Kaseya

Agent Procedures

User Guide

Version R94

English

December 12, 2016

Copyright Agreement

The purchase and use of all Software and Services is subject to the Agreement as defined in Kaseya's "Click-Accept" EULATOS as updated from time to time by Kaseya at http://www.kaseya.com/legal.aspx. If Customer does not agree with the Agreement, please do not install, use or purchase any Software and Services from Kaseya as continued use of the Software or Services indicates Customer's acceptance of the Agreement."

Contents

Agent Procedures Overview

Agent Procedures

The **Agent Procedures** module *automates tasks performed on managed machines*. Agent procedures can be run immediately, by schedule, or in response to a VSA system event or API request. The **Agents Procedures** module also enables you to:

- Approve newly created or edited agent procedures using **Pending Approvals** *(page 42)*. As a security precaution, all agent procedures must be signed and approved before they can be run.
- View the status of all procedures run on a managed machine using **Agent Procedure Status** *(page 41)*.
- Spread out the impact agent procedures have on network traffic and server loading using **Distribution** *(page 40)*.
- Transfer files to and from managed machines using **Get File** *(page 47)* and **Distribute File** *(page 48)*.
- Schedule the installation of Microsoft and non-Microsoft applications and patches using **Patch Deploy** *(page 43)* and **Application Deploy** *(page 44)*.

> **Note:** See **Patch Management** *(http://help.kaseya.com/webhelp/EN/KPATCH/9040000/index.asp#2200.htm)* to install Microsoft patches on managed machines.

Functions	Description
Schedule / Create *(page 1)*	Automates user-defined tasks on managed machines by creating and scheduling agent procedures.
Distribution *(page 40)*	Minimizes network traffic and server loading by executing agent procedures evenly throughout the day.
Agent Procedure Status *(page 41)*	Shows the status of agent procedures executed on managed machines.
Pending Approval *(page 42)*	Approves newly created or edited agent procedures.
Patch Deploy *(page 43)*	Use this wizard tool to create procedures to deploy Microsoft patches to managed machines.
Application Deploy *(page 44)*	Use this wizard tool to create procedures to deploy non-Microsoft install packages (setup.exe) to managed machines.
Get File *(page 47)*	View and manage files uploaded to the Kaseya Server from managed machines using the getFile() agent procedure command.
Distribute File *(page 48)*	Write files to all selected managed machines and maintain them.

Schedule / Create

Agent Procedures > Manage Procedures > Schedule / Create

The **Schedule / Create** page automates user-defined tasks on managed machines by creating and scheduling *agent procedures*. See the following topics for details:

- **Action Buttons** *(page 2)*
- **Scheduling Agent Procedures** *(page 3)*

- **Creating / Editing Agent Procedures** *(page 4)*
- **IF-ELSE-STEP Commands** *(page 6)*
- **64-Bit Commands** *(page 34)*
- **Using Variables** *(page 35)*
- **Variable Manager** *(page 37)*
- **Manage Files Stored on Server** *(page 38)*
- **Folder Rights** *(page 39)*

Related Topics

- **Alert triggered agent procedures** - Almost all configurable alerts in the VSA include a **Run Agent Procedure** option that you can use to run a selected agent procedure if the alert is triggered. For example, the Alerts page contains a list of alerts that include this option.
- **Agent Procedure Failure Alerts** - The Alerts - Agent Procedure Failure page triggers an alert when an agent procedure fails to execute on a managed machine. For example, if you specify a file name, directory path or registry key in an agent procedure, then run the agent procedure on a machine ID for which these values are invalid, you can be notified about the agent procedure failure using this alerts page.
- **Logging Failed Steps in Procedures** - The System > Configure page includes the following option - **Enable logging of procedure errors marked "Continue procedure if step fail"** - If checked, failed steps in procedures are logged. If blank, failed steps in procedures are *not* logged.
- **Preventing the Logging of Successful Child Script Execution** - The System > Configure page includes the following option - **Enable logging of successful child script execution in agent procedure log** - If unchecked, child script success entries are not included in the agent procedure log.   This can reduce the size of the agent procedure log tremendously. It takes up to 5 minutes for the KServer to read this setting change.
- **View Definitions** - You can filter the display of machine IDs on any agent page using the following agent procedure options in View Definitions.
  - **With procedure scheduled/not scheduled**
  - **Last execution status success/failed**
  - **Procedure has/has not executed in the last N days**
- **Service Desk** - When a ticket service procedure is run, it can **execute an agent procedure** *(http://help.kaseya.com/webhelp/EN/KSD/9040000/index.asp#6267.htm)*.

Action Buttons

Agent procedures are organized using two folder trees in the middle pane, underneath **Private** and **Shared** cabinets. The following action buttons display, depending on the object selected in the folder tree.

When a Cabinet is Selected

- **Collapse All** - Collapses all branches of the folder tree.
- **Expand All** - Expands all branches of the folder tree.

Always Available

- **Manage Files** - See **Manage Files Stored on Server** *(page 38)* for more information.
- **Manage Variables** - See **Variable Manager** *(page 37)* for more information.
- **(Apply Filter)** - Enter text in the filter edit box, then click the funnel icon to apply filtering to the folder trees. Filtering is case-insensitive. Match occurs if filter text is found anywhere in the folder trees.

When a Folder is Selected

- **Share Folder** - Shares a folder with user roles and individual users. *Applies to shared cabinet folders only.*

  > **Note:** See guidelines for share rights to objects within folder trees in the **Folder Rights** *(page 39)* topic.

- **New Procedure** - Opens the agent procedure editor to create a new procedure in the selected folder of the folder tree. See **Creating / Editing Agent Procedures** *(page 4)*.
- **New Folder** - Creates a new folder underneath the selected cabinet or folder.
- **Delete Folder** - Deletes a selected folder.
- **Rename Folder** - Renames a selected folder.
- **Import Folder/Procedure** - Imports a folder or procedure as children to the selected folder in the folder tree. *Applies to private cabinet folders only.*

  > **Note:** The **Import Center** will import a previously exported *shared* agent procedure folder or procedure to the **Shared** cabinet. It will not overwrite any folder or procedure using the same name and tree path.

- **Export Folder** - Exports the selected folder and all its procedures as an XML file. The XML file can be re-imported.

Additional Actions When a Procedure is Selected

- **Edit Procedure** - Opens the agent procedure editor to edit the selected procedure. See **Creating / Editing Agent Procedures** *(page 4)*.
- **Rename Procedure** - Renames the selected procedure.
- **Delete Procedure** - Deletes the selected procedure. Agent procedures that are used by other agent procedures cannot be deleted.
- **Export Procedure** - Exports the selected procedure.

Scheduling Agent Procedures

Manage the scheduling of agent procedures using tabs in the right hand pane. When a procedure is selected in the middle pane, the following tabs display In the right-hand pane.

