

Creating custom tool definition files for HP Systems Insight Manager 5.1 or greater



Abstract	3
Introduction	3
What is a tool definition file?	3
Tool types	4
Creating custom tools manually with the HP SIM CLI	4
Tool elements and structure	4
Creating a custom SSA tool	5
Sample web launch tool	8
Sample MSA tool	9
Sample Enabling Remote Desktop tool	10
Adding a TDEF to HP SIM	10
Removing a TDEF from HP SIM	11
Modifying a TDEF	11
Creating custom tools with the HP SIM GUI	12
Creating Custom Tools	12
Creating a New Remote Tool	12
Creating a New CMS Tool	14
Creating a New Web Page Tool	16
Managing custom tools	17
Conclusion	18
Appendix A: tool type-specific requirements	19
SSA-specific attributes	19
MSA-specific attributes	20
WLA-specific attributes	21
Appendix B: mxtool command parameters	22
Appendix C: parameterized strings	23
Appendix D: Common tool attributes	25
Appendix E: Tool Filtering attributes	27

Appendix F: Environment Variables.....	28
Appendix G: Tool parameter guidelines	30
For more information	31
Call to action.....	31

Abstract

HP Systems Insight Manager (HP SIM) is a flexible management utility for an enterprise environment employing HP ProLiant, BladeSystem, StorageWorks, and Integrity solutions. This paper describes how you can customize HP SIM to run the tools you typically use in your environment.

Introduction

HP Systems Insight Manager is the foundation for the HP unified server-storage management strategy. HP SIM is a hardware-level management product that supports multiple operating systems on HP ProLiant, Integrity and HP 9000 servers, HP StorageWorks MSA, EVA, XP arrays, and third-party arrays. Through a single management view of Microsoft® Windows®, HP-UX 11iv1, HP-UX 11iv2, HP-UX 11iv3, and Red Hat, and SuSE Linux, HP SIM provides the basic management features of system discovery and identification, single-event view, inventory data collection, and reporting. The core HP SIM software uses Web Based Enterprise Management (WBEM) to deliver the essential capabilities required to manage all HP server platforms.

While HP SIM 5.1 comes fully operational with a ready-to-implement command and tool set, advanced users can create custom tools and commands that streamline the management process for their own environment. This paper describes methods for creating customized tools used by HP SIM for specific management tasks.

This paper assumes that readers:

- Are familiar with IT administration policies and practices.
- Are familiar with the operating system platform implemented by their data center [Windows (DOS), Linux, or HP-UX (Unix)].
- Are familiar with the eXtensible Markup Language (XML) data file format.
- Have reviewed the *HP SIM 5.2 Installation and Configuration* guides and the *HP Systems Insight Manager 5.2 Technical Reference Guide*.

Additional reference data is available in the form of man pages, which are online html pages that provide quick access to specific topics such as HP SIM commands and parameters. The HP SIM documents listed previously, the man pages, and additional HP SIM support documents are available at the HP SIM information library at the following URL:

<http://h18004.www1.hp.com/products/servers/management/hpsim/infolibrary.html>

What is a tool definition file?

A key method of administering multiple systems is through scripting. HP SIM features a modular architecture that uses tool definition files (TDEFs) written in the XML data file format. A TDEF contains the definitions of one or more tools used by HP SIM and define how a tool launches and executes. A tool can be a script or an executable file. Creating custom tools enables you to extend the use of HP SIM to your specific business environment.

Tool types

HP SIM defines six types of tools described in the following table.

Table 1. Tool types

Name	Description
Single-system-aware command tool OR Remote Tool in the GUI	A single-system-aware (SSA) tool executes on a selected target and is only aware of the target system environment. In executing an SSA tool, the HP SIM distributed task facility (DTF) of the central management server (CMS) uses secure shell (SSH) to send one or more files to the target system, which then executes the tool. An example of an SSA tool would be a tool that wraps a common Unix command such as ls, cat, or cp.
Multiple-system-aware command tool	A multiple-system-aware (MSA) tool executes typically on the CMS and can work with multiple target systems. When launched, the MSA process is created once and then passed to all targets on the list. An XWindows tool is an example of an MSA tool.
Web-launch tool or Web page tool in the GUI	A Web launch tool typically launches in a separate browser (by default) or in the same frame as HP SIM and is specified by a universal resource locator (URL). Web-launch applications that do not share HP SIM certificates should be executed in a separate frame.
Application launch tool OR CMS Tool in the GUI	An application launch tool is a batch file, script, or executable that runs on the CMS and can reference environment variables specified by the tool to access device or event information. An example of an application launch tool would be one that performs a task that is tied to the contents of an "Exchange Servers" list which returns three devices (A, B, and C). The tool will run three times (in the context of A, B, and C).
Automation tools	Executed on the CMS and perform some action, such as discovery on the target systems.
Message driven tools	Executed on the CMS and perform some action, such as discovery on the target systems.

HP SIM allows you to easily create custom SSA, MSA, and Web launch TDEFs. You can manually create SSA, Web launch, and Application Launch in HP SIM using [graphic user interface \(GUI\) menus](#) or using the command line interface (CLI) as described in the following section.

Creating custom tools manually with the HP SIM CLI

HP SIM includes a CLI that allows manual control of HP SIM functions. This manual control allows you to create your own customized tools. The CLI is accessible directly on the CMS or from any network client using SSH client software. Creating custom tools manually offers a better understanding of the XML file format and allows greater flexibility in exercising the options available when creating TDEFs.

Tool elements and structure

0. The elements that comprise a tool are placed between the <tool-list> and </tool-list> XML tags, which mark the beginning and the end of a TDEF respectively.

Table 2 provides descriptions of the basic elements of a TDEF in the proper order.

NOTE:

Italicized text should be replaced by actual value or data.

Table 2. Basic TDEF elements

Element	Syntax	Description
Tool type and name	<code><tool type=tool name="name of tool"> </tool type=tool></code>	Defines the type of tool (SSA, MSA, or web-launch) and the name. The name should be descriptive and must be in quotations. Tool type = ssa-command, msa-command, web-launch, app-launch.
Category	<code><category> </category></code>	Element used by HP SIM for organizing tools, limited to 80 characters. This is used for toolbox authorizations.
Description	<code><description> </description></code>	Optional element that describes, in 1024 characters or less, the tool to the user and will be shown in the task wizard when the task is created.
Comments	<code><comments> </comments></code>	Optional element that explains what the tool will do.
Execute as user	<code><execute-as-user> </execute-as-user></code>	Optional element that specifies the user whose permissions can execute the command string on the target node. If not set, it will default to the user who created or ran the task.
Include-filter	<code><include-filter> </include-filter></code>	Optional element that defines filters for hardware and/or operating system. Elements invoked in the filter have a direct effect on whether the tool will appear in the menu. Used in the target selection when a task is created using this tool.
Tool block	<code><tool type=block> </tool type=block></code>	Heart of the tool that defines the action [command(s) to be taken based on the tool type (see Appendix A)]. The commands support parameter expansions so specific target information can be passed on to the tool. See Appendix C for a list of options. Tool type = ssa, msa, web
Attribute	<code><attribute> </attribute></code>	An expandable list of name-value pairs that are attributes added and/or required for SIM client applications. This allows extending the tool definition without requiring a schema change. Must include the name of the attribute. For common attribute descriptions see Appendix D .

