folder); add, modify, or delete a server; manage jobs (launch a remote server); add multiple servers; and refresh the interface display. You can also click the About button to display software release information and review/change license information.

About the Enterprise Dashboard

You can configure the Enterprise Edition Main window with separate tabs to represent each server under management. Here’s how it works. If you click a server name and then click Manage Jobs in the Main window header bar, SGI Trusted Edge launches the Trusted Edge server administration interface for the selected server and then creates a tab for that server on the Enterprise Dashboard. You can switch between server tabs and the Enterprise Dashboard view.

Using the server list in Figure 5-2, Figure 5-3 illustrates the resulting display if you click server vm-win2008r2, and then click Manage Jobs. Trusted Edge launches the

server administration interface for server vm-win2008r2 and creates a tab for that server on the Enterprise Dashboard.

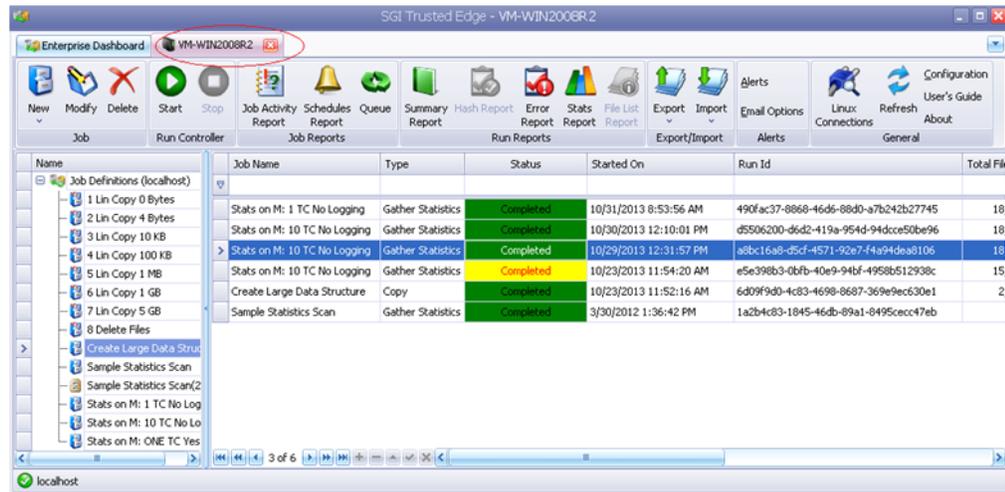


Figure 5-3: Enterprise Dashboard with a Tab for Server vm-win2008r2

To return to the Enterprise Dashboard view of all servers under management, simply click Enterprise Dashboard.

Arranging Enterprise Dashboard Windows

You can arrange Enterprise Dashboard windows several ways. For example, you can float any server window as a unique independent window or arrange server windows to the top/bottom/left/right of the Main Enterprise Administration window.

To arrange server windows, right-click on any open server tab as illustrated in Figure 5-4.



Figure 5-4: Right-Click Dropdown List

To bring any open server window to the forefront, simply click the arrow in the upper right hand corner of the Main Enterprise Administration window.

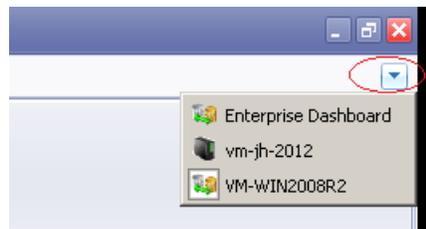


Figure 5-5: Bringing Open Servers to the Forefront

About the Main Window Display

The Main window display contains five columns:

- Name – Name and folder structure of the SGI Trusted Edge servers under management
- Port Number – Port number of the Trusted Server as defined during installation

- Last Job Run Status – The status of the last job run on the server. Valid status values are:

Status Value	Description
In Progress Job Run	Job in progress paused.
No data available	Job is stopped or no job runs are available to determine the status.
Offline	Server is unable to connect.
Status Retrieval Error	Offline error.
Success	Job ran successfully. (Displayed in green.)
Success with Warnings	Job ran successfully but with warnings. (Displayed in yellow.)
Failed	Job failed execution. (Displayed in red.)

- Last Updated On – Date and time the Enterprise Edition user interface display was last refreshed
- Last Updated By – User ID of the administrator who last refreshed the Enterprise Edition user interface display

Figure 5-6 illustrates the Main window with the job status display.

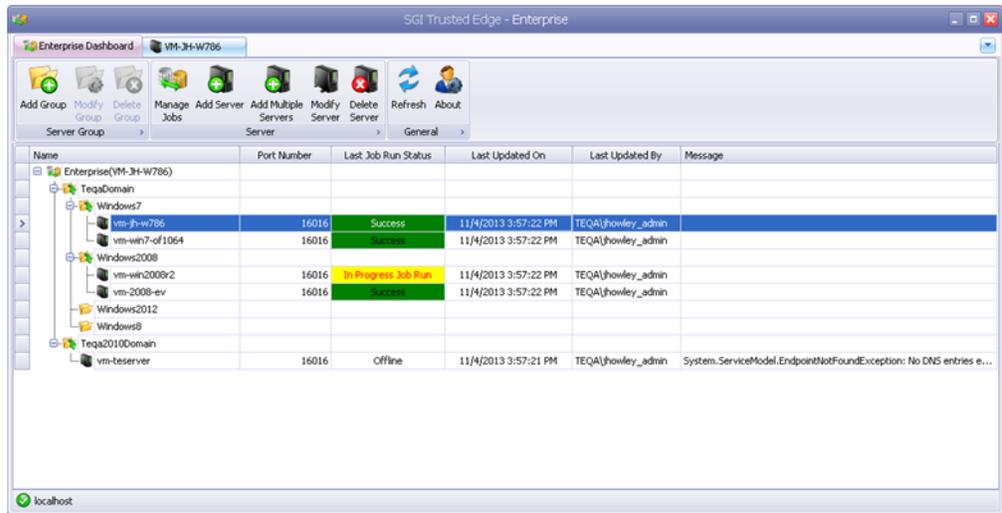


Figure 5-6: Main Window Job Status Display

Adding and Deleting Groups and Servers

The following procedures explain how to use the Enterprise Edition to add and delete servers and groups.

Adding a Group

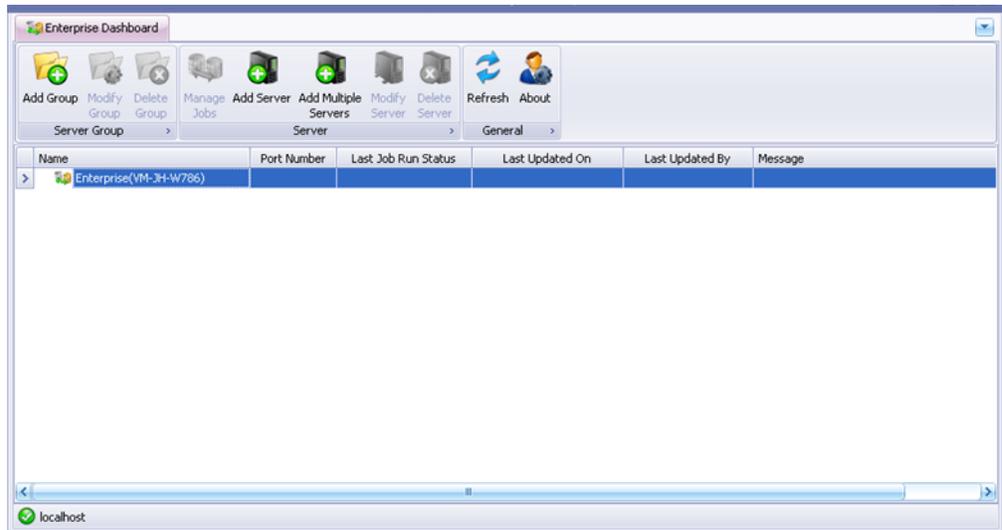
Before you add a group, highlight the folder or server that will be the top level for the group. Highlighting is necessary to ensure Trusted Edge adds the group to the proper level in the tree structure.

In the following example, the new group will appear in the Name display under the parent server Enterprise(VM-JH-W786).

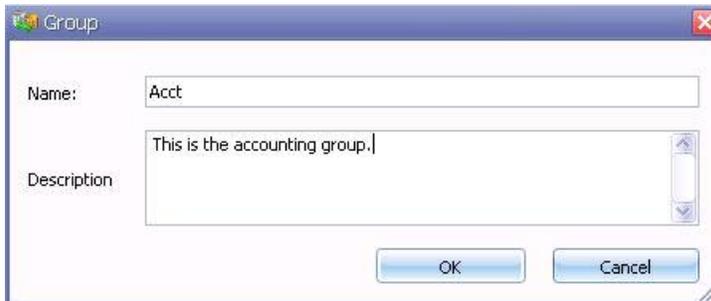
Use the following procedure to add a group.

▼ To add a group

1. Highlight the folder or server that will be the parent for the new group.

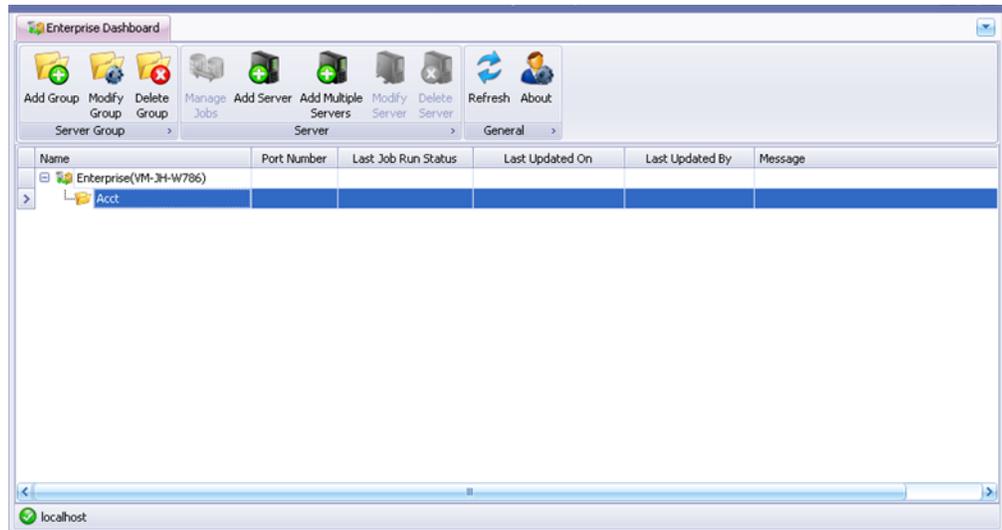


2. From the Trusted Edge **Enterprise Console Main** window, click **Add Group** in the top header bar. The Group window displays. Alternatively, you can right-click the server name and select **Add Group**.
3. In the **Name** text box, type the name of the new group.
4. In the **Description** text box, type an optional description of the group.



5. Click **OK**.

You have now created a group called Acct.

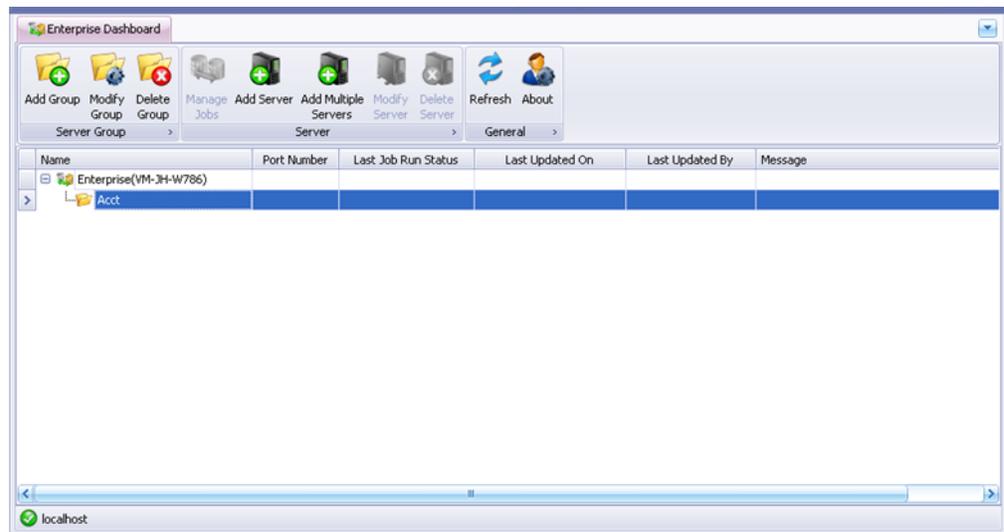


Adding a Server

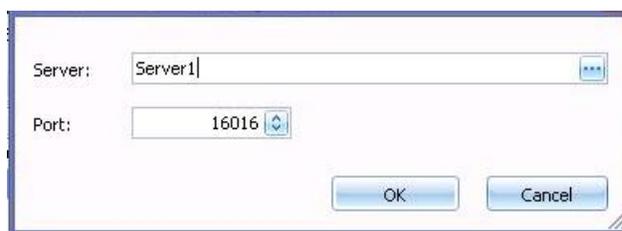
Use the following procedure to add a server to a group. In this example, the server will appear below the parent group Acct.

▼ To add a server to a group

1. Highlight the group where the server belongs (in this example, Acct).

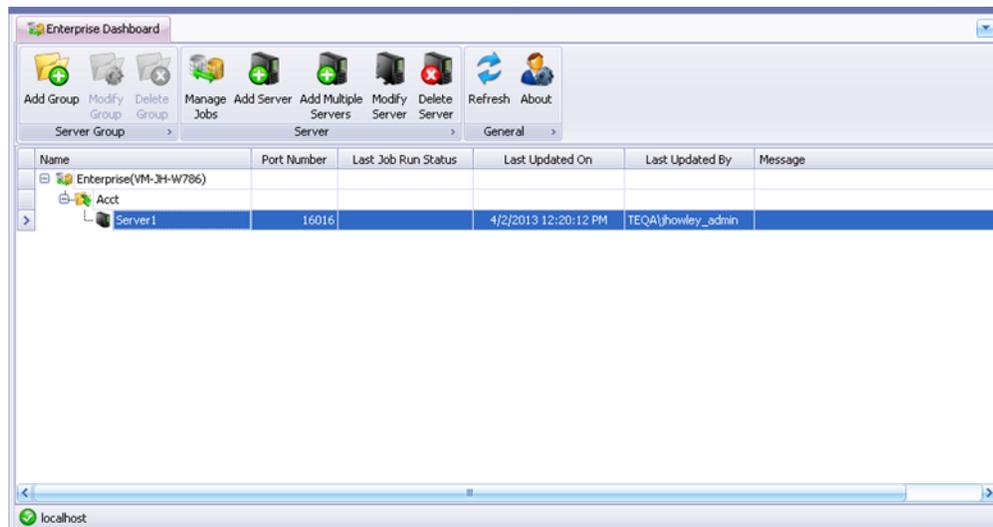


2. In the **Main** window header bar, click **Add Server**. The SGI Trusted Edge Server window displays. Alternatively, you can right-click the group name and select **Add Group**.
3. In the **Server** text box, type the server name or IP address.
4. In the **Port** text box, type a port number or accept the default port 16016. You can also click  to increase or decrease the value of the existing port number.



5. Click **OK**.

You have now added a server called Server1 to the Acct group.



Once you add a remote or local server to the Name list, you can double-click the server name to launch the administration interface for that server. From this interface, you can perform SGI Trusted Edge administrative functions such as creating job definitions, generating reports, and migrating/coping files.

Note: Highlighting a server name and then pressing the F8 key will also launch the SGI Trusted Edge user interface.

Deleting a Group

Use the following procedure to delete a group from the Name list. You can only delete empty groups (those containing no servers).

▼ To delete a group

1. On the **Enterprise Edition Console Main** window, click the group you want to delete and then click **Delete Group** in the main header bar. (You can also right-click the group name, and select **Delete Group**.)
2. Click **Yes** in response to the message, “Are you sure you want to delete <group name)?”

Deleting a Server

Use the following procedure to delete a server from the Name list.

▼ To delete a server

1. On the **Enterprise Edition Console Main** window, click the server you want to delete and then click **Delete Server** in the main header bar. (You can also right-click the server name, and select **Delete Server**.)
2. Click **Yes** in response to the message, “Are you sure you want to delete <server name)?”

Performing Remote Administration on a Trusted Edge Server

From a server with access to the Enterprise Edition Console user interface, you can manage your local or multiple remote Trusted Edge servers as long as those servers were installed with the Enable Remote Administration checkbox selected.

For example, assume your local Trusted Edge server (VM-WIN2008R2) was installed with both Enable Remote Administration and Enterprise Administration Console enabled. Figure 5-7 illustrates the Enterprise Edition Console user interface for this server. Note that in this example configuration, there is one remote server (vm-jh-w786) under management.

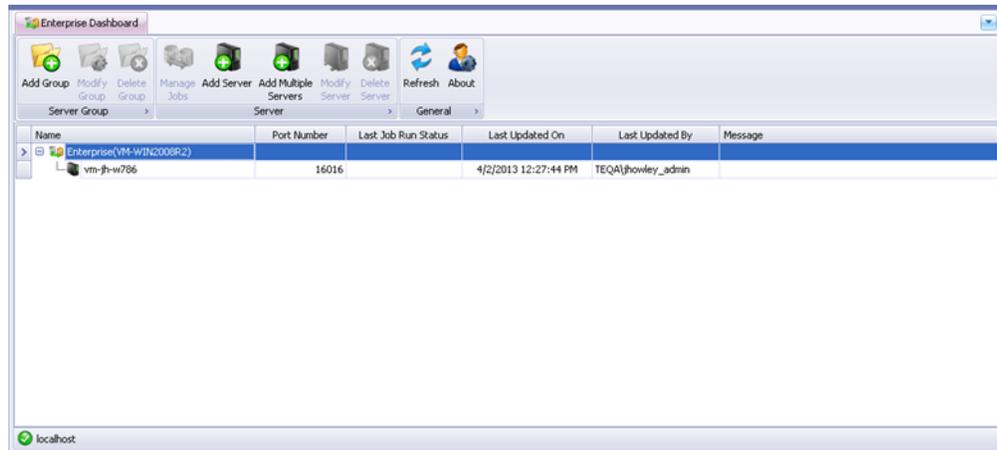


Figure 5-7: Example Remote Server (vm-jh-w786) under Management

To switch from the Enterprise Edition console view to the SGI Trusted Edge server administration interface for local server VM-WIN2008R2, double-click Enterprise(VM-WIN2008R2) or highlight the server name and press F8.

Figure 5-8 illustrates the resulting display, which is the server administration interface for server VM-WIN2008R2.

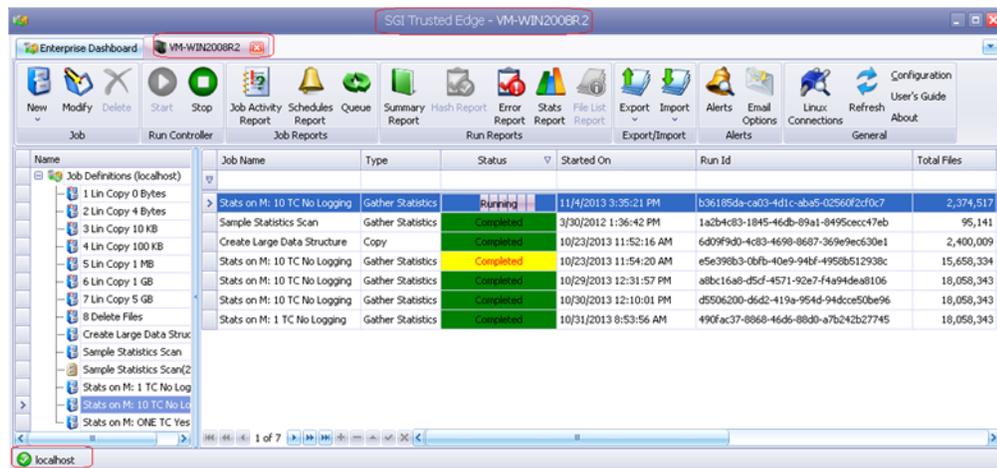


Figure 5-8: Server Administration Interface for Server VM-WIN2008R2

Notice the Host button at the lower right corner of the window. This button tells you the name of the server you are currently managing.

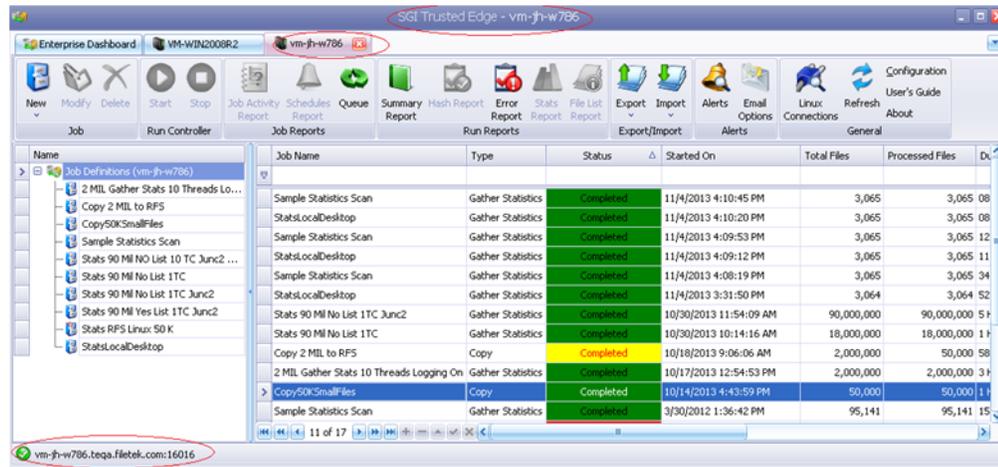


Figure 5-9: Trusted Edge User Interface for Server vm-jh-w786

When connected to a remote user interface, SGI Trusted Edge refreshes that interface every 30 seconds.



Configuring SGI Trusted Edge Email Alerts

This chapter explains how to use the SGI Trusted Edge email alert feature to:

- Enable email alerts and send a test email message
- Create a new email alert
- Create a new Start Job definition based on an event trigger
- Run a command or PowerShell based on an event trigger
- Initiate a workflow based on a job trigger

In addition, this chapter contains sample message formats for Microsoft Exchange, Hotmail, Yahoo, and Gmail email server configurations.

About Email Alerts

With SGI Trusted Edge, you can send email alerts to one or more email recipients based on run events (for example, job started, stopped, or completed). In addition, you can configure job run events to trigger the start of a new job or initiate a command line application, a PowerShell Script, or a custom workflow.

Note the following:

- Alerts will process SGI Trusted Edge scheduled jobs as well as manually started jobs.
- You can set an alert to inactive so that it does not run. You may subsequently activate the alert at any time.
- Only active alerts perform their configured action.

You access the email alerts feature from the Alerts section of the SGI Trusted Edge main header tool bar. This section has two buttons: Alerts and Email Options. First you access the Email Options button to configure your email server settings. Once you have completed email server configuration, you access the Alerts button to create/modify email alerts.

Figure 6-1 illustrates the main header tool bar with the Alerts section highlighted in red.



Figure 6-1: Header Tool Bar with Alerts Section Highlighted in Red

Configuring the Email Server

Prior to defining email alerts, you must configure the email server that will be used to send the alerts. For Microsoft Exchange email, you must also configure a Receive Connector.

To access the SGI Trusted server configuration page, click Email Options in the main header tool bar. Figure 6-2 illustrates the Email Options configuration page.

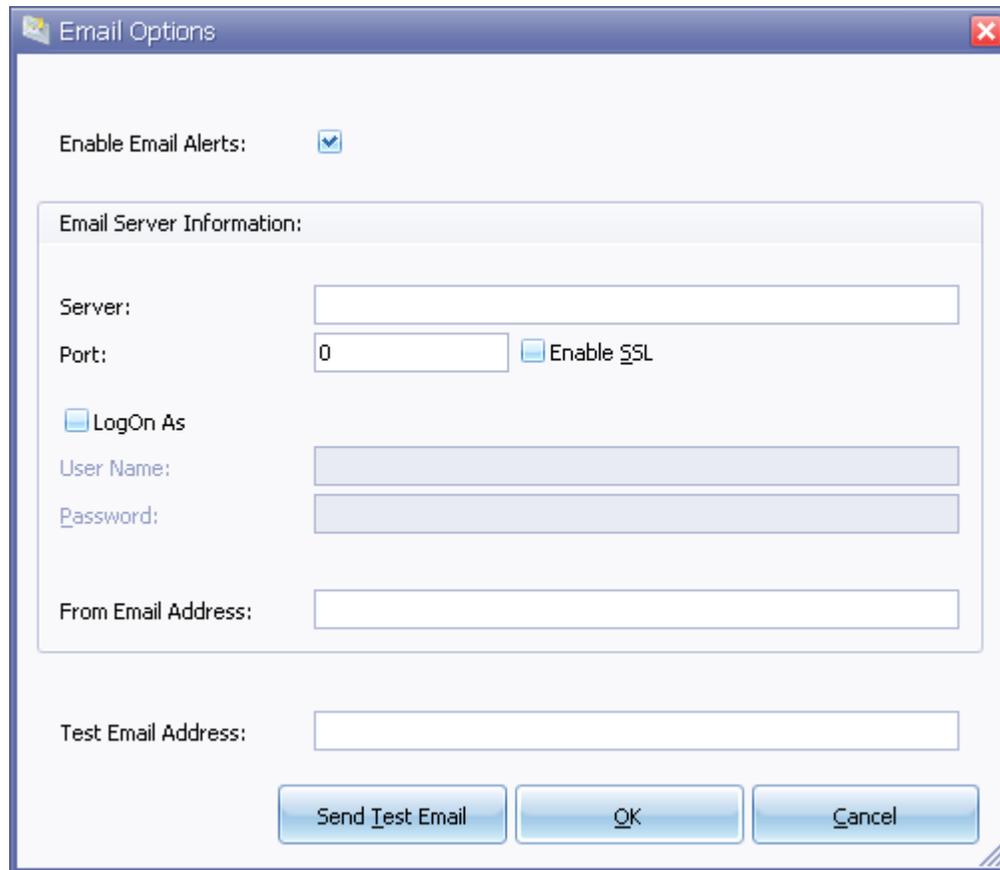


Figure 6-2: Email Option Configuration Page

Table 5-1 defines the fields on the Email Options Configuration page.

Table 6-1: Email Options Configuration Page

Field	Definition
Enable Email Alerts	Checkbox that determines whether email alerts are enabled. Select this checkbox to enable alerts. Leave it blank to disable alerts.

Server	<p>Name (or IP address) of the email server that will forward messages to the recipient account. Normally this account will be your in-house Exchange server, but you may also use the name of the SMTP server for an external email service such as Gmail, Hotmail, or Yahoo.</p> <ul style="list-style-type: none"> ■ The default Port number for an SMTP server is 25. ■ The default port number for an external mail server will vary. ■ If required by the mail server, select the checkbox to Enable SSL for added security.
Log On As	<p>Normally used to identify the external email account name and password for external email sources.</p> <ul style="list-style-type: none"> ■ Some Exchange servers may require Log on As credentials to be specified (in addition to configuring a Receive Connector) to avoid spam. ■ Typically within Exchange environments, the Log On As field remains empty, and mail will be sent via the Exchange Receive Connector to the test email address. Refer to the section, “Configuring a Receive Connector,” for more information.
From Email Address	The account shown in the alert message as the sending email address. Trusted Edge does not validate this email address.
Test Email Address	The destination address for the email (recipient address).
Send Test Email Button	Clickable button to send a generic test email message.