- **Schedule** - Select one or more machine IDs in this tab's table, then click one of the following action buttons:
  - **Schedule Procedure** - Schedule a task once or periodically. Each type of recurrence—Once, Hourly, Daily, Weekly, Monthly, Yearly—displays additional options appropriate for that type of recurrence. Periodic scheduling includes setting start and end dates for the recurrence. *Not all options are available for each task scheduled.* Options can include:
    - ✓ **Schedule will be based on the timezone of the agent (rather than server)** - If checked, time settings set in the Scheduler dialog reference the local time on the agent machine to determine when to run this task. If blank, time settings reference server time, based on the server time option selected in System > Preferences. Defaults from the System > Default Settings page.
    - ✓ **Distribution Window** - Reschedules the task to a randomly selected time no later than the number of periods specified, to spread network traffic and server loading. For example, if the scheduled time for a task is 3:00 AM, and the distribution window is 1 hour, then the task schedule will be changed to run at a random time between 3:00 AM and 4:00 AM.

- ✓ **Skip if offline** - If checked and the machine is offline, skip and run the next scheduled period and time. If blank and the machine is offline, run the task as soon as the machine is online again. Applies only to recurring schedules, a 'Once' schedule always executes the next time the agent is online.
- ✓ **Power up if offline** - Windows only. If checked, powers up the machine if offline. Requires Wake-On-network or vPro and another managed system on the same network.
- ✓ **Exclude the following time range** - **Applies only to the distribution window.** If checked, specifies a time range to exclude the scheduling of a task within the distribution window. Specifying a time range outside of the distribution window is ignored by the scheduler.

> **Note:** You can stagger the running of scheduled agent procedures using Agent Procedures > **Distribution** *(page 40)*.

- ➢ **Run Now** - Run this agent procedure on each selected machine ID immediately.
- ➢ **Cancel** - Cancel the scheduled agent procedure on each selected machine ID.

- **View Procedure** - Provides a display only view of the procedure. A user can execute an agent procedure and view it without necessarily being able to edit it. See **Folder Rights** *(page 39)* for more information.
- **Used by** - Displays a list of other procedures that execute this procedure. Agent procedures that are used by other agent procedures cannot be deleted.
- **Approval History** - Displays a list of dates and users that approved the procedure.

Recurring Agent Procedures

Use the **Agent Procedure Status** *(page 41)* page to identify the list of recurring agent procedures assigned to each agent.

Creating / Editing Agent Procedures

Creating / Editing Agent Procedures

To create a new procedure, select a cabinet or folder in the middle pane, then click the **New Procedure** button to open the **Creating / Editing Agent Procedures** *(page 4)*.

To edit an existing procedure, select the procedure, then click the **Edit Procedure** button to open the **Creating / Editing Agent Procedures** *(page 4)*. You can also double-click a procedure to edit it.

> **Note:** Access to creating or editing a procedure depends on your **Folder Rights** *(page 39)*.

The Agent Procedure Editor

All statements you can add to an agent procedure display in the left-hand pane. Agent procedures display in the middle pane of the editor on one more tabs. The parameters for each statement display in the right-hand pane.

> **Note:** See **IF-ELSE-STEP Statements** *(page 6)* for a detailed explanation of each statement's parameters.

Action Buttons

These buttons display in the middle pane of the procedure editor.

- **Procedure**
  - ➢ **New** - Creates an empty tab for a new procedure.

  - **Open** - Edits an existing procedure.
  - **Save** - Saves the currently selected procedure.
  - **Save As** - Saves the procedure to a different name. A dialog enables you to select the folder used to save the procedure.
- **Edit** - The following buttons are only enabled when one or more statements are selected.
  - **Undo** - Undoes the last edit.
  - **Redo** - Redoes the last edit.
  - **Cut** - Cuts selected lines.
  - **Copy** - Copies selected lines.
  - **Paste** - Pastes copied lines.
  - **Remove** - Removes selected lines.
  - **Goto Line** - Selects the line number you specify.
  - **Search** - Searches for matching text in commands, parameters and values.
  - **Insert Lines** - Inserts a blank line that you can then begin typing into. This displays a drop-down list of commands that you can select a command from and insert into the procedure.
  - **Indent Lines** - Indents selected lines
  - **Outdent Lines** - Outdents selected lines.
- **Help**
  - **Help Tips** - Display tooltips on how to use the procedure editor.
  - **Online Help** - Displays online help.

Drag and Drop

- Drag and drop any statement above or below any other statement.
- Drag and drop any comment above or below any statement.
- A statement is automatically indented when dropped below an IF statement, except for an ELSE statement.
- You can nest steps within multiple IF or ELSE statements. Just drag-and-drop an IF or ELSE statement below an IF statement to insert it as a child statement.

Guidelines

- Click any STEP, IF or ELSE statement in the middle pane to see its settings in the right-hand pane. You can edit these settings in the right hand pane or click any value in a statement directly to edit it.
- Multiple lines can be selected and acted on at one time.
- Right click selected lines to get additional options.
- Enter a value at the top of the left pane to filter the list of statements you can select.
- Hovering the cursor over any statement in the left or middle pane displays a tooltip description of that statement. The same description displays at the top of the third pane.
- Hovering the cursor to the left of selected statements displays −←→ icons. Click these icons to remove, indent or outdent selected statements.
- When entering a value for a variable into a parameter:
  - Enter a < to select from a list of system variables.
  - Enter a # to select from a list of **user defined variables** *(page 35)*.
- Open and work on multiple procedures simultaneously. Each procedure you open displays in a separate tab. Copy and paste selected statements between tabs.
- You can set a STEP to `Continue on Fail`. This allows a procedure to continue running even if that particular STEP fails.

- Click the blank line at the bottom of the procedure to edit the description for the entire procedure.

IF-ELSE-STEP Commands

The following is a summary of standard IF-ELSE-STEP commands used in VSA agent procedures.

IF Definitions

checkVar() *(page 9)*	Evaluates the given agent variable. See **Using Variables** *(page 35)*.
else *(page 10)*	Adds an **Else** branch to run steps when an **If** branch returns a `False` result.
eval() *(page 10)*	Compares a variable with a supplied value.
getOS() *(page 10)*	Determines if the current Windows OS is 32 or 64-bit.
getRAM() *(page 10)*	Evaluates the total amount of memory reported by the latest audit of the agent.
getRegistryValue() *(page 11)*	Evaluates the given registry value.
hasRegistryKey() *(page 11)*	Tests for the existence of the given registry key.
isAppRunning() *(page 12)*	Checks to see if a specified application is currently running on the managed machine.
isServiceRunning() *(page 12)*	Determines if a service is running on the managed machine.
isUserActive() *(page 12)*	Determines whether the user is either: • Idle or not logged on, or • Active
isUserLoggedin() *(page 12)*	Tests whether a specific user, or any user, is logged in or not.
isYesFromUser() *(page 12)*	Presents a **Yes/No** dialog box to the user.
testFile() *(page 13)*	Tests for the existence of a file.
testFileInDirectoryPath() *(page 13)*	Tests for the existence of a file in the current directory path returned by **getDirectoryPathFromRegistry()**.
true *(page 13)*	Always returns `True`, executing **If** branch.