Note: Replace italicized text with actual value or data.

Creating a custom SSA tool

This procedure uses the CLI to create a custom SSA tool for copying any executable file to a managed node (target system) and having it execute (install) there. The following procedure uses the CMS as the access system.

This example illustrates the creation of a custom tool that will install a security patch on every Windows server managed by HPSIM. If done manually, the administrator would have to locate each Windows server and perform the following commands in that server:

- Log on as Administrator
- Access a network drive or portable media containing a copy of the file `hpsecurity_patch.exe` and copy that file to the local drive.
- Use Start/Run or a command line prompt to enter the command:
`<install_path>\hpsecurity_patch.exe`
- Log off of the system

For this example, it is assumed that the administrator will want to execute this procedure again and be able to quickly locate it in the HP SIM menus, so an entry in the **Deploy** menu will be made and

called Software Distributor, which when invoked will enable the administrator to execute this custom tool.

1. Log into the CMS using a valid user name and password. HP SIM grants authorization based on the operating system login.

NOTE:

Only administrators have command line access to HP SIM on a Windows CMS. Administrators on a HP-UX/Linux CMS must have root capability.

2. Open a terminal window or a command prompt window to execute HP SIM commands.
3. Open a text editor and create a new file by typing the XML version text and tool list tags as follows:

```
<?xml version="1.0" encoding="UTF-8" ?>
<tool-list>
```

NOTE:

Your text editor must be able create a text-only file with no embedded formatting.

4. Following the leading XML version and tool-list tags, type the tool name tag of `<ssa-command-tool name="Deploy HP Security Patch">` to define the type and name of the tool. The revision string is used to keep track of different versions of the tool as will be seen later. Enter the subsequent category, description, and comment elements to further define the tool for HP SIM and the user (the description and comments will be displayed in the GUI window for that particular tool).

```
<?xml version="1.0" encoding="UTF-8" ?>
<tool-list>
  <ssa-command-tool name="Deploy HP Security Patch" revision="1.0">
    <category>Software Management</category>
    <description>Deploy HP Security Patch v.1 to the target
node</description>
    <comment>This tool will deploy hpsecurity_patch.exe to the
target Node. Please verify that the hpsecurity_patch.exe is located in
C:/temp before deploying.</comment>
```

5. Enter the `execute-as-user` element with the value of `Administrator` to define the user whose permissions are allowed on the target node. After entering the `execute-as-user` element, the TDEF should display as follows:

```
<execute-as-user>Administrator</execute-as-user>
```

6. The `include-filter` element specifies which hardware and/or operating system filters will be applied. For this example, enter the `include-filter` data as shown below.

```
<include-filter type="os">
  <node-filter name="OSName" operator="eq"
value="WINNT" />
</include-filter>
```

- Following the include-filter element is a block element that is the heart of the tool and includes the command(s) to be executed. Enter the ssa block element as shown below. It will copy the file to the specified destination and execute it there. In the example below, the HP Security Patch v.1 executable is given the filename hpsecurity_patch.exe.

```
<ssa-block>
  <command command-type="stdout" log="false">C:\\Program
Files\\hpsecurity_patch.exe</command>
  <copy-block>
    <source>C:\\temp\\hpsecurity_patch.exe</source>
    <destination>C:\\Program
Files\\hpsecurity_patch.exe</destination>
  </copy-block>
</ssa-block>
```

NOTE:

The <destination> must be a directory that exists on the Managed Node. The default file permission value used by DTF for a file copy operation is 755. If another permission is to be used, an explicit file permission command such as `chmod` should be included in the copy block element for security reasons. Refer to the *HP SIM Technical Reference Guide* for more information.

- Type the following attribute element code, which states where the tool will be located in the HP SIM menu.

```
<attribute name="menu-path">Deploy|Software Distributor</attribute>
```

- To finish the TDEF, enter the final tool list tag as shown below.

```
</tool-list>
```

The fully composed TDEF for a SSA copy tool to deploy the HP Security Patch to a managed system and then execute, should display as follows:

```
<?xml version="1.0" encoding="UTF-8" ?>
<tool-list>
  <ssa-command-tool name="Deploy HP Security Patch"
revision="1.0">
    <category>Software Management</category>
    <description>Deploy HP Security Patch v.1 to the target
node</description>
    <comment>This tool will deploy hpsecurity_patch.exe to
the target Node. Please verify that hpsecurity_patch.exe is located
in C:/temp before deploying.</comment>
    <execute-as-user>Administrator</execute-as-user>
    <include-filter type="os">
      <node-filter name="OSName" operator="eq"
value="WINNT" />
    </include-filter>
    <ssa-block>
      <command command-type="stdout"
log="false">C:\\Program Files\\hpsecurity_patch.exe</command>
      <copy-block>
        <source>C:\\temp\\hpsecurity_patch.exe
</source>
```

```

                <destination>C:\\Program Files\\
hpsecurity_patch.exe</destination>
            </copy-block>
        </ssa-block>
        <attribute name="menu-path">Deploy|Software
Distributor</attribute>
        <attribute name="il8n-attrs">TOOL,mxtools</attribute>
    </ssa-command-tool>
</tool-list>

```

10. Save the file. HP recommends using a file name that indicates its function, in this case, DeployHPSecurityPatchv.1.xml. Make sure that the file name ends with the .XML extension. Note that file names on Linux and HP-UX operating systems are case-sensitive. The directory used by HP SIM to store tools is as follows:

- for HP-UX and Linux systems: /var/opt/mx/tools
- for Windows systems: C:\Program Files\HP\System Insight Manager\tools

11. To add the new tool to HP SIM, perform the procedure described in the section "[Adding a TDEF to HP SIM.](#)"

For more information about specific SSA tool attributes, refer to the [SSA-specific attributes](#) section in Appendix A: tool type-specific requirements section of this paper.

Sample web launch tool

A web launch tool launches an application requiring a URL. The example below launches the application "WebJetAdmin" for a device selected within the HP SIM window as long as that device is a printer. The `<web-block>` element (in bold below) provides the URL of the managed node where WebJetAdmin is installed. The parameter %n is used to substitute the managed node hostname. The `<toolbox-enabled>` element can have a value of true or false. If the `<toolbox-enabled>` element is true, it will be associated with the Toolboxes under HP SIM User and Authorization. This enables a trusted user to disable the tool in the Toolbox if the value is false. Refer to [Appendix B](#) for additional parameters. This tool launches in a separate browser window using the "target-frame" of WJAFrame.

```

<?xml version="1.0" encoding="UTF-8" ?>
<tool-list>
    <web-launch-tool name="WebJetAdmin" max-targets="1" revision="1.0">
        <category>Local Tools</category>
        <description>View properties of remote printer via
WebJetAdmin.</description>
        <execute-as-user>root</execute-as-user>
        <toolbox-enabled value="true" />
        <include-filter type="hardware">
            <node-filter name="DeviceType" operator="eq" value="Printer"/>
        </include-filter>
        <web-block accepts-targets="true">
            <main-url>http://hostname.domain:8000/device/%n/</main-url>
        </web-block>
        <attribute name="menu-path">Tools|System Information</attribute>
        <attribute name="target-frame">WJAFrame</attribute>
    </web-launch-tool>
</tool-list>

```

NOTE:

In the previous example, `hostname.domain` should be replaced with the fully qualified host name of where the WebJetAdmin tool is running.

