
Sentinel™ 5

Wizard User's Guide v5.1.1

- Linux
- Solaris
- Windows

Volume III of V

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Preface

The e-Security Technical documentation is general-purpose operation and reference guide. This documentation is intended for Information Security Professionals. The text in this documentation is designed to serve as a source of reference about e-Security's Enterprise Security Management System. There is additional documentation available on the e-Security web portal.

e-Security Technical documentation is broken down into five different volumes. They are:

- Volume I – Sentinel™ 5 Install Guide
- Volume II – Sentinel™ 5 User's Guide
- Volume III – Sentinel™ 5 Wizard User's Guide
- Volume IV – Sentinel™ 5 User's Reference Guide
- Volume V – Sentinel™ 3rd Party Integration

Volume I – Sentinel Install Guide

This guide explains how to install:

- Sentinel Server
- Sentinel Console
- Sentinel Correlation Engine
- Sentinel Crystal Reports
- Wizard Agent Builder
- Wizard Agent Manager
- Advisor

Volume II – Sentinel User's Guide

This guide discusses:

- Sentinel Console Operation
- Sentinel Features
- Sentinel Architecture
- Sentinel Communication
- Shutdown/Startup of Sentinel
- Vulnerability assessment
- Event monitoring
- Event filtering
- Event correlation
- Sentinel Data Manager
- Event Configuration for Business Relevance
- Mapping Service
- Historical reporting
- Wizard Host Management
- Incidents
- Cases
- User management
- Workflow

Volume III – Wizard User's Guide

This guide discusses:

- Wizard Agent Builder Operation
- Wizard Agent Manager
- Agents
- Wizard Host Management
- Building and maintaining agents

Volume IV - Sentinel User's Reference Guide

This guide discusses:

- Wizard scripting language
- Wizard parsing commands
- Wizard administrator functions
- Wizard and Sentinel meta-tags
- Sentinel correlation engine
- User Permissions
- Correlation command line options
- e-Security database schema

Volume V - Sentinel 3rd Party Integration Guide

- Remedy
- HP OpenView Operations
- HP Service Desk

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Chapter 1 – Wizard Introduction

The e-Security Wizard User's Guide is your introduction to the operation of e-Security Wizard. This guide will explain each component and how all the components operate.

This guide assumes that you are familiar with Network Security, Database Administration, Windows and UNIX operating systems.

Contents

This guide contains the following chapters:

- Chapter 1 – Wizard Introduction
- Chapter 2 – Managing Wizard Hosts
- Chapter 3 – Building and Maintaining Agents
- Appendix A – Syslog Connector
- Appendix B – Socket Server
- Appendix C – Copyright Information

Conventions Used

Notes and Cautions

NOTE: Notes provide additional information that may be useful.

CAUTION: Cautions provide additional information that may keep you from performing damage or loss of data to your system.
--

Commands

Commands appear in courier font. For example:

```
useradd -g dba -d /export/home/oracle -m -s /bin/csh
oracle
```

Wizard

Wizard enables you to build, configure and control agents. Agents are used to collect and normalize events from security devices and programs. These normalized events are then sent to Sentinel for use in real time analysis correlation, reporting and incident response.

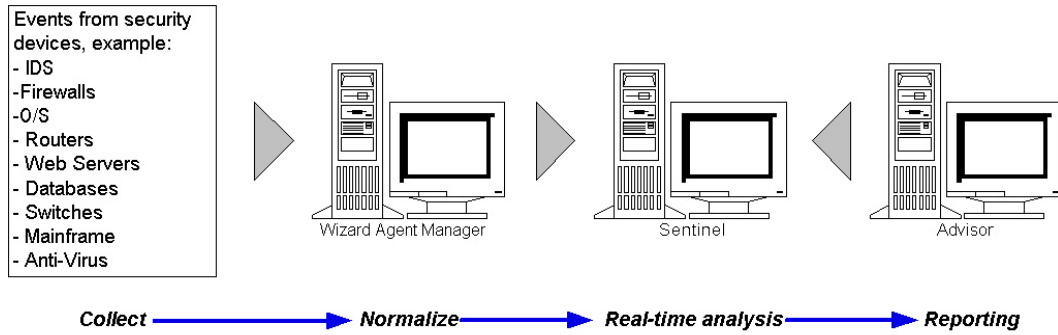
NOTE: Although not a requirement, it is recommended that in a multiple Wizard Agent Builder configuration that one Agent Builder be designated as the Primary Agent Builder. This machine is then used to store, develop or modify agents and configure ports.

The following components comprise Wizard:

- Agent Builder is the Wizard user interface that enables you to build, configure, deploy and control agents. In addition to running agents locally, the Agent Builder can be used to upload, download and control agents on remote systems.

- Agent Manager is the Wizard back-end that manages agents, system status messages and performs global filtering of events.

An agent is the receptor that collects and normalizes raw events from security devices and programs and outputs normalized events that can be correlated, reported and used for incident response. Your e-Security software comes with tier 1 level Agents. Go to the e-Security Customer Portal to download additional agents at <http://www.esecurityinc.com/>.



Agents

Agents are used to filter and standardize critical event data into a normalized format and make it available to the Sentinel process. There are three levels of Agents, they are:

- Supported Agents (T1) – these are Agents that are:
 - documented
 - have meta-data
 - available to all customers
 - customer support
- Documented Agents (T2) – these are agents that are:
 - destined for the Agent library
 - documented
 - have metadata
 - based on the standard e-Security templates
 - limited Customer Support
- Sample Agents (T3) – these are agents that:
 - have proof of concept
 - developed for a specific customer
 - may not have meta-data or any supported documentation
 - limited Customer Support

Agents allow you to gain access to event data from many sources, including:

- | | |
|---|----------------------------|
| ▪ Intrusion Detection Systems (host) | ▪ Anti-Virus |
| ▪ Intrusion Detection Systems (network) | ▪ Web Servers |
| ▪ Firewalls | ▪ Databases |
| ▪ Operating Systems | ▪ Mainframe |
| ▪ Policy Monitoring | ▪ Vulnerability Assessment |
| ▪ Authentication | ▪ Directory Services |
| ▪ Routers & Switches | ▪ Network Management |
| | ▪ Proprietary Systems |

- VPN

Agents are made of:

- [Template files](#)
- [Parameter files](#)
- [Lookup files](#)
- [Mapping files](#)
- [Parameter Description File and Manifest Files](#)

The template file and its associated parameter file are merged into different script files when the Agent Script is built.

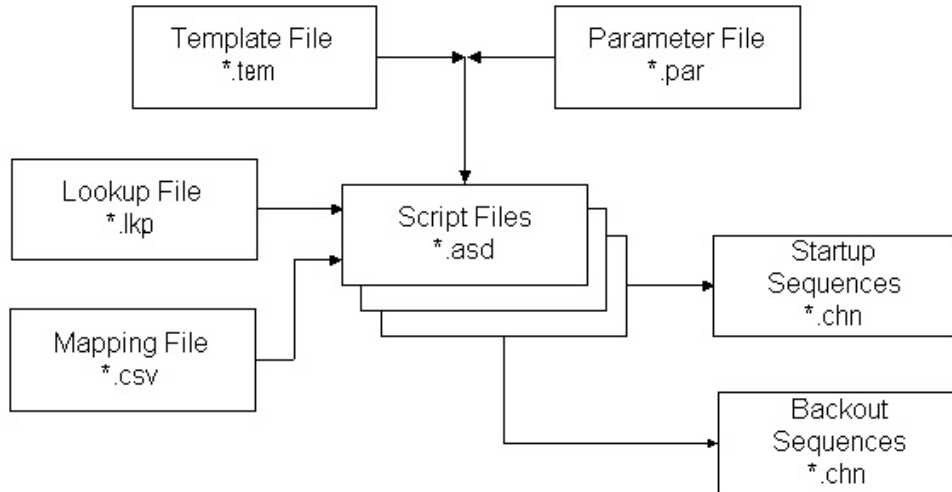
Each script file is named after the column name of the set of values in the parameter file. Script files are grouped in an ordered sequence into startup and backout sequences.

Startup and backout sequences are assigned to a port, which executes the series of scripts that it contains when it is started or stopped. A script must be included in a startup or backout sequence in order to be used by a port. Ports enable an agent to locate Wizard hosts on the network by providing the IP address or file name of the host. They also provide Sentinel with information on the location of sensors and the agent that is used to manage data for those sensors. The following options are configurable for ports:

- Connection type
 - Serial – data read from a RS-232C serial port
 - Socket - a TCP socket connection
 - File New - reads only security event data that is added to a file after the script has started (reads from the end of the file)
 - File All - reads all the security event data in a file
 - Persistent Process - launches a persistent process when the port is started, communicates between the agent assigned to that port and an external application through receive and transmit states and continues to run for the active life of the port.
 - Transient Process - communicates between the Agent assigned to that port and an external application through receive and transmit states. Transient process may be started multiple times.
 - SNMP - receives SNMP v1, v2 and v3 traps
 - None
- Agent name – you can rename, copy and add Agents

When a template uses the LOOKUP() parsing command, the appropriate lookup file is searched for a specific block of parsing commands to run.

When a template uses the TRANSLATE parsing command, the command loads a mapping file allowing for fast lookup of key entries.



Template Files

You can create, add states to, edit and delete templates. Templates determine how records will be processed. Most of the decisions about templates revolve around what types of records you are working with and their format. There is an equivalent template file with a .tem extension. They are located at %WORKBENCH_HOME%\elements\<Agent Name>.

Template files are based on states. A state is a decision point within the logical flow or path of a template. Each point (state) contains information indicating the process to perform. States include reference to parameters, when the template is merged with a parameter file specific values replace the parameters. When the parameters are replaced by specific values, one or more script files are created.

As a state is inserted into a template, it is assigned a number that remains with it no matter where it is moved in the template. There are three groupings of states.

- The Transmit, Receive, Decide and Parse states are numbered in the order that they are inserted in the template.
 - [Transmit state](#) (Tx) – transmits a string to a defined port
 - [Receive state](#) (Rx) - defines whether or not Wizard receives information from a security application into a buffer. Information is taken from the port definition.
 - [Decide state](#) - uses a string of data or variable to determine what state to move to next
 - [Parse state](#) - uses the parsing commands to create templates to process the information collected in the receive buffer
- The Next and Go To states are identified by the number of the state to which they are pointing.
 - Next state - indicates which state to jump to in the next script
 - Go state - used to move back to another state within the current script
- The Stop state is always number zero. Indicates when to stop the processing on a port.

Transmit State

The Transmit State sends either a string or variable (depending on what type of data is selected) to the connection type configured for that agent. If the

connection is broken when entering the transmit state and a value is entered in Rx/Tx Value box on the template's Port Information panel, the following event occurs, attempts are made to re-establish the connection until a successful reconnection is achieved.

There is an inter-character delay that specifies the number of milliseconds (ms) between sending each byte of data.

Receive State

The Receive State specifies the method Wizard uses to determine when data has been received from the agent. In the Receive State, you specify:

- Receive Type
- Minimum Bytes
- Delimiter Decide String

If the connection is broken when entering the transmit state and a value is entered in Rx/Tx Value box on the template's Port Information panel, the following event occurs, attempts are made to re-establish the connection until a successful reconnection is achieved.

After the Receive State of the RxBuffer, two variables are automatically populated with the results of the Receive State:

- s_RXBufferString contains the text received by the RxBuffer
- i_RXBufferLength contains the length of the s_RXBufferString

This is equivalent to executing the following script code after a Receive State:

- COPY(s_RXBufferString:)
- LENGTH(i_RXBufferLength,s_RXBufferString)

These automatically populated variables allow for easy comparison in a Decide State of whether or not the Receive State timed out (i_RXBufferLength = 0). They also allow for the direct use of the RXbuffer through the s_RXBufferString variable.

Receive Types - There are four Receive Types available in the Template editor. They are:

- Timeout - Allows a script to continue processing even if data is not received in a specified amount of time. Selecting timeout allows Wizard to receive data until the timeout period is reached, as defined by the variable, RX_TIMEOUT_DELAY.
- Wait - Used primarily when receiving unsolicited event messages. Wizard will wait for the "timeout" duration until data is received.

<p>NOTE: For timeout and wait receive types, processing in the script will not continue until the minimum number of bytes has been received or when the timeout is reached for the timeout option.</p>

- delim timeout - Uses a pre-defined string of characters to indicate to Wizard that data has been received. The data in the Delimiter Decide String box is verified against the data in the receive buffer as each byte is received.
- delim wait - Used when waiting for unsolicited messages. A user-defined string of characters indicates to Wizard that data has been received. Wizard uses the data in the Delimiter Decide String box to verify the receive data as

each byte is received. The parameter `RX_TIMEOUT_DELAY` has no effect when using the `delim wait` option.

NOTE: For the `delim timeout` and `delim wait` receive types, processing in the script will not continue until the delimiter decide string evaluates to true and the minimum number of bytes has been received or the timeout is reached for the `delim timeout` option.

Minimum Bytes - The minimum number of bytes is the number of bytes that must be received before Wizard either uses the default timeout period or continues processing. Processing in the script will not continue until the minimum number of bytes is received.

Delimiter Decide String - The Delimiter Decide String is completed when the Receive Type is `delim timeout` or `delim wait`. Agent processing will not continue to the next state until the delimiter decide string matches data read in and the minimum number of bytes has been received.

The delimiter decide string is a POSIX 1003.2 compliant regular expression.

Receive Type Scenarios - There are four types of Receive Type scenarios. They are:

- **Timeout Scenario** - After the Receive State is entered, processing stops until minimum bytes is read or `RX_TIMEOUT_DELAY` seconds passes. After Wizard receives more than the minimum number of bytes specified, or the timeout has been exceeded, the agent port processing continues to the next state of the script.
- **Wait Scenario** - The Wait Receive State type waits until the Wizard agent receives the minimum number of bytes specified in the Minimum Bytes box. After Wizard receives more than the minimum number of bytes specified in the Minimum Bytes box, the agent port processing continues to the next state of the script. If the minimum number of bytes is not received, the agent port processing never times out.
- **Delim Timeout Scenario** - If the delimiter decide string is encountered after the minimum byte position set in the Minimum Bytes box is received, the data up to and including the delimiter is stored in the Rx Buffer. If the delimiter decide string is not encountered, no data is transferred to the receive buffer and the agent port processing times out in the default timeout period.
- **Delim Wait Scenario** - If the delimiter decide string is encountered after the minimum number of bytes set in the Minimum Bytes box is received, the agent port processing continues and the data is processed. If the delimiter decide string is not encountered, no data is transferred to the receive buffer and the port does not timeout. If the delimiter decide string is never encountered, the agent port processing never times out. In addition, if the delimiter decide string is encountered, but the minimum bytes have not been received, the agent port processing never times out.

Decide State

The Decide State evaluates the contents of the receive buffer or variable to determine what action to take. If the information in the receive buffer contains the selected decide type, the Agent Manager processes the command as true and the Yes route is followed. If the receive buffer does not contain the selected

decide type, the Agent Manager processes the decision as false and the No route is followed.

The receive buffer (size Rxbuffer) is an editable parameter located:

```
$WORKBENCH_HOME/config/wizard.properties/  
system.max_receive_buffer_size
```

This parameter allows you to configure Agent Manager's receive buffer (Rx buffer). The default is 50,000 events. The minimum is 5,000 events. When the Rx buffer reaches maximum size, new events are dropped as they are received because they are throttled.

There are four Decide Types. They are:

- String - Compares a user-defined decide string to the content of the receive buffer. The contents of the decide string are verified with the contents of the receive buffer, or a variable, to determine which decision route to process. The decide string is a POSIX 1003.2 compliant regular expression. A variable supports strings, integers and floats.
- True - Forces an evaluation of true, Agent Manager follows the Yes route.
- False - Forces an evaluation of false, Agent Manager follows the No route.
- Data - Compares a user-defined decide string to another string or the value of a variable.