STEP Definitions

alarmsSuspend() *(page 14)*	Suppresses alarms on a machine for a specified number of minutes.
alarmsUnsuspendAll() *(page 14)*	Stops the suppression of alarms on a machine.
captureDesktopScreenshot() *(page 14)*	Captures a desktop screenshot of the agent machine and uploads it to the Kaseya Server.
changeDomainUserGroup() *(page 14)*	Changes a domain user's membership in a domain user group.
changeLocalUserGroup() *(page 14)*	Changes a local user's membership in a local user group.
closeApplication() *(page 14)*	Closes a running application.
comment() *(page 15)*	Adds a one-line comment to the procedure.
copyFile() *(page 15)*	Copies a file from one directory to another.
copyUseCredentials() *(page 15)*	Copies a file from one directory to another using a user credential.
createDomainUser() *(page 15)*	Adds a new user to an Active Directory domain when run on a domain

	controller.
createEventLogEntry() *(page 15)*	Creates an event log entry in either the Application, Security or System event log types. You can create a Warning, Error or Informational event with your own description.
createLocalUser() *(page 16)*	Adds a new local user account to a machine.
createWindowsFileShare() *(page 16)*	Creates a new file share on a Windows machine.
deleteDirectory() *(page 16)*	Deletes a directory from the agent machine.
deleteFile() *(page 16)*	Deletes a file from the managed machine.
deleteFileInDirectoryPath() *(page 16)*	Deletes file in directory returned by **getDirectoryPathFromRegistry()**.
deleteRegistryKey() *(page 17)*	Deletes a key from the registry.
delete64BitRegistryKey() *(page 17)*	Deletes a **64-bit** *(page 34)* key from the registry.
deleteRegistryValue() *(page 17)*	Deletes a value from the registry.
delete64BitRegistryValue() *(page 17)*	Deletes a **64-bit** *(page 34)* value from the registry.
deleteUser() *(page 17)*	Deletes a user from the agent machine.
disableUser() *(page 17)*	Disables a user, preventing logon to the agent machine.
disableWindowsService() *(page 17)*	Disables a Windows service.
enableUser() *(page 18)*	Enables a previously disabled user, allowing the user to logon to the OS.
executeFile() *(page 18)*	Executes any file as if it was run from the **Run** item in the **Windows** Start menu.
executeFileInDirectoryPath() *(page 18)*	Same as execute file. File location is relative to the directory returned by **getDirectoryPathFromRegistry()**.
executePowershell() *(page 18)*	Executes a powershell file, or command with arguments or both.
executePowerShell32BitSystem *(page 18)*	Executes a powershell file, or command with arguments or both, as a 32 bit system command.
executePowerShell32BitUser *(page 18)*	Executes a powershell file, or command with arguments or both, as a 32 bit user command.
executePowerShell64BitSystem *(page 18)*	Executes a powershell file, or command with arguments or both, as a 64 bit system command.
executePowerShell64BitUser *(page 18)*	Executes a powershell file, or command with arguments or both, as a 64 bit user command.
executeProcedure() *(page 19)*	Starts another VSA agent procedure on the current machine.
executeShellCommand() *(page 19)*	Runs any command from a command shell.
executeShellCommandToVariable() *(page 20)*	Executes a shell command and returns output created during and after its execution to a variable.
executeVBScript() *(page 20)*	Runs a Vbscript, with or without command line arguments.
getDirectoryPathFromRegistry() *(page 20)*	Returns the directory path stored in the registry at the specified location. Result used in subsequent steps.
getFile() *(page 20)*	Gets a file from the managed machine and saves it to the Kaseya Server.
getFileInDirectoryPath() *(page 21)*	Gets a file from the managed machine located relative to the directory returned by **getDirectoryPathFromRegistry()** and saves it to the Kaseya Server.
getURL() *(page 21)*	Returns the text and HTML contents of a URL and stores it to a file on the managed machine.
getURLUsePatchFileSource() *(page 21)*	Downloads a file from a given URL to a target folder and file for that agent. Uses the Patch Management > File Source settings.

getVariable() *(page 22)*	Gets a value from the agent on the managed machine and assigns it to a variable. See **Using Variables** *(page 35)*.
getVariableRandomNumber() *(page 22)*	Generates a random number.
getVariableUniversalCreate() *(page 22)*	Gets a variable that persists outside of the immediate procedure's execution.
getVariableUniversalRead() *(page 23)*	Reads up to three variables you have previously created using the **getVariableUniversalCreate()** step.
giveCurrentUserAdminRights() *(page 23)*	Adds the current user to the local administrator’s group on the agent machine, either permanently or for a temporary period of time.
impersonateUser() *(page 23)*	Specifies the user account to use when executing a file or shell when **Execute as the logged on user** is specified in a subsequent command.
installAptGetPackage() *(page 23)*	Silently installs a package using the `apt-get` command in Linux.
installDebPackage() *(page 24)*	Silently installs a Debian package on any Linux OS that supports `.deb` packages.
installDMG() *(page 24)*	Silently installs a `.DMG` package in OS X.
installMSI() *(page 24)*	Installs an MSI file for Windows.
installPKG() *(page 24)*	Silently installs a `.PKG` package in OS X.
installRPM() *(page 24)*	Silently installs an RPM package on any Linux OS that supports installing RPMs.
logoffCurrentUser() *(page 25)*	Automatically logs off the current user.
pauseProcedure() *(page 25)*	Pauses the procedure for N seconds.
reboot() *(page 25)*	Reboots the managed machine.
rebootWithWarning() *(page 25)*	Reboots a machine, displaying a warning message to the end-user before the reboot process occurs.
removeWindowsFileShare() *(page 25)*	Removes a file share from a Windows agent.
renameLockedFile() *(page 25)*	Renames a file that is currently in use.
renameLockedFileInDirectoryPath() *(page 26)*	Renames a file currently in use in directory returned by **getDirectoryPathFromRegistry()**.
scheduleProcedure() *(page 26)*	Schedules an agent procedure to run on a specified machine.
sendAlert() *(page 26)*	Creates an alert based on a previous **getVariable()** command.
sendEmail() *(page 28)*	Sends an email to one or more recipients.
sendMessage() *(page 28)*	Displays a message in a dialog box on the managed machine.
sendURL() *(page 28)*	Opens a browser to the specified URL on the managed machine.
setRegistryValue() *(page 28)*	Sets the registry value to a specific value.
set64BitRegistryValue() *(page 28)*	Sets the **64-bit** *(page 34)* registry value to a specific value.
sqlRead() *(page 29)*	Returns a value from the database and stores it to a named variable by running a selected SQL "read" statement.
sqlWrite() *(page 29)*	Updates the database by running a selected SQL "write" statement.
startWindowsService() *(page 30)*	Runs a Start command for a Windows service, if it exists.
stopWindowsService() *(page 30)*	Runs a Start command for a Windows service if it exists.
transferFile() *(page 30)*	Transfers a file from the agent machine running this step to another agent machine.
uninstallbyProductGUID() *(page 31)*	Silently uninstalls a product based on its MSI GUID.
unzipFile() *(page 31)*	Extracts the contents of a specified zip file to a target folder.

updateSystemInfo() *(page 31)*	Updates the selected **System Info** field with the specified value.
useCredential() *(page 31)*	Specifies that the agent credential should be used when **Execute as the logged on user** is specified in a subsequent command.
windowsServiceRecoverySettings() *(page 32)*	Sets the Service Recovery Settings for any given service in Windows.
writeDirectory() *(page 32)*	Writes a directory from the server to the managed machine.
writeFile() *(page 32)*	Writes a file stored on the Kaseya Server to the managed machine.
writeFileFromAgent() *(page 33)*	Transfers a file from another agent machine to the agent machine running this step.
writeFileInDirectoryPath() *(page 33)*	Writes a file stored on the Kaseya Server to the managed machine using the directory returned by **getDirectoryPathFromRegistry()**.
writeProcedureLogEntry() *(page 33)*	Writes a string to the Agent Procedure Log.
writeTextToFile() *(page 33)*	Writes text to a file on the agent machine.
zipDirectory() *(page 33)*	Compresses a directory and any subdirectories or files it contains into a zip file on the agent machine.
zipFiles() *(page 33)*	Compresses a single file or files into a zip file on the agent machine.