For more information about specific web launch tool requirements and attributes, refer to the [WLA-specific attributes](#) section in Appendix A of this paper. For more information about parameterized strings, refer to [Appendix C](#).

Sample MSA tool

The MSA tool executes on the CMS and is functional with multiple targets. The process executes once, and then is passed to all targets selected. The example below shows an MSA tool that deploys the SSH public key to the selected managed target nodes as long as those nodes are recognized as iLO devices on an HP single partition server. To do this manually, the administrator would:

- Log on as Administrator on the CMS
- Use Start/Run or a command line prompt to enter the command:
- `Mxagentconfig -a -n <nodename> -u <username> -p <password>`
- Repeat the command for each managed node
- Log off the system

The “<msa-block>” element (in bold below) initiates **mxagentconfig** and requires the user name and password parameters.

NOTE:

When the XWindows tool is launched, the system running the browser must be running an XWindows server for the tool’s GUI to be visible.

```
<?xml version="1.0" encoding="UTF-8" ?>
<tool-list>
  <msa-command-tool name="Deploy SSH Public Key" visible="true"
    schedulable="true" revision="2.1">
    <category>MP Tools</category>
    <description>Deploys the HP Systems Insight Manager SSH public key on one or more HP
      Integrity and HP 9000 iLO(s). This key is required for iLO to trust HP Systems Insight Manager
      to execute commands.</description>
    <comment>Install SSH Public Keys</comment>
    <include-filter type="hardware">
    <node-filter name="DeviceType" operator="eq" value="MgmtProc" />
    <node-filter name="Model" operator="eq" value="HP Single Partition
      Server, Management Processor" />
    </include-filter>
    <msa-block>
    <command command-type="stdout" log="true">mxagentconfig -a %( -n
      %n%z%) -u %1 -s %2</command>
    <parameter index="1" prompt="User" required="true" />
    <parameter index="2" prompt="Password" required="true" />
    <execution-node>CMS</execution-node>
    </msa-block>
  </msa-command-tool>
</tool-list>
```

```

<attribute name="insert-separator">true</attribute> <!-- Optional -->
<attribute name="custom-page-
  1"/>/taskandjob/MpTools/MplInstallSSHKeyCPP1.jsp</attribute> <!-- Optional -
  -->
<attribute name="menu-path">Configure </attribute>
<attribute name="menu-sort-key">800</attribute> <!-- Optional -->
<attribute name="i18n-attrs">TOOL,mxtools</attribute>
<attribute name="show-cmdline">>false</attribute>
  </msa-command-tool>
</tool-list>

```

For more information about specific MSA tool requirements and attributes, refer to the [MSA-specific attributes](#) section in [Appendix A](#) of this paper.

Sample Enabling Remote Desktop tool

Remote Desktop is a Microsoft feature that allows you to remotely access any Windows 2003 server. Unfortunately, Remote Desktop is disabled by default during installation, which can lead to problems accessing the system without physically being present in front of the server. HP SIM allows you to create a custom TDEF to enable remote desktop on selected targets as long as the selection is running Windows 2003 server operating system. The following example demonstrates the ability of the TDEF to create a menu item called Enable Remote Desktop.

```

<?xml version="1.0" encoding="UTF-8" ?>
<tool-list>
  <ssa-command-tool name="Enable Remote Desktop" revision="1.0">
    <category>Software Management</category>
    <description>Change the registry value from 1 to 0 to enable
remote desktop</description>
    <comment>The tool can be run on multiple Windows
systems</comment>
    <execute-as-user>Administrator</execute-as-user>
    <include-filter type="os">
      <node-filter name="OSName" operator="eq" value="WINNT"
/></include-filter>
    <ssa-block>
      <command command-type="stdout" log="false">reg add
"hklm\system\currentcontrolset\control\terminal server" /f /v
fDenyTSCconnections /t REG_DWORD /d 0</command>
    </ssa-block>
    <attribute name="menu-path">Configure</attribute>
    <attribute name="i18n-attrs">TOOL,mxtools</attribute>
  </ssa-command-tool>
</tool-list>

```

Adding a TDEF to HP SIM

After you create a custom TDEF, to function you must add it into HPSIM. Add a TDEF to HP SIM using the **mxtool -a** command, as described in the following procedures:

1. At a terminal or command line prompt, type **mxtool -a -f <file pathname>**.

NOTE:

For more information about mxtool command parameters, refer to [Appendix B: mxtool command parameters](#).

2. To use the web launch tool previously created, type:

```
mxtool -a -f /tools/webjetadmin.xml
A successful TDEF addition results in a dialog box displaying the
following:
Successfully parsed tool file
Successfully added tool named "WebJetAdmin"
Successfully added 1 tool
```

Removing a TDEF from HP SIM

Removing a TDEF from HP SIM requires using the option `-r` when running the command `mxtools`. Removing a tool is not operating system specific and can be run from any terminal or command prompt.

To remove a TDEF from HP SIM, use the **mxtool -r** command as in the following example:

```
mxtool -r -f /tools/webjetadmin.xml
```

A successful TDEF removal will result in the dialog box displaying the following:

```
Successfully parsed tool file
Successfully removed tool named "WebJetAdmin"
Successfully removed 1 tool
```

Note:

If a task or task results are tied to a tool, by default the tool cannot be removed. The **-x force** option is used in this case.

Modifying a TDEF

Modifying a TDEF allows users to customize the XML to align with their business. Each TDEF included can be modified to fit with each customer's business needs.

To modify a TDEF to execute as a different user, perform the following steps:

1. Modify the Windows HP SIM tools to use the new user account as follows:
 - a. Navigate to the tools directory.
Example: `C:\Program Files\HP\System Insight Manager\tools`
 - b. Search the tools directory for the tool to modify. Alternatively, you may create a tool definition file from an existing tool using the `mxtool` command.
Example: `mxtool -lf -t netstat > netstat.xml`
 - c. Edit **netstat.xml** using a text editor. Find each `execute-as-user` line in the XML file.
Example: `<execute-as-user>Administrator</execute-as-user>`
 - d. (Optional) Change the revision attribute value for the tool type and name element or use the **-x force** option on the `mxtool` command line:
Example: In the SSA command tool sample code on the previous page, change `revision="1.0"` to `revision="1.1"`.
 - e. Run `mxtool` to update the tool definition:
Example: `mxtool -m -f netstat.xml -x force`.