Configuring a Receive Connector within Exchange 2007/2010

Use the following procedure to configure a Receive Connector in Exchange 2007/2010. You must configure this connector to forward email from Trusted Edge to the desired recipient.

▼ To configure a Receive Connector within Exchange 2007/2010

1. Open the **Exchange Management** console.
2. Browse to **Server Configuration** → **Hub Transport**.



3. At the bottom of the page, in the white space under Receive Connectors, right click and select **New Receive Connector**.
4. Assign a name to the connector or keep the default **(Custom) for Intended Use**.
5. Click **Next**.
6. On the **Local Network Settings** page, add the FQDN of the local Exchange server.
7. Click **Next**.
8. On the **Remote Network Settings** page, highlight the default entry **(0.0.0.0-255.255.255.255)**, and click **X** to delete it.
9. Click **Add**.
10. Type the IP address of the SGI Trusted Edge Server.
11. Click **Next**.
12. On the **New Connector** page, click **New**.
13. On the **Completion** page, click **Finish**.
14. Right click the newly created connector, and select **Properties**.
15. Click the **Permission Group** tab, and allow Anonymous users to connect to this receive connector.
16. Click **OK**.

After completing this procedure, the SGI Trusted Edge server will be able to send SMTP email alerts through Exchange to the email address specified in the Test Email Address field.

Sending a Test Email

Once you have configured your Exchange server or external SMTP server to forward email from SGI Trusted Edge, click the **Test Email** button on the Email Options page to send a generic test message. If the recipient receives the message, you have configured the Email Server parameters correctly. Figure 6-3 illustrates a sample **Test Email**.

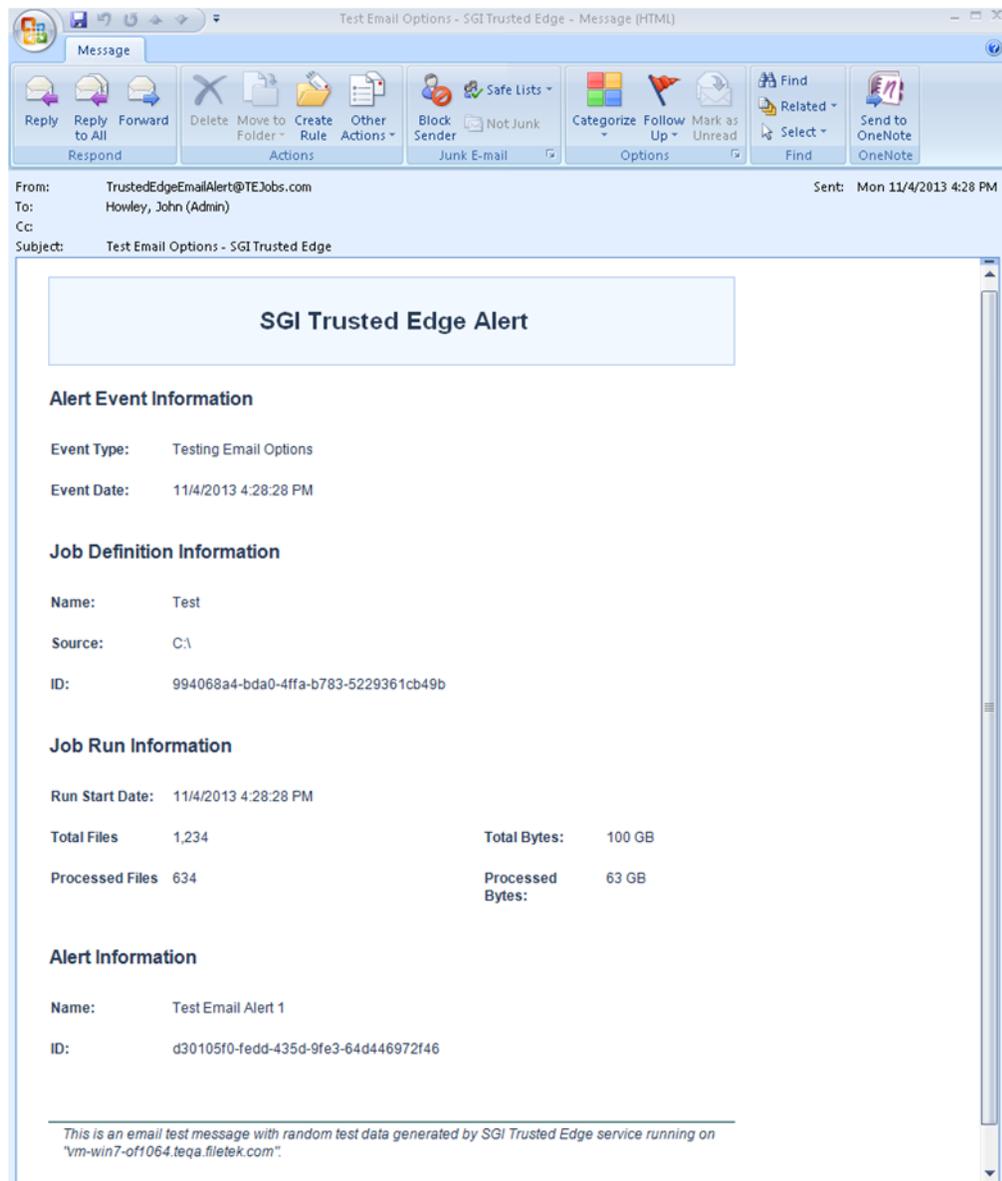


Figure 6-3: Sample Test Email

If the recipient does not receive the email message, there is a configuration problem with the Email Server settings as indicated by the message in Figure 5-4.



Figure 6-4: Configuration Error Message

Example Email Screen Shots

This section contains example standard alert and server configuration email.

Standard Alert

Figure 6-5 illustrates a standard email alert based on a deleted job definition.

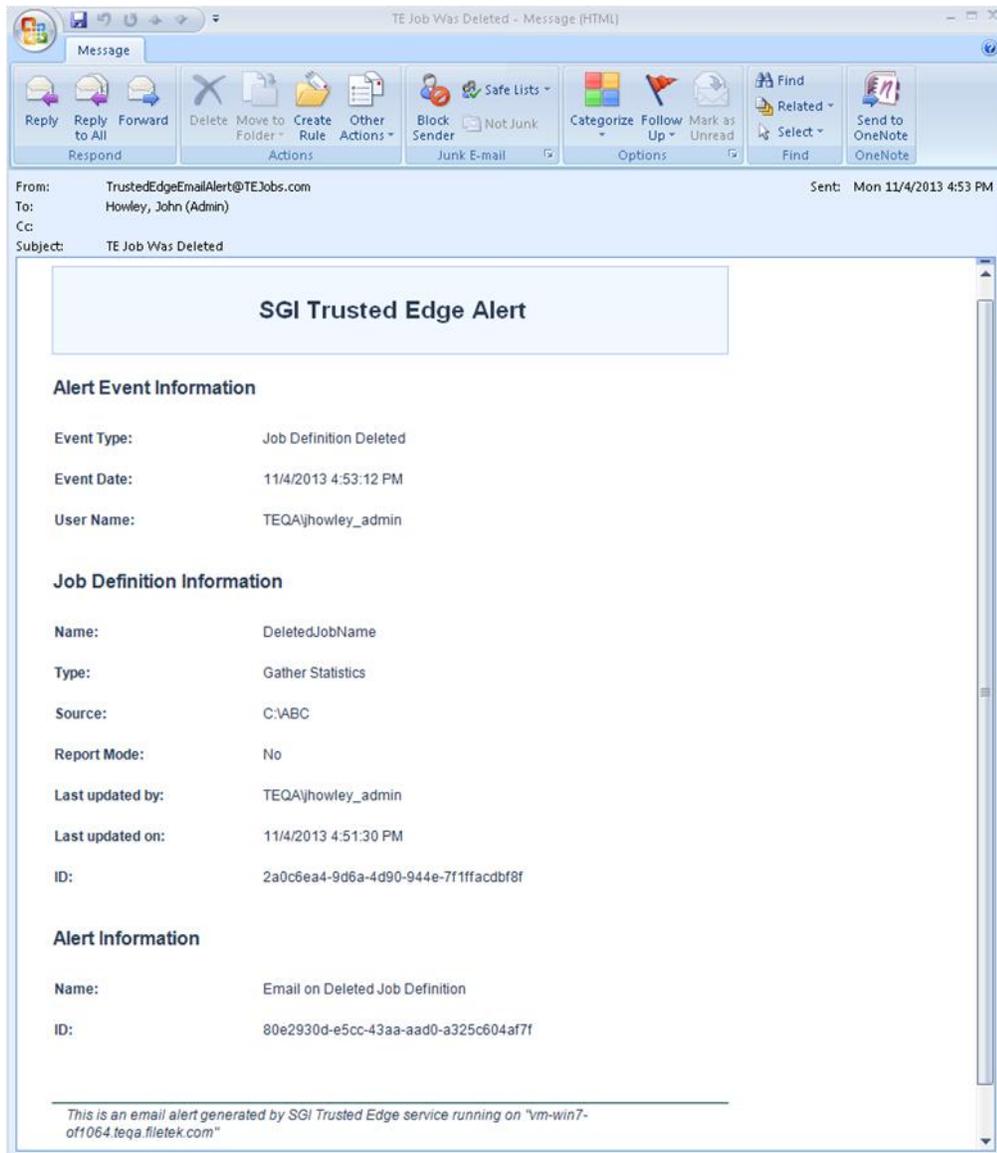


Figure 6-5: Standard Email Alert

Microsoft Exchange Server Configuration

Figure 6-6 illustrates a typical Microsoft Exchange Server configuration.

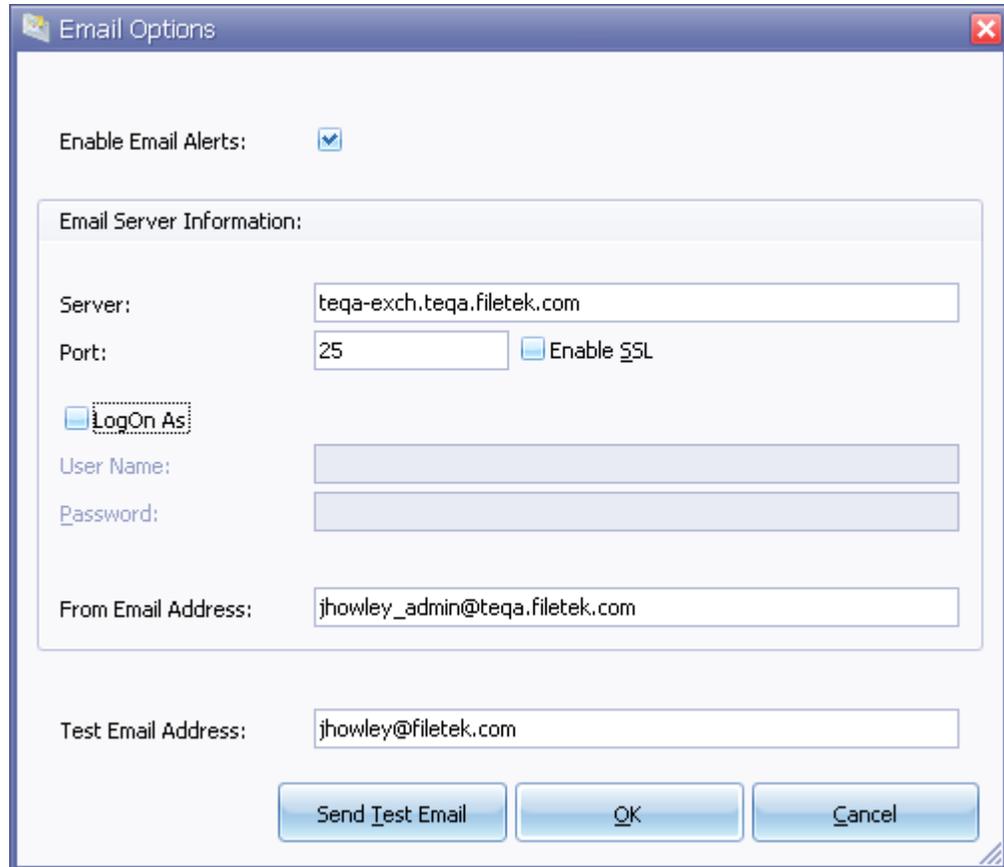


Figure 6-6: Typical Microsoft Exchange Server Configuration

Hotmail Configuration

Figure 6-7 illustrates a typical Hotmail Server configuration.

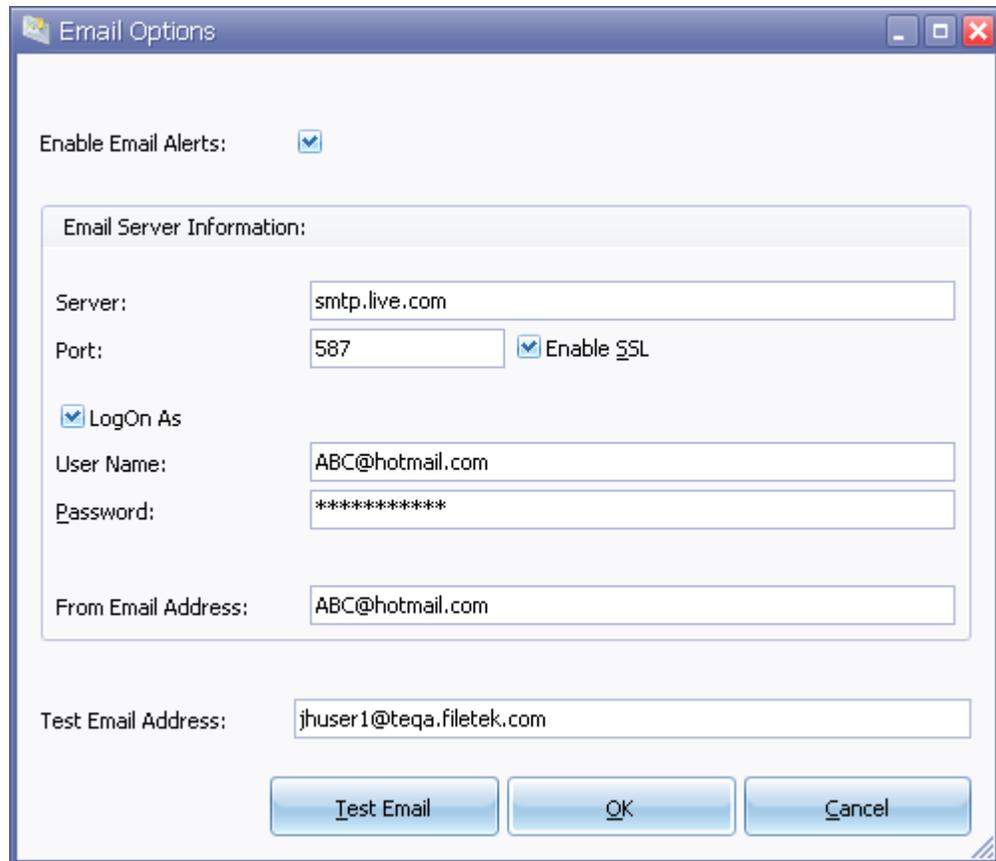


Figure 6-7: Typical Hotmail Server Configuration

Yahoo Server Configuration

Figure 6-8 illustrates a typical Yahoo Server configuration.

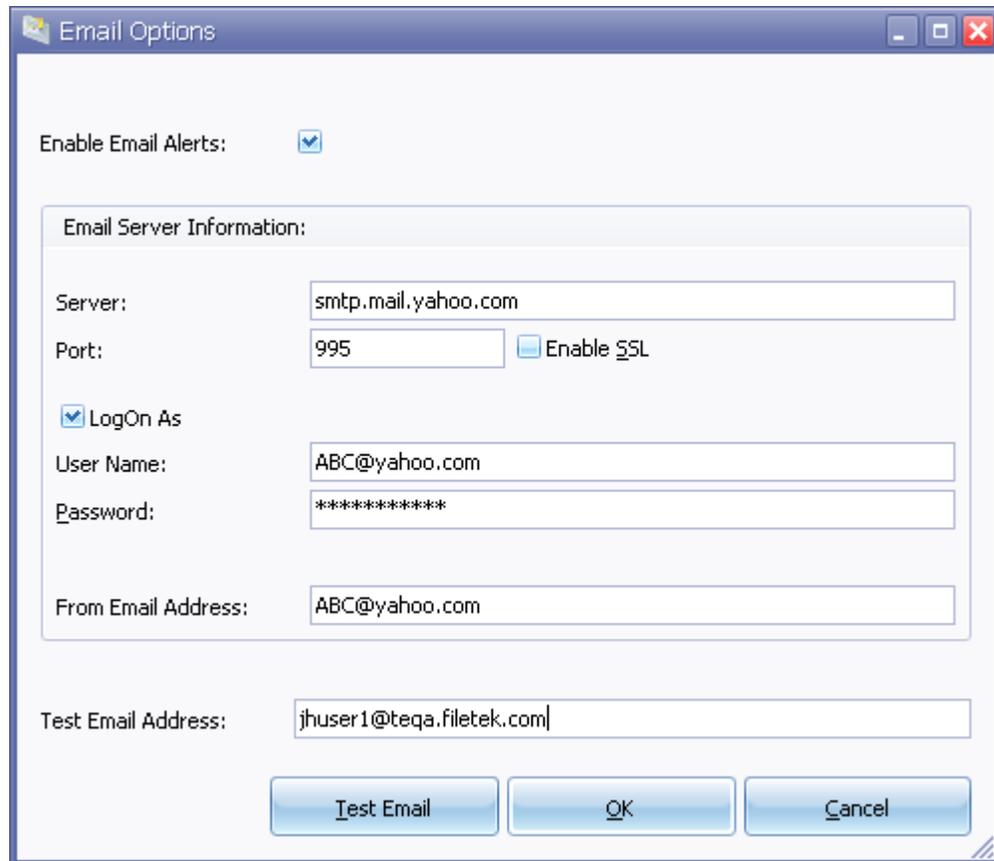


Figure 6-8: Typical Yahoo Server Configuration

Gmail Server Configuration

Figure 6-9 illustrates a typical Gmail Server configuration.

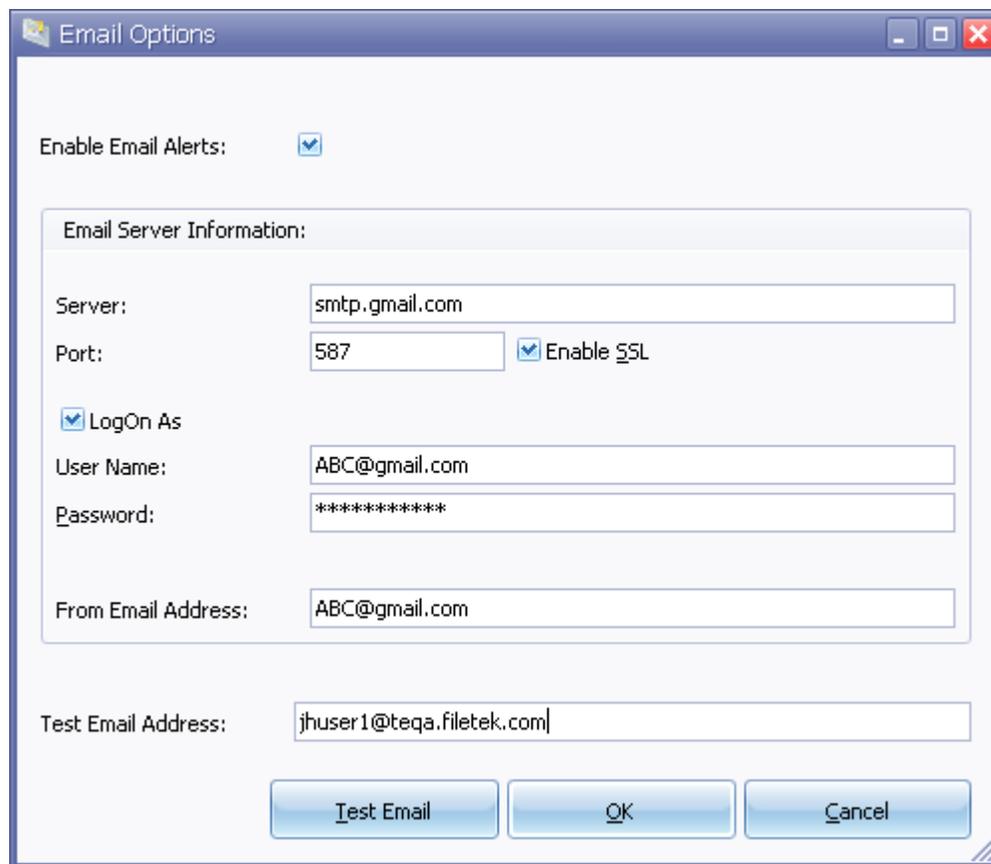


Figure 6-9: Typical Gmail Server Configuration

Once the email server setup is completed and accurate, you can begin configuring alerts.

Viewing and Processing Alerts

Trusted Edge lists information about already configured alerts on the Job Definition Alerts page. To display this page, click **Alerts** in the Trusted Edge main header menu bar. From the Job Definition Alerts page, you can also create a new alert; modify, copy, inactivate, or delete an existing alert; refresh (reload) the page; or close the Job Definition alerts window. Note that the Job Definition Alerts page contains hidden columns that can be added to display Triggering Job Definition(s) and Action Details information.

Figure 6-10 illustrates the Job Definition Alerts page.

Name	Type	Status	Events	Last Updated By	Last Updated On
1 Start2	Start Job Definition(s)	Active	Job Run Completed	TEQA\howley_admin	10/15/2013 11:18:18 AM
2 Start3	Start Job Definition(s)	Active	Job Run Completed	TEQA\howley_admin	10/15/2013 11:18:18 AM
3 Start4	Start Job Definition(s)	Active	Job Run Completed	TEQA\howley_admin	10/15/2013 11:18:18 AM
4 Start5	Start Job Definition(s)	Active	Job Run Completed	TEQA\howley_admin	10/15/2013 11:18:18 AM
5 Start6	Start Job Definition(s)	Active	Job Run Completed	TEQA\howley_admin	10/15/2013 11:18:18 AM
6 Start7	Start Job Definition(s)	Active	Job Run Completed	TEQA\howley_admin	10/15/2013 11:18:18 AM
7 Start8	Start Job Definition(s)	Active	Job Run Completed	TEQA\howley_admin	10/15/2013 11:18:18 AM
8 Start1	Start Job Definition(s)	Active	Job Run Completed	TEQA\howley_admin	10/15/2013 11:18:18 AM

Figure 6-10: Job Definition Alerts Page

The Alerts header bar has a Graph View option for viewing configured alerts in different formats. The default format is the Sugiyama Scheme (linear view) shown in Figure 6-11. SGI Trusted Edge presents the Sugiyama Scheme view when you click Graph View.

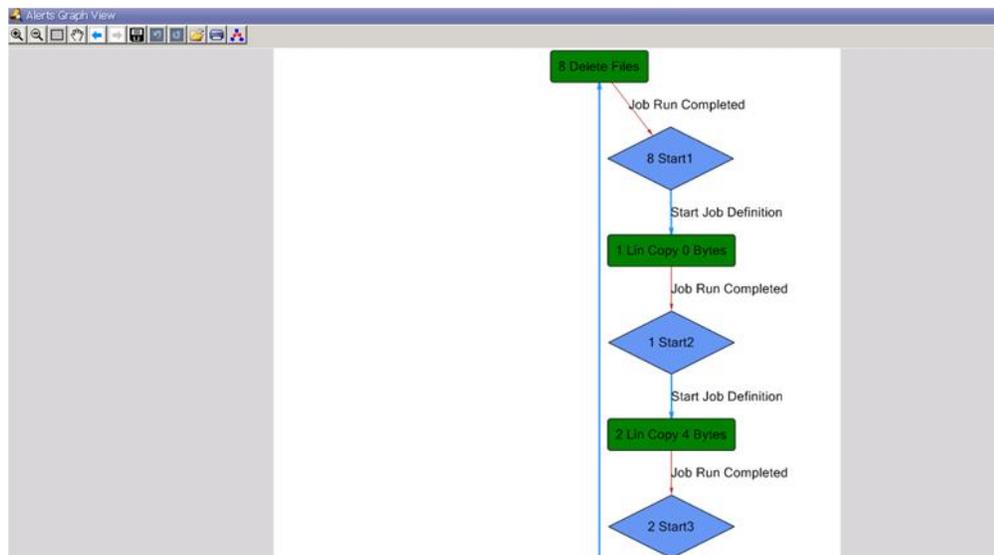


Figure 6-11: Sugiyama Scheme Default View

In all graphic view formats, green rectangle icons represent Job Definition names, and blue diamond icons represent Alert definitions. The view in Figure 6-11 illustrates how jobs can be run continuously with each triggering the next job in a loop. This alert list also depicts a configured alert that will send email for any job run failure.

To display a different graphic view format, click the Layout button as shown in Figure 6-12.



Figure 6-12: Graph View Layout Button

Figure 6-13 displays an MDS view of the same job alert scheme shown in Figure 6-11.

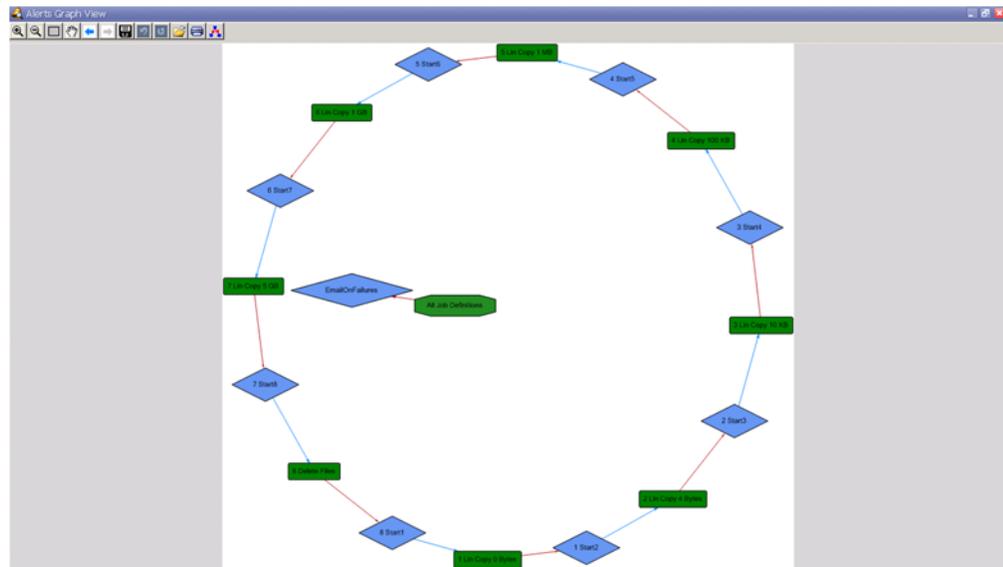


Figure 6-13: MDS View

Alert Actions

There are seven alert actions. Click the Alerts button (highlighted in red below) to display the alert actions list.