IF Commands

checkVar()

Enter a variable name, in the form `#var_name#`, in the space provided. **checkVar()** evaluates the current values assigned `#var_name#` and compares it with the supplied value. The supplied value may also be another variable name in the form of `#var_name2#`. If the check is true, **IF** commands are executed. If the check is false, **ELSE** steps are executed. See **Using Variables** *(page 35)*. The available tests are:

- `Exists` : true if the variable exists.

> **Note:** If this test is run on a **managed variable** *(page 37)*, this step will fail for all machine groups that don't have a value specified for the managed variable. An error message will display in the agent procedure log, stating `Script Variable Not Found`.

- `Does Not Exist` : true if the variable does *not* exist.
- `=` : true if value of the variable equals the test value.
- `Not =` : true if value of the variable does *not* equal the test value.
- `>` : true if value of the variable is greater than the test value.
- `>=` : true if value of the variable is greater than or equal to the test value.
- `<` : true if value of the variable is less than the test value.
- `<=` : true if value of the variable is less than or equal to the test value.
- `Contains` : true if the test value is a sub string of the variable value.
- `Not Contains` : true if the test value is *not* a sub string of the variable value.
- `Begins With` : true if the variable value begins with the test value.
- `Ends With` : true if the variable value ends with the test value.

For the tests `=`, `Not =`, `>`, `>=`, `<`, and `<=` the variables compared may be a string, a number, a date in the format of `yyyy/mm/dd` or `yyyy/mm/dd hh:mm` or `yyyy/mm/dd hh:mm:ss`, or a version number containing dots or commas such as `1.2.3` or `4,5,6,7`. Values in variables are stored as strings, so compared numbers must be of equal string length. If a date format is specified, it may be offset using `+`

dd:hh:mm:ss or - dd:hh:mm:ss. Only dd days are required; hh hours, mm minutes, and ss seconds may be omitted and are assumed to be zero when absent. CURRENT_TIMESTAMP may be specified to indicate that the current time be substituted in the comparison at the time the procedure is executed. e.g. CURRENT_TIMESTAMP - 7:12:00:00 will be evaluated as 7 days and 12 hours subtracted from the time that the procedure is executed.

Example - Sample Procedures.Managed Services.Network Tests.Ping IP Address 2

```
If checkVar("#pingtest#") Does Not Contain "Lost = 0"
```

else

Adds an **Else** command underneath a corresponding **If** command. Any steps listed under the **Else** command are executed when the corresponding **If** command returns a False result.

Example - Sample Procedures.Managed Services.Disk Mgmt.Clean.Windows Disk Cleanup (wdc)

```
If
hasRegistryKey("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Expl
orer\VolumeCaches\Compress old files") Does Not Exist
   executeProcedure(WDC Step 1", " ", "Immediate", "All Operating Systems", "Halt on
Fail")
Else
   executeProcedure(WDC Step 2", " ", "Immediate", "All Operating Systems", "Halt on
Fail")
```

eval()

Enter a numerical expression containing one or more variable names, in the form #var_name#, in the space provided. **eval()** uses the current value assigned to each #var_name#, evaluates the mathematical expression, and compares it with the supplied value. The supplied value may also be another expression. The mathematical expression may contain +, -, *, /, (, and). e.g. (3.7 + (200 * #countA#)) / (#countB# - #countC#). If the check is true, **IF** steps are executed. If the check is false, **ELSE** steps are executed. The available tests are:

- = : true if value of the variable equals the test value.
- Not = : true if value of the variable does not equal the test value.
- > : true if value of the variable is greater than the test value.
- >= : true if value of the variable is greater than or equal to the test value.
- < : true if value of the variable is less than the test value.
- <= : true if value of the variable is less than or equal to the test value.

> **Note:** Cannot be used with Exists, Does Not Exist, Contains, or Not Contains operators.

Example

```
If eval("#currentvalue# + 1") Is Greater Than "#maximumValue#"
```

getOS()

Determines if the current Windows OS is 32 or 64-bit.

Operating systems supported: Windows

Example

```
If getOS() 64-Bit Windows
```

getRAM()

Evaluates the total amount of memory in megabytes reported by the latest audit of the agent. This could come in helpful in ensuring a system meets the resource requirements of an application before an installation is attempted.

Operating systems supported: Windows, OS X, Linux

Example

```
If getRAM() Is Less Than "8500"
```

hasRegistryKey() / has64BitRegistryKey()

Warning: Certain registry locations require **64-Bit Commands** *(page 34)* for 64-bit Windows machines.

Tests for the existence of a registry key. **hasRegistryKey()** differs from **getRegistryValue()** *(page 11)* since it can check for a directory level registry entry that only contains more registry keys (no values).

Example - Core.1 Windows Procedures.Desktops.Maintenance.Common Maintenance Tasks.Disk Cleanup.Windows Disk Cleanup

```
If
hasRegistryKey("HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Microsoft\Windows\Current
Version\explorer\VolumeCaches\Compress Old Files\") Exists
```

getRegistryValue() / get64BitRegistryValue

Warning: Certain registry locations require **64-Bit Commands** *(page 34)* for 64-bit Windows machines.

After entering the registry path, the value contained in the key is returned. A check can be made for existence, absence, equality, or size differences. For example, `HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\AppPaths\AgentMon.exe\path` contains the directory path identifying where the agent is installed on the target machine. The test determines if the value stored for this key exists, thereby verifying the agent is installed.

The available tests are:

- `Exists` : true if the registry key exists in the hive.
- `Does Not Exist` : true if the registry key does *not* exist in the hive.
- `=` : true if value of the registry key equals the test value.
- `Not =` : true if value of the registry key does *not* equal the test value.
- `>` : true if value of the registry key is greater than the test value (value must be a number).
- `>=` : true if value of the registry key is greater than or equal to the test value (value must be a number).
- `<` : true if value of the registry key is less than the test value (value must be a number).
- `<=` : true if value of the registry key is less than or equal to the test value (value must be a number).
- `Contains` : true if the test value is a sub string of the registry key value (value must be a string).
- `Not Contains` : true if the test value is *not* a sub string of the registry key value (value must be a string).