Parse State

The Parse State is used to develop the scripts to be executed on the ports. The parsing commands can include parameters that are merged with the template when the scripts are created. A Visual Editor and a Text Editor are available to define the parsing commands.

The Parse State is also used to insert parsing commands into a template. The parsing commands may include parameters, which are replaced with specific values when the template is merged with a parameter file in the script building process. Merging a template and a parameter file can output multiple scripts to execute on the ports.

Parameter Files

Parameters are the equivalent of variables. Parameter files (.par files) are tables used to define variable names on the associated run script files. They are used when referenced in the parsing code. Parameters are stored as strings. Any numeric value needs to be converted into a string for manipulation. When new values for parameters are entered, they take effect after you build your script. They are merged with the template file when creating a script.

Run script file names are displayed in the first row of the table and the parameter names or labels are displayed in the first column of the table. The second row of the table is used to define the icons that appear in the Agent's tree. The remaining row defines the variables or parameter values to be used for parameter as it relates to the particular script.

Values within a parameter file are:

- Meta-tags, information and comments – there are over 200 available meta-tags, 100 are user configurable and the rest are reserved.

- Rule – set file names appear in the header row of the table, while parameters themselves appear in the first column in the table
- Bitmap – second row of the table, defines the bitmap used for that file. The bitmap will appear in the Agents list.

Lookup Files

Lookup files are optional tables (.lkp files) against which received values are compared to determine what actions, if any, to take in response to security events. Lookup files contain match clauses, which are used to compare individual strings. Based on the match clauses in a specific lookup file and the data received from source devices, the LOOKUP Command will determine whether the search string is found or is not found.

Optionally, parsing commands may be associated with the match string. The parsing commands are executed if a match is found.

Mapping Files

Mapping files are optional files (.csv) that allow for fast lookup of key entries. The csv file is a relative path from an agent's script directory. The editing of these files is currently not available within Agent Builder, but the files can be edited using Excel.

Example of a possible mapping file is:

~Month~	~Number~
Jan	1
Feb	2
Mar	3
Apr	4
May	5
Jun	6
Jul	7
Aug	8
Sep	9
Oct	10
Nov	11
Dec	12

The entries can be a variable number of script variables (string, variable or float) used to indicate which variables to store the data. This particular example is used to translate (map) Month to a Number (e.g., Jan to 1).

Manifest Files

Manifest files are what differentiates version 5.* agents from previous agents. Manifest files support the deployment of agents from the Sentinel Console and Agent versioning. Agent parsing is defined in the agent.lkp file. These lookup cases are:

- Setup - one time setup of variables and parameters
- Check_Setup - one time check of those variables and parameters
- Initialize_Vars - the beginning of every loop, where variables are initialized once per parse
- Parse - the place where the parsing is performed

This allows plugging in new agent parsing into existing templates. In addition, it provides the ability to overlay new versions of the agent's parsing to update the code. The following is list of the Manifest files and their contents for v5.0:

- agent.nfo
 - product,Snort
 - product.vendor,GNU
 - product.version,2.0
 - product.security.type,IDS
 - product.sensor.type,N
 - product.name,IDSx_GNUx_SNRT
 - file.version,1

Other e-Security References

The following manuals are available with the e-Security install CDs.

- Sentinel™ e-Security Install Guide
- Sentinel™ User's Guide
- Sentinel™ Wizard User's Guide
- Sentinel™ User's Reference Guide
- Sentinel™ 3rd Party Integration Guide
- Release Notes

Contacting e-Security

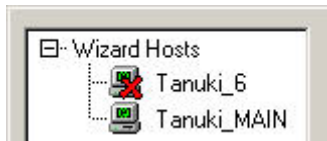
- For Technical Support, support@esecurity.net
- For information, info@esecurity.net
- Website: <http://www.esecurity.net>
- For 24x7 support, call Technical Support directly at 800-474-3131

Chapter 2 – Managing Wizard Hosts

Wizard hosts are machines that have Agent Manager installed. Hosts interact with Agent Builder machines and Sentinel over the network. Agents receive and parse data. Based on this data, hosts will send alerts to Sentinel.

Wizard automatically detects hosts on the network and adds them to the list on the Wizard host tab. You cannot add hosts manually. You can rename existing hosts and delete hosts that are no longer physically present and communicating on the network.

Agent Builder collects health messages on hosts. If a host does not respond with a health message, the host will display a red X on the Wizard Hosts tree. You can remove a host with a red X, but if Agent Builder detects communications from that host, the host will re-appear in the Wizard Hosts tree. Similarly, if you remove a host that is already communicating, the health message returns it to the Wizard Hosts tree.



When a host is detected, it is assigned an identification number.

Latest agents can be found on the Service Pack CD. For more information see the Service Pack Release Notes.

NOTE: For more information regarding configuration of the Demo Agents, see the Sentinel Install Guide, Testing the Installation.

How a Wizard Host Gets Agent Data

To enable a Wizard Host (a machine with Agent Manager installed) to receive data from an agent, you upload the agent from an Agent Builder machine to the Wizard Host through a port configured on the Agent Builder. After an agent is uploaded to a host, the host can receive data from that agent.

Each Wizard Host may be connected to multiple ports and monitor data from multiple agents. A Wizard Host can have ports with Agents that connect to many different types of data sources. Individual Agents on a Wizard Port Host must be uploaded to run. In addition, ports provide Agent Manager with information on data source location.

Wizard Host Permissions

Wizard Host permissions is administered through the Sentinel Control Center Admin tab. Wizard Host user permissions are:

Permission Name	Description
View Agents	<ul style="list-style-type: none">View the 'Agents' tab in Sentinel Control CenterView the 'Wizard Hosts' tab in Agent Builder

Permission Name	Description
Control Agents	<ul style="list-style-type: none"> Includes all capabilities as the 'View Agents' permission Allows for the Command and Control of Agents from the Sentinel Control Center Allows for the Command and Control of Agents from the Wizard Agent Builder
Agent Administration	<ul style="list-style-type: none"> Includes all capabilities as the 'Command Agents' permission In Agent Builder, Agent editing and deployment In Agent Builder, creating, editing, compiling and debugging Agents. In Agent Builder, uploading and downloading Agents. In Agent Builder, exporting Wizard Hosts In Agent Builder, adding, editing, deleting Ports In Agent Builder, setting Port options

Command and Control consists of:

- start/stop individual ports
- start/stop all ports
- restart hosts
- rename hosts

Wizard Host Management

The following are discussed in this chapter:

- [Starting Agent Manager](#)
- [Stopping Agent Manager](#)
- [Agent Manager Administration](#)
- [Rename a host](#)
- [Delete a host](#)
- [Restart a host](#)
- [Export a host](#)
- [View host properties](#)
- [Edit a Template file](#)
- [Deleting a Template file](#)
- [Renaming a Lookup file](#)
- [Deleting a lookup file](#)
- [Deleting a Startup Sequence](#)
- [Starting and Stopping Wizard Ports](#)
- [Editing a Wizard Port](#)
- [Deleting a Wizard Port](#)
- [Uploading and downloading an Agent](#)
- [Debugging Wizard Ports](#)

Starting and Stopping Agent Manager

NOTE: The first time the Wizard Agent Builder is run, you may see the following message: "Directory 'Agents' does not exist." It will be automatically created for you. Some information may have been lost." Select OK; the directory will be created and the Wizard Agent Builder will launch. If this message displays beyond the first time the Agent Builder is run, the Agent directory might have been inadvertently deleted and you will need to verify if information was lost.

Starting or Stopping Agent Manager Service for Windows

Starting or Stopping Agent Manager Services for Windows

1. Click Start > Settings > Control Panel.

2. In the Control Panel, double-click Administrative Tools and click Services.
3. In the Services dialog box, right-click Agent Manager and click either Start or Stop.

Starting Agent Manager Services for Windows (command line)

1. Go to %WORKBENCH_HOME%
2. To start Agent Manager:
 - `./agent-manager start`
 - `./agent-manager restart` - starts the agent-manager script in the background and automatically starts the agent manager process if it is stopped. If the agentmanager process is already running, it will stop and restart.
 - `./agent-manager.sh console` – starts the agentmanager process in foreground.

NOTE: While in console mode, ensure that you are only running one instance of Agent Manager on the machine.

Stopping Agent Manager Services for Windows (command line)

1. Go to %WORKBENCH_HOME%
2. To stop Agent Manager:

```
./agent-manager stop
```

Starting Agent Manager for UNIX (Normal and Console)

Starting Agent Manager for UNIX

1. As user esecadm, go to
`$WORKBENCH_HOME`
2. Enter the following command:

```
./agent-manager.sh start
```

 - `./agent-manager.sh restart` - starts the agent-manager script in the background and automatically starts the agent manager process if it is stopped. If the agentmanager process is already running, it will stop and restart.
 - `./agent-manager.sh console` – starts the agentmanager process in foreground.

Stopping Agent Manager for UNIX

Stopping Agent Manager for UNIX

1. As user esecadm, go to
`$WORKBENCH_HOME`
2. Enter the following command:

```
./agent-manager.sh stop
```

Agent Manager Administration

There is an Agent Manager executable (Windows) and script (UNIX) that allow you to:

- Install the Windows Agent Manager Service (Windows only)
- Remove the Windows Agent Manager Service (Windows only)
- Set the Agent Manager Service
- Print extensive debug information
- Display the build version
- Display help

Installing the Windows Agent Manager Service (Windows only)

Installing the Windows Agent Manager Service (Windows only)

1. At the command prompt, go to %workbench_home%.
2. Enter the following command:

```
agent-manager.bat -install
```

3. To start the service, either:

- At the command prompt enter:


```
net start "agent manager"
```
- Click Start > Settings > Control Panel. Double-click on Services, select Agent Manager. Start Agent Manager service.

NOTE: If your Services window is already open, click Action > Refresh and start your Agent Manager service.

Removing the Windows Agent Manager Service (Windows)

Removing the Windows Agent Manager Service (Windows)

1. Stop the Agent Manager Service by either:
 - At the command prompt enter:


```
net stop "agent manager"
```
 - Click Start > Settings > Control Panel. Double-click on Services, select Agent Manager. Stop Agent Manager service. Close the Services window.
2. At the command prompt, go to %workbench_home%.
3. Enter the following command:

```
agent-manager.bat -remove
```

Changing Agent Manager Password for Windows

NOTE: In order to meet stringent security configurations required by Common Criteria Certification, e-Security requires a strong password with the following characteristics:

1. Choose passwords of at least 8 with characters in length that includes at least one UPPER CASE, one lower case, one special symbol (!@#%\$%^&*()_+), and one numeric (0-9).

2. Your password may not contain your e-mail name or any part of your full name.
3. Your password should not be a "common" word (for example, it should not be a word in the dictionary or slang in common use).
4. Your password should not contain words from any language, because numerous password-cracking programs exist that can run through millions of possible word combinations in seconds.
5. You should choose a password you can remember and yet is complex. For example, Msi5!YOld (My Son is 5 years old) OR IhliCf5#yN (I have lived in California for 5 years now).

Changing Agent Manager password for Windows

1. At the command prompt, go to %workbench_home%.
2. Enter the following command:

CAUTION: You will not be prompted for password confirmation or will you be prompted for the old password.

```
agent-manager.bat -password <new password>
```

3. For the password to take affect, either:
 - At the command prompt enter:


```
net stop "agent manager"
```

```
net start "agent manager"
```
 - At the Agent Builder, right-click on your host computer and select restart host.
 - Click Start > Settings > Control Panel. Double-click on Services, select Agent Manager. Stop and start Agent Manager service.

Changing Agent Manager Password for UNIX

NOTE: In order to meet stringent security configurations required by Common Criteria Certification, e-Security requires a strong password with the following characteristics:

1. Choose passwords of at least 8 with characters in length that includes at least one UPPER CASE, one lower case, one special symbol (!@#\$%^&*()_+), and one numeric (0-9).
2. Your password may not contain your e-mail name or any part of your full name.
3. Your password should not be a "common" word (for example, it should not be a word in the dictionary or slang in common use).
4. Your password should not contain words from any language, because numerous password-cracking programs exist that can run through millions of possible word combinations in seconds.
5. You should choose a password you can remember and yet is complex. For example, Msi5!YOld (My Son is 5 years old) OR IhliCf5#yN (I have lived in California for 5 years now).

Changing Agent Manager password for UNIX

1. As user esecadm, go to \$WORKBENCH_HOME.
2. Enter the following command:

CAUTION: You will not be prompted for password confirmation or will be prompted for the old password.

```
./agent-manager.sh -password <new password>
```

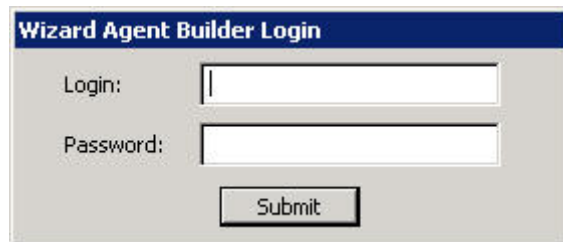
3. For the password to take affect, go to /usr/local/bin and enter the following command;

```
./agent-manager.sh -restart
```

Starting Agent Builder

Starting Agent Builder

1. Click Start > Programs > e-Security > Agent Builder or double-click on the Agent Builder icon on your desktop.
2. Depending upon your installation, login as esecadm or under your Windows authentication username.



Renaming a Wizard Host

Renaming a Wizard Host

1. Within Agent Builder (Wizard), click the Wizard Hosts tab to open the Wizard Hosts tree panel.
2. In the Wizard Hosts tree, right-click the host to be renamed and click Rename Host. You can only rename a host that is active.
3. Enter the new name of the host and press Enter.

NOTE: Renaming a host does not change the ID number that's assigned to a Wizard host when it is installed. This information is stored in %WORKBENCH_HOME%\wizard\agents\names.dat.

Deleting a Wizard Host

To delete a host, the host must first be removed from the network. Hosts that are communicating over the network cannot be removed. If a host is present on the network but not communicating, it will be displayed with a red X over the host icon in Wizard Hosts tree.

Deleting a Wizard Host

1. Click the Wizard Hosts tab to open the Wizard Hosts tree panel.
2. In the Wizard Hosts tree, right-click the host.

3. Click Delete Host.

Restarting a Wizard Host

Restarting a Wizard Host

1. Click the Wizard Hosts tab to open the Wizard Hosts tree panel and select a host.
2. Right-click a host and click Start Ports. You can only restart a Wizard Host that is active.

Exporting a Wizard Host

Exporting a Wizard Host

1. Click the Wizard Hosts tab to open the Wizard Hosts tree panel. Select a host.
2. Click File > Export Host. The following subdirectory is created:

`%WORKBENCH_HOME%\upload_<host name>`

This subdirectory can be moved to a remote machine using Secure Shell (SSH) or a disk. After the subdirectory is put on the remote machine, run the uploadhost command. This copies the necessary files to the proper directories.

NOTE: If the SNMP settings are changed, the Agent Builder will not be able to communicate with the remote machine from the time the Export button is pressed until the exported agent files are uploaded.

Viewing Wizard Host Properties

Viewing Wizard Host Properties

1. Click the Wizard Hosts tab to open the Wizard Hosts tree panel.
2. In the Wizard Hosts tree, right-click the host and click Properties. The Wizard Properties window displays the following information:
 - Name
 - ID
 - Hostname
 - IP Address
 - Version
 - Uptime
3. Click OK to close the Properties window.