- Select New to create a new alert.
- On the Job Definition Alerts page, select an alert from the alert list, and then click Modify, Copy, Make Inactive, or Delete to alter that alert.
- Click Refresh to reload the page.
- Click Close to exit the Job Definition Alerts window.

Figure 6-14: Job Definition Alert Actions

Creating a New Email Alert

Use the following procedure to create a new email alert.

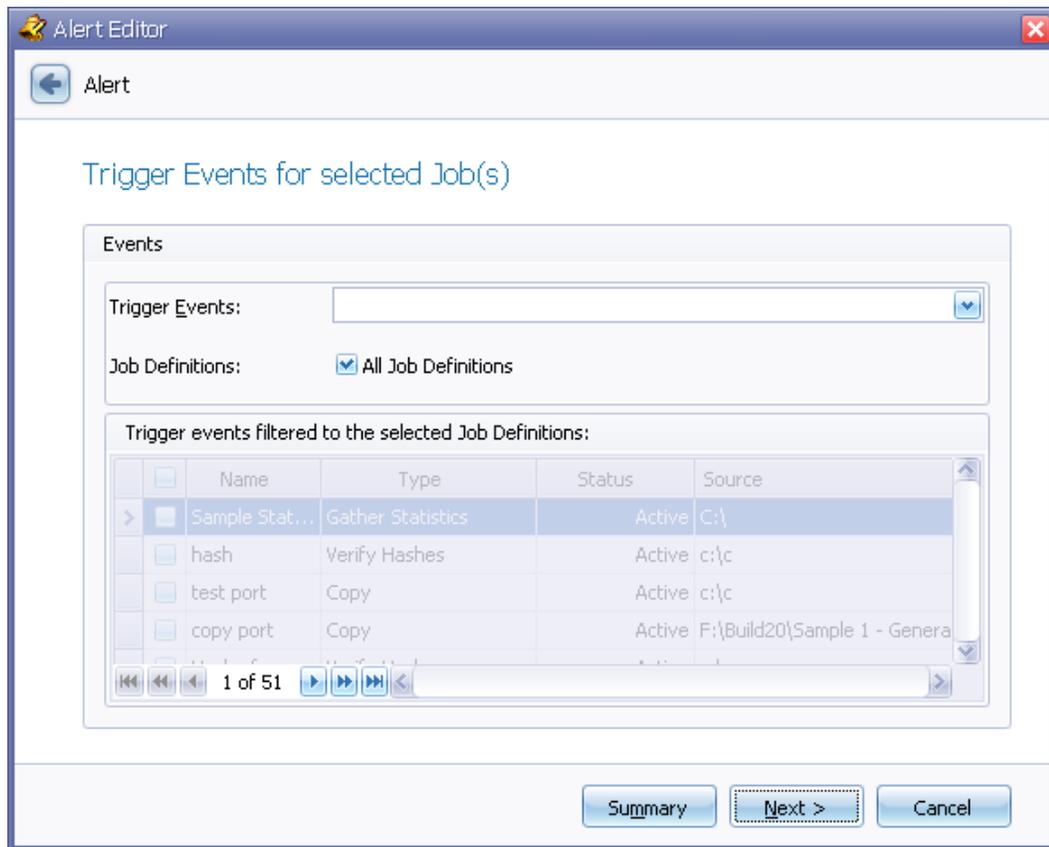
- ▼ To create a new email alert,
 1. On the **Job Definition Alerts** page, click **Alert**, and select **New** from the **Alerts** drop down list. Trusted Edge displays the Alert Editor page.

The screenshot shows the 'Alert Editor' window. It has a title bar with a back arrow icon and the text 'Alert Editor'. Below the title bar is a header area with a back arrow icon and the text 'Alert'. The main content area is titled 'Alert' and contains the following fields:

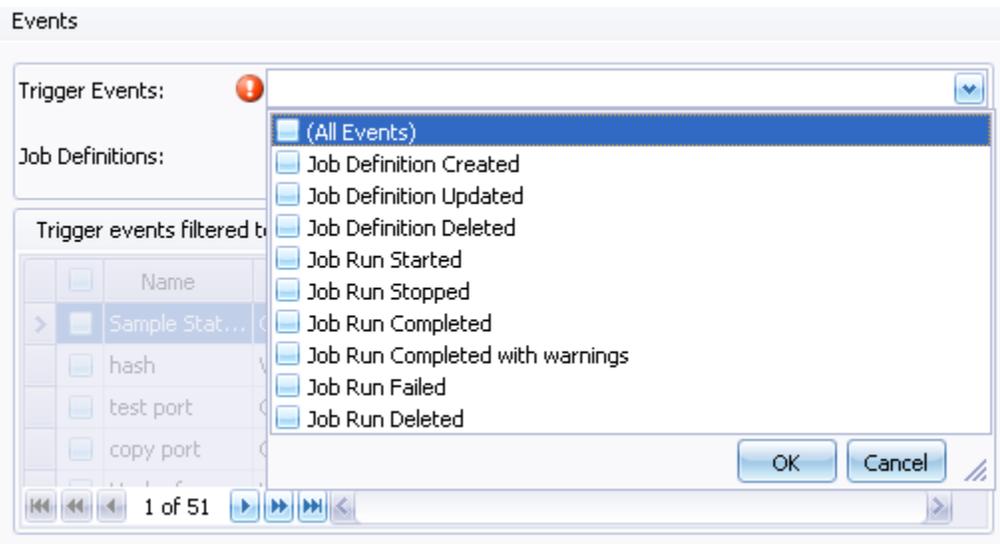
- Name:** A text box with the placeholder text 'Please enter unique job name'.
- Description:** A large, empty text area with a vertical scrollbar on the right side.
- Status:** A checkbox labeled 'Active' which is checked.
- Type:** A dropdown menu with 'Email alert' selected.

At the bottom of the window, there are three buttons: 'Summary', 'Next >', and 'Cancel'.

2. On the **Alert Editor** page, in the **Name** (required) text box, type a name for the alert.
3. In the **Description** text box, type an optional description.
4. Accept the **Active Status** (leave the checkbox selected).
5. Click the arrow next to **Type**, and select **Email alert** from the drop down list.
6. Click **Next**. Trusted Edge displays the Trigger Events for Selected Job(s) page.



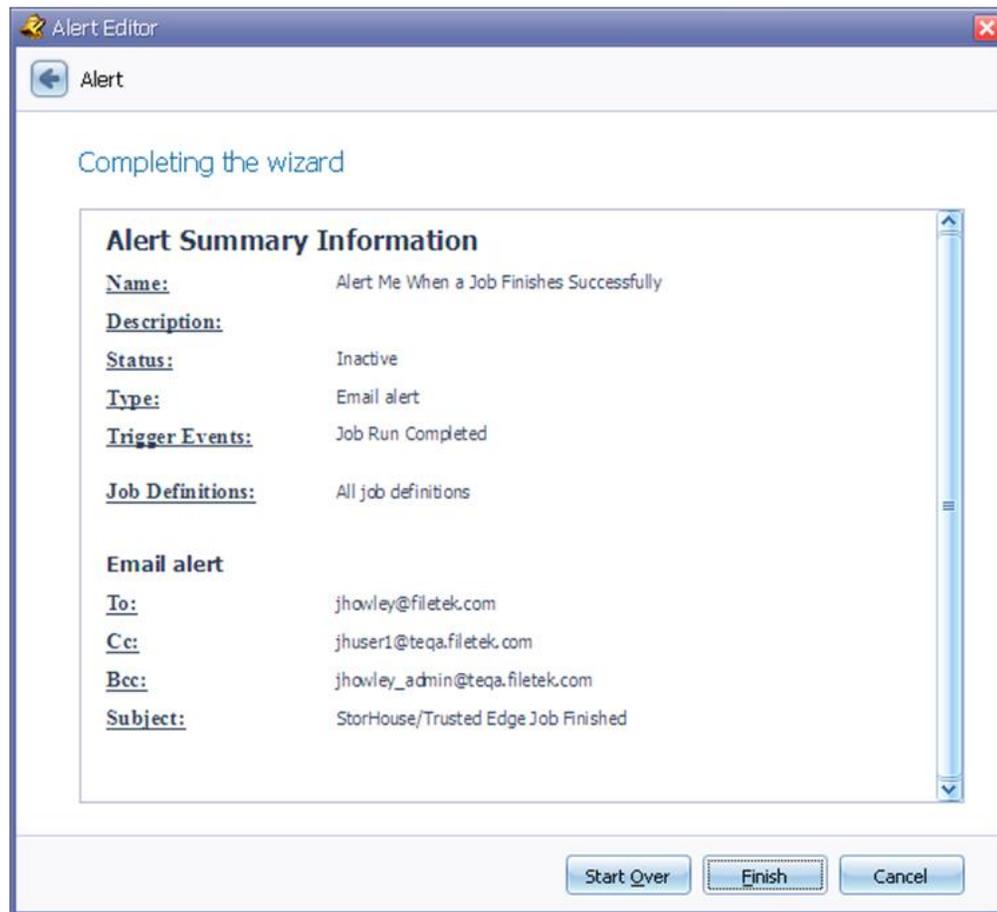
7. Click the arrow next to the **Trigger Events** drop down list to display a list of available job events.



8. Select the job event(s) to trigger the email alert.
 - Select **(All Events)** to select all the items in the list.
 - Select **Job Run Completed** to be notified when a job completes successfully.
 - To select more than one event, press **CTRL** while clicking the desired events.
9. Click **OK** to close the Trigger Events drop down list.
10. Select one or more job definitions to be evaluated based on the selected trigger events.
 - Leave the **All Job Definitions** checkbox checked to select all jobs.
 - To apply the triggers to specific jobs, deselect the **All Jobs Definitions** checkbox and select the specific job(s) you want.
11. Click **Next** to display the **Send Email Alert** page.

The screenshot shows a window titled "Alert Editor" with a sub-header "Alert". Below this is a section titled "Send Email Alert". Inside this section is a "Send Email" form with four text input fields: "To:", "Cc:", "Bcc:", and "Subject:". Each of the first three fields has a vertical scroll bar on its right side. At the bottom of the dialog, there are three buttons: "Summary", "Next >" (which is highlighted with a dotted border), and "Cancel".

12. On the **Send Email Alert** page, in the corresponding text boxes, type To:, Cc:, and Bcc: recipient email addresses and the subject for the alert.
 - For example, if you have configured triggers to email you when a job definition called “Copy Server1” completes, your Subject might be something like “CopyServer1 Job Finished Successfully.”
 - Note that Trusted Edge does not validate any email addresses.
 - Always use fully qualified (rjones@SGI.com) rather than friendly (Rich Jones) email addresses.
13. Click **Next** to display the **Completing the Wizard** page.



14. On the **Completing the Wizard** page, review your settings for accuracy. To change a setting, select click  or **Start Over**.
15. Click **Finish** to save the alert.

Creating a Trigger to Initiate a New Start Job Definition

In addition to sending email alerts, you can define triggers to launch different types of jobs. For example, you can set up a trigger to start Job B when Job A completes. For this Start Job Definition(s) alert type, you must have more than one job defined to Trusted Edge.

Use the following procedure to create an alert to initiate a new Start Job definition.

▼ To create an alert to initiate a new Start Job definition

1. On the **SGI Trusted Edge Main** page, click **Alerts** in the top header menu. Trusted Edge displays the Job Definition Alerts page.

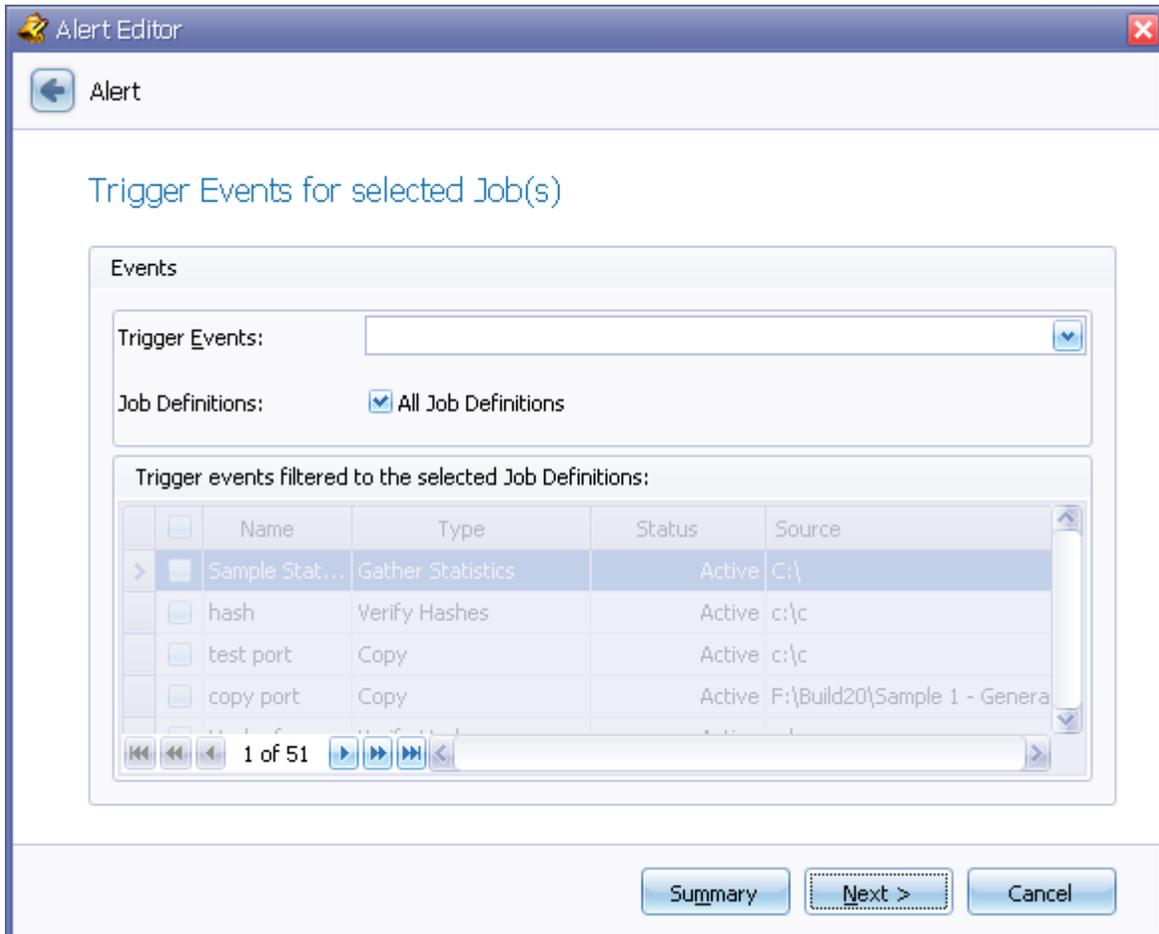
2. Click  in the upper left corner of the **Job Definition alerts** page, and select **New** from the **Alerts** drop down list. Trusted Edge displays the **Alert Editor** page.

The screenshot shows the 'Alert Editor' window. It has a title bar with a close button. Below the title bar is a navigation arrow and the word 'Alert'. The main content area is titled 'Alert' and contains the following fields:

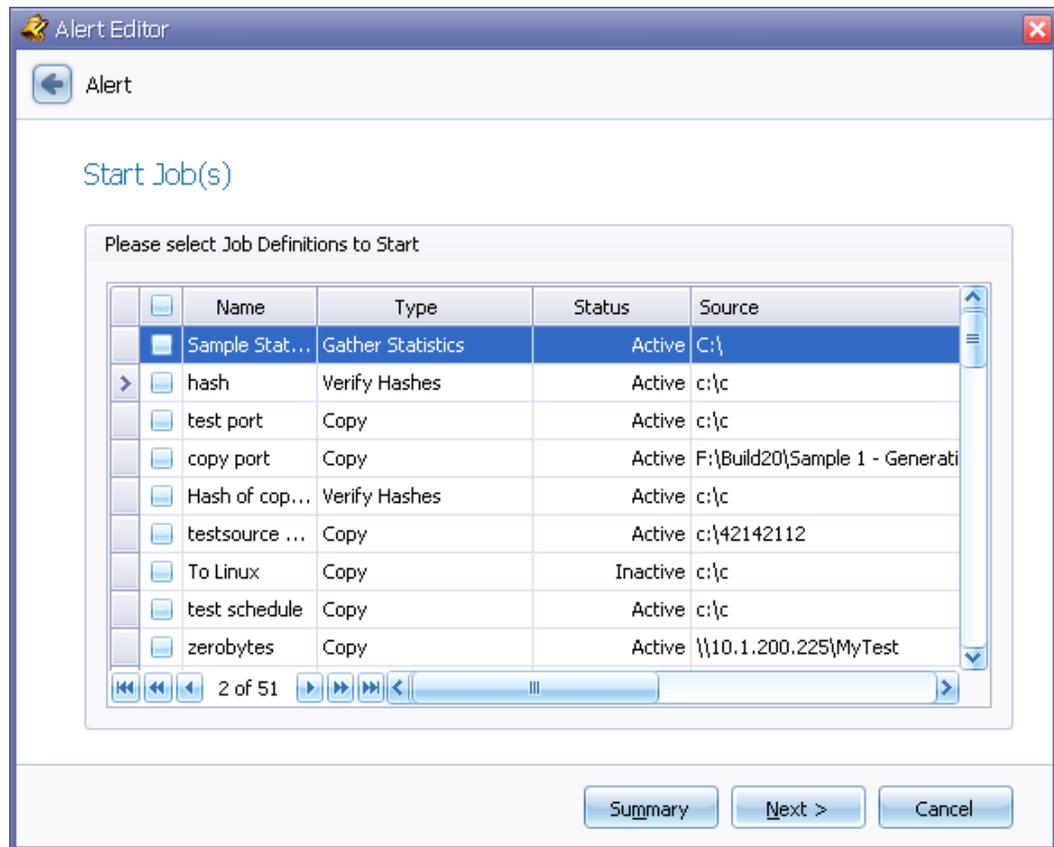
- Name:** A text box with the placeholder text 'Please enter unique job name'.
- Description:** A large text area for entering a description.
- Status:** A checkbox labeled 'Active' which is checked.
- Type:** A dropdown menu with 'Start Job Definition(s)' selected.

At the bottom of the window are three buttons: 'Summary', 'Next >', and 'Cancel'.

3. In the **Name** text box, type a name for the alert.
4. In the **Description** text box, type an optional description of the alert.
5. Keep the **Active** checkbox selected.
6. Click the arrow next to **Type**, and select **Start Job Definition(s)**.
7. Click **Next**. Trusted Edge displays the second **Alert Editor** page.
8. On the **Alert Editor** page, select a trigger and a job to be monitored for the trigger.



9. Click **Next**. Trusted Edge displays the **Start Job(s)** page.



10. On the **Start Job(s)** page, select the job(s) to be launched when the trigger criteria have been met.

For instance, assume you have a job called Job1 that copies data from a source directory to a destination directory without performing data hashing. Your trigger criteria could be that when Job1 completes, start a new job called Hash to hash the data copied by Job1.

11. Click **Next** to continue.

12. On the **Completing the Wizard** page, review your settings for accuracy. Change them by clicking  or **Start Over** to begin again.

13. Click **Finish**.

Additional Information about Starting Jobs with a Trigger

When stating jobs with a trigger, note that:

- Trusted Edge will only start a job that is currently idle.
- Trusted Edge will not restart a job that is currently running.
- Trusted Edge will not queue a job run to start if that job is currently running.
- Within the user interface, job runs started by an alert trigger show Started By User column information as SYSTEM_ALERT.
- Trusted Edge will not cause a job to start itself based upon its own trigger. For example, you cannot start Job1 if the trigger is set for Job1 completed.

Creating a Trigger to Run a Command

You can configure a job trigger to execute a command just as if the application were silently initiated from a CMD prompt. The command will start without any user interface, and no user will be able to interactively enter/work with the launched command. When a Trusted Edge job triggers a Run command, the application executes with the same account credentials used to run the SGI Trusted service.

Use the following procedure to cause Trusted Edge to run a command based on a job trigger. In this example, Trusted Edge will run an application called ACLVerifier.exe when the trigger occurs.

▼ To run a command based on a job trigger

1. On the **SGI Trusted Edge Main** page, click **Alerts** in the top header menu. Trusted Edge displays the Job Definition Alerts page.



2. Click  in the upper left corner of the **Job Definition alerts** page, and select **New** from the **Alerts** drop down list. Trusted Edge displays the **Alert Editor** page.

3. In the **Name** text box, type a name for the alert.
4. In the **Description** text box, type an optional description of the alert.
5. Keep the **Active** checkbox selected.
6. Click the arrow next to **Type**, and select **Run a Command**.

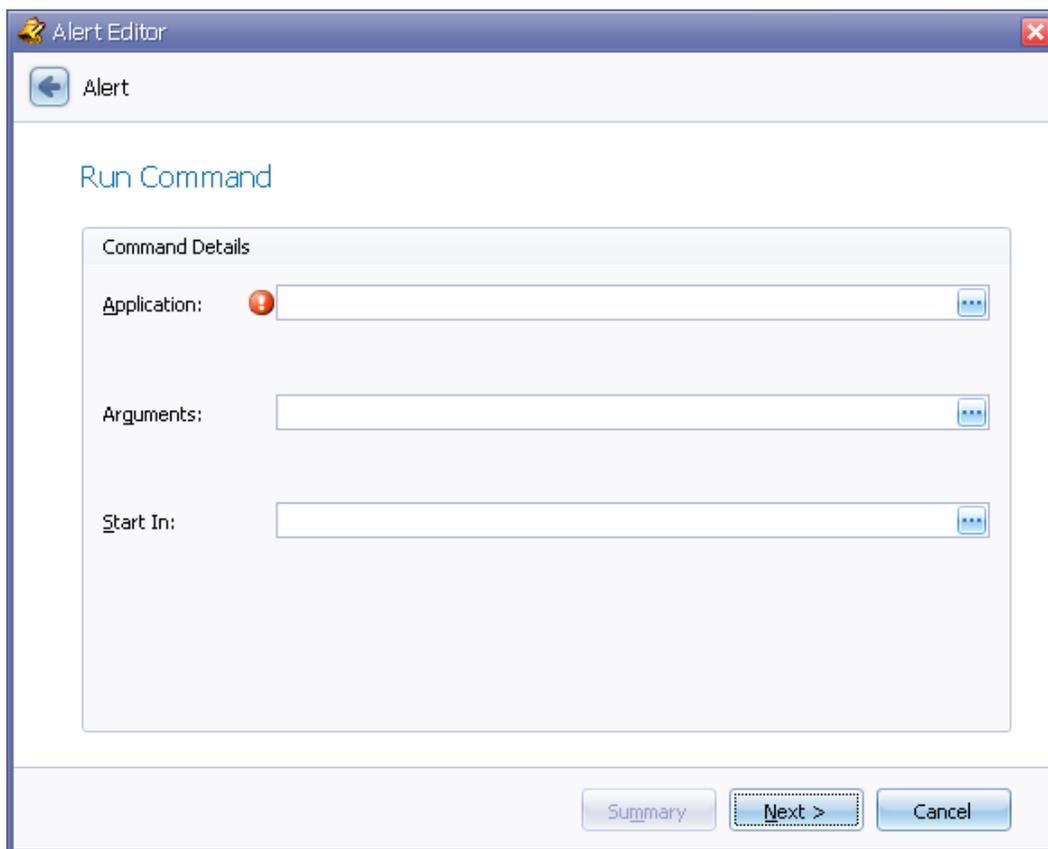
The screenshot shows the 'Alert Editor' window. The title bar reads 'Alert Editor' with a close button on the right. Below the title bar is a navigation bar with a back arrow and the word 'Alert'. The main content area is titled 'Alert' and contains the following fields:

- Name:** A text box containing 'Verify ACLs On Copy'.
- Description:** A text area that is currently empty.
- Status:** A checkbox labeled 'Active' which is checked.
- Type:** A dropdown menu with 'Run a command' selected.

At the bottom of the window, there are three buttons: 'Summary', 'Next >', and 'Cancel'.

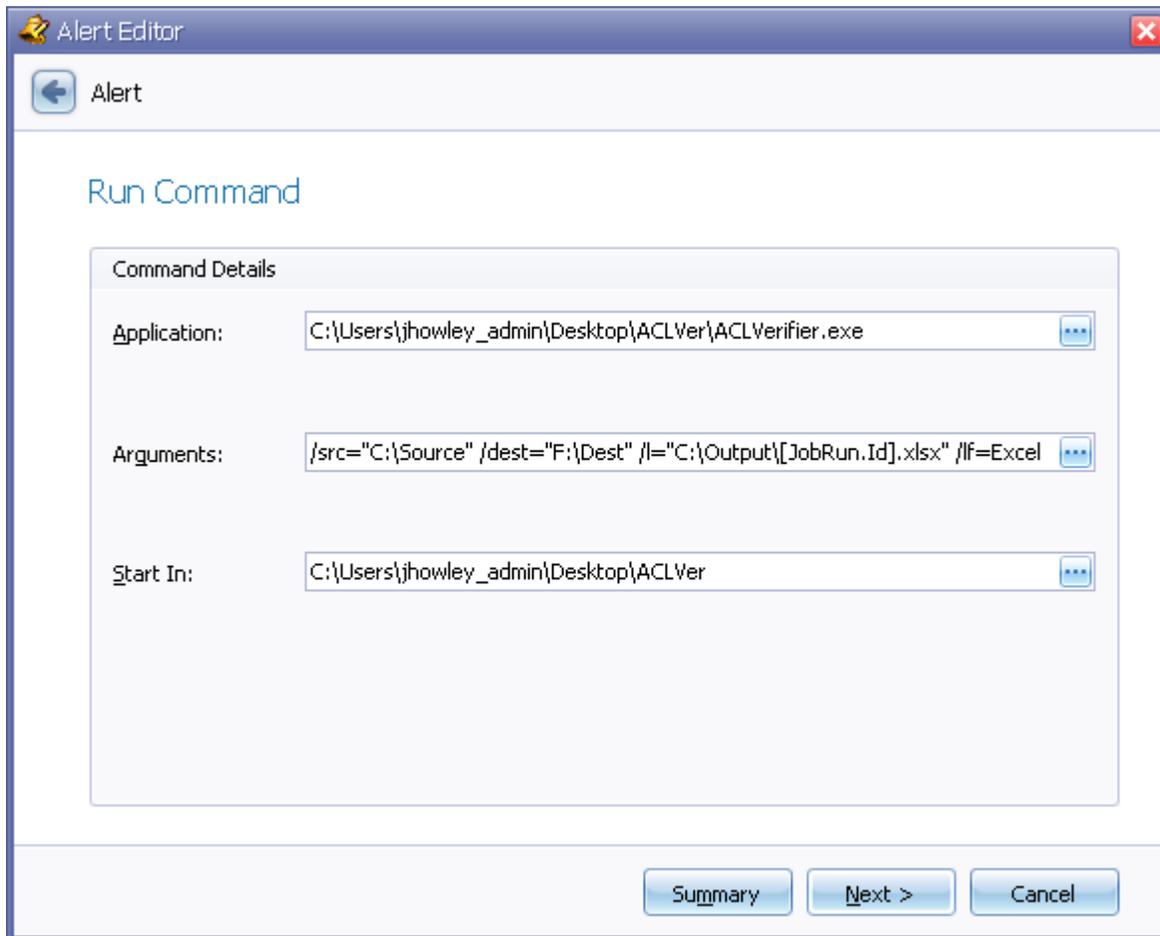
7. Click **Next**. Trusted Edge displays the second **Alert Editor** page.
8. On the second **Alert Editor** page, select a trigger and a job to be monitored for the trigger.