Using the Backslash Character (\)

A backslash character `\` at the end of the key returns the default value of that key. `HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\App Paths\WORDPAD.EXE\` returns a default value, such as `%ProgramFiles%\Windows NT\Accessories\WORDPAD.EXE`

The *last single backslash* in a string is used to delimit the registry key from the registry value. To include backslashes as part of the value string, specify *double slashes* for each slash character. For example, the string `HKEY_LOCAL_MACHINE\SOFTWARE\SomeKey\Value\\Name` is interpreted as the key `HKEY_LOCAL_MACHINE\SOFTWARE\SomeKey` with a value of `Value\Name`.

Example

```
if isUserLoggedIn(" ")
  getVariable("Registry Value",
"HKEY_CURRENT_USER\KaseyaAgent-HKCUTest\TestREG_DWORD", "regDWORD", "All Operating
Systems, "Halt on Fail"
```

isAppRunning()

Checks to see if a specified application is currently running on the managed machine. If the application is running, the **IF** command is executed; otherwise, the **ELSE** command is executed. When this option is selected from the drop-down list, the **Enter the application name** field appears. Specify the process name for the application you want to test. For example, to test the `Calculator` application, specify `calc.exe`, which is the process name that displays in the **Processes** tab of the Windows **Task Manager**.

Example

```
If isAppRunning("Skype.exe")
```

isServiceRunning()

Determines if a service is running on the managed machine. Specify the *service name*.

- True if the service name is running.
- False if the service name is stopped or does not exist.

Note: Be sure to use the *service name* of the service, not the *display name* of the service. For example, the *display name* of the service for Microsoft SQL Server is `SQL Server (MSSQLSERVER)`, but the *service name* of the service is `MSSQLSERVER`. For Windows machines, right click any service in the **Services** window and click the **Properties** option to see the *service name* of that service.

Example

```
If isServiceRunning("RemoteRegistry")
```

isUserActive()

Determines whether the user is either:

- Idle or not logged on, or
- Active

Operating systems supported: Windows, OS X, Linux

Example

```
If isUserActive() User is idle or not logged in
```

isUserLoggedin()

Tests to see if a specific user or any user is logged on the managed machine. Enter the machine user's logon name or leave the field blank to check for any user logged on. The **IF** commands are executed if a user is logged on. The **ELSE** steps are executed if a user is not logged on.

Example

```
If isUserLoggedIn(" ")
```

isYesFromUser()

Displays a dialog box on the managed machine with **Yes** and **No** buttons. Also carries out the **ELSE** command if a specified amount of time has timed out. If **Yes** is selected by the machine user, the **IF** command is executed. If the selection times out or the machine user selects **No**, the **ELSE** command is executed. This function requests the machine user's permission to proceed with the agent procedure. This query is useful for agent procedures that require a reboot of the managed machine before completion.

Procedure variables, for example #varName#, may be used inside **isYesFromUser()** fields to dynamically generate messages based on procedure data.

Delimit the text displayed by the button labels and message using three or more plus characters (+++).

Example - Sample Procedures.Agent Control.Reboot-Ask-Yes-2

```
If isYesFromUser("+++YES:Reboot Now+++NO:Continue Working+++The system
administrator needs to Reboot your computer. Reboot now?", 5)
```

testFile()

Determines if a file exists on a managed machine. Enter the full path and file name. **testFile()** compares the full path and file name with the supplied value. If the check is true, **IF** commands are executed. If the check is false, **ELSE** steps are executed.

> **Note:** Environment variables such as %windir%\notepad.exe are acceptable.

The available tests are:

- Exists : true if the full path and file name exists.
- Does not Exist : true if the full path and file name does *not* exist.
- Contains : true if the test value is a sub string of the file content.
- Not Contains : true if the test value is *not* a sub string of the file content.
- Begins With : true if the test value begins with the variable value.
- Ends With : true if the test value ends with the variable value.

Example - Core.1 Windows Procedures.Desktops.Machine Control.Networking.Block Websites.Clear All Blocked Websites

```
If testFile("%windir%\System32\drivers\etc\hosts") Exists
```

testFileInDirectoryPath()

Tests the specified file located at the path returned using the **getDirectoryPathFromRegistry()** *(page 20)* step. The available tests are:

- Exists : true if the file name exists.
- Does not Exist : true if the file name does *not* exist.
- Contains : true if the test value is a sub string of the file content.
- Not Contains : true if the test value is *not* a sub string of the file content.
- Begins With : true if the test value begins with the variable value.
- Ends With : true if the test value ends with the variable value.

Example - Core.3 Linux Procedures.Software Control.Applications.Install CHKCONFIG

```
If testFileInDirectoryPath("/var/tmp/installed-software.read") Contains
"chkconfig"
```

true

Selecting True directs the **IF** commands to execute. Use **True** to directly execute a series of steps that do not require any decision points, such as determining whether a file exists using **testFile()** *(page 13)*.

> **Note:** Using IF TRUE is not required. It is included for backwards compatibility with 5.x scripts and earlier that have been migrated forward.

Example - Sample Procedures.Agent Control.Reboot

```
If true
  reboot("All Operating Systems", "Halt on Fail")
```

STEP Commands

alarmsSuspend()

Suppresses alarms on a machine for a specified number of minutes. Updates the status of machines on the Monitor > Status > Suspend Alarm page.

Example - Core.1 Windows Procedures.Servers.Print Server.Print Server

```
alarmsSuspend(1, "All Windows Operating Systems", "Halt on Fail")
```

alarmsUnsuspendAll()

Stops the suppression of alarms on a machine. Updates the status of machines on the Monitor > Status > Suspend Alarm page.

Example - Core.1 Windows Procedures.Servers.Print Server.Print Server

```
alarmsUnsuspendAll("All Windows Operating Systems", "Halt on Fail")
```

captureDesktopScreenshot()

Captures a desktop screenshot of the agent machine and uploads it to the Kaseya Server. The screenshot is saved as a PNG file with a unique name in a folder dedicated to that agent. You can access these files from the Audit > Documents page or from Live Connect. End-user notification options must be selected based on the level of user notification desired, silently capturing a screenshot, notifying the user that the capture will take place, or asking to approve the capture. A custom message can be entered if end-user notification or permission requesting is selected. Otherwise a standard message displays.

Operating systems supported: Windows, OS X

Example

```
captureDesktopScreenshot("Silent Capture", " ", "All Operating Systems", "Halt on
Fail")
```

changeDomainUserGroup()

Changes a domain user's membership in a domain user group. This **STEP** must be run on a domain controller. Enter the domain username of the member being added or removed from the domain user group. Then select whether to add or remove membership. Then select the domain user group.

Operating systems supported: Windows

Example

```
changeDomainUserGroup(#username", "Add Permission", "Domain Users", "All Operating
Systems", "Halt on Fail")
```

changeLocalUserGroup()

Changes a local user's membership in a local user group. Enter the local username of the member being added or removed from the local user group. Then select whether to add or remove membership. Then select the group.