- Configure each managed system that is to run tools with the user account. If the current users account was used to install OpenSSH, then the managed node should be correctly configured. If a different account is used, then the administrator should either run the “Configure or Repair Agents” tool on the systems (specifying the administrator or other account to be used by the SSH), or perform the following steps:
 - a. Add the administrator user to the passwd file using the “sshuser” utility on the managed system. Example: `sshuser -u MyUser -d MyDomain -f "C:\Program Files\OpenSSH\etc\passwd"`
 - b. Run `mxagentconfig` on the CMS to configure public key authentication for the administrator user. Example: `mxagentconfig -a -n <managed system> -u MyDomain\MyUser`

Note:

For more information about mxtool command parameters, refer to [Appendix B: mxtool command parameters](#).

This concludes the procedures for creating TDEFs manually using the CLI of HP SIM. To view changes to TDEFs, refresh the HP SIM GUI by selecting the system list. A software restart is not necessary.

Creating custom tools with the HP SIM GUI

The HP SIM user interface allows you to quickly create custom tools and TDEFs without having to deal intimately with the XML format. However, note that the XML requirements for a TDEF remain the same as described previously for creating TDEFs manually. The TDEF files created through the GUI may be saved and modified manually by advanced users at a later time.

The GUI provides new custom tools, which run on the CMS and against target nodes

Creating Custom Tools

The HP SIM GUI allows you to create the following tools without creating XML script manually:

- Remote tool (SSA)
- CMS tool (MSA)
- Web page tool

Creating a New Remote Tool

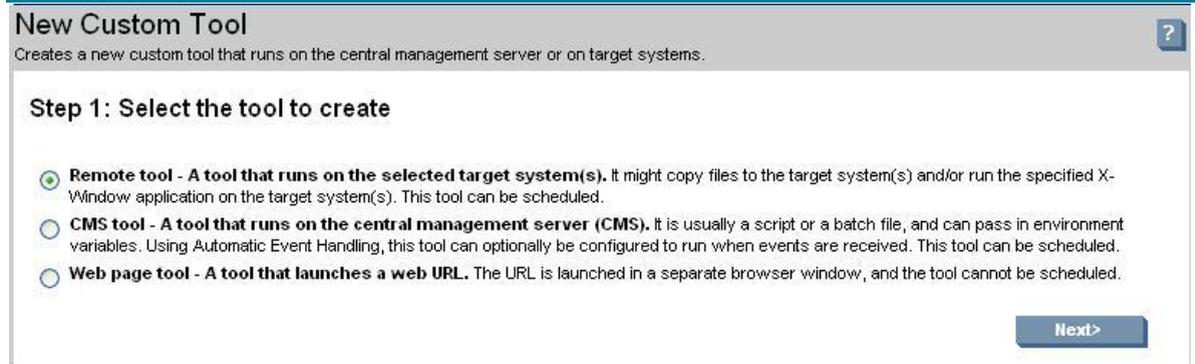
The remote tool allows you to run a command on each selected target. SSH must be installed and configured on each target for the tool to run.

After you create a new tool, the tool displays in the **Custom Tools** menu.

To create a new remote tool, open HP SIM and perform the following steps:

1. At the main HP SIM window, in the top menu bar click **Tools > Custom Tools > New Custom Tool**. Step 1 of the **New Custom Tool** window appears as shown in Figure 1.

Figure 1: HP SIM New Custom Tool window – Step 1: Tool selection



2. Select **Remote Tool**, and then click **Next**. Step 2 of the **New Custom Tool** window appears as shown in Figure 2 and Figure 3. **CMS tool** is selected by default.

Figure 2: New Custom Tool window – Step 2: Top of Remote tool window

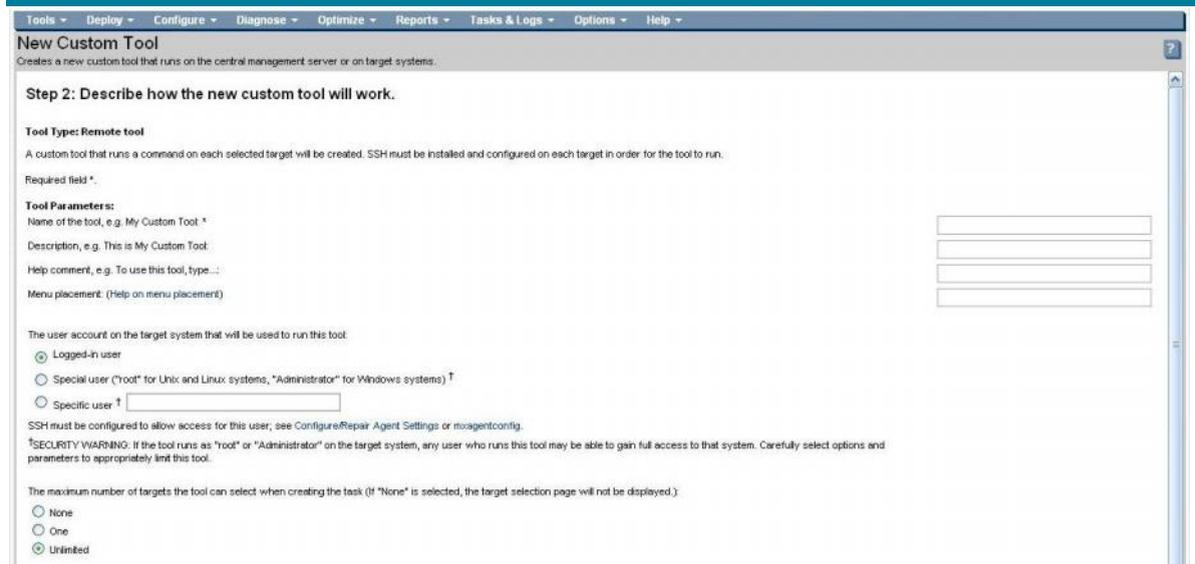


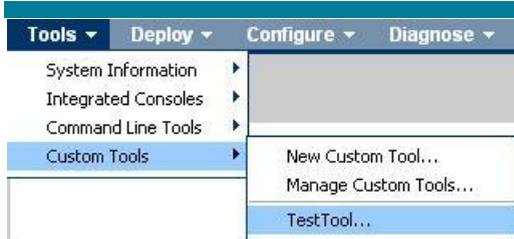
Figure 3: New Custom Tool window – Step 2: Bottom of Remote tool window



- Enter the required and optional parameters for the new tool in the **Tool Parameters** section. Parameters marked with an asterisk (*) require data entry (see Appendix G: Tool parameter guidelines for tool parameter guidelines).
- When finished, click **OK**.

After you create a new tool, the tool displays in the **Custom Tools** list. Figure 4 provides an example of a user-created tool named “TestTool” in the list.