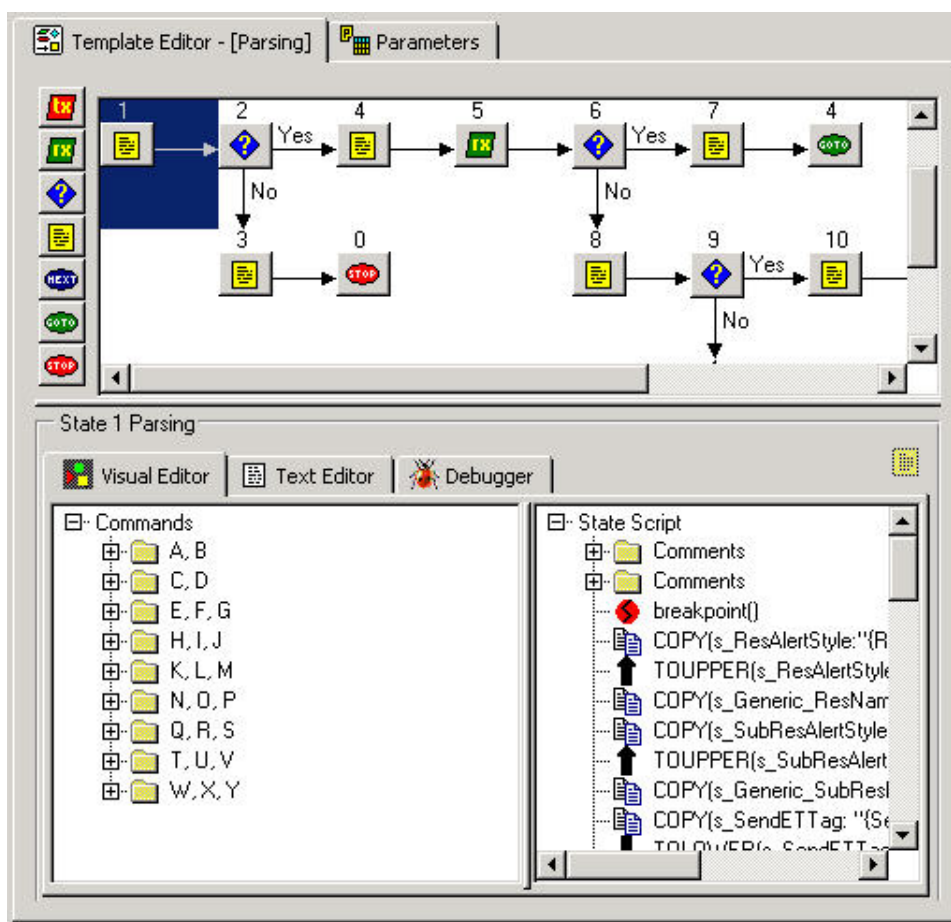
NOTE: If the host is not running, a No Response window will display when you select Properties.

Editing a Template File

Editing a Template File

1. Click the Agents tab to open the Agents tree panel.

2. In the Agents tree, click the template and click the Template Editor tab on the right.
3. In the Template Editor, click the state to edit and make your desired changes. You can edit a state using the Visual Editor or Text Editor. For information about Parsing Commands, see the e-Security User's Reference Guide.



Deleting a Template File

Deleting a Template File

1. Click the Agents tab to open the Agents tree panel.
2. In the Agents tree, right-click a template and click Delete Template.

Renaming a Lookup File

Renaming a Lookup File

1. Click the Agents tab to open the Agents tree panel.
2. Right-click the lookup file and click Rename Lookup File.
3. Type in the new name and press Enter.

Deleting a Lookup File

Deleting a Lookup File

1. Click the Agents tab to open the Agents tree panel.
2. Right-click the lookup file and click Delete Lookup File.

Deleting a Script

Deleting a Script

1. There are two ways to delete a script.
 - In the Agent tree, right-click a script and click Delete
 - Right-click the script in the Startup Scripts or the Backout Scripts column and select Delete Script.

Deleting a Startup Sequence

Deleting a Startup Sequence

1. In the Startup Scripts panel, select the startup sequence from the dropdown menu so that sequence name displays in the Startup Scripts box.
2. Right-click the script in the Agents tree and select Delete Current Startup Sequence. The startup sequence is removed from the Startup Scripts list.

NOTE: If you delete the default startup sequence, any scripts assigned to the default startup sequence are removed from the Startup Scripts column, but default still displays in the Startup Sequences menu.

Wizard Ports

This section discusses how to stop, start, edit, delete and debug a Wizard Port.

Starting and Stopping a Wizard Port - GUI

When an agent is started or stopped, the Start or Stop button under the Start/Stop column will change once the agent actually starts or stops. If you are working with a remote agent, this change may be delayed while waiting for the agent's status to be received.

Starting or stopping a port executes the selected startup script and backout script.

When starting all ports, a port will only start if the Run Port at Startup box is checked under the Other Port Options of the Options menu.

Starting and Stopping all Wizard Ports

1. In the Wizard window, to:
 - To stop all ports, click the stop button in the tool bar.
 - To start all ports, click the start button in the tool bar.



Starting and Stopping an Individual Wizard Port

1. In the Wizard window, to:
 - To stop a port, click the stop button in the Start/Stop column corresponding to the port
 - To start a port, click the start button in the Start/Stop column corresponding to the port

Editing a Wizard Port

If you edit a port's configuration while it is running, the port will stop. To avoid data loss, stop the port manually before editing the port configuration.

Editing a Wizard Port

1. For the proper host, stop the port.
2. Follow the steps for creating a Wizard Port in Chapter 3. The new configuration will overwrite the existing configuration when you save or upload the port.

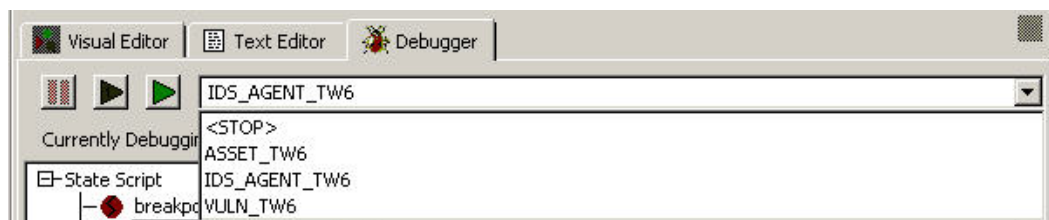
Deleting a Wizard Port

Deleting a Wizard Port

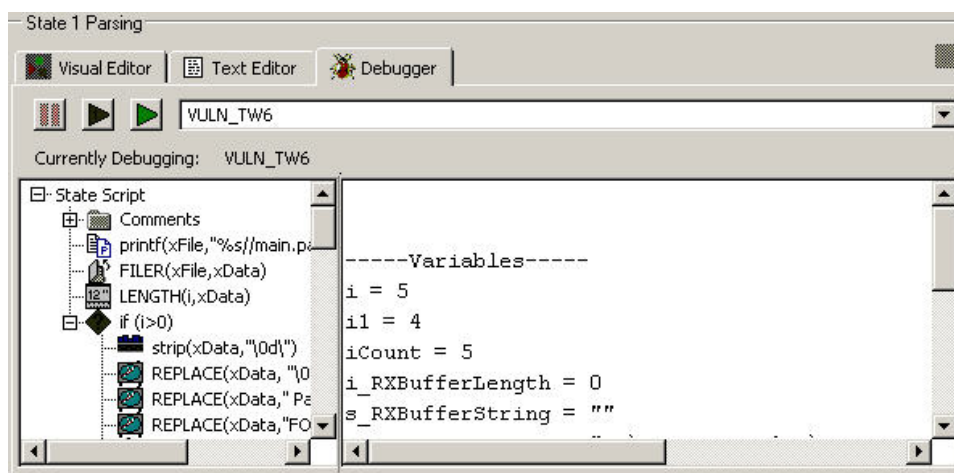
1. Stop the port.
2. In the Agent Builder's Port Information panel, right-click the port name and click Delete Port. All ports below the deleted port will be stopped automatically.
3. If you are deleting from a:
 - Local host - Click File > Save and select Port Information
 - Remote host - Click File > Upload/Download

Debugging a Wizard Port

The Debugger allows you to troubleshoot the agent code running on a port. The left side of the Debugger panel displays the State Script. The right side of the panel displays scripts and RX_Buffer variables, which can have names of up to 32 characters.



For the Debugger to be effective, you must have a parse state as the first state and have Breakpoint() Commands.




While debugging, wait for the Rx Buffer to update before performing another function.

NOTE: If your Agent Manager host has lost connectivity (✖), you cannot debug a port for that Agent Manager host.

Debugging a Wizard Port

1. In the Template Editor, select the Debugger tab in the editing panel to access the Debugger. A blank panel displays allowing you to select the Wizard Port you want to debug from a dropdown list.
If you click the Wizard Hosts tab, the port being debugged will indicate that it is in debug mode.

Port Name	Rx/Tx Type	Rx/Tx Value	Agent	Start/Stop	Status
VULN_TW6	File All	C:\workarea\vuln_inf	DemoVulnerabilityUploa	Stop	Debug
ASSET_TW6	File All	c:\workarea\asset_o	T1_GNUx_NMAP_035	Start	Off

2. From the dropdown list, select a port to start the debug process. Debug your port by either:
 - Press F6 to step through the commands one at a time or click the Execute One Command button.

 Click the button again or press F6 to resume script execution.
 - Press F7 run through commands or click the Resume Command Execution button.



Press F5 to pause or click the Pause Command Execution button.



It pauses until you press F7 or the Resume Command Execution button.

The Debugger stops at all breakpoints, but continues to run. The port's status is “on.”

No events are sent out during pauses during debug mode.

When the parser exits, the buttons are grayed and the selection list displays “No Port is being Debugged.”

Debugger will not break out of a pause, so if you are debugging a parser that has hit a pause command, the Stop button or the Step button will wait until the pause is complete before taking effect.

Uploading and Downloading Agents and Hosts

There are three tabs in Upload/Download window, they are:

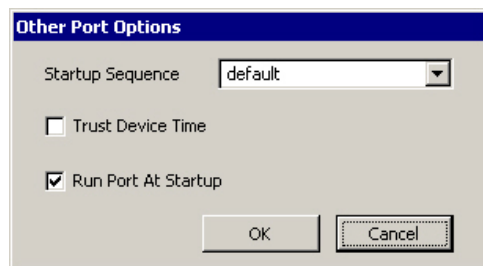
- Hosts – will upload each individual port configuration and agent collection to each of the specified hosts. Each host will still have their own port configuration and agent collection.
- Agents – for uploading individual agents
- Populate Network – will upload the port configuration/agents of a single specified host to all of the selected hosts. All selected hosts will get the same port configuration and agent collection as the source host.


When downloading, the port configuration on a remote agent will appear on the host you choose to download and any agent on the remote host with the same name as the local host will be overwritten.

Uploading an Agent to a Single Host

Uploading an Agent to a Single Host

1. If your agent is already properly configured and you have built your script, you can skip steps 2 to 11.
2. Click the Wizard Hosts tab and select a host.
3. Under the Port Name column, double-click new... Enter a name of your choice.
4. Under the Agent column, select an agent.
5. As per the agent documentation
(%WORKBENCH_HOME%\Elements\\docs\- 6. Click the Agents tab, expand the agent and highlight the template file.
- 7. To the right, click the parameters tab.
- 8. As per the agent documentation, set your parameter values.
- 9. (optional) If you want this agent not to start upon startup or to trust device time, click the Wizard Host tab, right-click on the Wizard Port name, select Other Port Options... and unclick Run Port At Startup or click Trust Device Time. Click OK.



10. Click save.
11. Click the Agents tab, right-click on the template file and select Build Script.
12. Click either:
 - File > Upload/Download
 - right-click on the agent and click Upload Agent
 - click the Upload/Download button 

The Upload/Download window opens.
13. In the Upload/Download window, click the Agents tab.
14. From the drop down list, select which agent you would like to upload.
15. Click Upload. The first time you do this, you will be prompted for an Agent Manager password, even for a local Wizard host. The Transfer Progress window opens and shows the progress of the upload.

NOTE: You can use the Transfer Progress window to restart hosts after a transfer.


Uploading an Agent to Multiple Hosts

Uploading an Agent to Multiple Hosts

CAUTION: If you upload a host that has an agent with the same name as one in your local host, the agent in your remote host will be overwritten without notice.

1. If your agent is already properly configured and you have built your script, you can skip steps 2 to 11.
2. Click the Wizard Hosts tab and select a host.
3. Under the Port Name column, double-click new... Enter a name of your choice.
4. Under the Agent column, select an agent.
5. As per the agent documentation
(%WORKBENCH_HOME%\Elements\<agent name>\docs\<file name>.pdf) configure the agent.
6. Click the Agents tab, expand the agent and highlight the template file.
7. To the right, click the parameters tab.
8. As per the agent documentation, set your parameter values.
9. (optional) If you want this agent not to start upon startup or to trust device time, click the Wizard Host tab, right-click on the Wizard Port name,

select Other Port Options... and unclick 'Run Port At Startup' or click 'Trust Device Time'. Click OK.

10. Click save.
11. Click the Agents tab to open the Agents tree panel
12. Click an agent.
13. Click either:
 - File > Upload/Download
 - click on the agent and select Upload Agent
 - click the Upload/Download button 


The Upload/Download window opens.

14. In the Upload/Download window, click the Hosts tab and select or clear the Upload Agents When Uploading check box.
If this check box is selected, agents selected on the Agents tab will be uploaded. This check box is selected by default. This option has no effect when downloading agents from a host.
15. From the list, select the Wizard hosts that you want to upload agents to.
All Wizard hosts on the network will automatically be included in the list. The buttons indicate whether or not the host machine is online.
Click Select All to select all Wizard hosts in the list. Click Select None to deselect all Wizard hosts in the list.
16. Click Upload to upload selected agents to the selected host(s). The first time you do this, you will be prompted for an Agent Manager password, even for a local Wizard host.

Downloading a Host

Downloading a Host

CAUTION: If you download a host that has an agent with the same name as one in your local host, the agent in your local host will be overwritten without notice.

1. Click the Wizard Hosts tab to open the Hosts tree panel.
2. In the Wizard Hosts tree, click the host you want to download.
3. Click either:
 - File > Upload/Download
 - click on the agent and select Upload Agent
 - click the Upload/Download button 

The Upload/Download window opens. The agent you have selected is checked by default.


4. Click Download. The first time you do this, you will be prompted for an Agent Manager password, even for a local Wizard host. The host is downloaded and added to the Wizard Hosts tree. The Transfer Progress window opens and shows the progress of the download.

NOTE: You can use the Transfer Progress window to restart hosts after a transfer.

NOTE: You can only download one host at a time. Checking more than one host will prevent downloads from occurring.

Downloading Agents from a Single Host

Downloading Agents from a Single Host


1. Click either:
 - File > Upload/Download
 - click the Upload/Download button The Upload/Download window opens.
2. From the list, select the Wizard host that you want to download agents from.

All Wizard hosts on the network will automatically be included in the list. The buttons indicate whether or not the host machine is online.

Click Select All to select all Wizard hosts in the list. Click Select None to deselect all Wizard hosts in the list.
3. Click Download to download agents from the selected host.

Uploading Ports to Multiple Hosts

Uploading Ports to Multiple Hosts


1. Click either:
 - File > Upload/Download
 - click the Upload/Download button 
2. The Upload/Download window opens.
3. In the Upload/Download window, click the Populate Network tab.
4. From the list labeled 'Select which host's port configuration and agents you would like to upload', select the host you want to upload port configuration settings and agents.
5. From the list labeled 'Select which hosts you would like to upload this configuration to', select the host you want to upload the selected settings.

All Wizard hosts on the network will automatically be included in the list. The buttons indicate whether or not the host machine is online.

Click Select All to select all Wizard hosts in the list. Click Select None to deselect all Wizard hosts in the list.

Uploading Multiple Agents to a Network

Uploading Multiple Agents to a Network

1. From the Wizard main window, select an agent on the Agents tree.
2. Click either:
 - File > Upload/Download
 - click on the agent and select Upload Agent
 - click the Upload/Download button 

3. Select the Populate Network tab.
4. In the first selection box, from the dropdown menu, select which host's port configuration and agents you would like to upload.
5. In the second selection box, from the dropdown menu, select which hosts you like to upload the configuration to.