Operating systems supported: Windows

Example

```
changeLocalUserGroup("#username#", "Add Permission", "Users", "All Operating
Systems", "Halt on Fail")
```

closeApplication()

If the specified application is running on the managed machine, then that application is closed down.

Specify the *process name* for the application you want to close. For example, to close the `Calculator` application, specify `calc.exe`, which is the process name that displays in the **Processes** tab of the Windows **Task Manager**.

Example

```
closeApplication("Skype.exe", "All Operating Systems", "Halt on Fail")
```

comment()

Adds a one line comment to the procedure.

Example

```
// The IRPStackSize setting for this machine is #IRPStackSize#
```

copyFile()

Copies a file from one directory to another on the agent machine. If the target file exists, you must check a box to overwrite an existing file. Be sure to keep in mind folder syntax when running this **STEP** across different operating systems, for example, `c:\temp\tempfile.txt` for Windows and `/tmp/tempfile.txt` for OS X and Linux.

Operating systems supported: Windows, OS X, Linux

Example

```
copyFile("%appdata%\Microsoft\Templates\#template#",
"e:\templates_archive\#template#", true, "All Operating Systems", "Halt on Fails")
```

copyUseCredentials()

Copies a file from a directory on a machine and attempts to copy the file to a target directory and filename. The copy process uses either:

- The agent credential specified for an agent using Agent > Manage Agents, or
- The user credential specified by an **impersonateUser()** *(page 23)* step before this step.

This **STEP** is mostly used for accessing files across network UNC shares. If the target file exists, you must check a box to overwrite an existing file. Be sure to keep in mind folder syntax when running this **STEP** across different operating systems, for example, `c:\temp\tempfile.txt` for Windows and `/tmp/tempfile.txt` for OS X and Linux.

Operating systems supported: Windows, OS X, Linux

Example

```
useCredential("All Operating Systems", "Halt on Fail")
copyFileUseCredentials("c:\logging\logfile.log",
"\\fileserver\log_archive\logfile.log", true, "All Operating Systems", "Halt on
Fail")
```

createDomainUser()

Adds a new user to an Active Directory domain when run on a domain controller. Enter a domain user name to create, then a password that meets the domain's complexity requirements for user accounts, then select the domain group the user will be added to, either `Domain Users` or `Domain Admins`.

Operating systems supported: Windows

Example

```
createDomainUser("#username#", "******", "Domain Users", "All Operating Systems",
"Halt on Fail")
```

createEventLogEntry()

Creates an event log entry in either the Application, Security or System event log types. You can create a Warning, Error or Informational event with your own description. The created event is hard-coded to use an Event ID of 607.

Operating systems supported: Windows

Example

```
createEventLogEntry("This is a test event log entry", "Error", "Application", "All
Operating Systems", "Halt on Fail")
```

createLocalUser()

Adds a new local user account to a machine. Enter a local user name to create, then a password that meets local user account complexity requirements, then select the group the user will be added to.

Operating systems supported: Windows, OS X, Linux

Example

```
createLocalUser("#username#", "******", "Administrator", "All Operating Systems",
"Halt on Fail")
```

createWindowsFileShare()

Creates a new file share on the Windows machine being managed by the agent. You must type in the name of the file share as it will be accessed over the network—without the `\\computername\` prefix—and enter the source folder on the agent machine for the file share. This folder will be created if it does not yet exist. You can remove a file share using the **removeWindowsFileShare()** *(page 25)* command.

Operating systems supported: Windows

Example

```
createWindowFileShare("#sharename#", "c:\sharedlocalfolder", "All Operating
Systems", "Halt on Fail")
```

deleteDirectory()

Deletes a directory from an agent machine. Ensure you have your directory syntax correct for Windows vs. OS X/ Linux. To ensure all sub-directories and files are also removed, check the **Recursively delete subdirectories and files** checkbox.

Operating systems supported: Windows, OS X, Linux

Example

```
deleteDirectory("#localfolder#", "Recursively delete", "All Operating Systems",
"Halt on Fail")
```

deleteFile()

Deletes a file on a managed machine. Enter the full path and filename.

- Environment variables are acceptable if they are set on a user's machine. For example, using a path `%windir%\notepad.exe` would be similar to `C:\windows\notepad.exe`.
- You can delete a file that is currently in use using the **renameLockedFile()** *(page 25)* command.

Example

```
deleteFile("#pathfilename#", "All Operating Systems", "Halt on Fail")
```

deleteFileInDirectoryPath()

Deletes the specified file located at the path returned using the **getDirectoryPathFromRegistry()** *(page 20)* command.

Example

```
If isUserLoggedIn(" ")
  getDirectoryPathFromRegistry(HKEY_CURRENT_USER\KaseyaAgent-HKCUTest\TestDirect
oryPath", "All Operating System, "Halt on Fail")
  deleteFileInDirectoryPath(test.txt", "All Operating Systems", "Halt on Fail")
```

deleteRegistryKey() / delete64BitRegistryKey()

> **Warning:** *Certain registry locations require* **64-Bit Commands** *(page 34)* for 64-bit Windows machines.

Deletes the specified registry key and all its sub-keys.

Example - Core.1 Windows Procedures.Desktops.Maintenance.Common Maintenance Tasks.Disk Cleanup.Windows Disk Cleanup

```
deleteRegistryKey("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\E
xplorer\VolumeCaches\Compress old files", "All Operating Systems", "Halt on Fail")
```

deleteRegistryValue() / delete64BitRegistryValue

> **Warning:** *Certain registry locations require* **64-Bit Commands** *(page 34)* for 64-bit Windows machines.

Deletes the value stored at the specified registry key. The *last single backslash* in a string is used to delimit the registry key from the registry value. To include backslashes as part of the value string, specify *double slashes* for each slash character. For example, the string `HKEY_LOCAL_MACHINE\SOFTWARE\SomeKey\Value\\Name` is interpreted as the key `HKEY_LOCAL_MACHINE\SOFTWARE\SomeKey` with a value of `Value\Name`.

Example - Core.4 Other Tools and Utility Procedures.AutoAdminLogon.Disable AutoAdminLogon

```
deleteRegistryValue("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows
NT\CurrentVersion\Winlogon\DefaultPassword", "Windows 8.1", "Continue on Fail")
```

deleteUser()

Deletes a user from the agent machine.

Operating systems supported: Windows, OS X, Linux

Example

```
deleteUser("#admin_name#", "All Operating Systems", "Halt on Fail")
```

disableUser()

Disables a user, preventing logon to the agent machine.

Operating systems supported: Windows, OS X, Linux

Example

```
disableUser("#username#", "All Operating Systems", "Halt on Fail")
```

disableWindowsService()

Disables a Windows service. See **startWindowsService()** *(page 30)*, **stopWindowsService()** *(page 30)*, and **windowsServiceRecoverySettings()** *(page 32)*.

Operating systems supported: Windows

> **Note:** Be sure to use the *service name* of the service, not the *display name* of the service. For example, the *display name* of the service for Microsoft SQL Server is `SQL Server (MSSQLSERVER)`, but the *service name* of the service is `MSSQLSERVER`. For Windows machines, right click any service in the **Services** window and click the **Properties** option to see the *service name* of that service.