Figure 4: HP SIM New Custom Tool window – Step 1



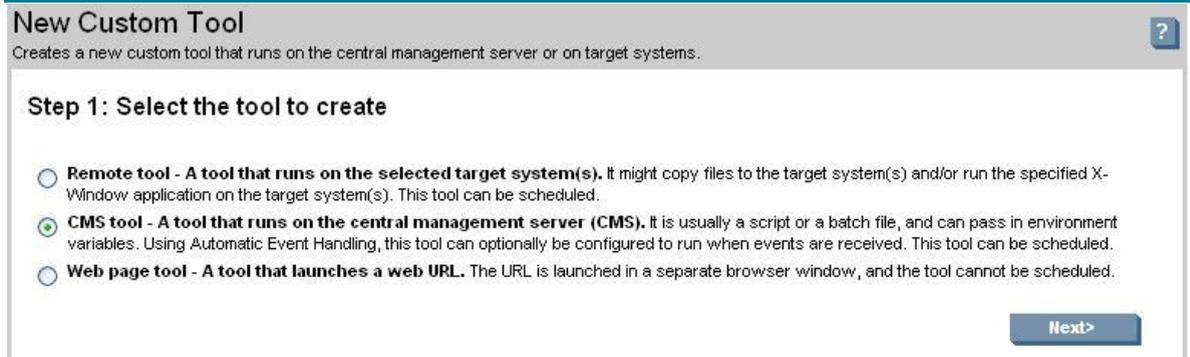
Creating a New CMS Tool

The CMS Tool allows you to launch an application or a script on the central management server running HP SIM. CMS tools can pass environment variables (parameters) to the launched application to make it perform as expected. Typical uses include launching a custom pager utility or a ROM flashing utility. You can use the Automatic Event Handling feature in HP SIM to configure this tool to run when events are received.

To use the New CMS tool option, open HP SIM and perform the following steps:

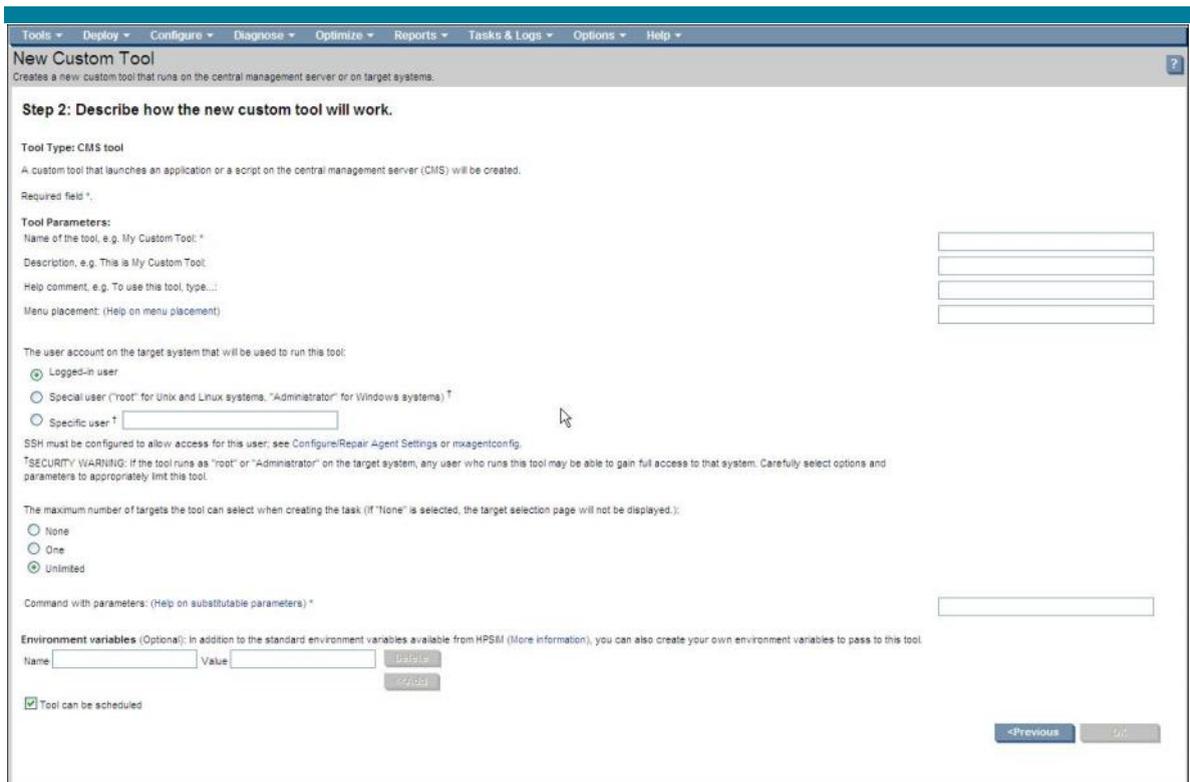
1. At the main HP SIM window, in the top menu bar click **Tools > Custom Tools > New Custom Tool**. Step 1 of the **New Custom Tool** window appears as shown in Figure 5.

Figure 5: HP SIM New Custom Tool window – Step 1: Tool selection



2. Select **CMS tool**, and then click **Next**. Step 2 of the **New Custom Tool** window appears as shown in Figure 6 and Figure 7.

Figure 6: HP SIM New Custom Tool window – Step 2: CMS tool



3. Enter the required and optional parameters for the new tool in the **Tool Parameters** section. Parameters marked with an asterisk (*) require data entry.

Data entry tips:

- o The Name must be between 1 and 255 characters.
- o The Executable path and file name must include the full path name from the root of the HP SIM console and the file name. Windows example:
c:\windows\system32\systeminfo.exe

- Parameter substitution is defined in the Parameterized Strings (refer to [Appendix C](#)). In the example below, %n is used to substitute the host name of the server used to run the tool. Additional login requirements for devices can be passed on the command line for the Windows tool SYSTEMINFO.
- When using Environment Variables, enter data (refer to [Appendix F](#) for Environment Variable data) in the **Variable Name** field. Enter data in the **Value** field, and click **Add**. Enter next **Variable name** and **Value**, as needed. Note that environment variables cannot be passed onto the Parameter line directly but must be incorporated into a batch file or program that is launched.

To clear a previously set variable, highlight the variable and click **Delete**.

4. When finished, select **OK**.

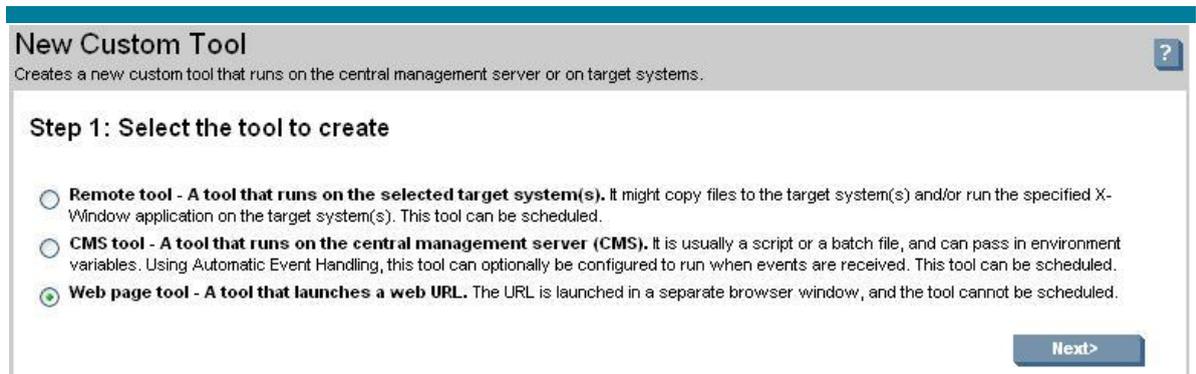
Creating a New Web Page Tool

Running the New Web Page Tool creates a Web Page Tool TDEF and loads it into HP SIM. You can use this tool to launch a Web site or Web application. Required fields are the tool name and the URL of the Web site or application to launch.