9. Click **Next** to display the **Run Command** page:



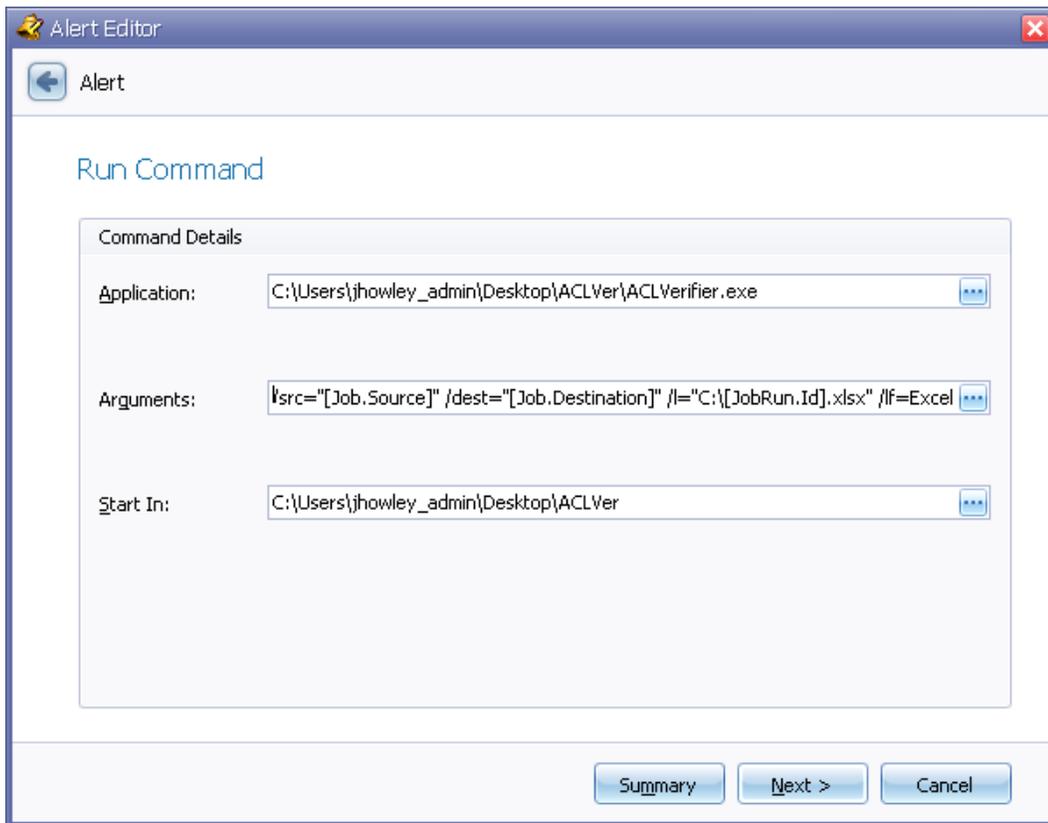
10. In the **Application** field, type the path to the application or click  to browse to the desired location.

11. In the **Arguments** text box, type the command arguments or click  for a list of command macros to insert.



- The command arguments are the same parameters used when running the application from a command prompt. For example, the ACLVerifier.exe utility has four parameters: source, destination, log file path, and log format type. You enter these arguments in the Argument text box as: /src; /dest; /l; and /lf as illustrated in the following screen.

- If you click on  next to the Arguments text box, Trusted Edge displays a list of macros that can dynamically extract data used with the argument. Use of these macros is optional. The following screen displays macros in the Arguments text box.



12. In the **Start In** text box, type the working folder for the specified application or click  to browse to the folder location.
13. Click **Next**.
14. On the **Completing the Wizard** page, review your settings for accuracy. Click  or **Start Over** to make a change.

15. Click **Finish**.

Creating a Trigger to Run a PowerShell Script

You can configure a job trigger to execute a PowerShell script just as if the script were silently initiated from a PowerShell prompt. The command will start without any user interface, and no user will be able to interactively enter/work with the launched script.

Note: PowerShell scripts must first be allowed to run on a computer before you can execute them. Refer to the following link for information on how to allow .PS1 files to execute:

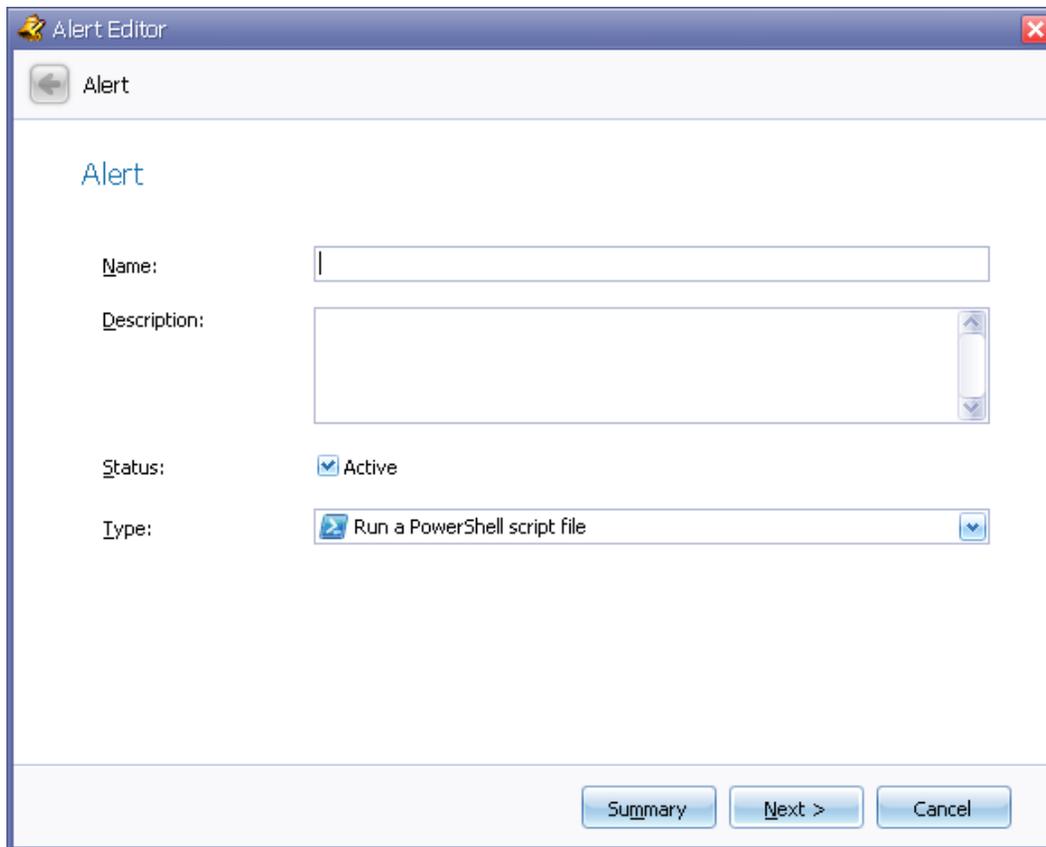
<http://technet.microsoft.com/en-us/library/ee176961.aspx>

Use the following procedure to cause Trusted Edge to run a PowerShell script based on a job trigger. In this example, Trusted Edge will run a PowerShell script called CompareACL.ps1 when the trigger occurs.

▼ To run a PowerShell script based on a job trigger

1. On the **SGI Trusted Edge Main** page, click **Alerts** in the top header menu. Trusted Edge displays the Job Definition Alerts page.

2. Click  Alerts in the upper left corner of the **Job Definition alerts** page, and select **New** from the **Alerts** drop down list. Trusted Edge displays the **Alert Editor** page.



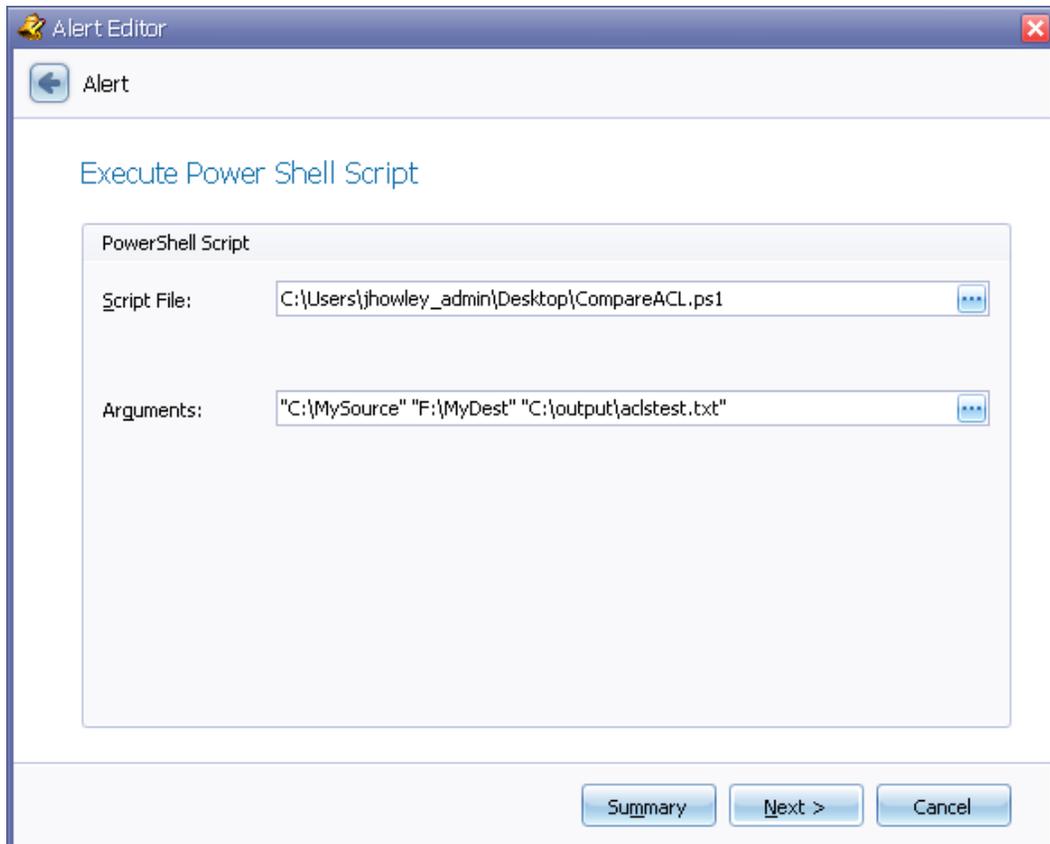
The image shows a screenshot of the 'Alert Editor' dialog box. The window title is 'Alert Editor'. Inside the dialog, there is a breadcrumb 'Alert' with a back arrow. Below that, the word 'Alert' is displayed in blue. The form contains the following fields:

- Name:** A text input field.
- Description:** A text area with a vertical scrollbar.
- Status:** A checkbox labeled 'Active' which is checked.
- Type:** A dropdown menu with 'Run a PowerShell script file' selected.

At the bottom of the dialog, there are three buttons: 'Summary', 'Next >', and 'Cancel'.

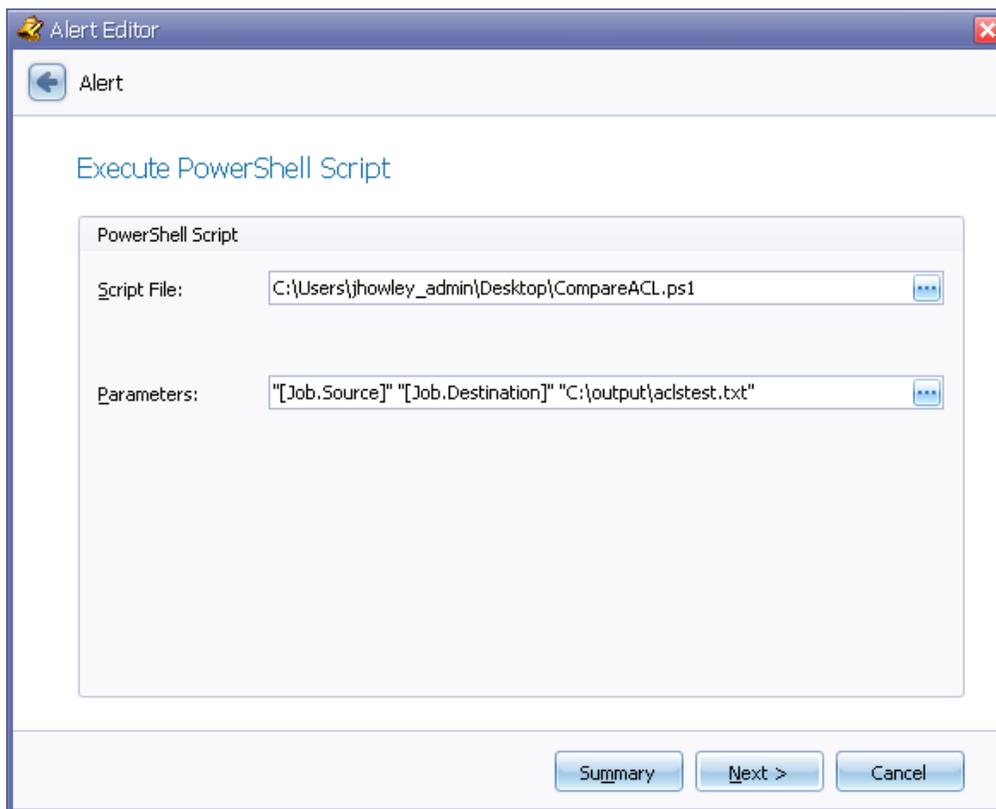
3. In the **Name** text box, type a name for the alert.
4. In the **Description** text box, type an optional description of the alert.
5. Keep the **Active** checkbox selected.
6. Click the arrow next to **Type**, and select **Run a PowerShell script file**.
7. Click **Next**. Trusted Edge displays the second **Alert Editor** page.

8. On the second **Alert Editor** page, select a trigger and a job to be monitored for the trigger.
9. Click **Next** to display the **Execute a Power Shell Script** page.



10. In the **Script File** field, type the path to the script or click  to browse to the desired location.
11. In the **Arguments** text box, type the script arguments or click  for a list of macros to insert.

- The script arguments are the same parameters used when running the script from a PowerShell prompt. In this example, the script has three arguments: Source, Destination, and output log file. The source value is C:\MySource. The destination value is F:\MyDest. The output file value is C:\output\aclstest.txt.
- If you click on  next to the Arguments text box, Trusted Edge displays a list of macros that can dynamically extract data used with the argument. Use of these macros is optional. The following screen displays the macros for source, destination, and output file.



12. Click **Next**.

13. On the **Completing the Wizard** page, review your settings for accuracy. Click  or **Start Over** to make a change.

14. Click **Finish**.

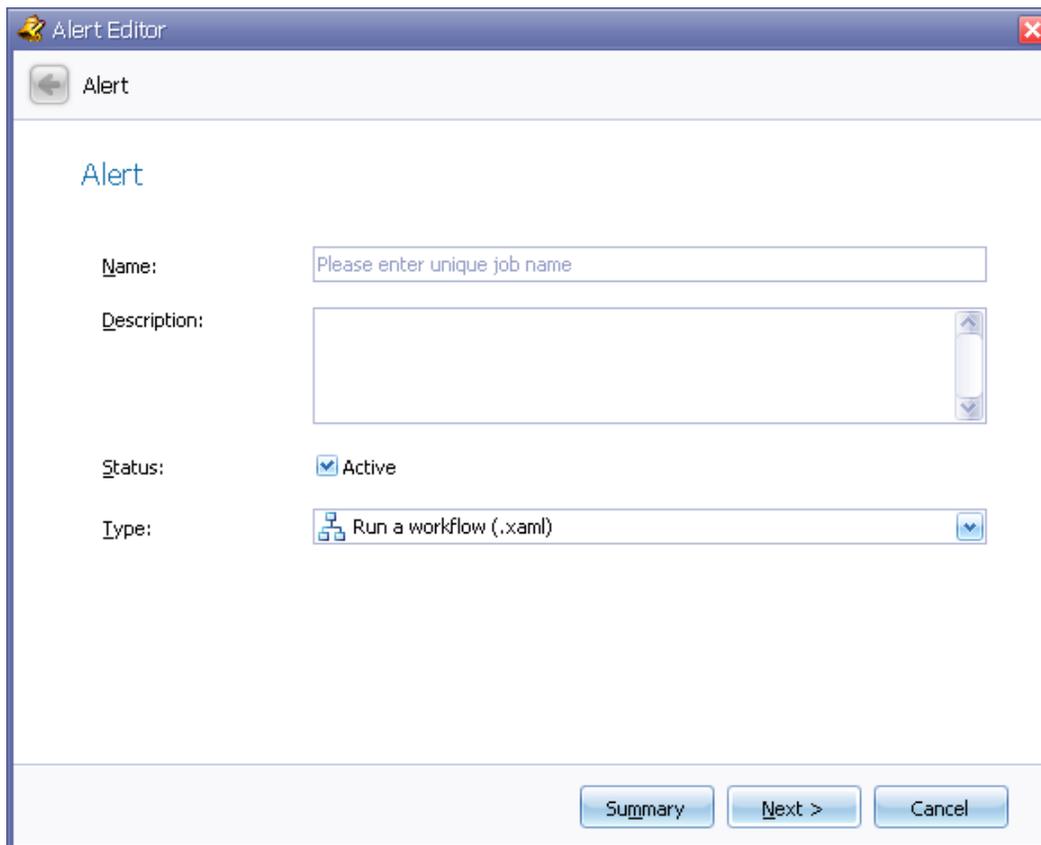
Creating a Trigger to Initiate a Workflow File

Use the following procedure to create a trigger that initiates a workflow file. In this example, Trusted Edge will initiate a workflow file called TestWorkflow.xaml when the trigger occurs.

▼ To create a trigger that initiates a workflow file

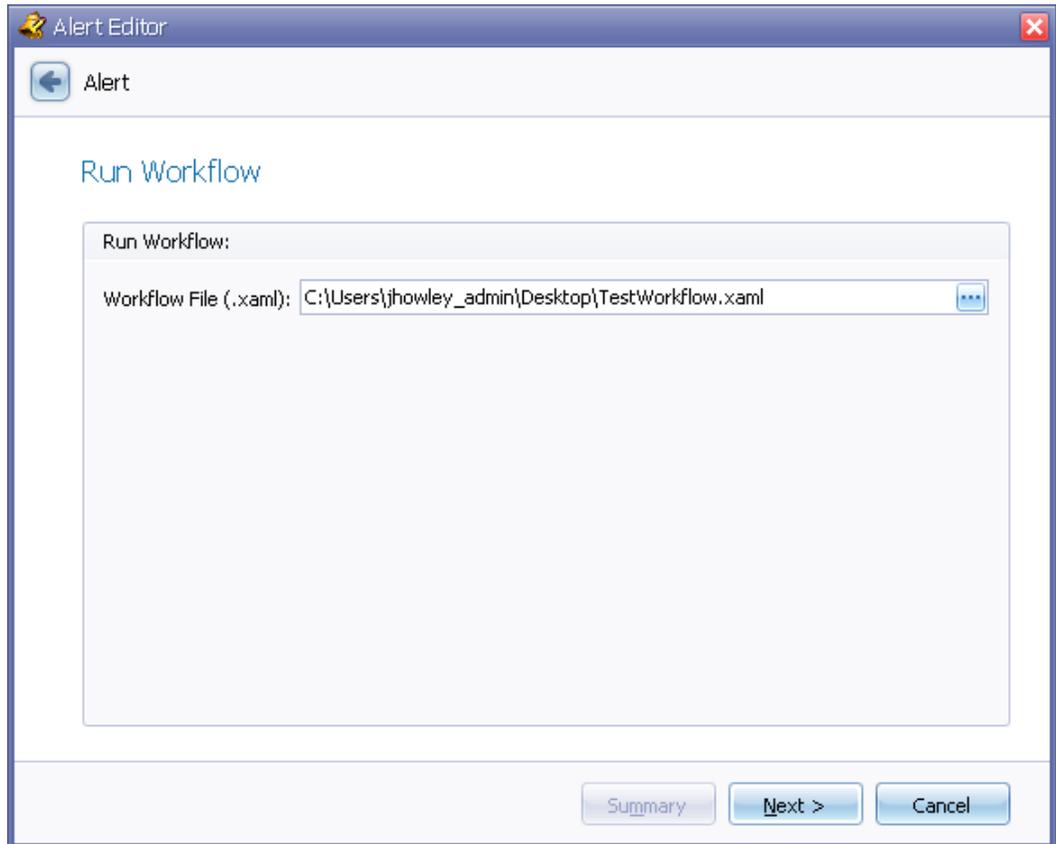
1. On the **SGI Trusted Edge Main** page, click **Alerts** in the top header menu. Trusted Edge displays the Job Definition Alerts page.

2. Click  in the upper left corner of the **Job Definition alerts** page, and select **New** from the **Alerts** drop down list. Trusted Edge displays the **Alert Editor** page.



3. In the **Name** text box, type a name for the alert.
4. In the **Description** text box, type an optional description of the alert.
5. Keep the **Active** checkbox selected.
6. Click the arrow next to **Type**, and select **Run a workflow (.xaml)**.
7. Click **Next**. Trusted Edge displays the second **Alert Editor** page.
8. On the second **Alert Editor** page, select a trigger and a job to be monitored for the trigger.

9. Click **Next** to display the **Run Workflow** page.



11. Click **Next**.
12. On the **Completing the Wizard** page, review your settings for accuracy. Click  or click **Start Over** to make a change.
13. Click **Finish**.

C H A P T E R 7



Using CaminoSoft to Create Trusted Edge Recallable Symbolic Links for Windows

You can create recallable symbolic links on a NetApp 7m (7 mode) filer by using the CaminoSoft feature that is integrated with SGI Trusted Edge. Unlike native Trusted Edge symbolic links, users can recall CaminoSoft symbolic links to the Source folder.

This chapter explains how to:

- Install the CaminoSoft Software on the Trusted Edge server
- Enable the Fpolicy on NetApp
- Install the CaminoSoft User Interface application
- Verify that the CsManager (CaminoSoft) Local Service is running

About CaminoSoft

The CaminoSoft software works with Trusted Edge as follows. If Trusted Edge recognizes the HKLM\SOFTWARE\CaminoSoft\HSM 5.2\BinPath registry path when creating a Migrate job, it allows the “As NetApp Filer FPolicy Stub” option to appear within the Trusted Edge “Create Shortcuts” dropdown menu (see Figure 7-1).

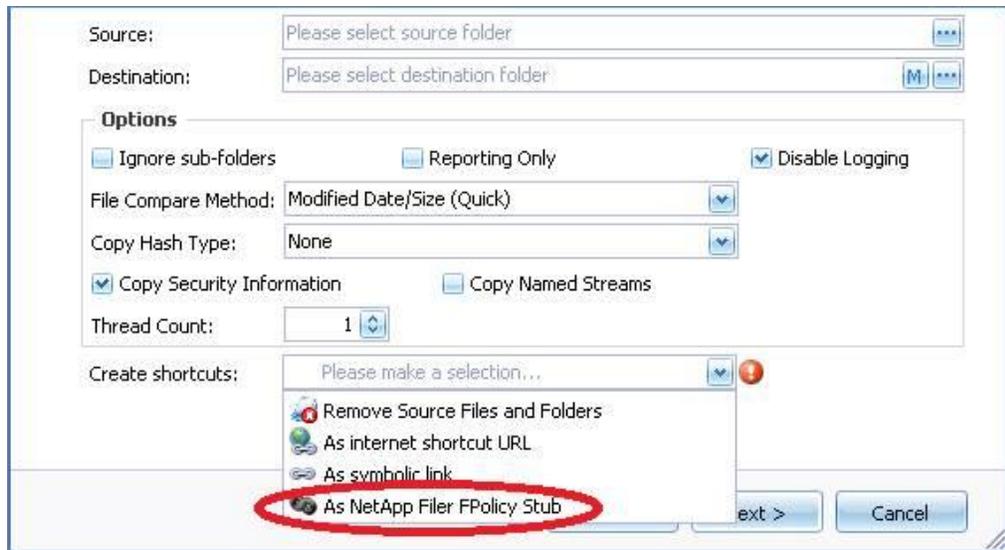


Figure 7-1: Create Shortcuts Menu

Users can choose the “As NetApp Filer FPolicy Stub” option to create recallable symbolic links. When this option is selected, Trusted Edge checks that the CsManager local (CaminoSoft) service is running when the Migrate job executes to enable recallable symbolic link functionality.

The CaminoSoft documentation is available at:

`\CaminoSoft\Managed_Server_W2K_52_4021\cd_image\docs`

Requirements

To use the CaminoSoft recallable symbolic link functionality, you must:

- Install the CaminoSoft Managed Server HSM Administrator and user interface software on the Trusted Edge server
- Create and enable an FPolicy within NetApp 7m filer
- Define the NetApp FPolicy within the CaminoSoft user interface

Special Considerations

Note the following when using Trusted Edge CaminoSoft recallable symbolic links:

- When users access links on the NetApp device, files will be recalled back to the NetApp source. To re-create shortcuts for files that have been recalled, you must rerun the Trusted Edge Migrate job.
- Stubbing works only on NetApp 7-m mode, not cluster mode (CM).
- CaminoSoft recallable symbolic links do not support long file paths greater than 256 characters.
- Trusted Edge only performs CIFS to CIFS migrations. Therefore, the NetApp volume must use CIFS and not UNIX-style security.
- CaminoSoft Managed Server HSM utilizes the Fpolicy callback feature from NetApp to perform file de-migrations.
- Links created from Trusted Edge are *NOT* available from the Trusted Edge/CaminoSoft server. Users must access them from another client machine.
- The CsManager.exe (CaminoSoft service) must be running to allow for shortcut retrieval.
- Uninstalling CaminoSoft will prevent shortcuts from being recalled.

Installing the CaminoSoft Software on the Trusted Edge Server

Use the following procedure to install the CaminoSoft software on the Trusted Edge server. You must have access to MSSQL Server, SQLExpress, or MS Access to install CaminoSoft.