NOTE: You must have at least one selection in at least one of the selection boxes in order to upload its configuration.

You may select a different agent for each dropdown box. Each agent checked in the main list will acquire the port configuration and agents of the host selected in the box labeled:

"Select which host's port configuration and agents you want to upload" unless None is selected.

6. When you have completed setting up the network configuration, select the Upload button to begin the upload process.

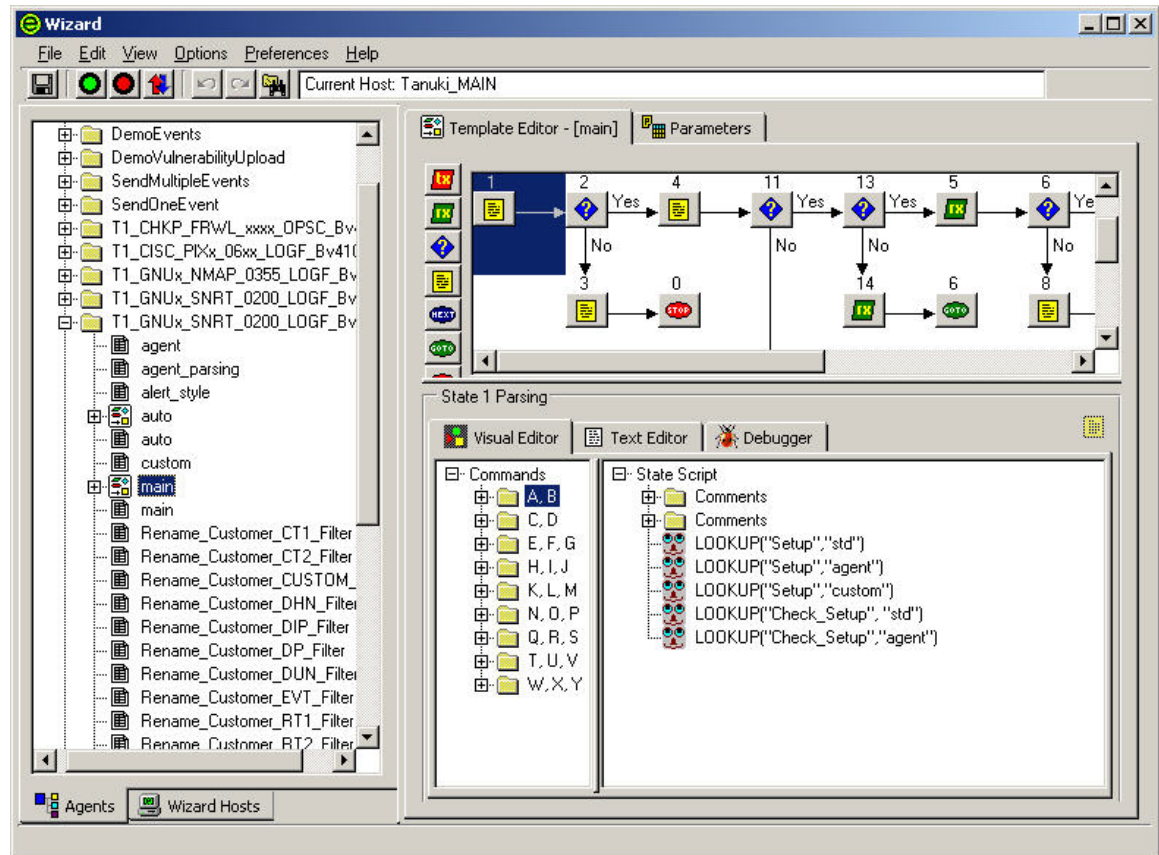
Upgrading Agents

Upgrading Agents

1. Read the documentation that comes with the new agent that explains any changes.
2. Put the new version of the agent in %workbench_home%/Elements directory on the PC that is the master for the agent.
3. Open the parameter file of the agent being replaced, cut and paste matching parameters into the new agent.
4. If necessary as per the documentation for the new agent, remove or add new parameter variables. If you are adding new parameter variables, populate the variable.
5. Save the parameter file in the new agent.
6. Build the new agent.
7. Edit the port configuration information to use the new agent.
8. Save the port configuration information.
9. Upload the new agent and port configuration.
10. Restart the port.

Chapter 3 – Building and Maintaining Agents

An agent is responsible for parsing the data from a security event source and sending events to Sentinel. Agents are built, activated and maintained using the Wizard Agent Builder. Click the Agents tab to display the Agents tree to see all of the agents and agent components on your e-Security system.



Agent Manager allows you to:

- [Build Agents](#)
 - [Creating and Configuring Template Files](#)
 - [Creating Parameter Files](#)
 - [Creating Lookup Files](#)
 - [Building Scripts](#)
 - [Creating a Wizard Port](#)

Agent Building Basics

The basic agent building steps are:

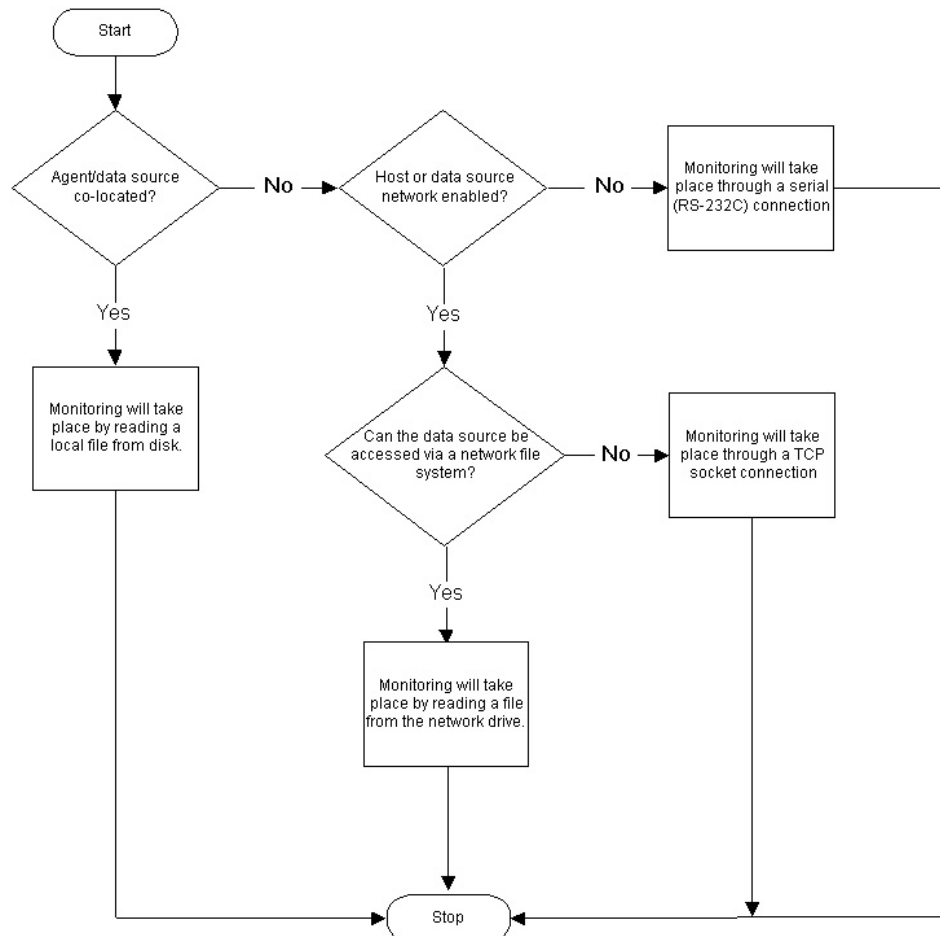
- [Create and configure a template file](#), including decision points based on how you apply states
- [Create and configure a parameter file](#)
- [Create and configure a lookup file](#) (optional)
- [Building a script](#)
- [Assign a startup sequence](#)

- [Create a port, assign the agent to the port and start the port](#)

Basic Agent Implementation Steps

The following are basic steps in implementing an Agent.

- Determine what you want to monitor
- Determine how to monitor the data
- Determine the product's operating system
 - If the host and product are co-located, the most logical way to obtain the data is to read it from the product's log file.
 - If the host and product are not located on the same machine, the needed data can be obtained through a network file system setup (such as NFS, Samba or SMB share), a TCP/IP socket connection or a serial connection.
- Build the agents and start the ports.
- If remote hosts are used, upload the agent files to those remote hosts. Start the port to execute the startup scripts; the information collected will be reported through the Sentinel system.



Building an Agent

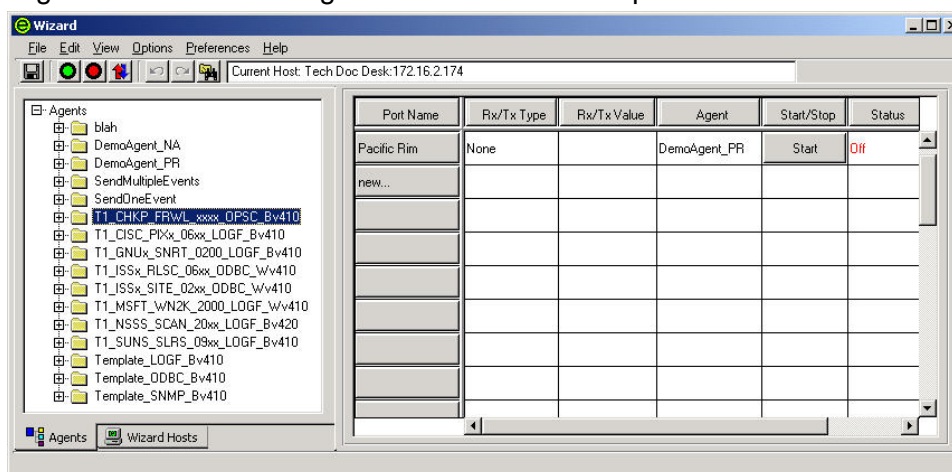
As previously discussed, building an agent requires you to create:

- [Template files](#)
- [Parameter files](#)
- [Lookup files](#) (optional)
- [Scripts](#)
- [Assign a Wizard Port Name to an Agent](#)

Creating and Configuring Template Files

Creating and Configuring Template files

1. Start Agent Builder.
2. Click the Agents tab to open the Agents tree panel.
3. In the Agents tree, right-click Agents and click New Agent.
4. Enter the new agent name in the space provided and press Enter.
5. Right-click on the new agent and click New Template.



6. In the New Template box on the Agents tree type a new template name and press Enter.
7. Select the new template and click the Template Editor tab.
8. In the Template Editor panel, drag and drop states to the editing area using the state buttons on the left of the panel. For information about adding states to a template, see [Adding a States to a Template](#).
9. Click Save.

Adding a State to a Template File

All agents begin processing at state 1, regardless of where state 1 appears in the template. Assuming state 1 is a processing state, insert the new state following state 1.








Agent Builder automatically assigns the first state a state number of 1. It is recommended that this first state contain only a `BREAKPOINT()` parsing command. Putting only a breakpoint after State 1 will allow for easier debugging. When debugging, the parser will automatically stop on the next state.

When building a template, start with a 'breakpoint only' parse state. Then, add the working state (Receive state, Parse state, etc.) at State 2. If you need to add a state to the beginning of the template, insert it after the `BREAKPOINT` only.

Do not delete the BREAKPOINT only parse state unless it is necessary to add another state at the beginning of the template. Optionally, you can enter comments in this BREAKPOINT only about the functionality of the template.

How to Add a State to a Template

1. Click the Agents tab to open the Agents tree panel.
2. In the Agents tree, select a template to display the Template Editor in the right panel.
3. Click Options > Add State > Transmit, Receive, Decide, Parse, Next, Go To or Stop states as needed or click the appropriate buttons.

-  Transmit
-  Receive
-  Decide
-  Parse
-  Next
-  Go To
-  Stop

4. Using the editing panels at the bottom of the Template Editor panel, insert the new code into each state as you add it.

Another method is to drag and drop a Parse State button from the left side of the Template Editor into the editing area.

NOTE: Do not use double quotation marks as part of the decide string either in the receive state (to match the delimiter in a log file, for example) or in a decide state, you will get the following error message:

```
***ERROR: Reading Template File..."
```

When one or more quotes is put into the decide or delimiter string, a quote mismatch occurs as follows:

```
StateDecideString: "test"123"
```

The workaround is to use \22\ instead of a quote (").

NOTE: If you select another item in the Agents tab (even in the same agent) and then go back to the offending template, Agent Builder gives you this error message and will not display any part or states of the template. The error is occurring because the quote character (") is used to delimit field values in a .tem file. For example:

```
StateDecideString: "test"
```

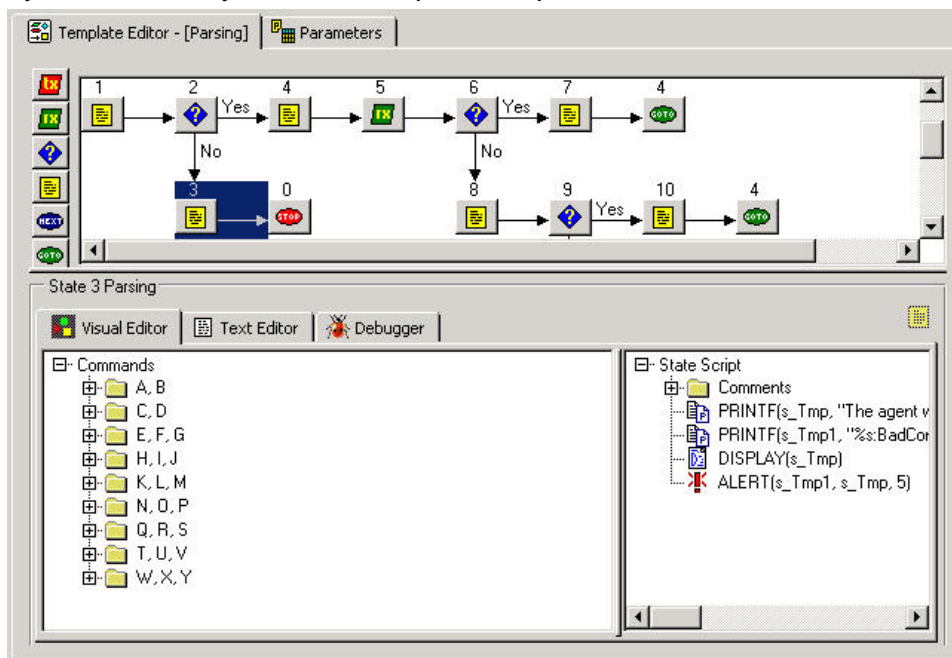
```
StateDelimiterString: "123"
```

Entering a Parsing Command via the Visual Editor

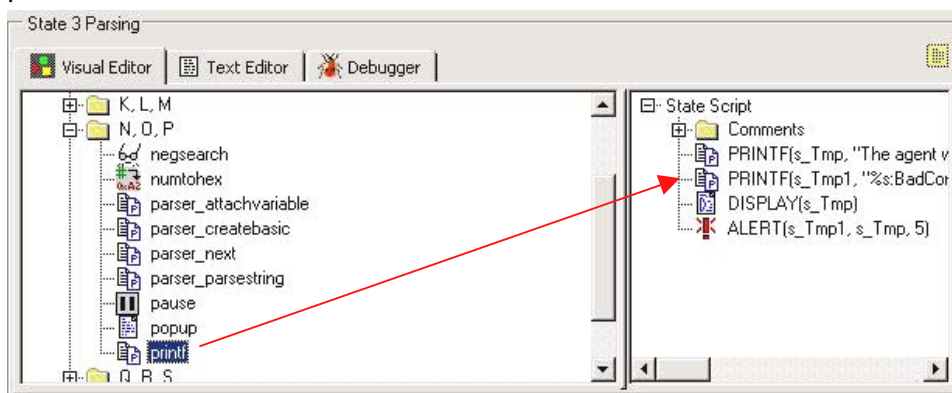
There are two methods of entering a Parsing Command, using the Visual Editor or using the Text Editor. Limit your commands to no more than 4096.