To use the New Web Launch Tool option, perform the following steps:

1. At the main HP SIM window, in the top menu bar click **Tools > Custom Tools > New Custom Tool**. Step 1 of the **New Custom Tool** window appears as shown in Figure 7.

Figure 7: HP SIM New Custom Tool window - Step 1: Tool selection



2. Select **Web page tool**, and then click **Next**. Step 2 of the **New Custom Tool** window appears as shown in Figure 8.

Figure 8: HP SIM New Custom Tool window – Step 2: Web page tool

The screenshot shows the 'New Custom Tool' window in HP SIM. The title bar includes menu items: Tools, Deploy, Configure, Diagnose, Optimize, Reports, Tasks & Logs, Options, and Help. The main content area is titled 'New Custom Tool' and contains the following sections:

- Step 2: Describe how the new custom tool will work.**
- Tool Type: Web page tool**
- A description: 'A custom tool that launches a URL to a web application or any specific web site will be created. All tools are automatically launched in a separate window. For example, to add a path to HP's web site, add the URL: http://www.hp.com.'
- Required field ***
- Tool Parameters:**
 - Name of the tool, e.g. My Custom Tool: *
 - Description, e.g. This is My Custom Tool:
 - Help comment, e.g. To use this tool, type...:
 - Menu placement: (Help on menu placement)
- The user account on the target system that will be used to run this tool:**
 - Logged-in user
 - Special user ("root" for Unix and Linux systems, "Administrator" for Windows systems)†
 - Specific user †
- SSH must be configured to allow access for this user; see Configure/Repair Agent Settings or mxagentconf.
- †SECURITY WARNING: If the tool runs as "root" or "Administrator" on the target system, any user who runs this tool may be able to gain full access to that system. Carefully select options and parameters to appropriately limit this tool.
- The maximum number of targets the tool can select when creating the task (if "None" is selected, the target selection page will not be displayed.):**
 - None
 - One
 - Unlimited
- URL to the site or application to launch, e.g. http://www.hp.com: *
- The format of how target systems are passed to the url (Help on common formats):

At the bottom right, there are '<Previous' and 'OK' buttons.

3. Enter the required and optional parameters for the new tool in the **Tool Parameters** section. Parameters marked with an asterisk (*) require data entry (refer to [Appendix G](#) for tool parameter guidelines).
4. When finished, select **OK**.

Managing custom tools

The **Manage Custom Tools** window enables you to:

- Create new custom tools
- Edit existing custom tools
- View custom tool definitions
- Run or schedule a tool to run
- Delete a tool

To create a new tool, click **New** and proceed with the tool creation wizard.

To perform an action on an existing tool, select the tool from the list, and then click the appropriate button.

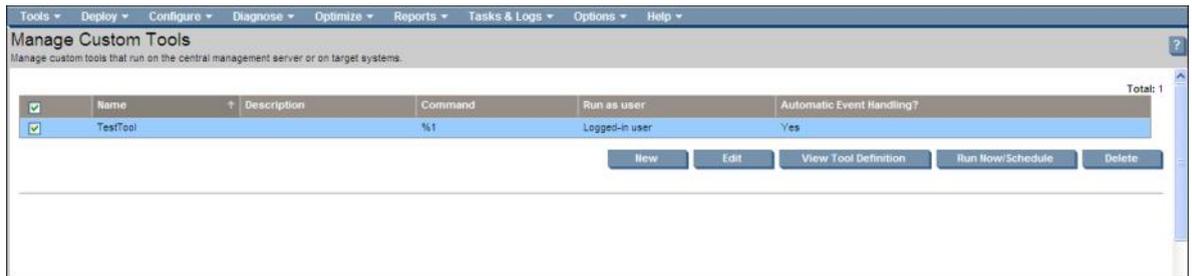
To remove a tool, perform the following steps:

CAUTION:

This function can remove (delete) any user-created tool.

1. In the top menu bar of the main HP SIM window bar, select **Tools > Custom Tools > Manage Custom Tools**. The **Manage Custom Tools** window appears as shown in Figure 9.

Figure 9: HP SIM Manage Custom Tools window



2. Select the tool to delete checking the box next to the appropriate tool.
3. Click **Delete**, and then click **OK** to confirm the deletion.

Conclusion

Using the capabilities of the XML file format, HP SIM offers flexibility in customizing management tools for HP-UX, Linux, and Windows systems.

Appendix A: tool type-specific requirements

SSA-specific attributes

Table A - 1 lists the SSA-specific attributes.

Table A - 1. SSA-specific attributes

Attribute	Syntax [1]	Description
ssa-block	<i><ssa-block></i> (<i>command/copy-block</i> <i>attributes</i>) <i></ssa-block></i>	You should specify only one <i>command</i> or <i>copy-block</i> or both; however, you may specify up to 16 multiple <i>copy-blocks</i> can be specified. After the <i>command</i> and/or <i>copy-blocks</i> , one may specify the parameters for the <i>command</i> and/or <i>copy-block</i> .
command	<i><command></i> (parameter) <i></command></i>	Specifies the command for an SSA tool. If the command accepts parameters, you must specify the command as a parameterized string. This element may have two attributes: <i>command-type</i> and <i>log</i> .
copy-block	<i><copy-block></i> (attribute data) <i></copy-block></i>	Specifies a source file path and a destination file path for a copy operation. The source element specifies the source file path for a copy operation. The destination element specifies the destination file path for a copy operation. The default permission of the copied block is 755. The <i>chmod</i> command is required to set a custom permission.

NOTE:

[1] Replace italicized text between start and stop tags with actual attribute/value/data. Non-italicized text represents valid entry option. You must specify values for attributes; there are no default values.

MSA-specific attributes

MSA command tools must specify a command and the system on which the command will execute. Table A - 2 lists the MSA-specific attributes.

Table A - 2. MSA-specific attributes

Attribute	Syntax [1]	Description
msa-block	<i><msa-block></i> (<i>command/parameters</i>) <i></msa-block></i>	Specifies an MSA command, the parameters for the command, and an execution node on which the command executes.
Command	<i><command></i> (parameters) <i></command></i>	Specifies the command for an MSA tool. If the command accepts parameters, it must be specified as a parameterized string. This element may have two attributes: <i>command-type</i> and <i>log</i> .
Execution-node	<i><execution-node></i> (parameters) <i></execution-node></i>	Specifies the node on which an MSA tool will execute.

NOTE:

[1] Replace italicized text between start and stop tags with actual attribute/value/data. Non-italicized text represents valid entry option. You must specify values for attributes; there are no default values.

WLA-specific attributes

Web-launch aware tools must specify a main URL. Table A - 3 lists the WLA-specific attributes.