▼ To install the CaminoSoft Managed Server HSM Engine on the Trusted Edge Server

1. Run the following executable:

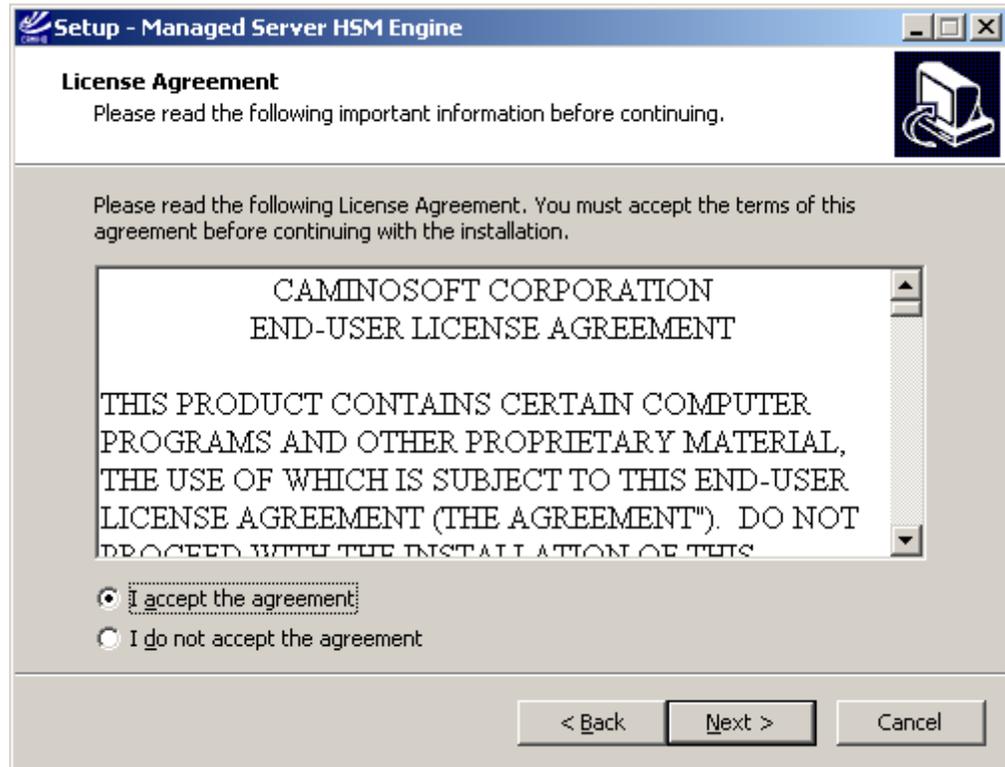
```
\CaminoSoft\Managed_Server_W2K_52_4021\cd_image\MSEngine-x32-x64\setup.exe
```

2. On the **Welcome** window, click **Next**.

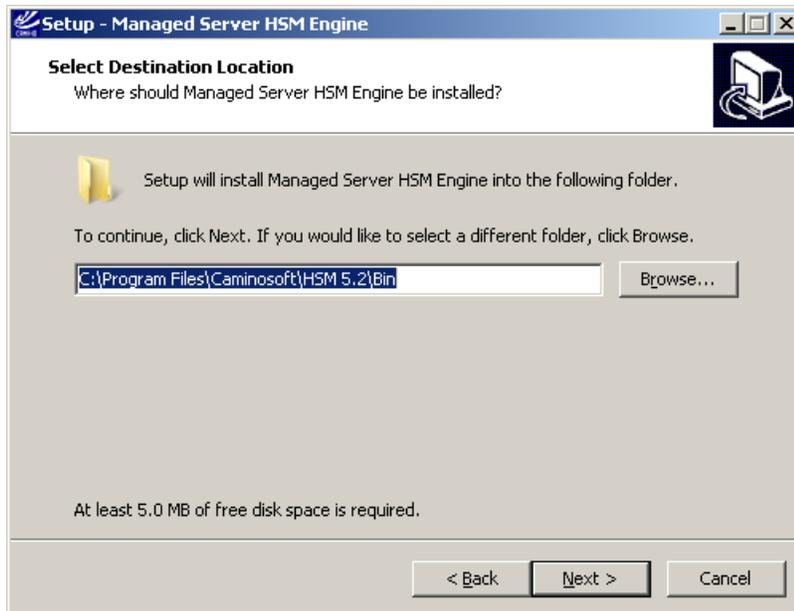


3. On the **License Agreement** window, select **I accept the agreement**, and then click **Next**.

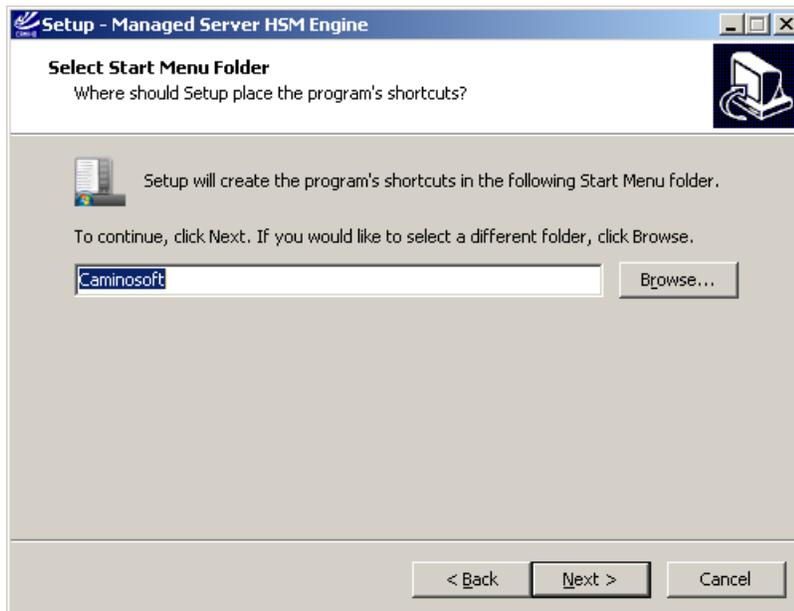
- ■ ■ ■ Chapter 7 – Using CaminoSoft to Create Trusted Edge Recallable Symbolic Links for Windows



4. On the **Select Destination** Location window, browse to the install folder location, and click **Next**.

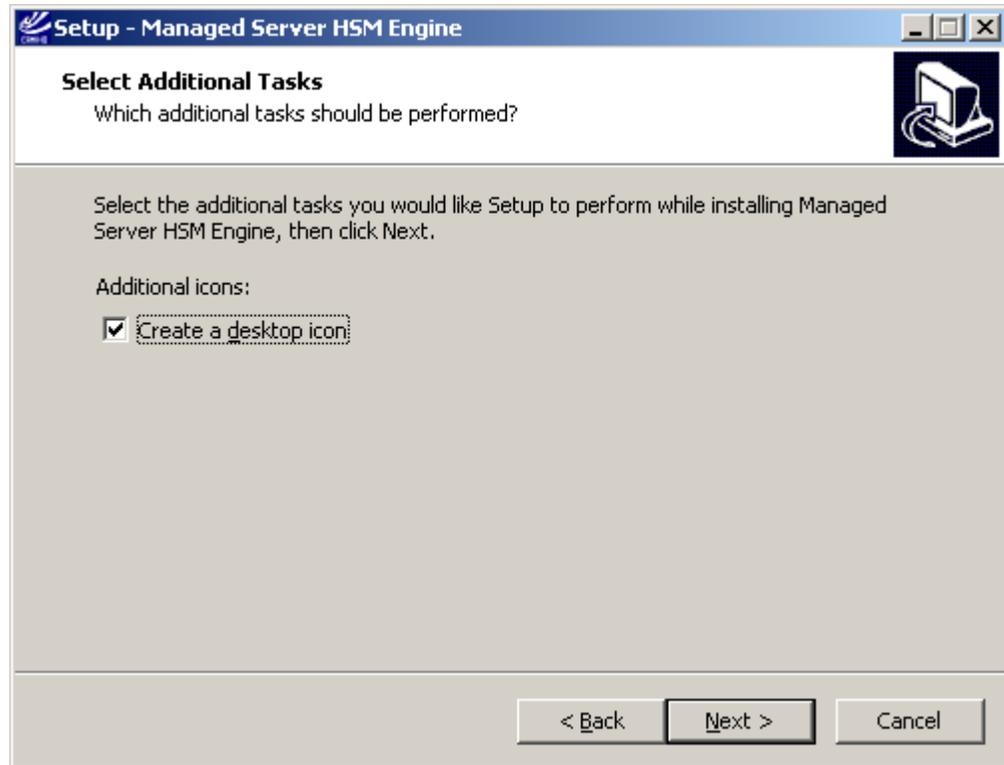


5. On the **Select Start Menu Folder** window, browse to the Start Menu folder location, and then click **Next**.

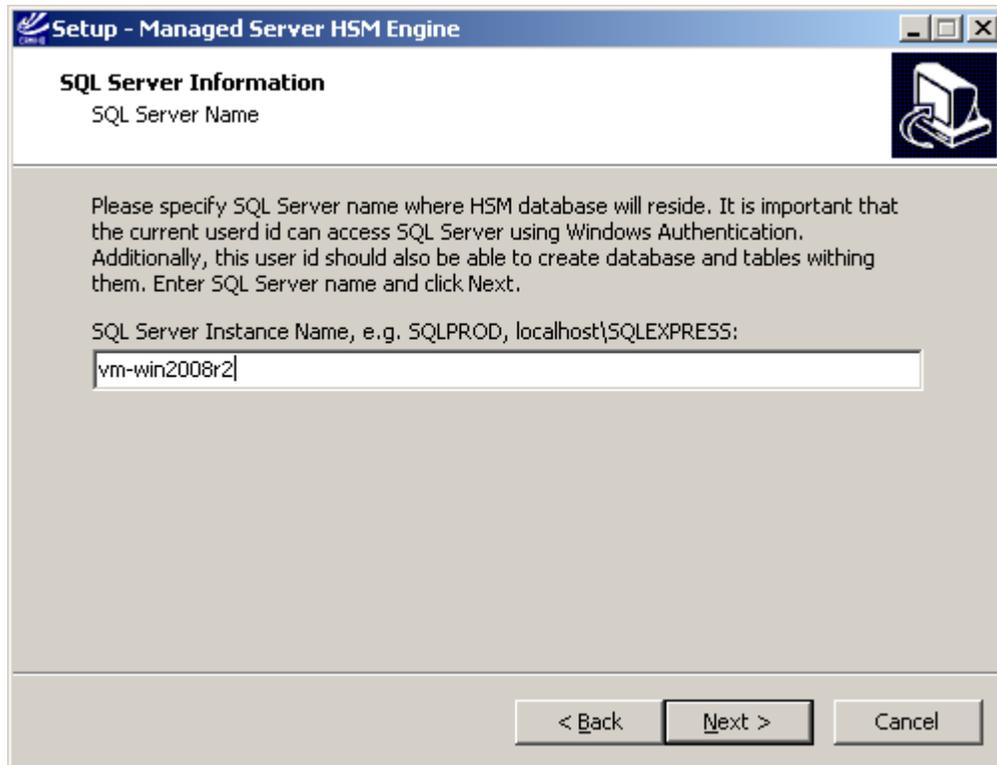


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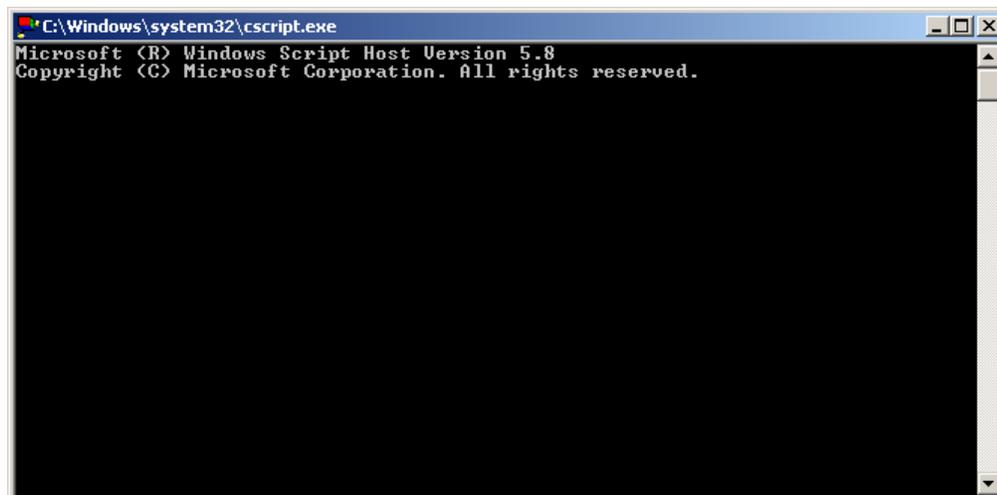
6. On the **Select Additional Tasks** window, select the **Create a desktop icon** checkbox, and then click **Next**.



7. On the **SQL Server Information** window, in the **SQL Server Instance Name** text box, type an SQL Server Instance Name, and then click **Next**.

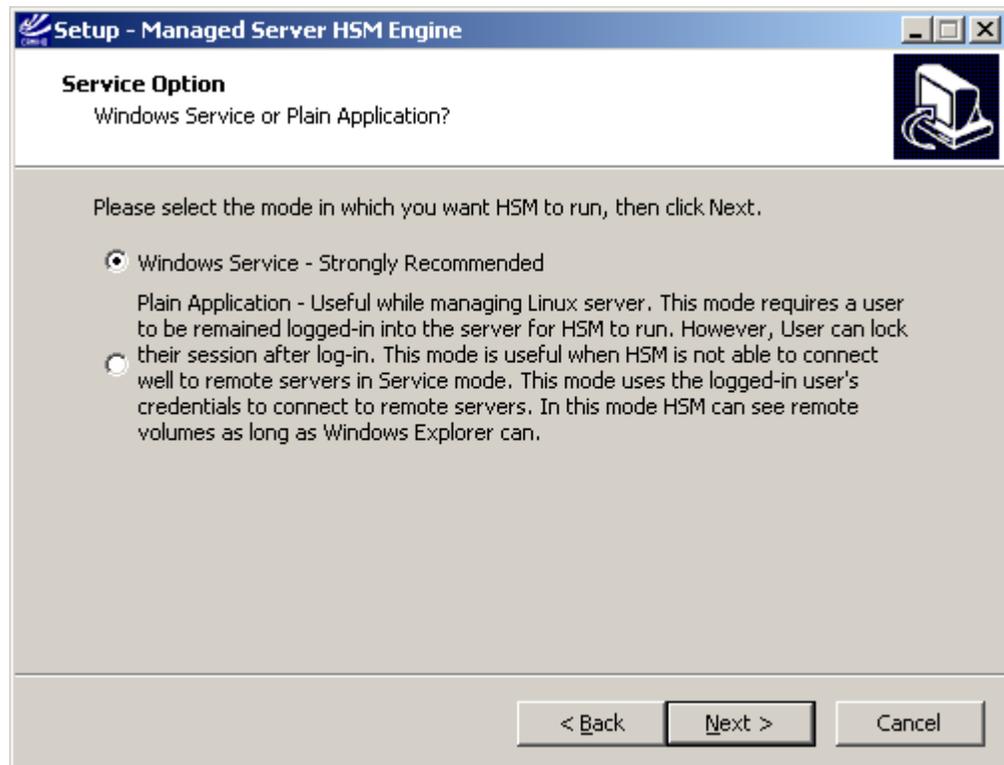


The following windows appear.

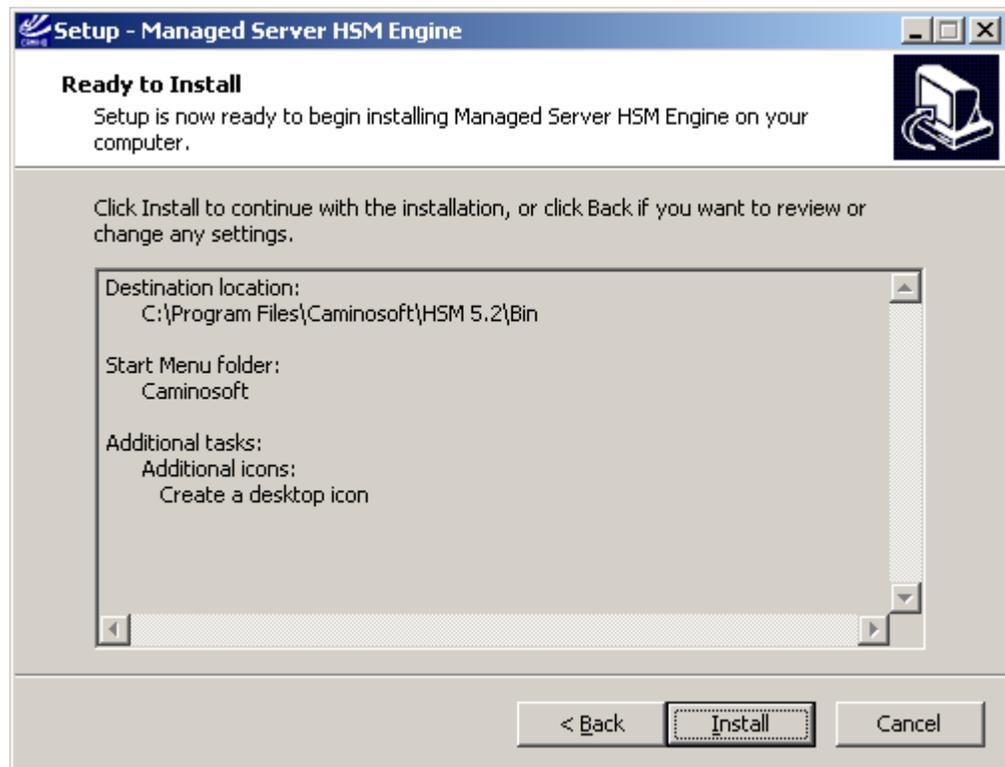


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8. On the **Service Option** window, select an execution mode, and then click **Next**.

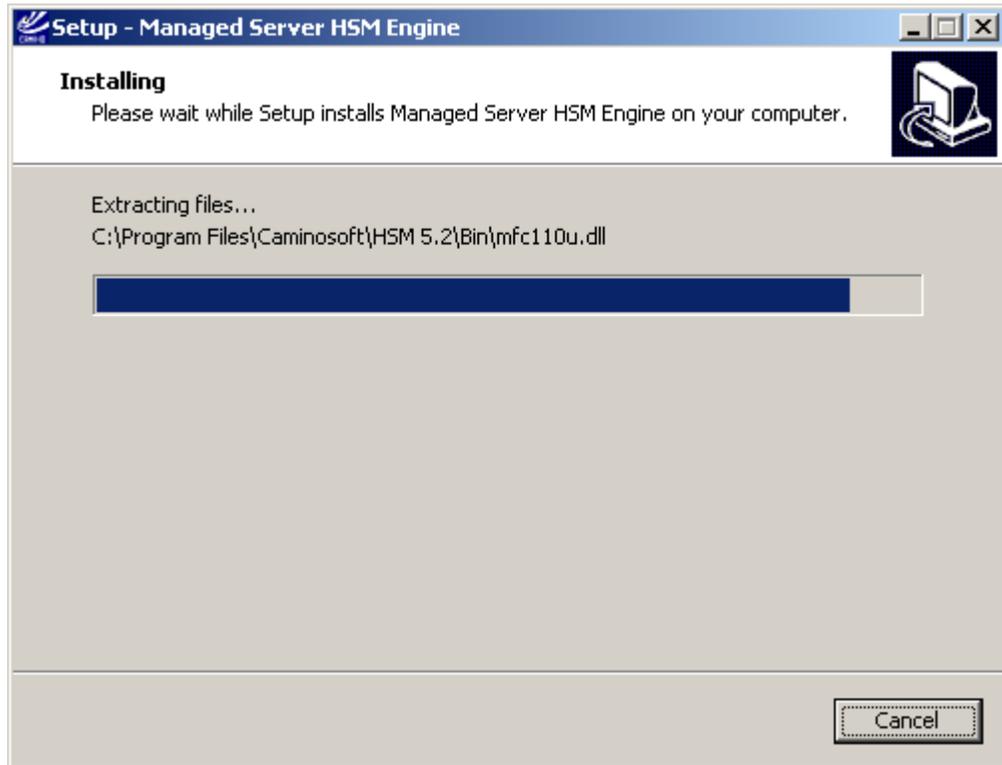


9. On the **Ready to Install** window, click **Install**.



The installation procedure displays the following window.

- ■ ■ ■ Chapter 7 – Using CaminoSoft to Create Trusted Edge Recallable Symbolic Links for Windows

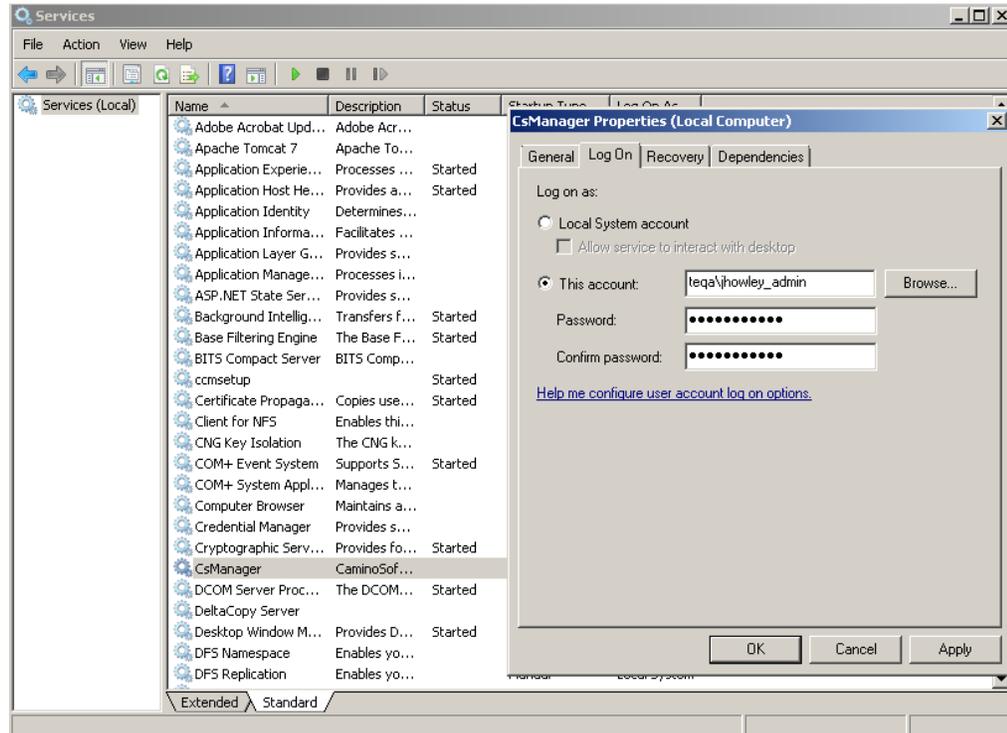


10. On the **Completing the Wizard** window, select the **Launch Service Control Manager** checkbox to configure the CsManager Service, and then click **Finish**.



11. On the **Servers** window, in the left window **Name** list, select **CsManger**.
12. To change from a local service account to a domain account, on the **CsManager Properties** window, click the **Log On** tab, and then:
 - a) Select the **This account** checkbox.
 - b) Browse to the account you want to use.
 - c) Type a password.
 - d) Retype the password to confirm.
 - e) Click **Apply** when done.
13. Restart the CsManager Service.

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As Figure 7-2 illustrates, CaminoSoft creates two databases upon installation.

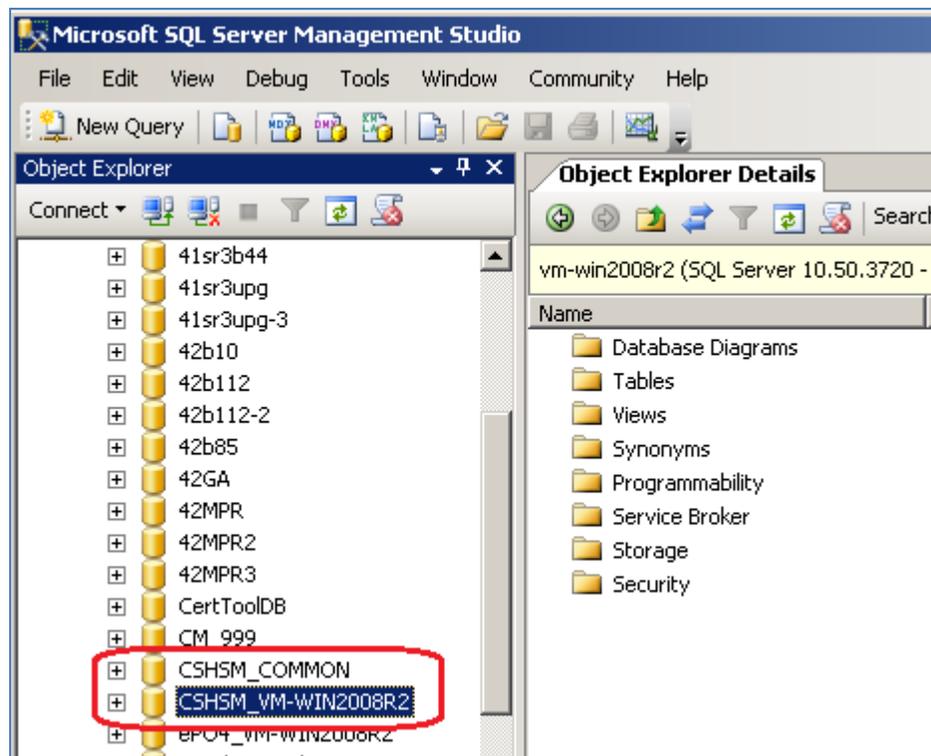


Figure 7-2: CaminoSoft Databases

Enabling the Fpolicy on NetApp

Once you have installed the CaminoSoft Managed Server HSM Administrator software on the Trusted Edge Server, you must create an Fpolicy on the NetApp 7-m device. You can create the Fpolicy from a terminal session into NetApp by issuing the following three commands on the filer console:

- `options fpolicy.enable on`
- `fpolicy create <policy_name> screen`
- `fpolicy enable <policy_name>`

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Figure 7-3 illustrates an example.

```
vm-netapp1> options fpolicy.enable on
vm-netapp1> Thu Jun 13 12:47:08 EDT [vm-netapp1:fpolicy.enable:info]: FPOLICY: The file policy feature has been enabled.

vm-netapp1> fpolicy create TELinks screen
File policy TELinks created successfully.
vm-netapp1> fpolicy enable TELinks
File policy TELinks (file screening) is enabled.
vm-netapp1> Thu Jun 13 12:47:38 EDT [vm-netapp1:fpolicy.fscreen.enable:info]: FPOLICY: File policy TELinks (file screening) is enabled.

vm-netapp1> █
```

Figure 7-3: Creating an Fpolicy

Once you have created the Fpolicy, you must install the CaminoSoft User Interface application.