Entering a Parsing Command via the Visual Editor

1. In the Template Editor, select a parse state. The Visual Editor tab is open by default when you click a template to open.



2. In the visual editor, drag the parsing commands to the right side of the panel.



3. Enter the argument values in the Popup Command Editor window.
 - Select a Type – the types for each parsing command is described in the e-Security User's Reference Guide.
 - Specify a Value - Values are defined for a specific application. Examples of values for each parsing command are in the e-Security User's Reference Guide.

Entering a Parsing Command via the Text Editor

1. In the Template Editor, click the Text Editor tab.
2. Manually enter your parsing commands.
Use the Tab key on the keyboard to line up text when using a fixed font.
Copy, cut and paste options function like any standard text editor.

Editing a Parsing Command

Command Editor

Command Name:

Arguments

Arguments	Argument Use	Type	Value
Destination String	Mandatory	String Var	<input type="text"/>
No Argument	Mandatory	None	<input type="text"/>
Search String	Mandatory	String	<input type="text"/>
Offset	Optional	Number	<input type="text"/>

Description

Copy strings from Rx Buffer to a string variable until search string.

OK Cancel

- Arguments - Includes all of the possible arguments for the parsing command you selected in the Visual Editor
- Argument Use - Defines whether the argument is mandatory or optional
- Type - Determines the variable type; for example, strings, string variables, numbers, number variables, floats, float variables or predefined variables
- Value - Value you define for the variable that's named in the Type column

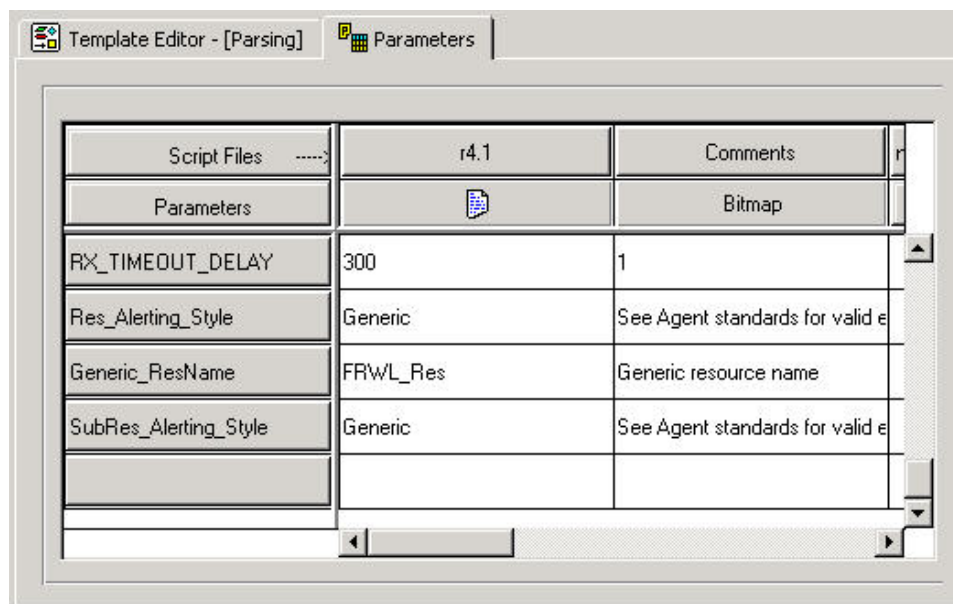
Editing a Parsing Command

1. In the visual editor, either:
 - Right click on a parsing command and choose Add to State Parsing List
 - Double-click on a parsing command, the Command Editor will open
2. Fill in the Type and Value boxes to complete the editing. See e-Security User's Reference Guide for more information on Parsing Command descriptions.

Creating and Configuring Parameter Files

Creating and configuring Parameter Files

1. Click the Agents tab.
2. Select a template and click the Parameters tab in the right panel.



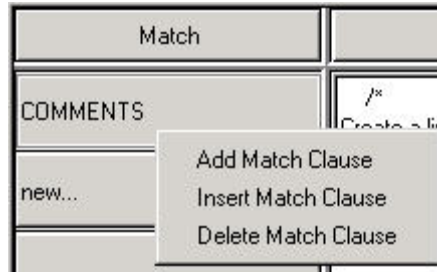
3. Double-click the new... button in the first column of the Parameters table.
4. Enter the new parameter name (this is the name of your script, such as r4.1) and press Enter.
5. (Optional) Right-click the Bitmap button (second column/second row) and click Assign Bitmap. In the Bitmap Assignment dialog box, select a Bitmap button.
6. Double-click each of the new parameter boxes and enter the appropriate values.
7. When all of the values are defined, the parameter and the template file need to be compiled to create a script. Go to section [Building Scripts](#).

Creating and Configuring Lookup Files

This is an optional procedure.

Creating and configuring Lookup Files

1. Click the Agents tab to open the Agents tree panel.
2. Right-click an agent and click New Lookup File.
3. In the New Lookup File box, type a new lookup file name and press Enter.
4. In the Match column, Double-click new... and enter the string to match and press Enter. You can add, insert and delete match clauses.
 - To add - In the Match column, right-click a match clause and click Add Match Clause.
 - To insert - In the Match column, right-click a match clause and click Insert Match Clause.
 - To delete - In the Match column, right-click a match clause and click Delete Match Clause.



5. (Optional) To enter parsing commands, right-click in the Parsing column to open the Visual Editor. For information about using the Visual Editor, see [To Enter Parsing Commands Using the Visual Editor](#).
6. Select the parsing commands and complete them in the Command Editor window. The commands display in the Parsing column.
7. When all of the values are defined, it must be compiled to create a script. Go to section [Building a Script](#).

Scripts

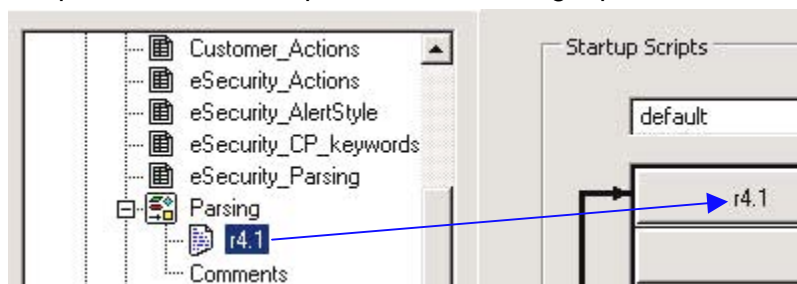
Scripts are generated from templates. You can generate multiple scripts from one template. Agent Manager allows you to:

- [Build a script](#)
- [Debug a script](#)
- [Assigning a Startup Sequence to a Script](#)

Building a Script

Building a script

1. Click the Agents tab to open the Agents tree panel.
2. In the left panel, select the template that you are building the scripts from.
3. Select File > Build Scripts.
4. In the Template Editor tab, drag a script from the template to the Startup Scripts or Backout Scripts column in the right panel.



Scripts execute in the order they appear in the Startup Scripts and Backout Scripts columns. To rearrange the script order, drag the scripts up or down in the columns.

NOTE: The final script in a backout sequence must end with the Stop processing state.

5. (Optional) Debug using the debugger.
6. Click File > Save.

- For the changes to take effect, stop and start the port using the Stop and Start buttons on the tool bar.

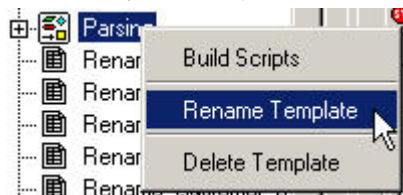


Enabling AutoBuild for Agents Prior to Version 5.0

Enabling the AutoBuild feature allows you to skip the step of building your script when you configure and deploy Agents.

To Enable AutoBuild for Agents Prior to Version 5.0

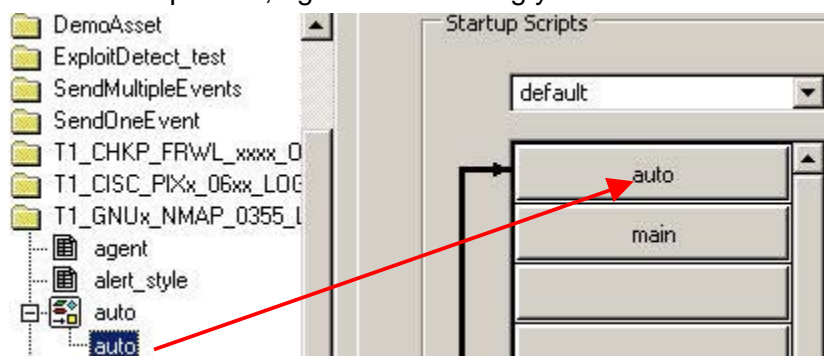
- Copy the following files from an existing v5.* agent and copy them into the agent you wish to enable AutoBuilding.
 - auto.tem
 - auto.asd
 - auto.lkp
 - auto.par
- Rename your template file to main.tem. You can do this in Agent Builder.



- Highlight the renamed template file and click the Parameters tab. Change the column header name that has the name of your script file (for instance r4.1) to main and hit the enter key.



- Click the Save button.
- In the Startup chain, right click and drag your auto.asd before main.



Debugging a Script

When you begin the debugging process, the port's status is set to "Debug" on the Port Information panel. To debug a script, see Debugging a Wizard Port in Chapter 2.

Assigning a Startup Sequence to a Script

If you want a port to run at startup, you can assign a startup sequence to run a specified set of scripts at startup. A startup sequence is a file that contains the names of the scripts to run at startup.

Assigning a Startup Sequence to a Script

1. Right-click a script name in the Agents tree and select New Startup Sequence. The New Startup Sequence dialog box displays.
2. In the New Startup Sequence dialog box, type the sequence name and click OK. The new startup sequence name is added to the menu at the top of the Startup Scripts panel. The following restrictions apply to sequence names:
 - Do not use startup or backout as sequence names
 - Do not use duplicate sequence names within the same agent
3. Drag the script file names from the Agents tree to the Startup Scripts column. The scripts execute in the order that they appear in the column, from top to bottom.
4. To rearrange the script order, drag the scripts from the column, or right-click the Startup Scripts panel and select Reorder Startup Script.

Creating a Wizard Port

You can create more than one port for an agent. For some types of sensors, you may need to create more than one instance of the same agent and assign each instance to a different port.

A port's connection type determines how security data and what information will be read and when a connection will be established. The connection types are:

- [Serial Connection Type](#)
- [Socket Connection Type](#)
- [File New Connection Type](#)
- [File All Connection Type](#)
- [Persistent Process Connection Type](#)
- [Transient Process Connection Type](#)
- [SNMP Trap Connection Type](#)
- [None Connection Type](#)

Serial Connection Type

The Serial connection type is used if data will be read from an RS-232C serial port (through either a serial cable or a modem connection). You must specify the appropriate serial port (for example, COM1, COM2) in the Rx/Tx Value box. The host running the product to be monitored must also have a serial connection to the agent's host, either through a serial cable directly or through modems on each end of the connection.

When using this connection type, there may be other modifications and entries that need to be made.

Socket Connection Type

The Socket connection type is used if the data will be read from a TCP socket connection. You must specify the IP address and TCP port number of the remote host in the Rx/Tx Value box. The IP address and TCP port number must be separated by a colon. For example, to specify the SMTP port, enter the following in the Rx/Tx Value box:

```
<IP Address>:<port>
```

You may also need to place a TCP socket server process on the remote host and configure it to serve data to the TCP port.

For more information about configuring agents with this connection type, see the agent documentation (such as agents Snort, Cisco PIX and Solaris Syslog) located in

```
%workbench_home%\elements\<agent name>\docs
```

File New Connection Type

The File New connection type is used to read only security event data that is added to a file after the script has started. File New opens this file and reads from the end of the file. You must specify in the Rx/Tx Value box the path to the log file.

For more information about configuring agent with this connection type, see the agent documentation (such as agent Solaris Syslog) located in

```
%workbench_home%\elements\<agent name>\docs
```

File All Connection Type

The File All connection type is used to read all the security event data in a file.

If you select File New or File All, you can enter either inputfile or outputfile for the Rx/Tx Value. The format is as follows:

```
inputfile, outputfile
```

or

```
inputfile
```

or

```
outputfile
```

If you select File New or File All and the file shrinks, the file is read from the beginning.

For more information about configuring agents with this connection type, see the agent documentation (such as agents Solaris Syslog and Windows 2000 Event Log) located in

```
%workbench_home%\elements\<agent name>\docs
```

Persistent Process Connection Type

The Persistent Process connection type is used to launch a persistent process when the port is started. The process communicates between the agent assigned to that port and an external application through receive and transmit states.

A Persistent Process starts at the first read/write state and continues to run for the active life of the port. The process is terminated by the port as part of the port's shutdown process. When the port stops, a level 5 event is sent. When the port is started, a level 1 event is sent.

For more information, go to section [Persistent and Transient Processes](#). For information about configuring the Rx/Tx Value for this connection type, go to section [Configuring Rx/Tx Value for Persistent and Transient Connection \(Rx/Tx Type\)](#). For more information about configuring agents with a persistent connection type, see the agent documentation (such as the agent Check Point Firewall & VPN) located in

```
%workbench_home%\elements\\docs
```

Transient Process Connection Type

The Transient Process connection type is used to launch a transient process when the port is started. The process communicates between the Agent assigned to that port and an external application through receive and transmit states.

A transient process may be started multiple times. The process is terminated by the port as part of the port's shutdown process.

NOTE: If you select Persistent Process or Transient Process, the Rx/Tx Value must include the path and the filename of the process to execute. You can use either the full path and filename or a relative (to %WORKBENCH_HOME%) path and filename. For example:

Full path:

```
C:\Program Files\Cisco\Csids_client - start
```

Relative Path:

```
.\elements\Cisco\Csids_client - start
```

For persistence process, the process will assume relative unless Rx/Tx Value is entered as a full path.

Transient Process Termination - If the Transient Process stops prior to parser termination, it is restarted on the next read or write state with no event being sent.

For more information, go to section [Persistent and Transient Processes](#). For information about configuring the Rx/Tx Value for this connection type, go to section [Configuring Rx/Tx Value for Persistent and Transient Connection \(Rx/Tx Type\)](#).

SNMP Trap Connection Type

The SNMP Trap connection type is used to receive SNMP v1, v2 and v3 traps. These traps are sent by sensors to the Wizard server IP address. Based on the IP address and the object identifier (OID) of the sending device, the Agent

Manager enables parsing through the appropriate agent. The Rx (parsing) state relays inbound SNMP trap data to the agent.

The information you use to collect and parse SNMP v1 and v3 traps are all configurable:

- SNMP v1 traps are identified using the IP address and the object identifier (OID), along with a trap code.
- SNMP v2/v3 traps are identified using the IP address, security name, engine ID, authentication and encryption keys (if enabled in the trap) and the trap's object identifier (OID).

The original format of the trap, in terms of trap values, is maintained as closely as possible. The format is usually defined in the MIB (management information base) for the sensor that originated the trap.

For more information, see [SNMP Trap Setup](#).

None Connection Type

The None Connection Type is used without a communication port. It is more efficient because it does not try to connect. This type of connection should be used if an agent does not use the Receive State and just processes commands.