Table A - 3. WLA-specific attributes

Attribute	Syntax [1]	Description
Web-block	<code><web-block></code> (URL/format attributes) <code></web-block></code>	Specifies a main-URL element. Also may specify parameters for the URLs. May optionally specify a target format to describe how targets are passed to a web-launch aware tool.
Main-URL	<code><main-url></code> <code>http://xxx.xxx.xxx</code> <code></main-url></code>	A parameterized string defining the full URL that opens the main application window for this tool action. In the Portal UI this is considered the URL to display in the Work Window.
Side-URL	<code><side-url></code> <code>http://xxx.xxx.xxx</code> <code></side-url></code>	An optional, parameterized string defining the full URL that opens the small window view for this tool action. In the Portal UI this is considered the URL to display in the Set-Aside View Window.
Current-URL	<code><current-url></code> <code>http://xxx.xxx.xxx</code> <code></current-url></code>	An optional, parameterized string defining the full URL that is used to refresh the main application window for this tool action. In the Portal UI this is considered the URL to refresh the Work Window to maintain its current state.
Status-URL	<code><status-url></code> <code>http://xxx.xxx.xxx</code> <code></status-url></code>	An optional, parameterized string defining the full URL that opens a window to show on-going status for the Task ID associated with executing this tool. In the Portal UI this is considered the URL to display for the current status/results of the task when selecting the task from the Task Status List.
Target-format	<code><target-format></code> (parameters) <code></target-format></code>	An optional parameterized string that provides a way for web-launch applications to pass long lists of targets. The <code><target-format></code> gets expanded in exactly the same manner as the URLs defined for the tool (for example, <code><main-url></code>).
System-page-link-group-title	<code><system-page-link-group-title></code> (parameters) <code></system-page-link-group-title></code>	Indicates the title of a section in the System Page Tools & Links tab. The content of this attribute is the displaying title for a section of links. For example, "HP Systems Insight Manager Pages" is a section title.

NOTE:

[1] Replace italicized text between start and stop tags with actual attribute/value/data. Non-italicized text represents valid entry option. You must specify values for attributes; there are no default values.

Appendix B: mxtool command parameters

The HP SIM `mxtool` command allows you to perform specific actions as defined by the parameter(s) that follow it. Table B - 1 is a partial list of common parameters used with the `mxtool` command.

Table B - 1. Command mxtool parameters

Parameter	Function
-a	Specify a file/tool to add
-d	Specify a directory
-f	Specify a file
-m	Modify/change
-r	Specify a file/tool to be removed
-t	Specify a tool name
-x force	Force a tool to be removed or modified even if the version is the same or tasks are tied to the tool

NOTE:

For more information about mxtool parameters, refer to the mxtool man page in the HP SIM information library at the following URL: <http://h18013.www1.hp.com/products/servers/management/hpsim/info-library5/mxtool.1m.html>.

Appendix C: parameterized strings

Parameterized strings (Table C - 1) allow tool developers to greatly enhance the options available in creating TDEFs. Parameterized strings contain replacement fields (similar to the format strings used in the popular printf() function in the standard C library). These fields can be replaced by values entered by the user at runtime (as defined by the tool parameters attribute), by some standard task properties supplied by the Task Controller by values related to the selected target systems or system groups, or by property values retrieved from a global tool properties file.

Table C - 1. Parameterized string substitution descriptions

Parameter	Description
Global attribute parameters	
%t	Job ID for the task being executed
%u	Name of the user running this task
%e	Name of the user this task will execute as
%s	Management server hostname of the core CMS running the tool (the HP SIM server name)
%#	Substitute the value input by the user for the parameter referenced by the number (#) provided, as a list index position (one-based positive whole integer... %1, %2, %3, and so on). Up to 10 parameters are allowed, %A is used for the 10th.
%y	SOAP logon token, for use with SOAP single sign-on Web applications
Current selected target parameters	
%f	The system name of the target system.
%n	Network name (hostname, IP address, IPX address, or system name in that order).
%a	Network address (IP address, or IPX address, in that order).
%l	Link name in format specified by System Link Configuration security setting (name, IP address, or full DNS name).
%p	IP address of WMI proxy, if any, for this target, in the form <ip address>:<port#></port#></ip>.
%g	HP SIM identifier or GUID of the target system.
%b	System type of the target system.
%c	System sub-type of the target system
%r% {rt[.attribute]%}	Substitutes the related system that has the relationship type as specified in the parameter rt. Valid relationship type strings are those that are stored in the associationTypeNumber column in the device_associations table. If the [.attribute] is specified, then one of the named system attributes would be returned for the related system. In addition, the common attributes such as Network name (.a) also work. For example, to get the IP address of the server's management processor, use %r%{MgmtProcToServer.a%}; to get the contact use %r%{MgmtProcToServer.Contact%}. If the related systems attribute is omitted, then for each system, the network name and IP address are returned in the form "network name ip address." If more than one system is returned, then they are comma-delimited. Note that the relationship type "MgmtProcToServer" can be used to return related system information for all management processor relationship types.
%[attribute]%}	The value of the named attribute of the target system.
Multiple selected target parameters (not supported for Custom Command Tools)	
%{ ... %}	Repeated pattern (only repeats if a current selection exists). If a current target selection does not exist, the text between the delimiters is removed on expansion.

Parameter	Description
	This allows the text to be optional and dependent upon the target selection list.
%i	Selection index (one-based).
%z	Do not substitute anything, but increment the selection index to the next integer and the referenced target system to the next target in the selected target list.
% < ... % >	Encrypted text (encrypt after all other parameters have been substituted).
%%	Enables you to retain a % in the command/URL after substitution.

NOTE:

For more information about parameterized strings, refer to the HP SIM Technical Reference Guide, available at <http://h18013.www1.hp.com/products/servers/management/hp-sim/infolibary.html>.

Appendix D: Common tool attributes

Table D - 1 lists the common name values available to use for TDEFs.

Table D - 1. Common attribute name values

Names Values	Description
Task Wizard names values	
show-cmdline	Displays command line equivalent of GUI action. Values: True False (default: true)
Custom-page-n	Value is a string giving relative path to jsp page that should be displayed, where n = sequential value starting at 1.
ListType	Limits the types of selections available for choosing to only System Lists or only Event Lists. If this value is not present then both System and Events lists are available. Values: systemLists eventLists
SelectionType	Limits the type of selections allowed for the tool. If "list", then only lists (criteria) are allowed for selection. If "collection", then only collections (non-criteria) are allowed for selection. If "individual", then only individual systems are allowed for selection. Values: list individual collection
Targets-are-events	This informs the task wizard that the selections made for this tool are the actual events and not the systems from which the events were generated, which is the default behavior. When using this attribute, the task wizard will assume a "listType" or "eventLists" and a "selectionType" of "list".
PageIndex	By default, the task wizard displays the target selection page as the first page during task creation. When a tool defines its own custom parameter pages, they may instruct the task wizard where to place the target selection page. n = value starting at 1.
TargetSelection lockTargetSelection	A tool may wish to show the target selection page without allowing the user to change the target. Values: true false (default: false)
Defined name values	
product-name	32 character string
Product-version	24 character number
Insert-separator	Insert a separator line in the menu structure before ("true") or after ("after") this tool. Values: true after false (default: false)
l18n-attrs	String. Name of a resource bundle for storing localized tool parameters. See the section on tool internationalization.
Tool-id	String. Normally, the portal will refer internally to the tool using its database GUID. If a tool needs a well-known ID that will not change, this attribute can be used.
Show-selections	Have the portal show—in the workspace—the number of selected nodes, linked to a popup window that displays a list of selected nodes. Values: true false (default: false)
help-url	String. Set this URL as the portal's current help URL when this tool loads. The help URL will be loaded into a separate browser window, and the name of the browser frame will be "helpWindow".
All tools values	
show-snap-off	Have the portal provide a hyperlink for tool's workspace to be snapped off into a separate browser window. Values: true false (default: false)