Installing the CaminoSoft User Interface Application

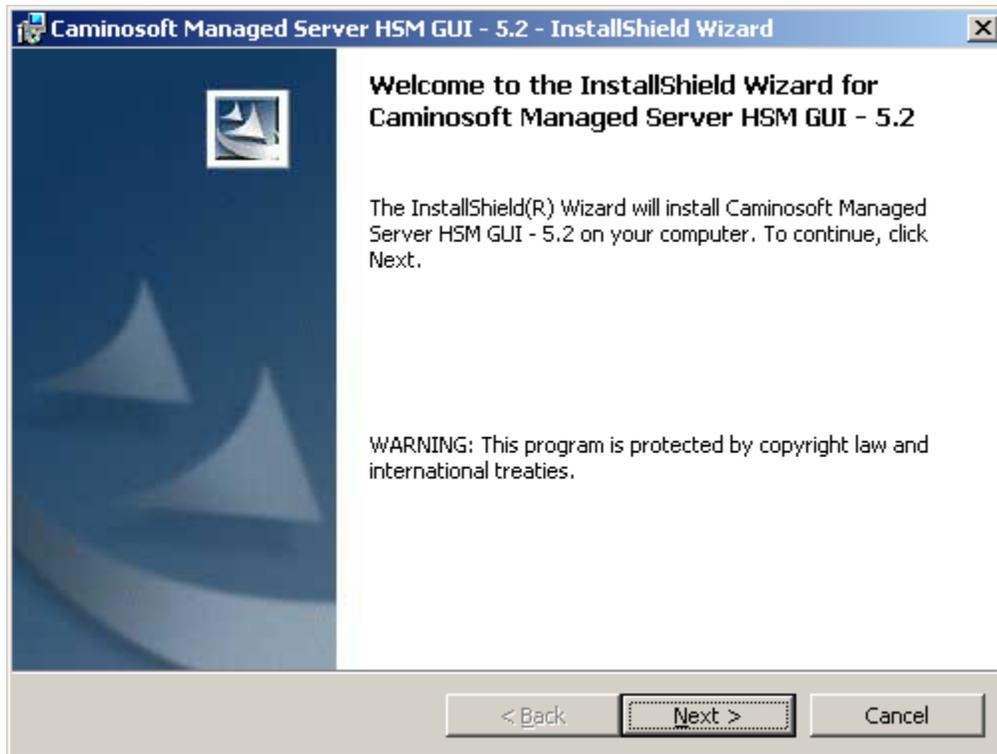
Use the following procedure to install the CaminoSoft User Interface application.

▼ To install the CaminoSoft User Interface

1. Run the following executable.

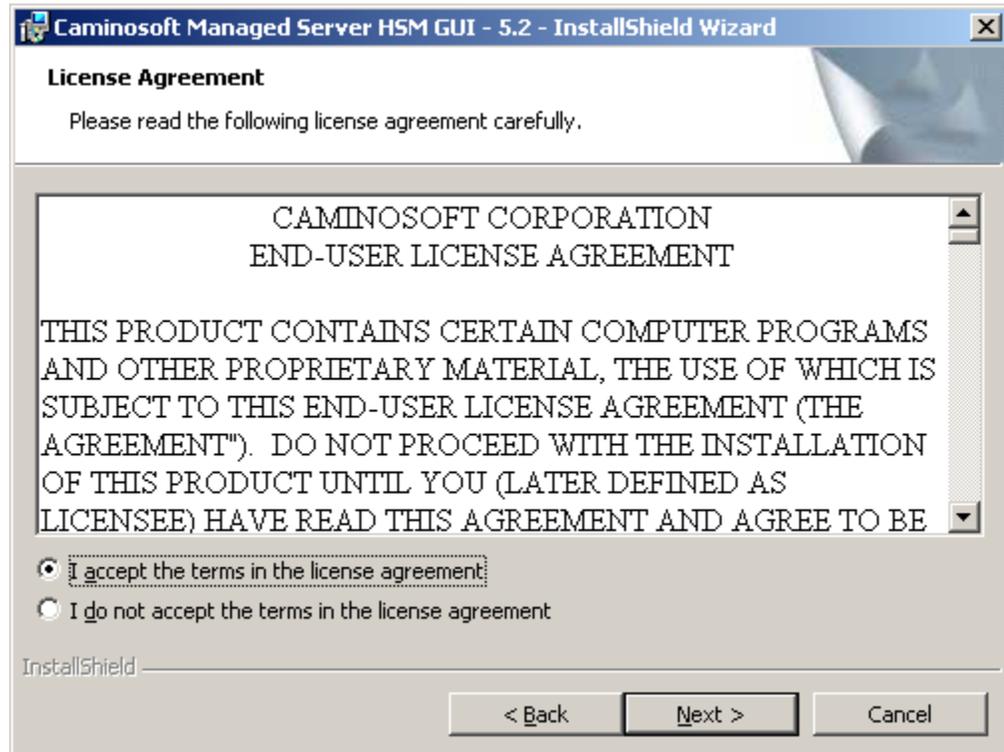
```
\CaminoSoft\Managed_Server_W2K_52_4021\cd_image\gui\setup.exe
```

2. On the **Welcome** window, click **Next**.

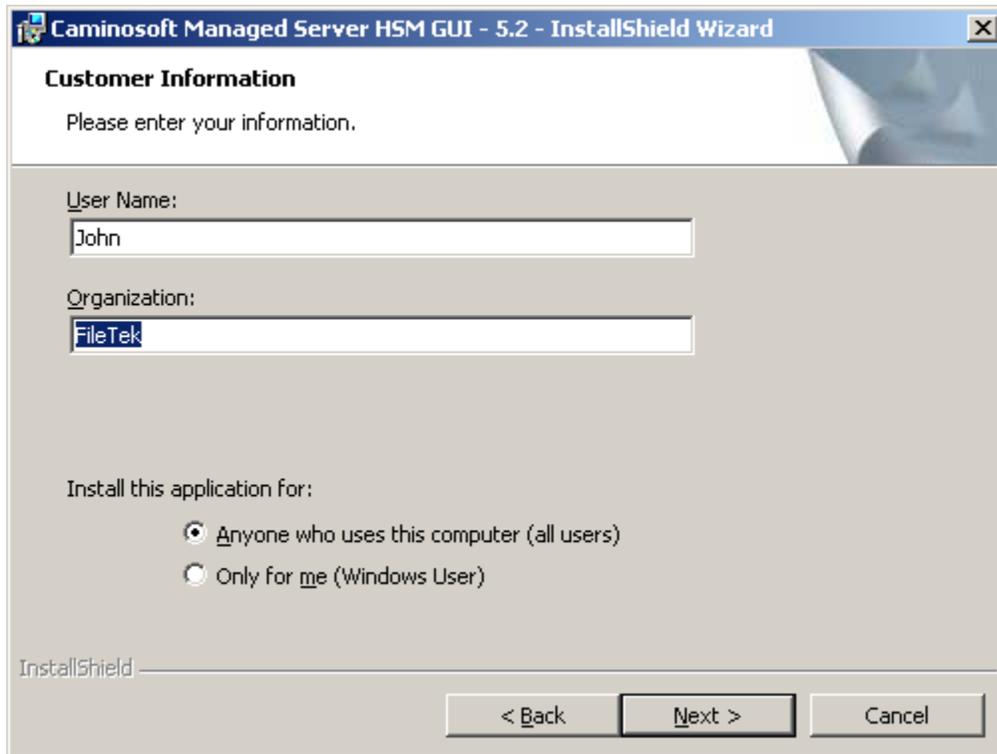


3. On the **License Agreement** window, select **I accept the terms in the license agreement**, and click **Next**.

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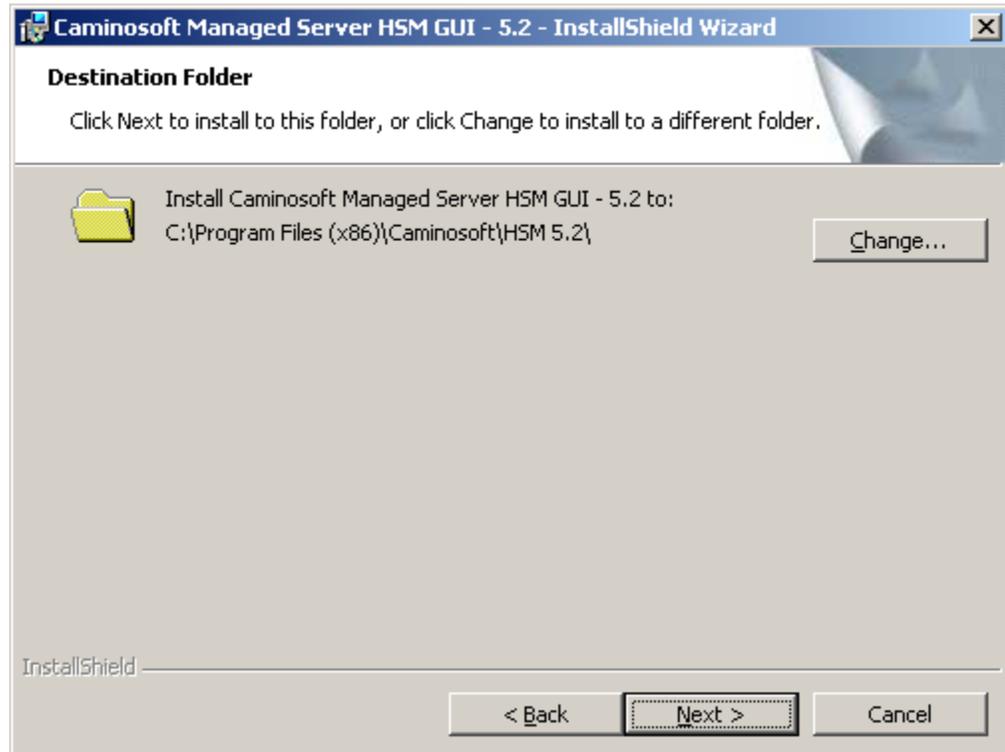


4. On the **Customer Information** window:
 - In the **User Name** text box, type a user name.
 - In the **Organization** text box, type your company name.
 - Select the **Anyone who uses this computer (all users)** check box.
 - Click **Next**.

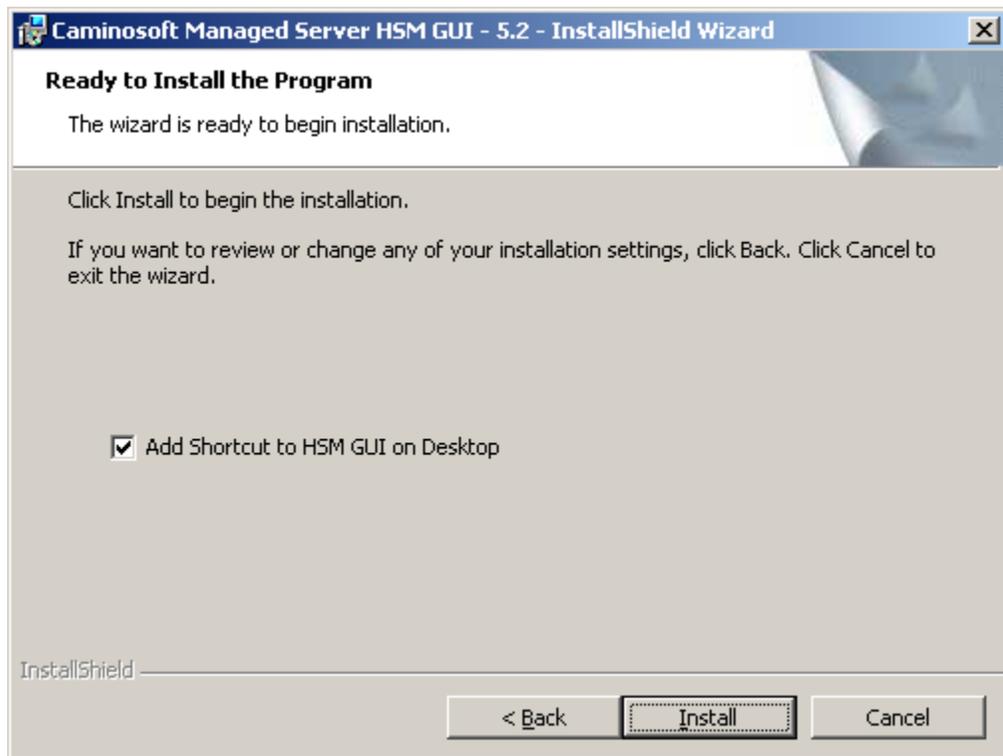


5. On the **Destination Folder** window, click **Next** to install the specified folder, or click **Change** to browse to a different folder, and then click **Next**.

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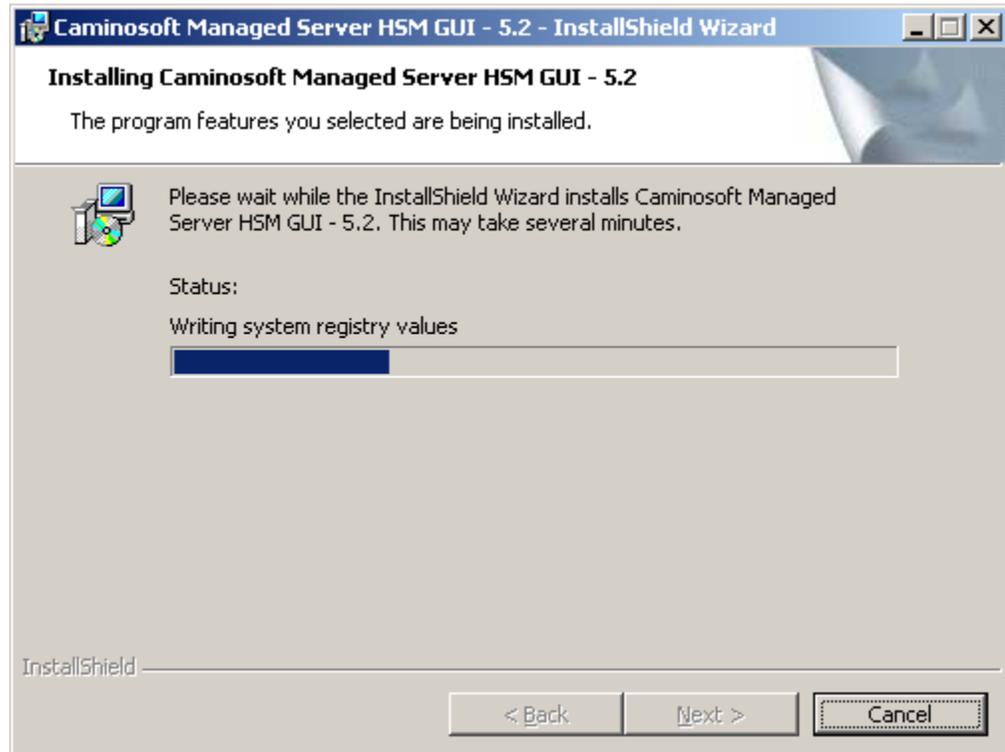


6. On the **Ready to Install the Program** window, select the **Add Shortcut to HSM GUI on Desktop** checkbox, and click **Install**.

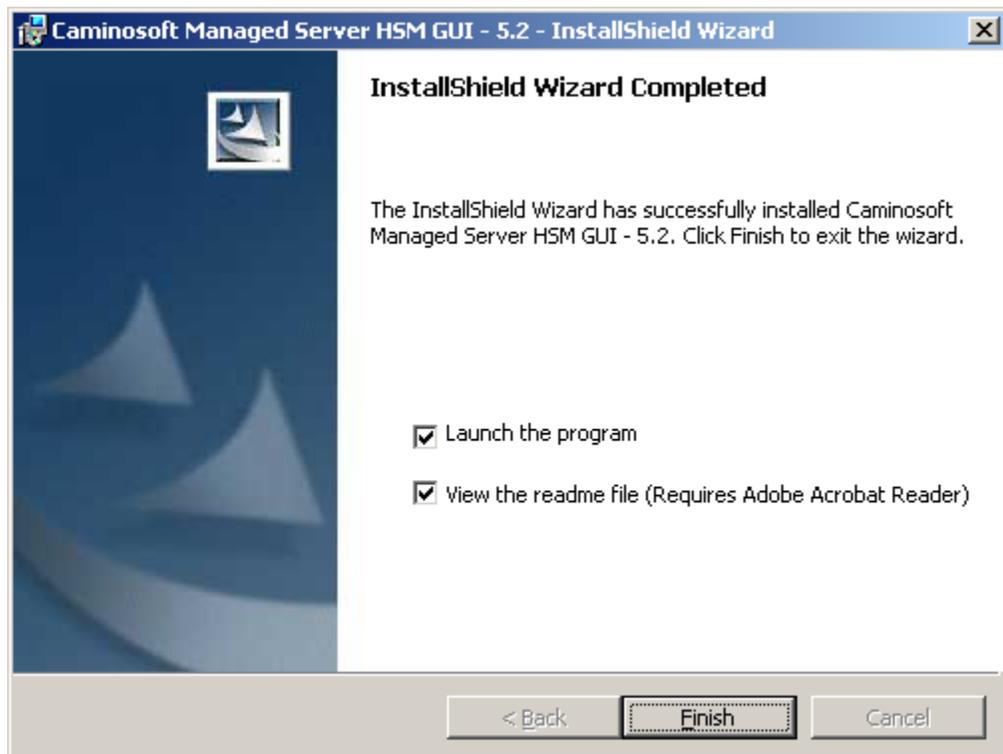


The software displays the Installing window.

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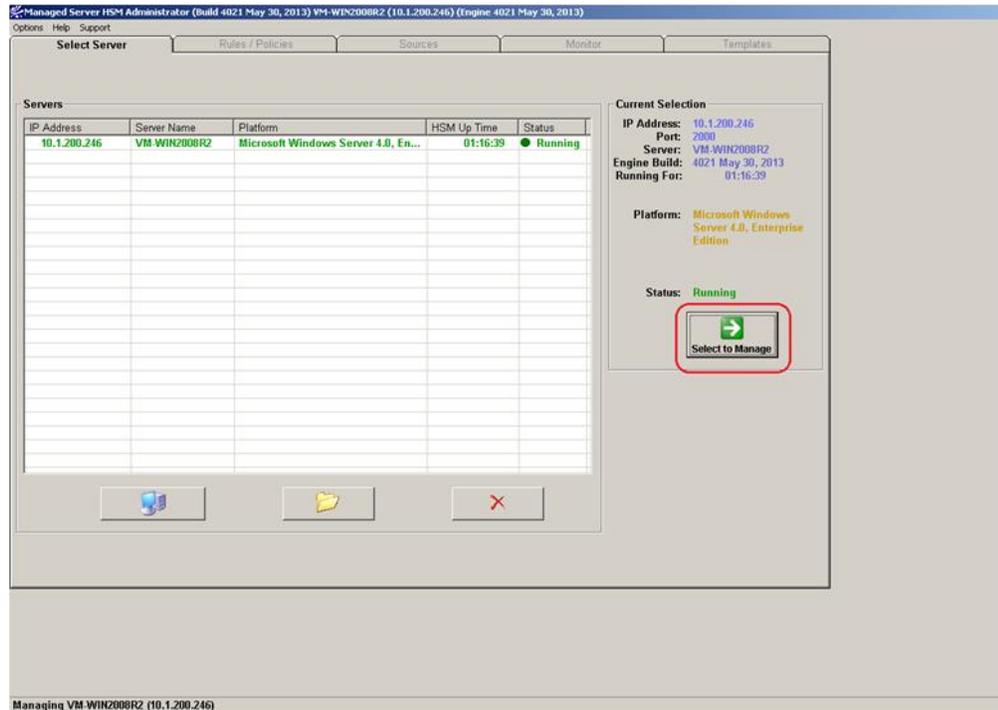


7. On the **InstallShield Wizard Completed** window, select the **Launch the program** and **View the readme file** checkboxes, and then click **Finish**.



8. On the **Managed Server HSM** window (initial user interface window), under the **Server** tab, click **Select to Manage**.

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9. On the **GUI Administration Credentials** window:
 - a) In the **New Password** text box, type a password.
 - b) In the **Confirm New Password** text box, retype the new password.
 - c) Click **OK**.



GUI Administrator Credentials

Please setup password to restrict GUI access to
Managed Server

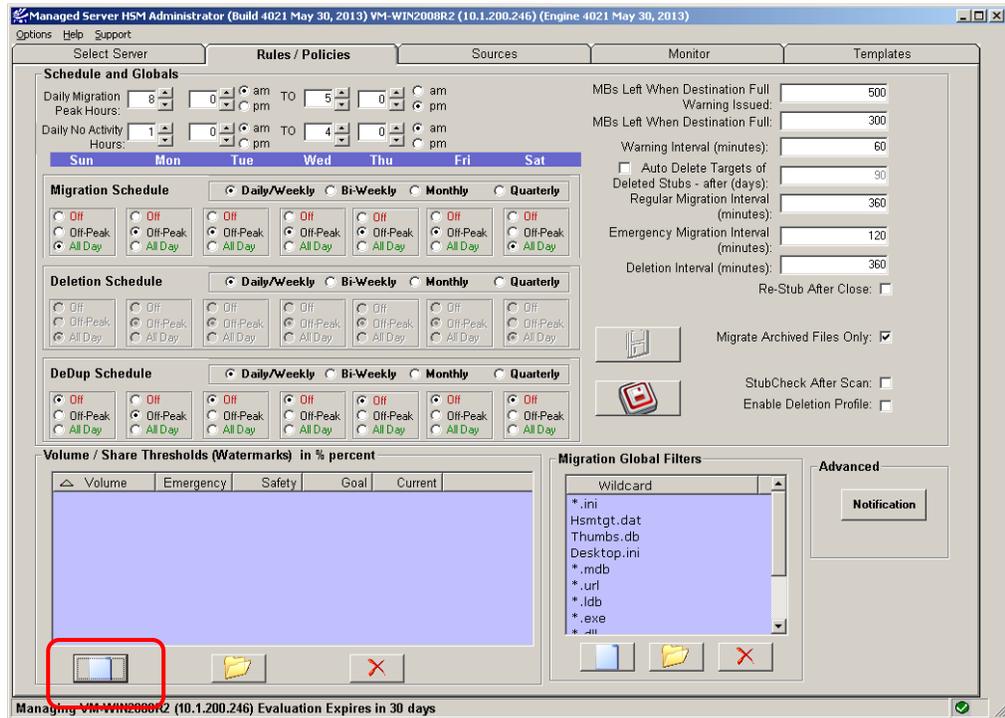
New Password

Confirm New Password

OK Cancel

10. Click the **Rules/Policies** tab.

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11. Under **Rules/Policies**, click the blank page icon  under **Volume/Share Thresholds**.

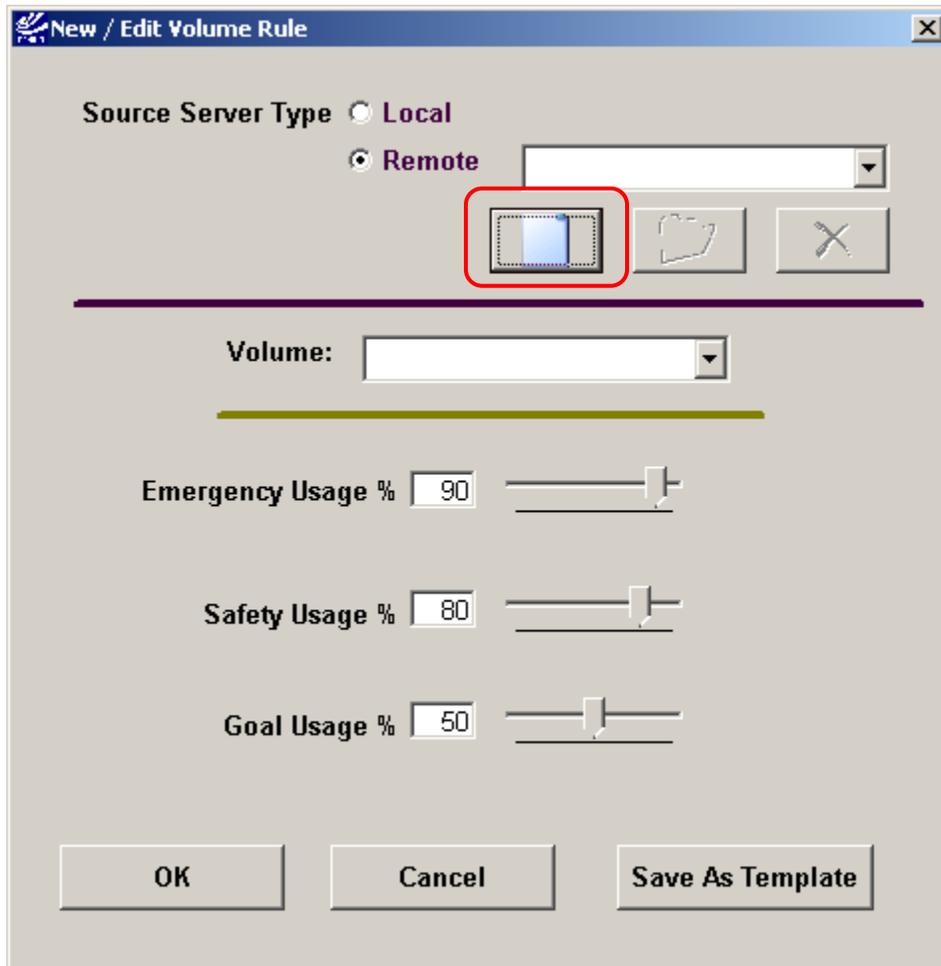
This action launches the New/Edit Volume Rule window.

12. On the **New/Edit Volume Rule** window, under **Source Server Type**:

a) Select **Remote**

b) Click .

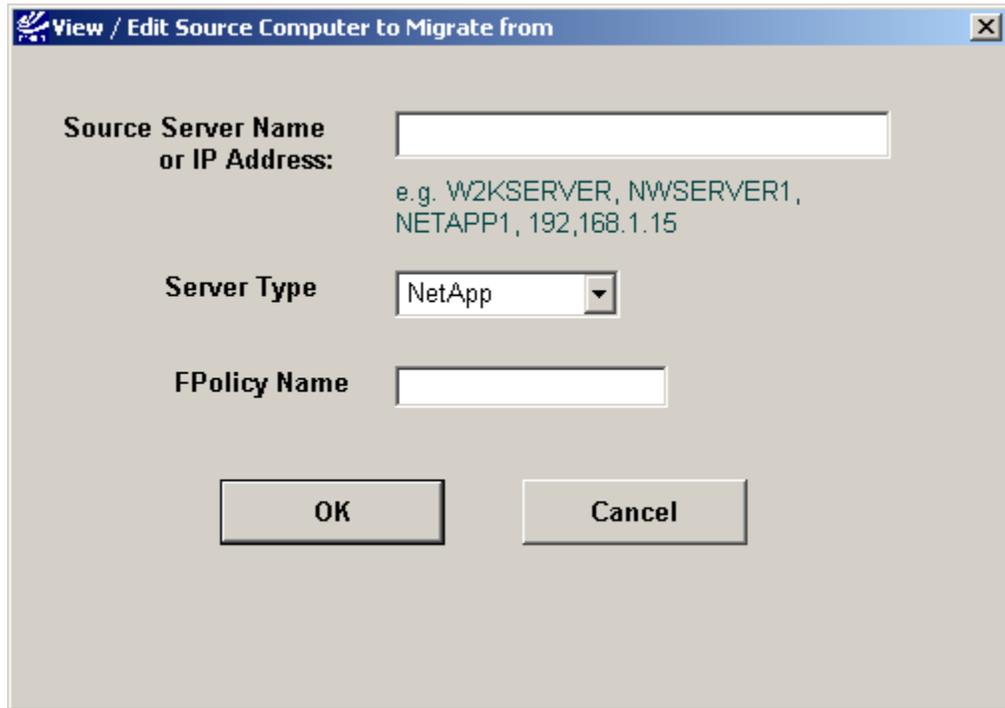
c) Click **OK** to display the View/Edit Source Computer to Migrate from window.