For more detailed information about setting up agents with a None connection type, see the agent documentation (such as agents ISS RealSecure and ISS SiteProtector) located in

```
%workbench_home%\elements\\docs
```

Creating, Assigning, Starting and Stopping a Wizard Port

Creating a Wizard Port

1. Refer to the agent documentation located `%workbench_home%\elements\\docs` for agent configuration information.
2. Click Agents tab and select an Agent.
3. In Agent Builder, click the Wizard Hosts tab and select a host.
4. In the Port Information panel on the right, double-click new, type the name of the port and press Enter.
5. Select an Rx/Tx Type.
6. Specify setup options based on the connection type selected:
 - For Serial and Socket connections - In the Port Name box, right-click the port name and select Edit Rx/Tx Value. Specify one of the following sets of options:
 - For Serial connections - Select the Baud Rate, Word Size, Parity and Stop Bits. Click OK.
 - For Socket connections - Enter the IP Address and Port Number for the host machine, separated by a colon. If no receive state will be used, set the type to None and click OK.
 - For all other connection types - Double-click the Rx/Tx Value cell, enter the appropriate information and press Enter.

- For SNMP Trap connection type, see [SNMP Trap Setup](#).
- 7. Double-click the Agent cell and select an agent name.
- 8. Right-click the Port Name and click Other Port Options. The Other Port Options dialog box displays.
- 9. In the Other Port Options dialog box, check or clear the Run Port at Startup check box, select a Startup Sequence and click OK.
- 10. If you are creating a port for the local host - Click File > Save and select Port Information.
If you are creating a port for a remote host - Click File > Upload/Download.
The port is added to the Port Information panel. You do not need to restart the system to implement the new port. Click Start to change the status of the new port from Off to On.

Persistent and Transient Processes

Using the Persistent Process or the Transient Process, Wizard is able to interface to another application using scripts that receive or transmit data and parse responses. Each of these scripts runs on a separate port and each port is connected to a specific application.

NOTE: Other Application is specified in the Rx/Tx Value box.

Process names can include the following items:

- Spaces
- Forward and backward slashes (to accommodate various operating systems)
- Command arguments
- Absolute and relative paths (the WORKBENCH_HOME environment variable is considered relative HOME)

When a receive/transmit (Rx/Tx) state occurs, the process specified in the Rx/Tx Value box is launched. When the parser terminates, the process terminates.

When a persistent process terminates, a level 5 event will be sent. When a persistent process starts, a level 1 event will be sent.

The standard output (stdout) of the Persistent/Transient Process is connected to the parser's receive "read" state. The standard input (stdin) of the Persistent/Transient Process is connected to the parser's transmit "write" state.

Configuring Rx/Tx Value for Persistent and Transient Connection (Rx/Tx Type)

There are three connector processes available when configuring Persistent and Transient Connections. They are:

- [DBConnector \(JDBC process connector\)](#)
- [Lea Client](#)
- [Remote Data Exchange Protocol \(RDEP\)](#)

Do not use quote marks in the Rx/Tx Value box for Persistent and Transient processes. If the process is an absolute path to a long executable name with spaces, then enter it without quotes. For example:

```
%WORKBENCH_HOME%\e-security\elements\checkpoint\lea_client checkpoint\lea_client.conf -new
```

Do not use spaces in arguments to the executable in the Rx/Tx Value box. These arguments are space delimited, so if they contain spaces the software will assume two arguments where there is only one. If the arguments are passing in the location of a configuration file, such as for Check Point, use a relative path from %WORKBENCH_HOME%. For example:

```
checkpoint/\lea_client checkpoint/\lea_client.conf -new
```

DBConnector

DBConnector (a JDBC process connector) runs a client that connects to a database server, executes an SQL query on that database and returns the result to standard output in name-value-pair format. The SQL query to execute is read from either standard input or a file. The name in the name-value-pair result is pulled from the column name of the result set. Due to this, the desired column name should be explicitly stated in the SQL. The exact syntax varies by database server.

This application is installed with Agent Manager in \$WORKBENCH_HOME/dbconnector.

For more information about using DBConnector, see the README file that is found alongside the application, e-Security Agent documentation for Intercept Host IDS 4.0 (via JDBC), or go to e-Security Customer Portal at <http://www.esecurityinc.com>.

Lea Client

e-Security's lea_client uses OPSEC's Log Export API to pull data from Check Point Firewall-1 and output it in name-value-pair format. The lea_client is usually used to feed data to e-Security's Check Point Firewall-1 agent, where the data is normalized and, depending on the action of the event (for example, drop, reject or accept), an alert is sent to the Sentinel server.

This application is installed with Agent Manager in \$WORKBENCH_HOME/checkpoint.

For more information about Check Point lea_client, see the README file that is found alongside the application, e-Security Agent documentation for Check Point Firewall & VPN Agent (via OPSEC), or go to e-Security Customer Portal at <http://www.esecurityinc.com>.

Remote Data Exchange Protocol (RDEP)

The rdep_client, a Java application, pulls data from remote Cisco IDS v4.0 sensors running RDEP. The rdep_client connects to the remote IDS sensor using an HTTP or HTTPS connection. After the client connects, it opens a subscription or uses a previously opened subscription. The subscription describes the type of data the IDS sensor will send to the client. The type of data a new subscription will retrieve can be modified by editing the rdep_client configuration file. Using the subscription, the client initiates a request for event data from the IDS sensor. The event data is returned by the IDS sensor in XML format, converted into

name-value-pairs by the e-Security RDEP client, then parsed and normalized by the agent. The agent then sends the normalized event on to the Sentinel.

This application is installed with Agent Manager in
\$WORKBENCH_HOME/cisco/rdep_client.

For more information about RDEP, see the README file that is found alongside the application, e-Security Agent documentation for Cisco IDS 4.0 Agent (via RDEP), or go to e-Security Customer Portal at <http://www.esecurityinc.com>.

SNMP Trap Setup

Sentinel is able to receive SNMP traps representing security events that have occurred from a sensor on a network. These events are sent to Sentinel over a network using SNMP protocol. SNMP v1, v2 and v3 are supported. To enable Sentinel to receive SNMP traps a Wizard agent must be created that uses the SNMP Trap connection (Rx/Tx) type.

You can configure the SNMP trap settings to specify the parameters that will allow Wizard SNMP agents to pass traps on to Sentinel as binary events.

The SNMP Trap Setting window is used to configure settings for Wizard SNMP agents, including the port used for SNMP traps, trap codes, authentication and encryption information.

How to access the SNMP Trap Window

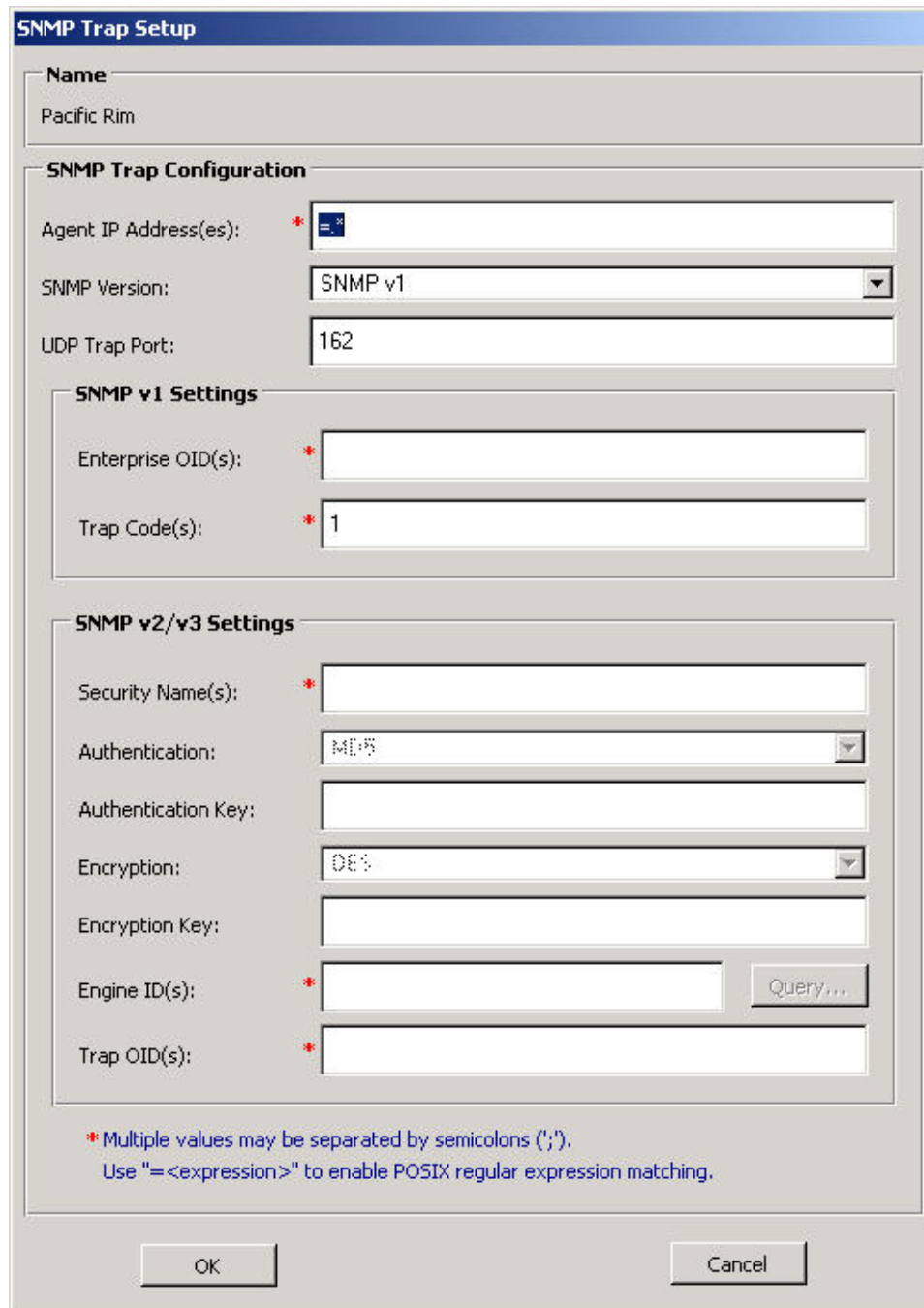
1. Within Agent Builder, assign a port name to your SNMP agent.
2. For Rx/Tx Type select SNMP Trap.
3. Right-click on the port name, select Edit Rx/Tx Value.
4. Enter your SNMP information.

NOTE: Default UDP trap port is 162. Ensure that that this port is available. If not you may choose another port number.

NOTE: Unlike other Agent Ports, the Rx/Tx Value field will populate as per your settings this the SNMP Trap Setup window. For an SNMP agent, you cannot manually edit the Rx/Tx Value field.

5. Saved and uploaded your SNMP agent.
6. Activate this agent by stopping and restarting your agent manager.

NOTE: To activate this agent, you must stop and restart your agent manager as stated in step 6.



The image shows a 'SNMP Trap Setup' dialog box with a blue title bar. It contains several sections for configuring SNMP traps. The 'Name' section has a text field with 'Pacific Rim'. The 'SNMP Trap Configuration' section includes 'Agent IP Address(es)' with a red asterisk and a button with an equals sign, 'SNMP Version' with a dropdown menu set to 'SNMP v1', and 'UDP Trap Port' with a text field set to '162'. The 'SNMP v1 Settings' section has 'Enterprise OID(s)' with a red asterisk and an empty text field, and 'Trap Code(s)' with a red asterisk and a text field containing '1'. The 'SNMP v2/v3 Settings' section includes 'Security Name(s)' with a red asterisk and an empty text field, 'Authentication' with a dropdown menu set to 'MD5', 'Authentication Key' with an empty text field, 'Encryption' with a dropdown menu set to 'DES', 'Encryption Key' with an empty text field, 'Engine ID(s)' with a red asterisk, an empty text field, and a 'Query...' button, and 'Trap OID(s)' with a red asterisk and an empty text field. At the bottom, there is a note: '* Multiple values may be separated by semicolons (;). Use "= <expression>" to enable POSIX regular expression matching.' and 'OK' and 'Cancel' buttons.

SNMP Trap Setup

Name

Pacific Rim

SNMP Trap Configuration

Agent IP Address(es): *

SNMP Version:

UDP Trap Port:

SNMP v1 Settings

Enterprise OID(s): *

Trap Code(s): *

SNMP v2/v3 Settings

Security Name(s): *

Authentication:

Authentication Key:

Encryption:

Encryption Key:

Engine ID(s): *

Trap OID(s): *

* Multiple values may be separated by semicolons (;).
Use "= <expression>" to enable POSIX regular expression matching.

SNMP Setup consists of:

- [Agent IP Address\(es\)](#)
- [SNMP Version](#)
- [UDP Trap Port](#)
- [SNMP v1 Settings](#)
 - Enterprise OID(s)
 - Trap Code(s)
- [SNMP v2/v3 Settings](#)
 - Security Name(s)

- Authentication
- Authentication Key
- Encryption
- Encryption Key
- Engine ID(s) with Query Button
- Trap OID(s)

In the SNMP Trap Setup dialog box (opened by right-clicking a port name on Agent Builder's Port Information panel and then clicking Edit Rx/Tx Value), you can configure Wizard to:

- Receive traps on ports other than UDP port 162 (the default).
- Create a single Wizard parsing script to process traps from multiple IP addresses, with such information as multiple trap codes and multiple trap object identifiers (OIDs).
- Allow for POSIX regular expression matching on IP address, enterprise object identifier (OID), trap code and trap OID fields.
- After decoding the trap, Wizard sets values for variables included in the script.

Agent IP Address(es)

Agent IP Address(es) are IP addresses you want to receive traps. Separate multiple values with semicolons (;). You can use the format =<expression> to match POSIX-compliant regular expressions. The asterisk (*) is a modifier of the preceding character or expression and the period (.) may be used as a wild card character and may appear anywhere in the string if using regular expressions.

The most common regular expressions that you are likely to use are:

- | | |
|-----------------|--|
| = | matches any sequence of characters of any length |
| = 192\. | matches any sequence of characters that contains 192.168 |
| 168.* | To get "begins with behavior," use: ^192.168... With ^ being the beginning-of-line anchor. |
| | To get "ends with behavior," use 0.47\$... With \$ being the end-of-line anchor |
| = [abc] | matches a or b or c |
| = [a-zA-Z0-9] | matches any single character in the alphabet (uppercase or lowercase) or any digit from 0 to 9 |

Basically, the rules in the above examples of common regular expressions are:

- | | |
|-----|---|
| . | matches any single character |
| * | matches zero or more occurrences of the preceding pattern |
| [] | matches any single character from the pattern defined in the brackets |

NOTE: These rules can be combined.

SNMP Version

Only one SNMP version can be configured. The options in the SNMP v1 Settings and SNMP v2/v3 Settings panes are enabled based on which version you select.

UDP Trap Port

The UDP Port destination port default is 162.

SNMP v1 Settings

These settings are enabled only if you select SNMP v1 from the SNMP Version list.

- Enterprise OID(s) - Object ID(s) used to identify the type of agent that sent the trap. Separate multiple values with semicolons (;).
- Trap Code(s) - Trap codes for sensors sending the SNMP traps. These trap codes represent the types of trap sent by the given SNMP agent. Separate multiple values with semicolons (;).

SNMP v2/v3 Settings

- Security Name(s) - User name used to access the agent. Security names are case-sensitive. Separate multiple values with semicolons (;).
- Authentication - Authentication method. Values are:
 - None - No authentication is performed on SNMP v3 traps.
 - MD5 - Security Name is configured to use the MD5 algorithm to create a digital signature for authentication.
- Authentication Key - Password used to authenticate the user on the agent. Enabled only if Authentication is MD5. Must be at least eight characters long. Authentication keys are case-sensitive. The same key must be configured on the sending SNMP agent.
- Encryption - Encryption method. Values are:
 - None - No encryption is performed on SNMP v3 traps.
 - DES - Expects to receive traps encrypted with the DES (Data Encryption Standard) encryption method.
- Encryption Key - Key used to decrypt traps sent to Wizard agents. Must be at least eight characters long. The encryption key is case-sensitive. Enabled only if DES is selected in the Encryption list.
- Engine ID(s) - A unique identifier for an SNMP v3 agent. There is an Engine ID Query Button that finds the IP address that you want to query. A successful query returns back the information and adds the engine ID. If you have an engine ID in the box, it appends a new one.
- Trap OID(s) - The trap's object ID that identifies the specific type of trap received.