Example

```
disableWindowsService("#service_name#", "All Operating Systems", "Halt on Fail")
```

enableUser()

Enables a previously disabled user, allowing the user to logon to the OS.

Operating systems supported: Windows, OS X

Example

```
enableUser("#username#", "All Operating Systems", "Halt on Fail")
```

executeFile()

Executes the specified file on the managed machine. This function replicates launching an application using the **Run...** command located in the Microsoft Windows **Start** menu. This function takes three parameters:

- Full path filename to the `.exe` file.
- Argument list to pass to the `.exe` file
- Option for the procedure to wait until the `.exe` completes or not.

> **Note:** Environment variables are acceptable, if they are set on a user's machine. For example, using a path `%windir%\notepad.exe`, would be similar to `C:\windows\notepad.exe`.

If **Execute as the logged on user** is selected, then a credential must be specified by running either the **impersonateUser()** *(page 23)* or **useCredential()** *(page 31)* command before this command. If run **Execute as the system account** is selected, execution is restricted to the agent's system level access.

Example - Sample Procedures.Managed Services.System Mgmt.Shutdown

```
executeFile("%windir%\system32\shutdown.exe", "-s -f", "Execute as System and
Continue", "Windows 8.1", "Halt on Fail")
```

executeFileInDirectoryPath()

Same as **executeFile()** *(page 18)* except the location of the .exe file is located at the path returned from a **getDirectoryPathFromRegistry()** *(page 20)* command.

If **Execute as the logged on user** is selected, then a credential must be specified by running either the **impersonateUser()** *(page 23)* or **useCredential()** *(page 31)* command before this command. If run **Execute as the system account** is selected, execution is restricted to the agent's system level access.

Example

```
getDirectoryPathFromRegistry(HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Adobe\Adobe
Acrobat\9.0\Installer\Acrodist.exe", "All Operating System, "Halt on Fail")
executeFileInDirectoryPath(" ", " ", "Execute as System and Continue", "All Operating
Systems", "Halt on Fail")
```

executePowershell()

Executes a powershell script, including:

- a Powershell `.PS1` file
- a Powershell command with special arguments
- a combination of both

Operating systems supported: Windows XP SP3+/Server 2008 with Powershell add-on, Windows 7, Windows Server 2008 or later

There are *five variants* of this command available.

- **executePowershell()** - Executes a powershell file, or command with arguments, or both. When running this command on either a 32bit or 64bit machine, no system credential or user credential is provided.
- **executePowerShell32BitSystem** - Executes a powershell file, or command with arguments, or both, as a *32 bit system* command.
- **executePowerShell32BitUser** - Executes a powershell file, or command with arguments, or both, as a *32 bit user* command.
- **executePowerShell64BitSystem** - Executes a powershell file, or command with arguments, or both, as a *64 bit system* command.
- **executePowerShell64BitUser** - Executes a powershell file, or command with arguments, or both, as a *64 bit user* command.

System and user commands:

- **System** - If a *system* command is run, execution is restricted to the agent's system level access.
- **User** - If a *user* command is selected, then a credential must be specified by running either the **impersonateUser()** *(page 23)* or **useCredential()** *(page 31)* command before this command.

Example

```
executePowershellCommand64BitSystem("#ps_service_script#, "#servicename#", false,
"All Operating Systems", "All Windows Operating Systems, "Halt on Fail")
```

executeProcedure()

Causes another named procedure to execute. Use this capability to string multiple **IF-ELSE-STEP** procedures together. If the procedure no longer exists on the Kaseya Server, an error message displays next to the procedure drop-down list. You can use this command to run a system procedure. You can nest procedures to 10 levels. You can include a time delay before running the called procedure.

Example - Sample Procedures.Agent Control.Reboot-Ask-No

```
If isUserLoggedIn(" ")
  executeProcedure(Reboot-Ask-No-2", " ", "Immediate", "All Operating Systems",
"Halt on Fail")
Else
  reboot("All Operating Systems", "Halt on Fail")
```

executeShellCommand()

Allows the procedure to pass commands to the command interpreter on the managed machine. When this command is selected, the field **Enter the command to execute in a command shell** is displayed. Enter a command in the field. The command must be syntactically correct and executable with the OS version on the managed machine. *Commands and parameters containing spaces should be surrounded by quotes.* Since the command is executed relative to the agent directory, absolute paths should be used when entering commands.

> **Note: executeShellCommand()** opens a command prompt window on a managed Windows machine to execute in. If you do not want a window opening on a managed Windows machine, because it might confuse users, put all the commands in a batch file. Send that file to the managed Windows machine using the **writeFile()** *(page 32)* command. Then run the batch file with the **executeFile()** *(page 18)* command. **executeFile()** does not open a window on a managed Windows machine.

If **Execute as the logged on user** is selected, then a credential must be specified by running either the **impersonateUser()** *(page 23)* or **useCredential()** *(page 31)* command before this command. If run **Execute as the system account** is selected, execution is restricted to the agent's system level access.

Example - Sample Procedures.Agent Control.Remove K Menu

```
executeShellCommand("rmdir "%ALLUSERSPROFILE%\Start Menu\Programs\Kaseya" /S /Q",
"Execute as System", "Windows 8.1", "Halt on Fail")
```

executeShellCommandToVariable()

Executes a shell command and returns output created during and after its execution to a variable. The variable must be referred to in subsequent steps as `#global:cmdresults#`.

Operating systems supported: Windows, Linux, OS X

Example

```
useCredential("All Operating Systems", "Halt on Fail")
executeShellCommandtToVariable("dir %APPDATA%", "User", true, "All Operating
Systems", "Halt on Fail")
pauseProcedure(2, "All Operating Systems", "Halt on Fail")
writeProcedureLogEntry("#global:cmdresults#", "All Operating Systems", "Halt on
Fail")
```

executeVBScript()

Runs a Vbscript, with or without command line arguments. If the Vbscript displays a popup window or notifies the end user, check the box for **Use Wscript instead of Cscript**.

Operating systems supported: Windows

Example

```
writeFile("AddFavorite.vbs", "#TEMP%\AddFavorite.vbs", "All Operating Systems",
"Halt on Fail")
executeVBScript("%TEMP%\AddFavorite.vbs", "#favoritename# #favoriteURL#", false,
"All Operating Systems", "Halt on Fail")
deleteFile("%TEMP%\AddFavorite.vbs", "All Operating Systems", "Halt on Fail")
```

getDirectoryPathFromRegistry()

Returns a file path stored in the specified registry key. Use this command to fetch the file location. For instance, use this command to find the directory where an application has been installed. The result can be used in subsequent steps by:

- **deleteFileInDirectoryPath()** *(page 16)*
- **executeFileInDirectoryPath()** *(page 18)*
- **getFileInDirectoryPath()** *(page 21)*
- **renameLockedFileInDirectoryPath()** *(page 26)*
- **testFileInDirectoryPath()** *(page 13)* (an IF command)
- **writeFileInDirectoryPath()** *(page 33)*

Example

```
getDirectoryPathFromRegistry("HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Adobe\Adobe
Acrobat\9.0\Installer\AcroDist.exe", "All Operating Systems", "Halt on Fail")
executeFileInDirectoryPath(" ", " ", "Execute as User and Continue", "All Operating
Systems", "Halt on Fail")
```

getFile()

Upload the file at the specified path from the managed machine. Be sure to enter a full path filename that you want to upload. Example: `news\info.txt`. Folders are created when the **getFile()** command is run, if they don't already exist. The file is stored on the Kaseya Server in a private directory for each managed machine. View or run the uploaded file using Agent Procedures > **Get File** *(page 47)*.