Names Values	Description
menu-path	A string in the form “base submenu subsubmenu”. Overrides the tool’s category.
title	String. Display the supplied string in the tool’s window title area. By default, the name of the tool (used in the Manage menu) will be used as the title of the tool.
show-title	Values: true false. (default: true) If false, the portal will not display a title bar for the tool.
Menu-sort-key	String. Integer sort key used to sort among the other menu items in the group. The lower the number, the earlier the item appears in the menu. If a group of menus consists of menus without sort keys, then those without keys are sorted alphabetically and put at the end
Trail-blazer	A trailblazer is a definition used only to establish the presence of cascades in the menu system and to apply a sorting order to them. Values: true false (default: false)
Web-launch tools	
Target-frame	String. Indicates not to load the tool’s URL into a workspace; instead, load the URL into the specified frame.

Appendix E: Tool Filtering attributes

Table E - 1 lists the common filtering values available to use for TDEFs.

Table E - 1. Tool filtering attributes

Filter name	Description
OSName	Acceptable values include: HPUX (no space or hyphen in the value) Linux WINNT (all windows flavors)
OSVendor	Acceptable values include: Microsoft SuSE RedHat HP
OSRevision	Acceptable values are as follows (see text below for version number details) (for Windows) 4.0, 4.1, 5.0, 5.1 (for Linux) 7.3, 8.0, 2.1 (for HP-UX) 11.11, 11.23
DeviceType	Long list: Select the Options menu, select Discovery , and then select Identification . Here you can select Manage System Types to see the list.
DeviceSubtype	Long list: Select the Options menu, select Discovery , and then select Identification . Here you can select Manage System Types to see the list.
Protocol	Acceptable values are as follows (see text below for version details) SNMP:1.0 DMI:1.1 WBEM:1.1 SMH:1.0 or 2.0 (this is the System Management home page running on a device) SSH:

The OSRevision and Protocol Support node attributes have values that are interpreted as version numbers. A version number is a series of non-negative decimal numbers separated by period (.) characters. When comparing version numbers, the following rules are used:

- The leftmost numbers in the series are most significant, so "1.0" is greater than "0.1".
- Leading zeroes on the numbers are disregarded, so "003" is equal to "3".
- Two adjacent period characters are interpreted as if they delimited the number zero, so "1.0.3" is equal to "1..3".
- A beginning period character is interpreted as if preceded by a zero, so ".9" is equal to "0.9".
- Trailing zero numbers are disregarded, so "1.0.0" is equal to "1"

Appendix F: Environment Variables

Table F - 1 lists the specific environment variables (EVs) available to use for TDEFs. In addition to this list, operating system environment variables are also available (for Windows systems) to be passed into TDEFs. In addition to these 'automatic' EV's, user-defined environment variables can be set as part of scripting in the TDEFs.

Table F - 1. Environment Variable name and descriptions

Names Values	Description
NoticeLabel	The short string type of event (like Discovered Device)
NoticeState	Shows whether the event has been cleared
NoticePlainText	Plain text description of the event and also includes whether it is set to In Progress, Cleared, or Not Cleared
NoticeRawData	The raw data of the event that was sent and in a string format. It is in a pipe () delimited format that can be used for simple parsing
NoticeSeverityStr	Can be Critical, Major, Minor, Unknown, Normal, Warning, or Informational
NoticeSeverity	An integer format of the severity 1 – Normal 2 – Warning 3 – Minor 4 – Major 5 – Critical 100 - Informational
NoticeQueryName	Displays the event list that generated the event. In the format of: This device or event meets the following query criteria: +QueryName; This device or event now meets the following query criteria: +QueryName; This device or event no longer meets the following query criteria: QueryName
DeviceName	Name of the device that generated the event
DeviceIpXAddressCount	Number of IPX addresses that are mapped to this device
DeviceIPAddressCount	Number of IP addresses that are mapped to this device
DeviceIPAddress%d	Based on the count of IP addresses, %d is an integer that shows the actual IP address. For example, if DeviceIPAddressCount=2 then DeviceIPAddress0=111.111.111.111 and DeviceIPAddress1=222.222.222.222.
DeviceMACAddress%d	Based on the MAC address count, %d is an integer that references the actual MAC address variable. If DeviceMACAddressCount=2 then, DeviceMACAddress0=00:80:5E:7F:B0:81 and DeviceMACAddress1=00:80:C7:29:EF:B6
GenericTrapID	If tied to an event list and the event was a SNMP trap, then this is set to the SNMP generic trap ID of the trap received
SpecificTrapID	If tied to an event list and the event was a SNMP trap, then it is set to the SNMP specific trap ID
Path	Path variable received from the operating system (received in context of the windows service account)

Names Values	Description
SystemRoot	Variable received from the operating system (received in context of the windows service account)
WinDIR	Variable received from the operating system (received in context of the windows service account)
ComputerName	Variable received from the operating system (received in context of the windows service account)

Appendix G: Tool parameter guidelines

Table G - 1 lists guidelines for entering parameter field data when creating new command line tools.

Table G - 1. New Command Line Tool parameter entry guidelines

Parameter Field	Data entry required?	Parameter string assignment	Entry guidelines
Tool name	Yes	%1	As when using the CLI, the name of the new tool should be descriptive of the tool's function.
Tool command	Yes	%2	This is the new command used to call the tool, and it can include parameters.
Prompt	No	%3	If the Tool command includes the %1 parameter, then this field entry is required to specify the destination prompt.
Tool menu category	No	%4	Use this entry to specify the location of the tool in the menu. If left blank, the new tool is added to the Tools > Custom Tools menu.
Tool description	No	%5	Description of what the new tool does.
Tool help comment	No	%6	Description of how to use (invoke) the new tool.
Enter "root" to execute as root	No	%7	<p>If left blank, the new tool runs as the HP SIM user whose SSH public key must be configured on the managed system using the mxagentconfig command. Refer to the HP SIM 5.2 Installation and Configuration Guides for more information.</p> <p>CAUTION!</p> <p>If "root" is specified, any user authorized to run this tool may gain full access to the managed system depending on the definition of the command and its capabilities.</p>
File path to save tool	No	%8	<p>Path name of new tool.</p> <p>Example: <code>/var/opt/mx/tools/mytool.xml</code></p>

For more information

For more information about HP Systems Insight Manager, visit the HP website at the following URL:
www.hp.com/go/hpsim

Call to action

Send comments about this paper to: TechCom@HP.com

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