NOTE: If you specify multiple security names and engine IDs, the same authentication and encryption scheme is used for all.

NOTE: If different authentication and encryption keys are needed for different SNMP agents, then separate ports must be configured for each.

SNMP Trap Variables

Some trap variables are valid for all traps (SNMP v1 and v3) and some are valid only for one version. The following tables list all the SNMP trap variables, grouped by the SNMP version that they work with:

- SNMP Trap Variables for SNMP v1 and v3
- SNMP Trap Variables for SNMP v1
- SNMP Trap Variables for SNMP v3

SNMP Trap Variables for SNMP v1 and v3

Variable	Description
s_Trap_IP	IP address of the agent/sensor that sent the trap.
s_Trap_Time	Uptime value reported by the agent/sensor that sent the trap. Usually, this is the amount of time the agent has been running. Format: D:HH:MM:SS.ss (days, hours, minutes, seconds, hundredths of a second).
i_Trap_Version	Value for a specific SNMP version: 1 = SNMP v1 3 = SNMP v3
i_Trap_Vars	Number of variable bindings in the trap.
s_Trap_OID[]	An array (of size “i_Trap_Vars”) of the names of the MIB variables bound in the trap message. Each element of the s_Trap_OID array is an OID, for example “.1.3.6.1.4.1.4286....”
s_Trap_Value[]	An array (of size “i_Trap_vars”) of the values of the MIB variables bound in the trap message. The indices of this array and the s_Trap_OID array match up with each other, such that s_Trap_OID[0] is the name and s_Trap_Value[0] is the value.

SNMP Trap Variables for SNMP v1

Variable	Description
s_Trap_Ent	Enterprise object identifier (OID) of the agent/sensor that sent the trap.
s_Trap_Code_Generic	Generic trap code of the trap. Values are: 1-5 = standard, IETF-defined (Internet Engineering Task Force) trap types 6 = enterprise-specific trap (code is defined in s_Trap_Code_Specific)
s_Trap_Code_Specific	Specific trap code of the trap. Only relevant if s_Trap_Code_Generic = 6.

SNMP Trap Variables for SNMP v3

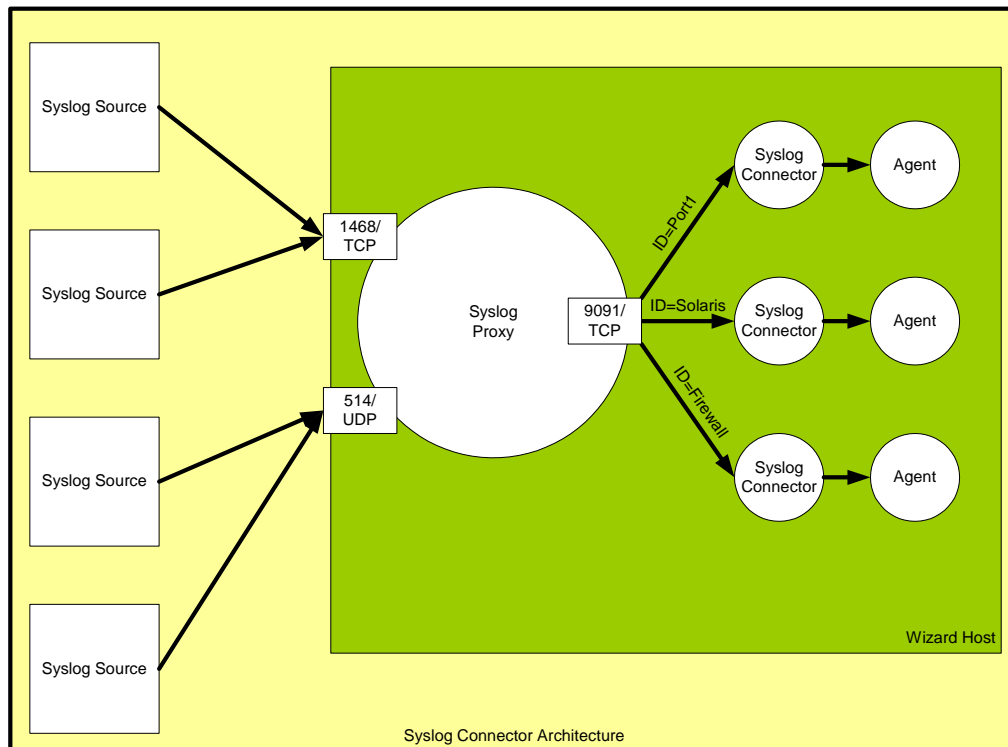
Variable	Description
s_Trap_Engine_ID	Engine ID of the SNMP v3 agent that sent the trap.
s_Trap_OID	Object Identifier (OID) that identifies the type of SNMP v3 trap received. For trap identification purposes, the SNMP v3 trap OID takes the place of the SNMP v1 enterprise OID and generic/specific trap codes.
s_Trap_Security_Name	Security name by which the SNMP v3 agent that sent the trap is known.

Appendix A – Syslog Connector v1.0.2

e-Security has released this syslog connector in order to facilitate smooth integration between e-Security Agents and with those products able to generate syslog messages. This document is meant to explain the architecture, installation, usage and options of the syslog connector.

Architecture

The syslog connector is comprised of two parts. One part is the syslog proxy and the other is the syslog connector client. The syslog proxy listens to selected UDP and TCP ports. The UDP port by default is 514. The default TCP port is 1468, which is the port commonly used by Cisco PIX when sending syslog messages over the TCP protocol.



The functions each syslog connector component performs are described below:

- Syslog proxy
 - Listens to either a TCP and/or UDP port for syslog messages.
 - Parses incoming message looking for syslog standard message components (Priority, Date, Hostname and Message)
 - In the event the message source sends a message missing Priority, Date, or Hostname, it follows the RFC 3164 "BSD Syslog Protocol" and inserts supplementary data.
 - Having determined the Facility and Level from the Priority as well as the Hostname, the proxy effectively publishes the message to those syslog connector sessions interested in the message.

- In the event the syslog connector client session terminates, the syslog proxy will queue incoming messages for that client for 10 minutes. This behavior is meant to ensure the agent does not miss messages while it is being restarted or temporarily stopped.
- Syslog proxy listens on a TCP port, typically 9091, in order to service syslog connector client sessions.
- Syslog connector client
 - Connector is started as a Persistent Process with all the syslog connector runtime options entered into the RX/TX value.
 - One runtime parameter is the ID. The ID configured for a particular syslog connector must be unique among all syslog connectors connecting to the same syslog proxy.
 - A content filter can be specified at runtime in order to limit the scope of messages submitted to the agent for parsing.
 - The syslog connector makes a connection to the proxy's connector client service.
 - The syslog connector register's its ID and content filter to the syslog proxy.
 - Messages the syslog proxy associates to the ID are read by the syslog connector and directed to its standard output.
 - Currently the structure and content of the message is passed to the agent as is. In the future, the syslog connector will be able to format the message in order to comply with the agent's parsing requirements.

The syslog protocol has traditionally and is currently defined as a UDP based protocol. In the absence of a diverse population of applications/devices capable of sending messages over TCP or a recognized standard for syslog over TCP, the Cisco PIX approach to syslog message termination (carriage return + line feed) was adopted. Message termination is necessary for syslog over TCP, since there is no standard defined or natural boundary between messages. Syslog over UDP has natural message termination, since a UDP packet transports a single message and UDP is connection-less.

Installing and Uninstalling

The syslog connector was designed to operate on any Wizard platform. Due to this portability requirement, both components are written in Java. The necessary software and hardware requirements are listed below.

System Requirements

Software

- Java 1.4.1 or higher
- Wizard 4.2 or higher
- Windows (2000/XP/2003), Solaris (8/9), RedHat Enterprise Linux (v3 ES/AS)

Hardware

- Additional 14 MB of RAM (45 MB virtual memory) for each instance of syslog connector and the proxy

Installation

Both the syslog proxy and connector client files are automatically installed when the Agent Service is installed. The syslog files are in the directory:

For UNIX:

```
$ESEC_HOME/wizard/syslog
```

For Windows:

```
%ESEC_HOME%\wizard\syslog
```

The Wizard will not startup the syslog proxy automatically. If you wish to have the syslog proxy startup automatically, it must be installed as a service. Follow the following instructions to install the syslog proxy as a service.

Install as Windows Service (Windows)

The syslog proxy can be installed as a Windows Service to run automatically. To install the syslog proxy as a service, execute the following commands at the command prompt:

1. `cd /d "%ESEC_HOME%\wizard\syslog"`
2. `syslog-server.bat install`

This will create a Windows Service named "eSecurity Syslog Server".

Install as service (UNIX)

The syslog proxy can be installed as a service on UNIX so that it will run automatically when the machine starts. To install the syslog proxy as a service, execute the following commands:

1. Log in as root.
2. `cd $ESEC_HOME/wizard/syslog`
3. `./syslog-server.sh install`

This will cause the syslog proxy to be started automatically when the machine starts. By default, the syslog proxy will run as the root user. This is required because the syslog proxy will, by default, bind to port 514, which requires root privileges. To have the syslog proxy run as a user other than root, modify the script `/etc/init.d/esyslogserver`. You will need to make sure this user has privileges to bind to the port it will be listening for messages on. Some examples of how this can be done are:

- Use the "sudo" command to start the syslog proxy, giving the user "sudo" privileges to bind to the required port.
- Modify the syslog configuration (`syslog.conf`) and make the syslog proxy bind to a port that does not require root privileges (i.e. `>1024`). In this case, you'll probably need to redirect messages sent to port 514 to the new port you've selected to use.

Uninstallation

Uninstall as Windows Service (Windows)

To uninstall this Windows Service, execute the following commands at the command prompt:

1. `cd /d "%ESEC_HOME%\wizard\syslog"`
2. `syslog-server.bat remove`

Uninstall as Service (UNIX)

To uninstall the syslog proxy as a service, execute the following commands:

1. Log in as root.
2. `cd $ESEC_HOME/wizard/syslog`
3. `./syslog-server.sh remove`

Usage

Syslog Proxy Server

The Wizard will not startup the syslog proxy server automatically. If you wish to have the syslog proxy startup automatically, it must be installed as a service. Follow the instructions in the section [Installation](#) to install the syslog proxy as a service.

The syslog proxy configuration is stored in the file:

For UNIX:

```
$ESEC_HOME/wizard/syslog/config/syslog.conf
```

For Windows:

```
%ESEC_HOME%\wizard\syslog\config\syslog.conf
```

The syslog proxy is setup to use the following configuration by default:

- Listener on UDP port 514 for syslog messages
- Listener on TCP port 1468 for syslog messages
- Listener on TCP port 9091 for connector connections

The syslog proxy can be configured to listen to other ports for either receiving syslog messages or accepting client connections. Those switches respectively are:

<code>-udp <port></code>	port to listen for UDP messages from devices; default 514
<code>-tcp <port></code>	port to listen for TCP connections from devices; default 1468
<code>-connector <port></code>	port to listen for TCP connections from connectors; default 9091

To edit these settings, modify the following section of the syslog.conf file:

```
wrapper.app.parameter.3=-tcp
```



```

wrapper.app.parameter.4=1468
wrapper.app.parameter.5=-udp
wrapper.app.parameter.6=514
wrapper.app.parameter.7=-connector
wrapper.app.parameter.8=9091

```

For example, if you want to modify the port settings to the following:

- Listener on UDP port 4514 for syslog messages
- Listener on TCP port 4168 for syslog messages
- Listener on TCP port 4991 for connector connections

The section of syslog.conf posted above should be modified to:

```

wrapper.app.parameter.3=-tcp
wrapper.app.parameter.4=4168
wrapper.app.parameter.5=-udp
wrapper.app.parameter.6=4514
wrapper.app.parameter.7=-connector
wrapper.app.parameter.8=4991

```

By default, the syslog proxy configuration is setup to accept client connections from any host. To increase security, the syslog proxy can be setup to only accept client connections residing on the same host. This is a security precaution, since there is no privacy, access control or authentication between the client connectors and the proxy. The following switches address this:

-private	listen for connector connections on loopback

-shared	listen for connector connections on localhost -- the default

The -shared switch will instruct the proxy to bind the client connection listener to a socket accessible to remote hosts.

To edit these settings, modify the following section of the syslog.conf file:

```

wrapper.app.parameter.2=-shared

```

For example, to only allow client connections from the same host, you should modify the settings to the following:

```

wrapper.app.parameter.2=-private

```

The syslog proxy can be configured to record all received messages to a log file. The format of the messages will appear in the form the syslog proxy would use if it were to relay the messages on to another syslog server. As a result, the <PRI> or Priority used by the receiving syslog server to evaluate the messages' Facility and Level will be present at the beginning of each message. This kind of logging is enabled by the following switch.

```

-log <filename>      Name of the log file to append to.

```

To enable this kind of logging, add the following two lines to the syslog.conf file after the last "wrapper.app.parameter":

```

wrapper.app.parameter.11=-log

```

```
wrapper.app.parameter.12=<filename>
```

For example, to enable this kind of logging to the file `$ESEC_HOME/wizard/syslog/messages.log`, you should modify the settings to the following:

```
wrapper.app.parameter.7=-connector
wrapper.app.parameter.8=9091
wrapper.app.parameter.9=-messageSize
wrapper.app.parameter.10=5000
wrapper.app.parameter.11=-log
wrapper.app.parameter.12=messages.log
```

If an absolute path is not specified for the filename, the path will be relative to the directory `$ESEC_HOME/wizard/syslog`.

NOTE: The log file could become fairly large, so make sure the location where the file will be written has plenty of space (e.g. – a directory other than under `$ESEC_HOME`).

It is recommended that the syslog proxy be run with a minimum of 64MB and maximum of 256MB of JVM heap memory. With this configuration you can expect the following performance:

Proxy server limits:

- | | |
|-------------------------|--|
| ▪ Max number of events: | 500 eps (total for all client ports) |
| ▪ Max connector Q size: | 5000 messages (this is the default if none is specified) |
| ▪ Max connectors: | 5 |

To modify the memory settings, edit the following section of the `syslog.conf` file:

```
# Initial Java Heap Size (in MB)
wrapper.java.initmemory=64

# Maximum Java Heap Size (in MB)
wrapper.java.maxmemory=256
```

Syslog connector client

The syslog connector client connects to the syslog proxy collecting the messages for which it subscribed. The messages collected by the client are then delivered to standard output. The client's session with the server does not end until the client process or the syslog proxy terminates. This operational and output behavior makes it suitable for use by the agent engine as a Persistent Process connector.

In Agent Builder's Port Configuration window, configure a port with an Rx/Tx Type of Persistent Process and Rx/Tx Value similar to the generic syntax below.

For UNIX:

```
syslog/SyslogConnectorAgent.sh <arguments>
```

For Windows:

```
syslog\SyslogConnectorAgent.bat <arguments>
```

After having completed the Rx/Tx Value, select the appropriate agent from the library and upload the port configuration and possibly the agent as well to the remote Wizard.

The syslog connector client has been designed to use a number of default arguments in order to simplify general usage. The simplest command line for the syslog connector client would be:

For UNIX:

```
syslog/SyslogConnectorAgent.sh -id "MyUniqueID"
```

For Windows:

```
syslog\SyslogConnectorAgent.bat -id "MyUniqueID"
```

The interpretation of this command line is the following:

- Connect to the syslog proxy listening for this connection on 127.0.0.1:9091
- Subscribe to all messages sent with all possible syslog Facilities
- Subscribe to all messages sent with all possible syslog Levels
- Subscribe to all messages irrespective of the source IP address contained in the IP header.
- Subscribe to all messages irrespective of the host designation within the message.
- Assign these session subscription parameters the ID of "MyUniqueID"

The syslog connector client session will be registered with the syslog proxy with the above subscription filter under the ID of "MyUniqueID". The ID is required. The ID chosen was arbitrary, but must be unique among all syslog connector client sessions with the same syslog proxy. If a different syslog connector client is configured with the same ID, one of the two connections with the same ID will be dropped. The last session to connect with the same ID will survive.