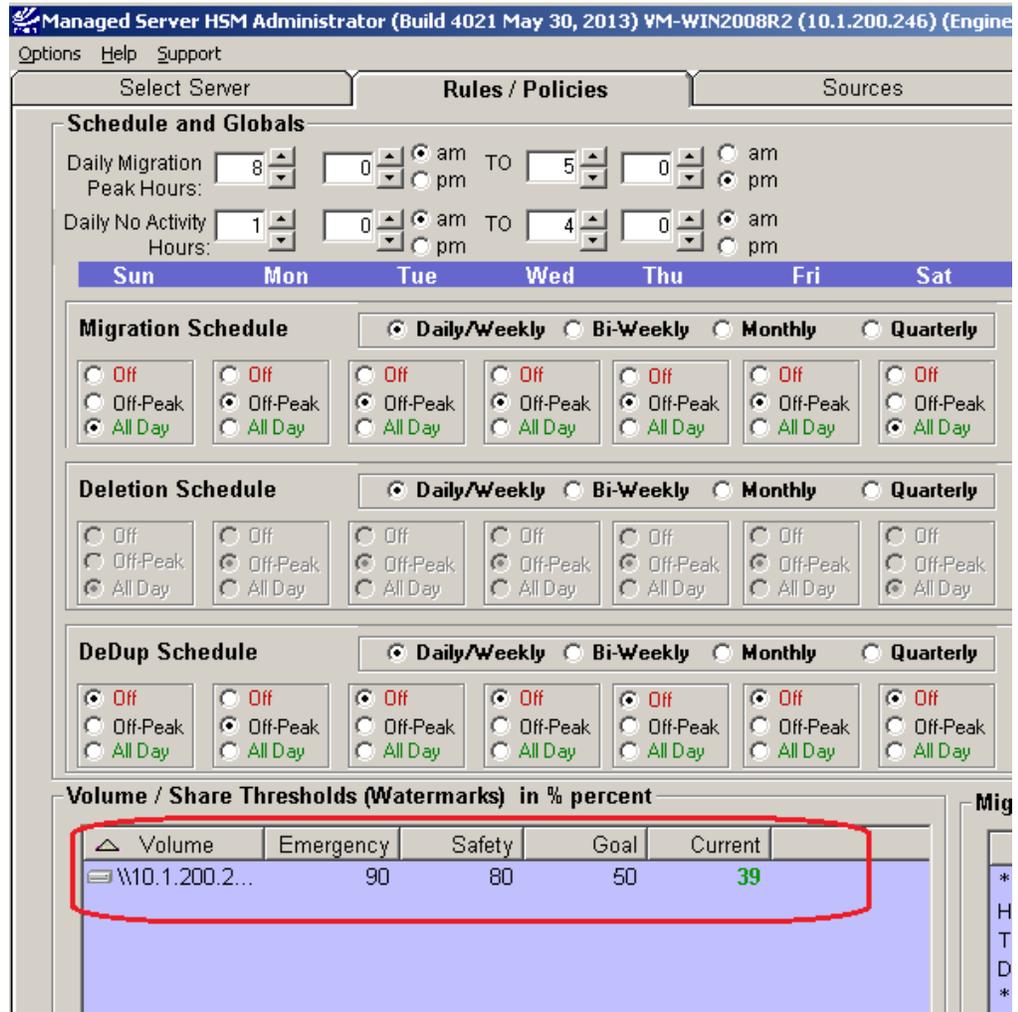
13. On the **View/Edit Source Computer to Migrate from** window:

- a) In the **Source Server Type** text box, type the server name or IP Address of the NetApp 7-m filer.
- b) Leave the **Server Type** as **NetApp**.
- c) In the **Fpolicy Name** text box, type the name of the FPolicy that you previously created.
- d) Click OK twice to save the settings.

■ ■ ■ ■ Chapter 7 – Using CaminoSoft to Create Trusted Edge Recallable Symbolic Links for Windows



The newly added NetApp connection will now appear under the Volume/Share Thresholds.



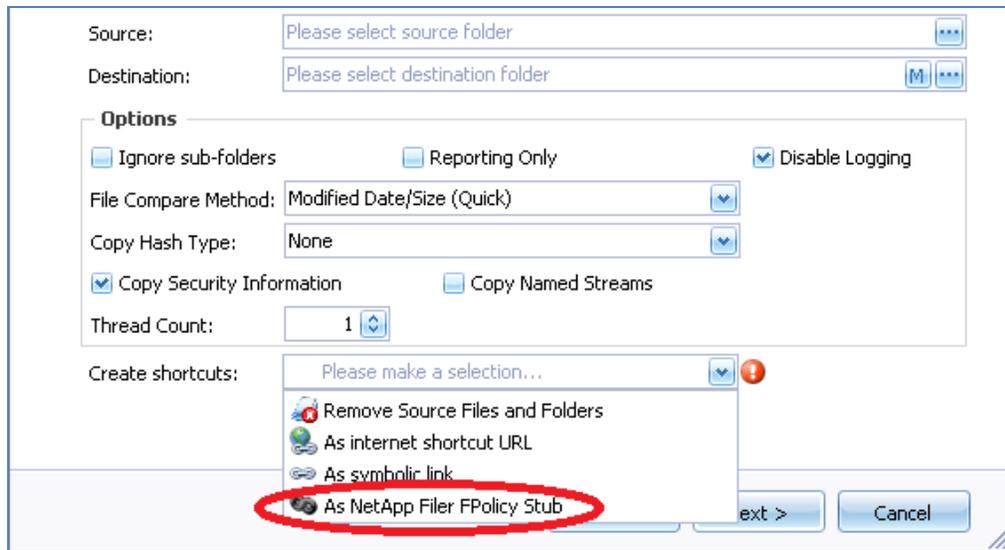
- Once you have added the NetApp connection, restart the **CsManager.exe** service from the Windows services applet.

Verifying that the CsManager Local (CaminoSoft) Service is Running

Use the following procedure to verify that the CsManager local (CaminoSoft) service is running.

▼ To verify that the CsManager (CaminoSoft) Service is running

1. In the Trusted Edge user interface, on the **Job Definition** window, click the arrow next to **Type**, and select **Migrate**.



2. Click the arrow next to **Create shortcuts** to display the create shortcuts dropdown list. If the **As NetApp Filer FPolicy Stub** option displays, the CsManger Service is active.



About Symbolic Links for Windows Files

Appendix A provides important information about symbolic links (symlinks) for Windows files and discusses symbolic link evaluation.

Notes about Symbolic Links

Note the following:

- *Only* Windows Vista/above and Windows 2008/above support symbolic links.
- Symbolic links are soft links, similar to Internet Shortcut URLs, except that the Windows file system filter driver resolves the target file/folder using the Windows API to seamlessly access data without having to open Internet Explorer.

- The system resolves a symbolic link using the credentials of the logged in user accessing the link.
- If a SGI Trusted Edge Migrate job creates a symbolic link using an Administrator share path (i.e., `\\ServerName\C$\SharedFolderName`), then only users who have admin share (C\$) permissions can open the file. For non-admin shares, standard permissions apply.
- Deleting a symbolic link removes *only* the symbolic link, not the target file that the symbolic link references.
- Applications or users opening a symbolic link file will open the target file.
- Applications or users editing a displayed symbolic link file will edit the target file.
- *Never* rename target files or change their location. These actions will break the source symbolic link.
- When creating Symbolic Links, ***always use a UNC path as the destination location*** for the Migrate job settings. Even if the destination is a local drive, *do not* use a mapped path such as folder `F:\Destination`. Instead, use `\\LocalMachineName\Destination` so that remote users know the symbolic link recall path. Otherwise, users will not have access to files unless they also have a local `F:\Destination` folder that contains the target files.
- Windows Explorer shows symbolic links as having 0 bytes. The Date Modified time on the Symbolic link will match the Modified Time of the Target file at the time the symbolic link is created. Windows does not synchronize symbolic link timestamps with the target file if the target is subsequently modified.

Evaluating Symbolic Links

For users to open symbolic links, you must properly configure the symbolic link evaluation mode settings on every client machine desiring access. Refer to the following link about the configuration and default settings of symbolic link evaluation:



[http://technet.microsoft.com/en-us/library/cc754077\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc754077(WS.10).aspx)

This article states that, by default, “symbolic link evaluation for Windows Vista, Windows 7, Windows Server 2008 and Windows Server 2008 R2 is Local-to-local enabled, Local-to-remote enabled, Remote-to-local disabled, Remote-to-remote disabled.”

To view the current symbolic link evaluation behavior, run this command from an administrator command prompt:

```
fsutil behavior query SymlinkEvaluation
```

To enable Remote-to-Local and Remote-to-Remote symbolic link evaluation, run this command from an administrator command prompt:

```
fsutil behavior set SymlinkEvaluation R2L:1 R2R:1
```

Changing the SymlinkEvaluation setting *does not* require a reboot.

You can also control SymlinkEvaluation settings through Group Policy by browsing to **Computer Configuration-> Administrative Templates- > System -> NTFS FileSystem** and configuring **Selectively allow the evaluation of a symbolic link**. Refer to Figure A-1.

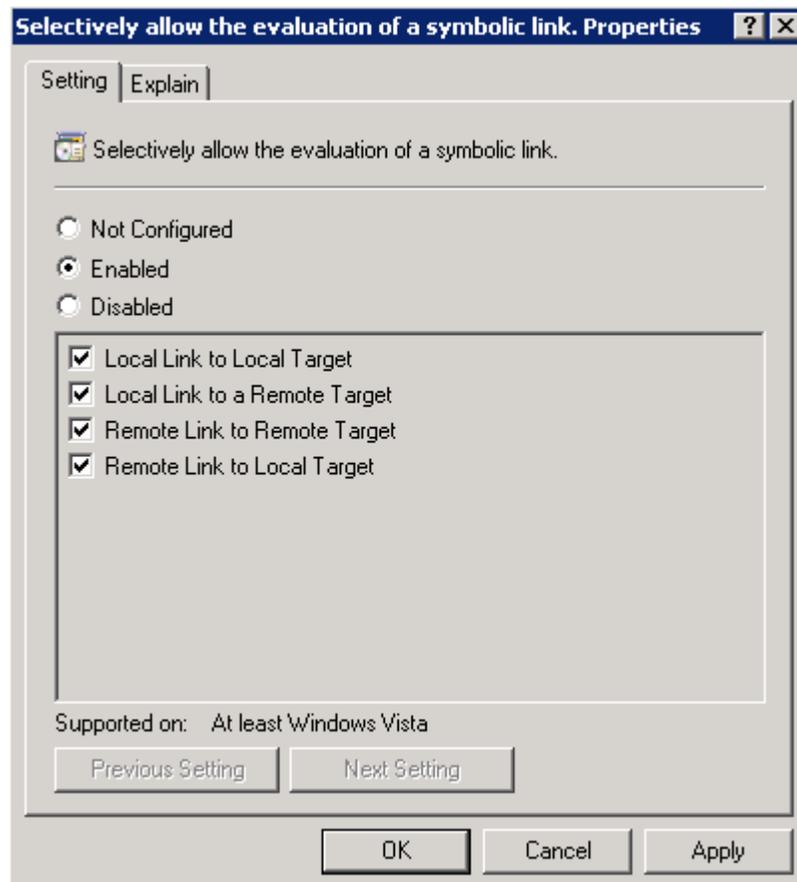


Figure A-1: AD Group Policy Editor

Additionally, you can control SymlinkEvaluation settings by adjusting this register key:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\FileSystem\

Refer to [http://technet.microsoft.com/en-us/library/cc785435\(Ws.10\).aspx](http://technet.microsoft.com/en-us/library/cc785435(Ws.10).aspx) for details.

A P P E N D I X **B**



Sorting Data in the User Interface Display

Appendix B explains how to sort data displayed in the user interface by job type and various filters.

Sorting the Job Name Column

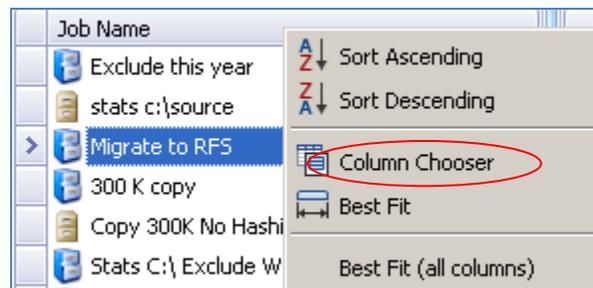
By default, the left portion of the SGI Trusted Edge main window displays only the job name. You can add additional columns to the display to view jobs differently from the standard presentation.

Use the following procedure to change the standard display.

▼ To change the standard job name display presentation

1. Right-click the **Job Name** header bar, and select **Column Chooser** from the drop-down list.

■ ■ ■ ■ Appendix B – Sorting Data in the User Interface Display



Selecting Column Chooser presents the following customization choices.



Dragging any of the customization options to the header bar adds another column within the left user interface window. The data can be sorted by column as desired for effective viewing.

2. To display the Job Name list by Job Type, select **Job Type** from the Customization list and drag it to the header bar. The resulting display will be sorted by job type rather than job name.



Status	Job Type	Job Name
Active	Copy	1 point 2 Million Copy No Hash
Active	Copy	300 K copy
Inactive	Copy	Copy 300K No Hashing
Active	Copy	Copy 600K
Active	Copy	Exclude this year
Active	Copy	Migrate to RFS
Inactive	Copy	stats c:\source
Active	Gather Statistics	gather stats on ... c:\b
Active	Gather Statistics	Stats C:\ Exclude Windows and Program Files
Active	Gather Statistics	Stats c:\a
Active	Gather Statistics	stats migrate
Active	Gather Statistics	Stats on alis te
Active	Gather Statistics	stats source
Active	Migrate	Migrate and Sym link copied a to b
Active	Synchronize (Source ↔ Destination)	Sync Both ways
Active	Synchronize (Source → Destination)	Sync b to a with ... folder
Active	Synchronize (Source → Destination)	Sync Src to Dest
Active	Synchronize (Source ← Destination)	sync b to a
Active	Verify Hashes	Verify Hashes of Sync Both ways
Active	Delete Files and Folders	Delete files and folders
Active	Delete Stale Links	Delete Stale Links

Using the Filter Editor

You can use the filter editor to sort job run results based on any column in the SGI Trusted Edge right window pane according to different criteria. Figure B-1 illustrates a sample SGI Trusted Edge main window display. The right window pane contains a list of jobs and information about those jobs.

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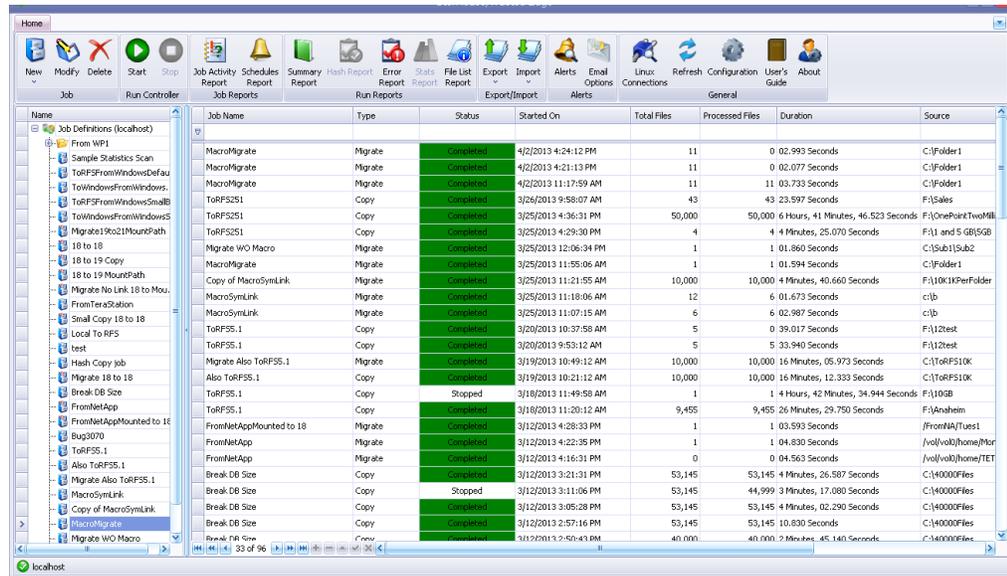
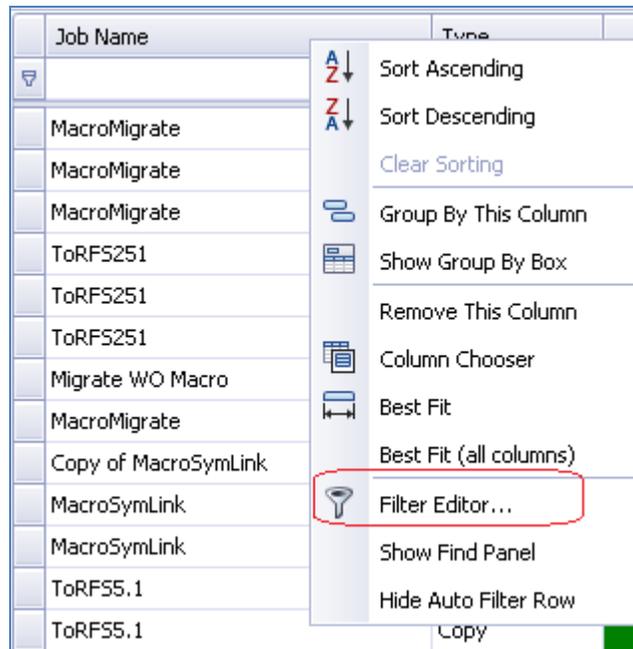


Figure B-1: Standard Job Display

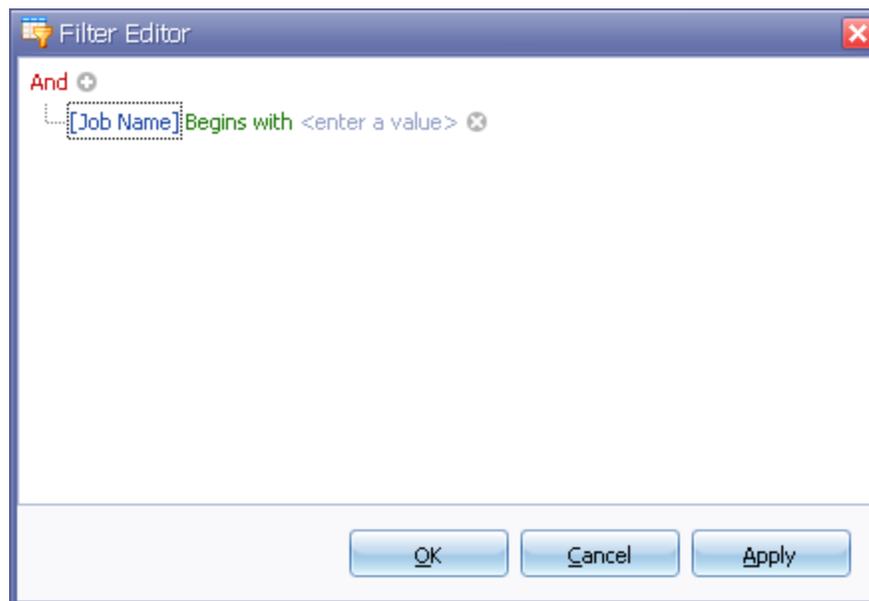
Assume that you want to filter the job list to display only those job runs that have occurred since (greater than) March 12, 2013. The following procedure explains how to use the Filter Editor to accomplish this goal.

▼ To use the Filter Editor to display only those jobs run since March 12, 2013

1. On the SGI Trusted Edge main window, right-click within the header bar on the **Started On** column and select **Filter Editor**.

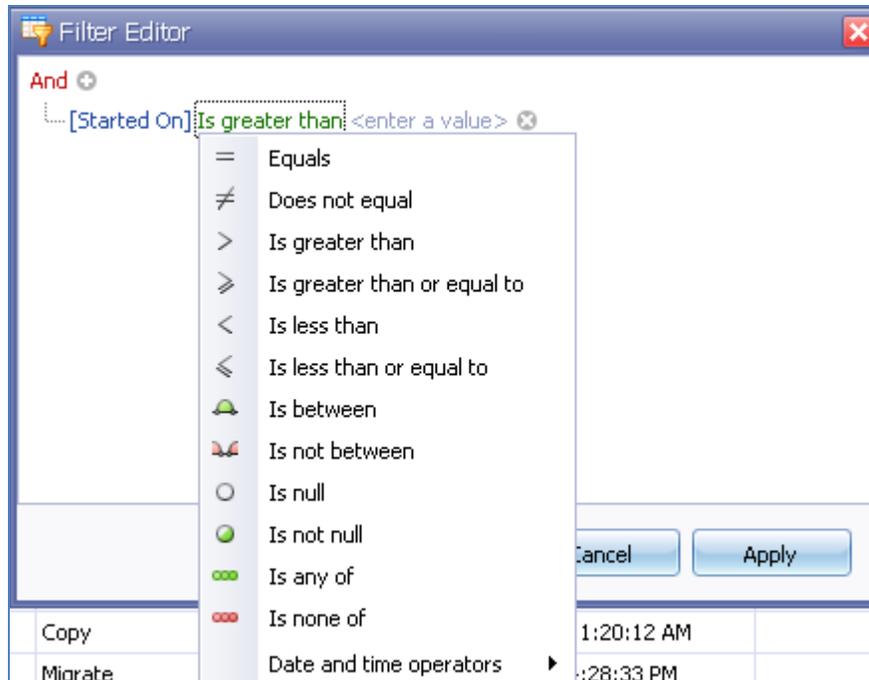


This action displays the Filter Editor dialog box.

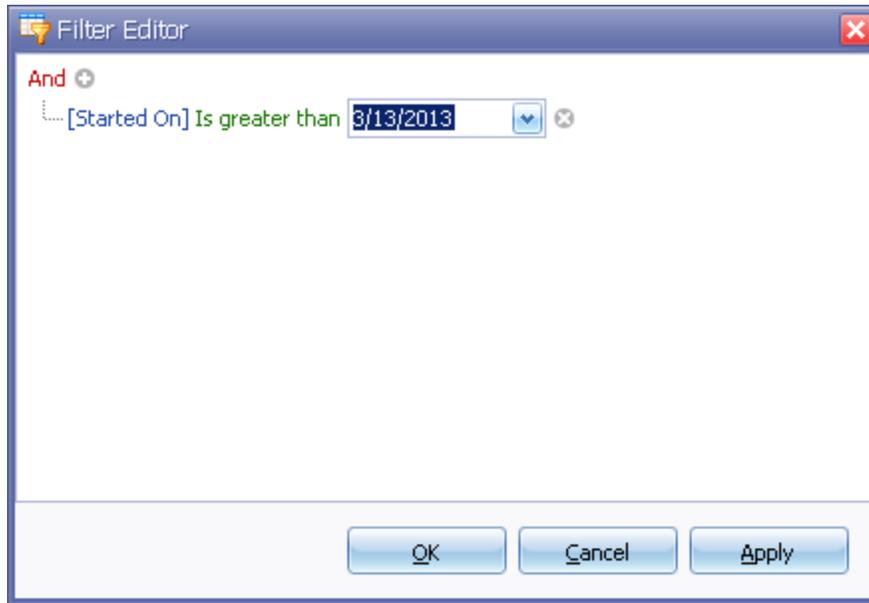


■ ■ ■ ■ Appendix B – Sorting Data in the User Interface Display

2. To view the jobs run since March 12, 2013, click **Job Name** and select the **Started On** option from the dropdown list. Then, select **Begins With** and **Is greater than**.



3. Click **<enter a value>** to reveal a dropdown calendar view.
4. Click **March 13**.



5. Click **Apply** to display only those Jobs that were run since March 13, 2013.

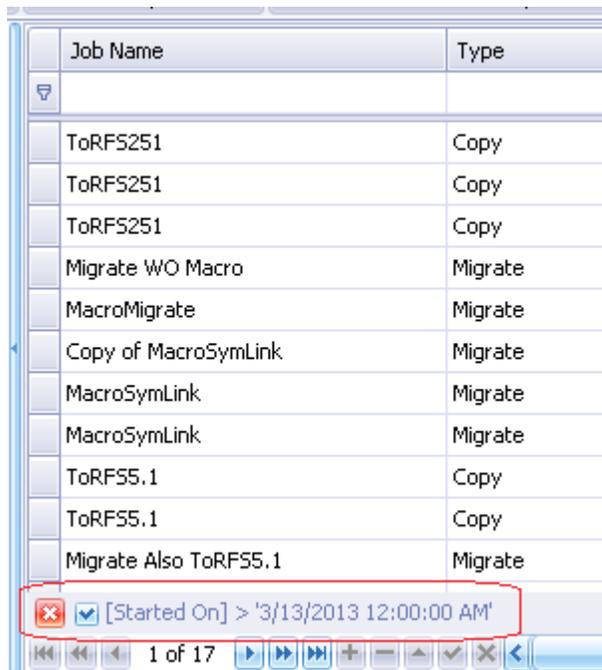
■ ■ ■ ■ Appendix B – Sorting Data in the User Interface Display

Job Name	Type	Status	Started On	Total Files	Processed Files	Duration	Source
MacroMigrate	Migrate	Completed	4/2/2013 4:24:12 PM	11	0	02.993 Seconds	C:\Folder 1
MacroMigrate	Migrate	Completed	4/2/2013 4:21:13 PM	11	0	02.077 Seconds	C:\Folder 1
MacroMigrate	Migrate	Completed	4/2/2013 11:17:59 AM	11	11	03.733 Seconds	C:\Folder 1
ToRFS251	Copy	Completed	3/26/2013 9:58:07 AM	43	43	23.597 Seconds	F:\Sales
ToRFS251	Copy	Completed	3/25/2013 4:36:31 PM	50,000	50,000	6 Hours, 41 Minutes, 46.523 Seconds	F:\OnePointTwoMillion
ToRFS251	Copy	Completed	3/25/2013 4:29:30 PM	4	4	4 Minutes, 25.070 Seconds	F:\1 and 5 GB\5GB
Migrate WO Macro	Migrate	Completed	3/25/2013 12:06:34 PM	1	1	01.860 Seconds	C:\Sub1\Sub2
MacroMigrate	Migrate	Completed	3/25/2013 11:55:05 AM	1	1	01.594 Seconds	C:\Folder 1
Copy of MacroSymLink	Migrate	Completed	3/25/2013 11:21:55 AM	10,000	10,000	4 Minutes, 40.660 Seconds	F:\10K\1KPerFolder
MacroSymLink	Migrate	Completed	3/25/2013 11:18:06 AM	12	6	01.673 Seconds	c:\b
MacroSymLink	Migrate	Completed	3/25/2013 11:07:15 AM	6	6	02.987 Seconds	c:\b
ToRFS5.1	Copy	Completed	3/20/2013 10:37:58 AM	5	0	39.017 Seconds	F:\12test
ToRFS5.1	Copy	Completed	3/20/2013 9:53:12 AM	5	5	33.940 Seconds	F:\12test
Migrate Also ToRFS5.1	Migrate	Completed	3/19/2013 10:49:12 AM	10,000	10,000	16 Minutes, 05.973 Seconds	C:\ToRFS10K
Also ToRFS5.1	Copy	Completed	3/19/2013 10:21:12 AM	10,000	10,000	16 Minutes, 12.333 Seconds	C:\ToRFS10K
ToRFS5.1	Copy	Stopped	3/18/2013 11:49:58 AM	1	1	4 Hours, 42 Minutes, 34.944 Seconds	F:\10GB
ToRFS5.1	Copy	Completed	3/18/2013 11:20:12 AM	9,455	9,455	26 Minutes, 29.750 Seconds	F:\Anaheim

Use the following procedure to return to the default display.

▼ To return to the default display:

1. At the bottom of the right window pane, there is a dropdown list of all current filters.



Job Name	Type
ToRFS251	Copy
ToRFS251	Copy
ToRFS251	Copy
Migrate WO Macro	Migrate
MacroMigrate	Migrate
Copy of MacroSymLink	Migrate
MacroSymLink	Migrate
MacroSymLink	Migrate
ToRF55.1	Copy
ToRF55.1	Copy
Migrate Also ToRF55.1	Migrate

[X] [v] [Started On] > '3/13/2013 12:00:00 AM'

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2. Click X to return to the default job run display.

In addition, you can quickly filter the job display by typing a value in the text box below a column header. For example, the following figure illustrates a list of processed files.

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Processed Files
1
13
1
1
1
1
53
13
1
6
7
12
13
147
147
95,804
9,965
0
218,185
53

Type 147 in the Processed Files column name text box to display only those jobs that processed 147 files. The resulting display looks like this.

Processed Files
147
147
147



Using PowerShell Options to Manage SGI Trusted Edge

Appendix C explains how to use PowerShell options to manage SGI Trusted Edge.

Prerequisites

The prerequisites necessary to use the PowerShell options built into SGI Trusted Edge are:

- The local server/workstation must be running with a SGI Trusted Edge Enterprise license.
- The local server must have the SGI Trusted Edge Enterprise Administration Console installed.
- You can enable the Trusted Edge Enterprise Administration Console setting during installation. For existing Trusted Edge sites, you can enable the

Enterprise Administration Console feature with the Add/Remove Programs or Programs and Features applet in Windows 2003/2008.

- To determine if Remote Administration is enabled on a machine, view the HKEY_LOCAL_MACHINE\SOFTWARE\SGI Trusted Edge\AllowRemoteAdmin registry key. A value of one (1) indicates enabled while a value of zero (0) indicates disabled.
- The HKEY_LOCAL_MACHINE\SOFTWARE\SGI Trusted Edge\PortNumber registry entry defines the port number in use.
- If you are connecting to a remote server, the Remote Administration feature must be similarly enabled on the remote machine.
- SGI Trusted Edge can use PowerShell 2.0 or 3.0.
 - PowerShell 2.0 is available for Windows Server 2003/2008, XP, or Vista. You can download PowerShell 2.0 at this link:
<http://support.microsoft.com/kb/968929>
 - PowerShell 3.0 is available for Windows 7 and Windows Server 2008. You can download PowerShell 3.0 at this link:
<http://www.microsoft.com/en-us/download/details.aspx?id=34595>
- To run PowerShell scripts, the local machine running the scripts (only) must have the Scripts feature enabled.
 - To determine whether a local machine can run scripts, type the following from a PowerShell prompt:
`Get-ExecutionPolicy`
 - If the Execution Policy is set to Restricted (the default on most systems), you can enable scripts to run by issuing the following command:
`Set-ExecutionPolicy Unrestricted`



- After enabling scripts, you must load the SGI Trusted Edge snap-in for PowerShell by running:

- `Add-PSSnapin "SGI.TrustedEdge.PSSnapIn"`

- You must call this snap-in at the beginning of all SGI Trusted Edge PowerShell script files.

- Once you have loaded the snap-in, you can list the available command options by running:

```
Get-Command SGI.TrustedEdge.PSSnapIn\*
```

The list of currently available commands include:

- Export-Alerts
- Export-Configuration
- Export-EmailOptions
- Export-JobDefinitions
- Export-LinuxConnections
- Get-Alert
- Get-Configuration
- Get-EmailOptions
- Get-JobDefinition
- Get-JobRunStatus
- Get-JobRunQueueAvailability
- Get-LinuxConnection
- Import-Alerts
- Import-Configuration

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- Import-EmailOptions
- Import-JobDefinitions
- Import-LinuxConnections
- List-Alerts
- List-LinuxConnections
- List-JobDefinitions
- List-JobQueueItems
- List-JobRuns
- Pause-JobDefinition
- Remove-Alert
- Remove-FromJobQueueByJob
- Remove-FromJobQueueByQItemId
- Remove-LinuxConnection
- Remove-JobDefinition
- Resume-JobDefinition
- Set-AlertStatus
- Set-Configuration
- Set-EmailOptions
- Set-LinuxConnectionStatus
- Set-JobDefinitionStatus
- Start-JobDefinition
- Stop-JobDefinition



- Wait-JobRunCompletion
- Wait-JobRunQueueAvailability

Examples

- ▼ To export the job definitions from a Remote server, execute the following command:

```
PS C:\Users> Export-JobDefinitions -Connection vm-llarch96:16016 -Path F:\ExportFolder\From2003Server\JobExport3.xml
```

Table C-1 explains the command fields.

Table C-1: Command Fields for Export-JobDefinitions

Field	Definition
Export-JobDefinitions	Identifies the command action to be performed.
Connection vm-llarch96:16016	Provides the connection information for the remote server. In this example, the server name vm-llarch96 is the remote server name followed by :16016, which is the remote connection port to be used.
-Path F:\ExportFolder\From2003Server\JobExport3.xml	Provides the destination path for the exported .XML job definitions file.

- ▼ To Import the job definitions from a local file (the same file that was exported in the previous example), execute the following command:

```
PS C:\Users > Import-JobDefinitions -Connection vm-win2008r2:16016 -Path F:\ExportFolder\From2003Server\JobExport3.xml
```

Table C-2 defines the command fields.

Table C-2: Import-Job Definitions Command Fields

Field	Definition
Import-JobDefinitions	Identifies the command action to be performed.
-Connection vm-win2008r2:16016	Identifies the connection information for the server to receive the imported .xml job definitions. The server name vm-win2008r2 is the local server followed by :16016, which is the connection port to be used.
-Path F:\ExportFolder\From2003Server\JobExport3.xml	Identifies the source path for the .XML file to be imported.

In both instances, the server names and port numbers may vary depending on the system. Port 16016 is the default port used by SGI Trusted Edge. In these examples, a local file system (F:\) is used to store the exported file. However, a UNC path may also be used.

Note the following:

- By default, SGI Trusted Edge marks all imported Jobs and Alerts inactive. To import jobs with the same state they have on the source server, use the – Overwrite \$True statement at the end of the PowerShell command. Here is an example.

```
PS C:\Users >Import-JobDefinitions -Connection vm-
win2008r2:16016 -Path
F:\ExportFolder\From2003Server\JobExport3.xml -OverWrite
$True
```

Or

```
PS C:\Users\ > Import-Alerts -Connection vm-win2008r2:16016
-Path
\\alis\te\users\jhowley\ExportTest\EmailAlertsFromVMLLARCH9
6.xml -OverWrite $True
```

- SGI Trusted Edge imports Email and/or Configuration options with the same parameters they have on the Source (exporting) server. If the Data Folder



(from the Configuration export) differs from the current directory on the importing server, that path will not be updated until you manually restart the SGI Trusted Edge service on the importing server.

- When Importing Email Alerts, some Alerts may be configured to run against existing jobs on the system. PowerShell will not import Alerts that are designed to operate on a specific job if that job does not exist on the importing system. An error will be returned from the script similar to this output:

```
"Import-Alerts : An error occurred while updating the
entries. See the inner exception for details..."
```

```
FullyQualifiedErrorId :
Error,SGI.STHTE.PowerShell.ImportAlertsCmdlet"
```

- ▼ To format the output of a particular command, use the `|Format-Table -AutoSize` switch at the end of your script as follows:

```
List-JobRuns -Connection vm-11arch96:16016 -ViewType All |
Format-Table -AutoSize
```

To further define the output, you may specify the data to be displayed as follows:

```
List-JobRuns -Connection vm-11arch96:16016 -ViewType All |
Format-Table -AutoSize -Property
RunStatus,StartDate,EndDate,RunDuration
```

- ▼ To display the Job Name with the associated Job Runs, use the following command:

```
List-JobRuns -Connection vm-11arch96:16016 -ViewType All |
Format-Table -AutoSize -Property
@{Expression={$_.RunSettings.Name};Label="Job
Name";width=125},@{Expression={$_.ArchiveJobId};Label="Job
ID";},RunStatus,StartDate,EndDate,RunDuration
```

Other Useful Commands

Other useful commands include:

▼ To display data folder path and logs folder path

```
Get-Configuration -Connection vm-llarch96:16016 | Format-Table
-AutoSize -Property
@{Expression={$_.General.DataFolder};Label="Data
Folder";},@{Expression={$_.General.LogsFolder};Label="Logs
Folder";}
```

▼ To display trace flags

```
Get-Configuration -Connection vm-llarch96:16016 | Format-Table
-AutoSize -Property @{Expression={$_.General.EnableJobRunTrace
};Label="Job Run Trace
Enabled";},@{Expression={$_.General.EnableServiceTrace
};Label="Service Trace
Enabled";},@{Expression={$_.General.EnableUIAppTrace};Label="
UI App Trace Enabled";}
```

▼ To display job run settings

```
Get-Configuration -Connection vm-llarch96:16016 | Format-Table
-AutoSize -Property @{Expression={$_.JobRun.MaxRetryAttempts
};Label="Failed Retry
Count";},@{Expression={$_.JobRun.RetryAttemptDelayInterval
};Label="Interval between
retries";},@{Expression={$_.JobRun.MaxErrorCountToAbort};Label
="Error Count to
abort (Max)";},@{Expression={$_.JobRun.MaxConcurrentJobRuns};La
bel="Concurrent Job Runs (Max)";}
```

▼ To display security settings

```
Get-Configuration -Connection vm-llarch96:16016 | Format-Table
-AutoSize -Property
@{Expression={$_.Security.IsAuthorizationEnabled
};Label="Enabled
Authorization";},@{Expression={$_.Security.ReaderUsersGroup
```



```
};Label="Read Users  
Group";},@{Expression={$_.Security.WriterUsersGroup};Label="Write Users Group";}
```

All Available Commands

Export

```
Export-Alerts -Connection ServerName:PortNumber -Path  
C:\SamplePath
```

```
Export-Configuration -Connection ServerName:PortNumber -Path  
\\ServerName\ShareName
```

```
Export-EmailOptions -Connection ServerName:PortNumber -Path  
C:\SamplePath
```

```
Export-LinuxConnections -connection vm-llarch96:16016 -Path  
c:\MyExportLinux.xml
```

```
Export-JobDefinitions -Connection ServerName:PortNumber -Path  
\\ServerName\ShareName
```

Import

```
Import-Alerts -Connection ServerName:PortNumber -Path  
\\ServerName\ShareName -OverWrite -OverWrite $True
```

```
Import-Configuration -Connection ServerName:PortNumber -Path  
C:\SamplePath
```

```
Import-EmailOptions -Connection ServerName:PortNumber -Path  
\\ServerName\ShareName
```

```
Import-LinuxConnections -connection vm-llarch96:16016 -Path  
c:\MyExportLinux.xml
```

Connections are imported in the state (Active/Inactive state) that existed when they were exported.)

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```
Import-JobDefinitions -Connection ServerName:PortNumber -Path  
C:\SamplePath -OverWrite -OverWrite $True
```

Only Alerts and Job Definitions accept the '-OverWrite' parameter. If you omit -OverWrite \$, then -OverWrite \$False is presumed. If you specify OverWrite \$False, all imports will be marked as Inactive.

List

```
List-Alerts -Connection ServerName:PortNumber -SearchByName  
<String>
```

```
List-LinuxConnections -Connection ServerName:PortNumber
```

```
List-JobDefinitions -Connection ServerName:PortNumber -  
SearchByName <String>
```

```
List-JobQueueItems [-Connection] <string>
```

```
List-JobRuns -Connection ServerName:PortNumber -SearchByName  
<String>
```

Get

```
Get-Alert -Connection ServerName:PortNumber -Id <Nullable`1>
```

```
Get-Alert -Connection ServerName:PortNumber -Name <String>
```

```
Get-Configuration -Connection ServerName:PortNumber
```

```
Get-EmailOptions -Connection ServerName:PortNumber
```

```
Get-LinuxConnection -Connection ServerName:PortNumber -ID  
457ba76d-938d-4c2f-9990-b9f0227c208e
```

```
Get-JobDefinition -Connection ServerName:PortNumber -Id  
<Nullable`1>
```

```
Get-JobDefinition -Connection ServerName:PortNumber -Name  
<String>
```

```
Get-JobRunQueueAvailability [-Connection] <string>
```



```
Get-JobRunStatus [-Connection] <string> -RunId <guid>
```

Set

```
Set-AlertStatus -Connection ServerName:PortNumber -Id  
<Nullable`1> -IsActive
```

```
Set-AlertStatus -Connection ServerName:PortNumber -Name  
<String> -IsActive
```

```
Set-Configuration
```

```
Set-EmailOptions
```

```
Set-LinuxConnectionStatus -Connection vm-ch-w2k8r2 -Name abc1  
-IsActive $false
```

```
Set-LinuxConnectionStatus -Connection vm-ch-w2k8r2 -Name XYZ1  
-IsActive $true
```

```
Set-JobDefinitionStatus -Connection ServerName:PortNumber -  
Name <String> -IsActive
```

```
Set-JobDefinitionStatus -Connection ServerName:PortNumber -  
Name <String> -IsActive
```

Remove

```
Remove-Alert -Connection ServerName:PortNumber -Id  
<Nullable`1>
```

```
Remove-FromJobQueueByJob [-Connection] <string> [-Name]  
<string>
```

```
Remove-FromJobQueueByQItemId [-Connection] <string> [-Id]  
<guid>
```

```
Remove-Alert -Connection ServerName:PortNumber -Name <String>
```

```
Remove-JobDefinition -Connection ServerName:PortNumber -Id  
<Nullable`1>
```

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```
Remove-JobDefinition -Connection ServerName:PortNumber -Name  
<String>
```

```
Remove-LinuxConnection -Connection ServerName:PortNumber -ID  
457ba76d-938d-4c2f-9990-b9f0227c208e
```

Start

```
Start-JobDefinition -Connection ServerName:PortNumber -Id  
<Nullable`1> -ReportOnly
```

```
Start-JobDefinition -Connection ServerName:PortNumber -Name  
<String> -ReportOnly
```

Stop

```
Stop-JobDefinition -Connection ServerName:PortNumber -Id  
<Nullable`1>
```

```
Stop-JobDefinition -Connection ServerName:PortNumber -Name  
<String>
```

Pause

```
Pause-JobDefinition -Connection ServerName:PortNumber -Id  
<Nullable`1>
```

```
Pause-JobDefinition -Connection ServerName:PortNumber -Name  
<String>
```

Resume

```
Resume-JobDefinition -Connection ServerName:PortNumber -Id  
<Nullable`1>
```

```
Resume-JobDefinition -Connection ServerName:PortNumber -Name  
<String>
```



Wait

```
Wait-JobRunCompletion [-Connection] <string> -RunId <guid> [-  
TimerInterval <timespan>] [-TimeOutInterval <timespan>]
```

```
Wait-JobRunQueueAvailability [-Connection] <string> [-  
TimerInterval <timespan>] [-TimeOutInterval <timespan>]
```

A P P E N D I X **D**



Performing a Silent Installation

Appendix D explains how to perform a silent install of the SGI Trusted Edge software.

- ▼ To perform a silent installation of the SGI Trusted Edge-x64.msi software from the command prompt

Type this command to install the software with Enterprise Edition remote administration option enabled:

```
msiexec.exe /i "SGI Trusted Edge-x64.msi" /quiet  
ALLOWREMOTEAADMIN=1 PORTNUMBER=16016 IASERVICEACCOUNT=domain  
\username IASVCACCTPASSWD1=password  
IASVCACCTPASSWD2=password
```

Type this command to install the software with the Enterprise Edition enterprise server option enabled:

```
msiexec.exe /i "SGI Trusted Edge-x64.msi" /quiet  
ALLOWREMOTEAADMIN=1 PORTNUMBER=16016  
IASERVICEACCOUNT=domain\username
```



```
IASVCACCOUNTPASSWORD1=password IASVCACCOUNTPASSWORD2=password  
INSTALL_ENTERPRISE_SERVER=1
```

Type this command to install the software without any remote administration Enterprise features enabled.

```
msiexec.exe /install "SGI Trusted Edge-x64.msi" /quiet
```

Note the following:

- To import specific configuration values, you must specify the location of an exported Configuration.xml file that contains the desired settings.
- The silent installation options that can be set through the imported “ConfigTemplate.xml” file include:
 - Data and/or log folder locations
 - Failed retry count
 - Interval between retries (seconds)
 - Error count to abort (maximum)
 - Concurrent job runs (max)
 - Whether to enable security authorization
 - Groups that should have Read and Write access.

Table D-1 defines the command keywords.

Table D-1: Available Parameters for a Silent Installation

Parameter	Value	Required
IASERVICEACCOUNT=	DomainName\UserName or LocalMachineName\LocalUserName	Yes
IASVCACCTOUNTPASSWORD1=	ActualUserPassword.	Yes
IASVCACCTOUNTPASSWORD2=	ActualUserPassword for verification.	Yes
ALLOWREMOTEADMIN=	0 indicates disabled. 1 indicates enabled.	No
PORTNUMBER=	Any available port number (default of 16016).	No
LICENSECUSTOMER=	The Customer Name field entry.	No
INSTALL_ENTERPRISE_SERVER=	0 indicates disabled. 1 indicates enabled.	No
SYSTEM_CONFIG_FILE=	Path to an exported Configuration.xml file.	No
DATAFOLDER=	Path to the database file directory.	No
LOGSFOLDER=	Path to the trace log directory.	No

If you include DATAFOLDER and/or LOGSFOLDER, the value(s) you specify will override the values for these parameters in the Config.xml file.



A P P E N D I X **E**

Technical Notes

Appendix E contains Trusted Edge Technical Notes.

Enhancing Performance When Moving Many Small Windows Files

You can increase performance when moving many small Windows files between Windows servers by changing the default value of the `STREAM_BUFFER_SIZE` parameter in the `C:\Program Files\SGI Trusted Edge\bin\SGI.TE.ArchiveProcess.exe.config` file to a lower setting.

The default value in the `ArchiveProcess.exe.config` file looks like this:

```
<setting name="STREAM_BUFFER_SIZE" serializeAs="String">  
    <value>1048576</value>  
</setting>
```



Lowering the default setting from 1 MB (1048576) to a lesser value such as 64K (65536) causes Trusted Edge to use a smaller buffer size when moving files, which can increase the processing speed for small file copy/migration jobs (post change). However, note that the `STREAM_BUFFER_SIZE` value is a universal setting for all job runs, so consider lowering it only when you know the data set in question contains many small files.

Resolving “Custom Counters File View is Out of Memory” Errors Following Multiple Job Runs

In instances when multiple jobs are triggered by each other, the following job run error was witnessed after the thirty-fifth consecutive triggered job:

```
Error Job Run Failed "Job Failed with exception:
System.InvalidOperationException: Custom counters file view is
out of memory."
```

This error occurred because the system default value for the “file mapping size” was set too low. To resolve this issue, first make a copy of and then edit the `C:\Windows\Microsoft.NET\Framework64\v4.0.30319\Config\machine.config` file.

Specifically add this section:

```
<configuration>
<system.diagnostics>
<performanceCounters filemappingsize="524288" />
</system.diagnostics>
</configuration>
```

The file mapping size in the above example is set to the default value, but it can be set within the range of 32768 to 33554432. Setting the `filemappingsize` to 10485760 (10MB), followed by a reboot of the system, resolves the “Custom counters” error condition.

Buffering for Windows File Copying

Beginning with version 1.5, Trusted Edge has disabled buffering for file Copy jobs for files greater than 10 MB. For small files (<10 MB), Trusted Edge uses the Windows small stream buffer size of 4 KB to speed up the file copy process.

Using Rsync for Local to Local Linux Copy Jobs Only

For Local to Local Linux Copy jobs only (Source mounted to the Destination server or vice versa), Trusted Edge uses Rsync to copy file data rather than pulling and pushing data through the SFTP protocol. This approach greatly increases the copy process speed rather than imposing the 1-4 Mbps limit of the SFTP protocol.

- All other Trusted Edge functions (folder enumeration/filters and creation/assigning the security to folders/ symbolic link creation) are still performed using SFTP protocol.
- By default, Trusted Edge uses Rsync for copying local data. To disable this feature, change the “USE_RSYNC_FOR_LOCAL_FILE_COPY” property value to False within the C:\Program Files\SGI Trusted Edge\bin\SGI.TE.ArchiveProcess.exe.config file.
- For instances where the Linux Source and Destination folders reside on *different* Linux Connection servers, the file copy process will be performed by SFTP.
- By default, the Rsync file transfer is used only for files with a minimum file size of 384K (393216 bytes). You can adjust the “MIN_FILE_SIZE_FOR_RSYNC” value, depending on the source data makeup (file size and number of files), within C:\Program Files\SGI Trusted Edge\bin\SGI.TE.ArchiveProcess.exe.config file.
- For very small files, the Rsync command execution is slow compared to the native Trusted Edge SFTP file transfer.



- Based on the specific source data, making changes to the "MIN_FILE_SIZE_FOR_RSYNC" value may improve job run performance. SGI recommends that you start with a known dataset, use the default 393216-byte value, and note the job run speed. Then double the byte value, and run the same job. Increase or decrease the "MIN_FILE_SIZE_FOR_RSYNC" value until you achieve optimal performance.

The value configured for the "MIN_FILE_SIZE_FOR_RSYNC" will become effective for the next job run start. Changing the value will not affect jobs currently in progress. You do not need to restart the SGI Trusted Edge service to change this value.

When using Rsync for local to local Linux copy jobs:

- You cannot pause or stop the job runs from the Trusted Edge user interface.
- The summary report will not update the bytes processed incrementally. Rather, it will update the bytes processed count after an entire file is copied. This means that for larger files, the processed bytes will not update until the copy succeeds.

Limiting the Number of Rsync Jobs

The "MAX_RSYNC_COMMAND_SESSIONS" within the C:\Program Files\SGI Trusted Edge\bin\SGI.TE.ArchiveProcess.exe.config file limits the maximum number of Rsync jobs that can run simultaneously. The default value for "MAX_RSYNC_COMMAND_SESSIONS" is eight, which implies that up to eight simultaneous Rsync copy jobs can occur at one time.

Note: Any changes made to the C:\Program Files\SGI Trusted Edge\bin\SGI.TE.ArchiveProcess.exe.config file are not retained during upgrades or uninstall/reinstalls.

Limiting the Number of SSH Sessions

The SSH_MAXSESSION parameter within the C:\Program Files\SGI Trusted Edge\bin\SGI.TE.ArchiveProcess.exe.config file limits the number of SSH sessions allowed by the SSH server (based upon the sshd_config file MaxSession value).

The three rules to follow when adjusting these variables are:

- SSH_MAXSESSION must be less than or equal to the (\leq) sshd_config MaxSession value.
- MAX_RSYNC_COMMAND_SESSIONS must be less than ($<$) the value of SSH_MAXSESSION,
- SSH_MAXSESSION must be less than or equal to (\leq) the thread count value in the job definition.

Failing to follow these rules may result in the Trusted Edge job failing with the error “Failed to open a channel after 10 attempts.”

Ability to Skip the Copying of SACL Security Attributes

With the SGI Trusted Edge v1.4 Hotfix1, Trusted Edge skips copying SACL security attributes by default. To enable Trusted Edge to copy SACL information, you must create a DWORD value called "EnableCopySACLSecurityInfo" in the registry under “HKEY_LOCAL_MACHINE\SOFTWARE\SGI Trusted Edge” key. Set the value to 1 for enable and 0 to disable.

This approach was done to prevent seeing warnings when copying data from NetApp. For reference, the specific warnings were:

```
--From Server 2003--  
Source: \\10.1.201.23\qtree_07May2013_104405  
Destination: \\10.1.200.253\sales\FromNAClus\Wed\from2003Job
```



```
Error: System.Runtime.InteropServices.COMException
(0x80070522): A required privilege is not held by the client.
(Exception from HRESULT: 0x80070522)
    at
System.Runtime.InteropServices.Marshal.ThrowExceptionForHRInternal(Int32 errorCode, IntPtr errorInfo)
    at
Microsoft.Experimental.IO.SecurityInfo.GetFileSecurity(String
fileName, SECURITY_INFORMATION secInfo)
    at
Microsoft.Experimental.IO.SecurityInfo.<>c__DisplayClass2.<CopySACLSecurity>b__0(Object state)
    at PrivilegeClass.Privilege.RunWithPrivilege(String
privilege, Boolean enabled, PrivilegedCallback callback,
Object state)
    at
Microsoft.Experimental.IO.SecurityInfo.CopySACLSecurity(String
normalizedSourcePath, String normalizedDestinationPath)
    at Microsoft.Experimental.IO.SecurityInfo.Copy(String
sourcePath, String destinationPath)
    at
SGI.STHTE.ArchiveProcess.Workflow.FolderActionScanBase.CopySecurityData(IScanFolderItem srcFolder, IScanFolderItem
destFolder)

--From Server 2008R2--
Source: \\10.1.201.23\qtree_07May2013_104405\KW4.doc
Destination: \\10.1.200.253\sales\FromNAClus\Tues\1\KW4.doc
Error: System.Runtime.InteropServices.COMException
(0x80070006): The handle is invalid. (Exception from HRESULT:
0x80070006 (E_HANDLE))
    at
System.Runtime.InteropServices.Marshal.ThrowExceptionForHRInternal(Int32 errorCode, IntPtr errorInfo)
```

■ ■ ■ ■ Appendix E – Technical Notes

```
    at
Microsoft.Experimental.IO.SecurityInfo.GetFileSecurity(String
fileName, SECURITY_INFORMATION secInfo)
    at
Microsoft.Experimental.IO.SecurityInfo.<>c__DisplayClass2.<CopySACLSecurity>b__0(Object state)
    at PrivilegeClass.Privilege.RunWithPrivilege(String
privilege, Boolean enabled, PrivilegedCallback callback,
Object state)
    at
Microsoft.Experimental.IO.SecurityInfo.CopySACLSecurity(String
normalizedSourcePath, String normalizedDestinationPath)
    at Microsoft.Experimental.IO.SecurityInfo.Copy(String
sourcePath, String destinationPath)
    at
SGI.STHTE.ArchiveProcess.Workflow.FolderActionScanBase.CopySecurityData(IScanFileItem srcFile, IScanFileItem destFile)
```