The generic filter in the previous filter may waste agent-processing effort if the messages that meet the filter requirements, which are all received messages, are not relevant to this particular agent's operation. From the example above it should be apparent that the filter expression is very versatile. The following example, for UNIX, establishes a more restrictive albeit precise description of what messages are relevant to the agent.

```
syslog/SyslogConnectorAgent.sh -facilities  
    "user, kernel" -levels "warning, error" -sender  
    "192.16.0.12, 192.16.0.0/16" -host  
    "17.16.8.0/24, 10.1.1.13" -id "MyOtherUniqueID"
```

The interpretation of this command line is the following:

- Connect to the syslog proxy listening for this connection on 127.0.0.1:9091
- (-facilities) Subscribe to all messages sent with Facilities of user or kernel
- (-levels) Subscribe to all messages sent with Levels of warning or error

- (-sender) Subscribe to messages identified by the source IP address of the incoming messages to the syslog proxy. This argument has the syslog proxy look at the IP header information in order to evaluate these criteria. This allows the filter to accommodate syslog relay servers, relay servers do not identify themselves in the messages they relay. Although this argument was designed to accommodate relayed messages, this argument could be used to filter messages sent directly from the syslog source. In particular the relay servers or syslog sources of interest are 192.16.0.12 and 192.16.0.0/16. The second item actually represents a range of IP addresses; so long as the source IP address is within 192.16.0.0 and 192.16.255.255 those messages pass the filter criteria. Hostnames are not valid for no hostname resolution is performed to determine the hostnames of source IP addresses.
- (-host) Subscribe to messages that contain host designators 17.16.8.0/24 or 10.1.1.13 within the syslog message. The first item is an IP address range. If the message contains a host designator in IP address form and is within the range of 17.16.8.0 through 17.16.8.255, then the message passes this condition within the filter. Hostnames are supported by the –host argument. The hostname can either be designated literally or by regular expression. Keep in mind that no hostname resolution is performed for this argument either. One cannot expect that configuring either a hostname or IP address will result in the filter accommodating the opposite naming schema. For example, configuring –host 172.16.0.90 will not result in a filter match for a message containing the hostname of “testbox1” even though name resolution services would have mapped 172.19.0.90 to “testbox1”. So IP host designation will only match IP addresses and hostname host designation will only match hostnames.

The filter from the example above can be described in the following Boolean expression:

```
(Facility="user" or Facility="kernel") and
  (Level="warning" or Level="error") and
  (Sender="192.16.0.12" or Sender=192.16.0.0/16") and
  (Host="17.16.8.0/24" or Host="10.1.1.13")
```

The number of possible combinations of these arguments is the Cartesian product of argument types, where each argument type is a set. According to PRINCIPIA CYBERNETICA WEB

(http://pespmc1.vub.ac.be/ASC/CARTES_PRODU.html) the Cartesian product is:

“The collection of all ordered n-tuples that can be formed so that they contain one element of the first set, one element of the second,... and one element of the n-th set. This collection can be seen as constituting an n-dimensional space in which each n-tuple designates a cell. The simplest Cartesian product of two sets is a two-dimensional table or a cross-tabulation whose cells may be used to enter frequencies, to designate possibilities (see relation) or impossibilities (see constraint), or to chart the transitions comprising the behavior of a system. (Krippendorff)”

NOTE: As of the date of publication of this document, the above mentioned website was correct.

This implies that in theory quite a few distinct messages could pass this filter. Only practical operational conditions will truly dictate the number of distinct messages.

In addition to filter command line arguments, there are also the following optional command line arguments:

<code>-proxy <server_address>:<port#></code>	The syslog server proxy host address and port number to connect to.
<code>-log <filename></code>	Enables logging to the specified file.

The `-proxy` argument is used to configure the connector client to connect to either a non-default TCP port or host other than localhost. The syslog proxy expects a connector client connection is on 9091 by default. In the event that 9091 is not suitable for the host on which the syslog proxy is running, the port can be adjusted during syslog proxy startup and by using the `-proxy` argument the clients can be instructed to connect to this alternate port. Additionally, the target host of the connector client can be specified to be a host other than the local system. In the event a syslog proxy is accepting remote connector client sessions, a syslog connector client can be configured to establish a session with that remote syslog proxy. The IP address and connector client port of the syslog proxy would be configured with the `-proxy` argument.

The `-log` argument enables the logging feature of the connector client. The connector client will write out messages as it receives them from the syslog proxy. Unlike the syslog proxy log file, the message content will be filtered per the registered subscription details as well as each message logged will not contain the `<PRI>` or Priority field. The content will be consistent with what the agent receives from the same syslog connector client.

NOTE: The log file could become fairly large, so make sure the location where the file will be written has plenty of space (e.g. – a directory other than under `$ESEC_HOME`).

An example, for UNIX, of using the `-proxy` and `-log` arguments is:

```
syslog/SyslogConnectorAgent.sh -proxy localhost:9091 -
log connector_messages.log -id "MyUniqueID"
```

Configuring Logging for the Syslog Proxy Server

The Syslog Proxy server prints logging messages to the file:

```
$ESEC_HOME/wizard/syslog/syslog_trace*.*.log
```

The logging levels can be modified by editing the logging properties file:

```
$ESEC_HOME/wizard/syslog/syslog_log.prop
```

This is the logging properties file as specified by the following line in the `syslog.conf` file:

```
wrapper.java.additional.1=-
  Djava.util.logging.config.file=syslog_log.prop
```

Make modifications to the following section to adjust logging levels:

```
##### Configure the logging levels
# Logging level rules are read from the top down.
  Start with the most general, then get more specific.
...
#####
```

Sample Command Line Arguments

It is possible to run the Syslog Proxy server and client connector without using the scripts provided with the installation. To do this, you'll need to use the command line arguments found in this section.

Syslog proxy:

```
java -server -Xms64m -Xmx256m -
  Djava.util.logging.config.file=syslog-logger.prop -
  jar syslog.jar [-udp <port>] [-tcp <port>] [-
  connector <port>] [-private|-shared] [-log <file
  path>] [-messageSize <number>]
```

Valid arguments:

-server	Always should be used. Used by the JVM
-Xms64m	This specifies the initial memory size of the syslog proxy. We recommend 64 megabytes.
-Xmx256m	This specifies the maximum memory size of the syslog proxy. Our recommended default is 256 megabytes. This allows the proxy sever to handle spikes in data volumes, multiple client connectors and handle buffers if the connectors reconnect. This value can be changes to a higher number if there is available memory and data volumes and the number of clients connectors that connect. This should not exceed 1.2 Gigabytes per syslog proxy server, i.e. '-Xmx1200m'
-Djava.util. logging.config. file	This property specifies the name of the debug logging config path/file. So it needs to point to where thew file exists. If no path is specified it will look in the current directory from where the JVM was run. Example: %workbench_home%\syslog-logger.prop
-udp <port>	port to listen for UDP messages from devices, default 514
-tcp <port>	port to listen for TCP connections from devices, default 1468

-connector <port>	port to listen for TCP connections from connectors, default 9091
-private	listen for connector connections on loopback, is default
-shared	listen for connector connections on localhost. If this isn't set, a communication error will generate.
-log	name of a log file to append to
-help	Provide this help message
-version	Output the version of the proxy (0.91-poc)
-messageSize	Number of messages buffered to send again for the temporarily lost connections. Maximum size is 5000 with no commas. If the option value is not used or if the option value is greater than 5000, command will default to 5000.

Syslog connector client:

```
java -jar syslogconnector.jar -id <UniqueId> [-proxy
    <host:port number>] [-facilities
    <facility1,facility2,...>] [-levels <level1, level2,...>]
    [-sender <Source IP1[/integer subnet mask], Source
    IP2[/integer subnet mask],...>] [-host < IP1[/integer
    subnet mask]|Hostname1 | Hostname Regex1,
    IP2[/integer subnet mask]|Hostname2 | Hostname
    Regex2, ...>] [-log <file path to log file>]
```

Valid Arguments:

-proxy <host:port number>	The Syslog proxy to connect to host:port, default is 127.0.0.1:9091
-facilities <facility1,facility2,...>	Comma separated list of desired facilities, default is all facilities
-levels <level1, level2,...>	Comma separated list of desired severities, default is all levels
-sender <Source IP1[/integer subnet mask], Source IP2[/integer subnet mask],...>	Comma separated list of desired senders, default is all senders
-host < IP1[/integer subnet mask] Hostname1 Hostname Regex1, IP2[/integer subnet mask	Comma separated list of desired hosts, default is all host
-log <file path to log file>	Name of a log file to append to
-id <UniqueId>	Specify connector identity (REQUIRED)
-help	Provide this help message

`-version`

Output the version of the connector (0.91-poc)

Table of Supported Facilities

Facility names are case insensitive when specified within the syslog connector client command line.

KERNEL	UUCP	LOCAL0
USER	CRON	LOCAL1
MAIL	SECURITY	LOCAL2
DAEMON	FTP DAEMON	LOCAL3
AUTH	NTP	LOCAL4
SYSLOG	LOG AUDIT	LOCAL5
LPR	LOG ALERT	LOCAL6
NEWS	CLOCK DAEMON	LOCAL7

Table of Supported Levels

Level names are case insensitive when specified within the syslog connector client command line.

EMERGENCY	WARNING
ALERT	NOTICE
CRITICAL	INFORMATIONAL
ERROR	DEBUG

Deployment Notes

Relayed Messages to syslog Proxy

Most syslog servers are able to redirect syslog messages they receive to an alternate syslog server as well as process the incoming messages. In a deployment scenario it may be attractive to alter an existing log host to provide message relaying to the syslog proxy. There are unfortunate behaviors among some syslog servers that may make this a poor deployment choice.

It has been observed that Solaris 7, 9 and Linux 8 (which may be representative of other deployed versions) syslog server libraries do not place the hostname or IP address of the host in the messages they send off host. The receiving syslog server associates the source IP address or hostname (via name resolution) to the received messages in the log files it generates. In the case of the Solaris 9 acting as a relay to our proxy, it does not populate the messages it forwards to the proxy with either the IP address or hostname of the original message source. This is odd, since the log file on the Solaris 9 system shows an IP address or hostname. Without having the supplemental hostname in the message, the syslog proxy is forced to deduce the message originated from the relay server not the original host. The syslog proxy will supplement the message with IP address of the relay host in each message it receives from a Solaris 9 relay. The consequences of this are serious. The origin of a security event is not visible to the agent and therefore the e-Security solution.

e-Security recommends that the proxy not be a recipient of relayed messages if the messages do not contain the IP address or hostname of the true origin. This

recommendation may have significant logistical consequences if the proxy were to be used in production.

Example:

An su event takes place on ultrabookIIIi (172.16.0.70) running Solaris 7, which is forwarding syslog messages to talkabout (172.16.0.72) running Solaris 9, which in turn is relaying to the syslog proxy. The following are messages the e-Security connector generated.

Proxy:

```
<37>Apr 02 06:54:11 [172.16.0.72.151.234] su: 'su root'
succeeded for oespadm on /dev/pts/0
```

Connector Client:

```
Apr 02 06:54:11 [172.16.0.72.151.234] su: 'su root'
succeeded for oespadm on /dev/pts/0
```

Below is the packet trace of the same message first arriving at talkabout and then relayed to syslog proxy on pes020.esecurity.net.

```
# snoop -x0 udp port 514
Using device /dev/dmfe0 (promiscuous mode)
ultrabookIIIi -> talkabout      SYSLOG C port=42830 <37>Apr 1
18:54:11

0: 0000 83cd 1395 0040 2082 202b 0800 4500      .....@ . +...E.
16: 0061 fa09 4000 ff11 28d3 ac10 0046 ac10      .aú.@...(...F..
32: 0048 a74e 0202 004d 5d7e 3c33 373e 4170      .H.N...M]~<37>Ap
48: 7220 2031 2031 383a 3534 3a31 3120 7375      r 1 18:54:11 su
64: 3a20 2773 7520 726f 6f74 2720 7375 6363      : 'su root' succ
80: 6565 6465 6420 666f 7220 6f65 7370 6164      eeded for oespad
96: 6d20 6f6e 202f 6465 762f 7074 732f 30      m on /dev/pts/0

talkabout -> pes020.esecurity.net SYSLOG C port=38890 <37>Apr 1
18:54:11

0: 000a 5e02 a335 0000 83cd 1395 0800 4500      ..^..5.....E.
16: 0061 304b 4000 ff11 f031 ac10 0048 ac10      .a0K@....1...H..
32: 02a6 97ea 0202 004d 6a82 3c33 373e 4170      .....Mj.<37>Ap
48: 7220 2031 2031 383a 3534 3a31 3120 7375      r 1 18:54:11 su
64: 3a20 2773 7520 726f 6f74 2720 7375 6363      : 'su root' succ
80: 6565 6465 6420 666f 7220 6f65 7370 6164      eeded for oespad
96: 6d20 6f6e 202f 6465 762f 7074 732f 30      m on /dev/pts/0
```

The following was recorded on talkabout:

```
Apr 1 18:54:11 ultrabookIIIi su: 'su root' succeeded
for oespadm on /dev/pts/0
```

Appendix B – Configuring a Socket Server on a UNIX Host

A socket server provides an end-point for socket connections from the UNIX Wizard Agent Manager. For example, if you want to monitor a log file or a UNIX box from a remote Wizard and you need to get through a firewall to get to the port on the UNIX box.

The following instructions are for setting up a socket server on a UNIX host and that you will be monitoring an ASCII log file on the UNIX host.

To setup a socket server process on a UNIX host

1. Create the script that will serve the data to the TCP socket connection. To do this, create a new text file and copy the following lines into it, replacing <log file> with the full path name of the file you wish to monitor:

```
#!/bin/sh  
  
/bin/tail -f <log file>
```

Save the file (path and filename is arbitrary), but the file should be located where it won't be deleted and named to reflect its function: For example:

```
/usr/local/bin/logfileserver
```

2. Pick an unprivileged TCP port on the UNIX host to use for the server process. The unprivileged port number is an arbitrary number between 1025 and 65,535. To check if your port number is already in use, use the following command (replacing <port number> with your desired port):

```
netstat -an | grep LISTEN | grep <port number>
```

If a line is output (as in the following), the port is currently in use, so you'll have to pick a different one.

```
*.5555*.*0000 LISTEN
```

3. As user root, edit file /etc/services and add an entry for your new socket service at the end of the file. The following example adds a line for a service called "syslog_monitor," configured to listen on TCP port 5555:

```
syslog_monitor5555/tcp
```

4. Edit the file /etc/inetd.conf and add an entry for your new socket service at the end of the file. The following example adds a line for a service called "syslog_monitor," configured to run the script /usr/local/bin/in.syslog_monitor.

The following should be entered as fields separated by tabs on a single line in the file, regardless of the pagination shown.

```
syslog_monitor stream tcp nowait nobody  
/usr/local/bin/in.syslog_monitor  
in.syslog_monitor
```

5. Execute the following command to enable your socket server process:

```
kill -HUP `/bin/ps -ef | grep inetd | grep -v grep  
| awk '{print $2}'`
```

6. Try out the socket server. To do this, telnet to the port you choose and you should be greeted by the content of your log file:

```
% telnet localhost 5555
```

To break out of the telnet session, do a ^] (control-]), then type quit at the telnet> prompt.

Appendix C – Sentinel Copyright Information

e-Security Sentinel™ 5

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