- Optionally, existing copies of uploaded files are renamed with a `.bak` extension prior to the next upload of the file. This allows you to examine both the latest version of the file and the previous version.
- Optionally create a **Get File** alert if the uploaded file *differs* or is the *same* from the file that was uploaded previously. *You must create a Get File alert for a machine ID* using the Monitor > Alerts - Get File page to enable the sending of an alert using the **getFile()** command. Once defined for a machine ID, the same **Get File** alert is *active for any agent procedure* that uses a **getFile()** command and is run on that machine ID. Turn off alerts for specific files in the agent procedure editor by selecting one of the without alerts options.
- See **getFileInDirectoryPath()** *(page 21)*.

Example

```
getFile("c:\temp\NetStopInfoStore.txt", "backuplogs\NetStopInfoStore.txt",
"Overwrite existing file and sent alert if file changed", "All Operating Systems",
"Halt on Fail")
```

getFileInDirectoryPath()

Just like the **getFile()** *(page 20)* command but it adds the path returned from the **getDirectoryPathFromRegistry()** *(page 20)* command to the beginning of the remote file path. Access the uploaded file using the Agent Procedures > **getFile()** *(page 47)* function.

Example

```
getDirectoryPathFromRegistry("HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Dell\Client
SystemUpdate\InstallPath", "All Operating Systems", "Halt on Fail")
getFileInDirectoryPath("readme.txt", "readme.txt", "Overwrite existing file and send
alert if file changed", "All Operating Systems", "Halt on Fail")
```

getURL()

Returns the text and HTML contents of a URL and stores it to a file on the managed machine. To demonstrate this to yourself, try specifying `www.kaseya.com` as the URL and `c:\temp\test.htm` as the file to store the contents of this URL. A copy of the web page is created on the managed machine that contains all of the text and HTML content of this webpage. You can search the contents of the file on the managed machine in a subsequent command.

Another use is to download an executable file that is available from a web server, so that you don't need to upload the file to the VSA server nor use the VSA's bandwidth to write the file down to each agent. You can use a subsequent command to run the downloaded executable on the managed machine.

> **Note:** This command can download files from a LAN file source instead of the URL using Agent > Configure Agents > LAN Cache. Files have to be larger than 4k bytes.

Example

```
getURL("http:\\www.kaseya.com", "c:\temp\test.htm", "Continue Immediately", "All
Operating Systems", "Halt on Fail")
```

getURLUsePatchFileSource()

Downloads a file from a given URL to a target folder and file for that agent. Uses the Patch Management > File Source settings.

Operating systems supported: Windows

Example

```
getURLUsePatchFileSource("https://filezilla-project.org/download.php?type=server"
, "c:\temp", "No", "All Windows Operating Systems", "Halt on Fail")
```

getVariable()

> **Note:** This command includes a `64-bit Registry Value` *parameter*. See **64-Bit Commands** *(page 34).*

Defines a new agent variable. When the procedure step executes, the system defines a new variable and assigns it a value based on data fetched from the managed machine's agent.

> **Note:** See **Using Variables** *(page 35)* for the types of variable values supported by the **getVariable()** command.

Examples

Store a registry value.

```
getVariable("Registry Value", "HKEY_CURRENT_USER\KaseyaAgent-HKCUTest\TestREG_SZ",
"regSZ", "All Operating Systems", "Halt on Fail")
```

Store the contents of a file.

```
getVariable("File Content", "#systemdrive#\temp\degrag.txt", "defrag", "All
Operating Systems", "Halt on Fail")
```

Store a database view.

```
getVariable("SQL View Data", "vMachine/IpAddress", "ipaddress", "All Operating
Systems", "Halt on Fail")
```

Store a WMI value.

```
getVariable("WMI property", "root\cimv2:Win32_OperatingSystem.FreePhysicalMemory",
"freememory", "All Operating Systems", "Halt on Fail")
```

Store the agent install drive.

```
getVariable("Agent Install Drive (C:\)", " ", "agentDrv", "All Operating Systems",
"Halt on Fail"
```

Store the agent working directory path.

```
getVariable("Agent Working Directory Path", " ", "agentWorkDir", "All Operating
Systems", "Halt on Fail"
```

Prompt the user to enter a value when the procedure is scheduled.

```
getVariable("Prompt When Procedure is Scheduled", "URL:", "site", "All Operating
Systems", "Halt on Fail"
```

getVariableRandomNumber()

Generates a random number which can then be accessed as the variable `#global:rand#` in a subsequent step.

Operating systems supported: Windows, OS X, Linux

Example

```
getVariableRandomNumber("All Operating Systems", "Halt on Fail")
sendMessage("#global:rand#", "Display now", "All Operating Systems", "Halt on Fail")
```

getVariableUniversalCreate()

Gets a variable that persists outside of the immediate procedure's execution. This can be useful for passing a variable to another agent procedure using the **scheduleProcedure()** *(page 26)* step. You store values in three variables: `#global:universal1#`, `#global:universal2#`, and `#global:universal3#`. You can enter either string data or variables created in an earlier step. Variables created using this step can only be read after using the **getVariableUniversalRead()** *(page 23)* step in any subsequent step. The three variables are specific to each agent machine. You can optionally read the values from a different agent machine.

Operating systems supported: Windows, OS X, Linux

Example

```
getVariableUniversalCreate("red", "green", "blue", "All Operating Systems", "Halt on
Fail")
getVariableUniversalRead(" ", false, "All Operating Systems", "Halt on Fail")
sendMessage("#global:universal1#, #global:universal2#, #global:universal3#,
"Display now", "All Operating Systems", "Halt on Fail")
```

getVariableUniversalRead()

Reads up to three variables you have previously created using the **getVariableUniversalCreate()** *(page 22)* step. These variables must be referred to as `#global:universal1#`, `#global:universal2#`, and `#global:universal3#`. Please see the initial **getVariableUniversalCreate()** step for more detail. The three variables are specific to each agent machine. You can optionally read the values from a different agent machine.

Operating systems supported: Windows, OS X, Linux

Example

```
getVariableUniversalCreate("red", "green", "blue", "All Operating Systems", "Halt on
Fail")
getVariableUniversalRead(" ", false, "All Operating Systems", "Halt on Fail")
sendMessage("#global:universal1#, #global:universal2#, #global:universal3#,
"Display now", "All Operating Systems", "Halt on Fail")
```

giveCurrentUserAdminRights()

Adds the current user on the agent machine to the local administrator’s group on the agent machine, either permanently or for a temporary period of time. This change does *not* take effect until the user logs off. It is recommended you leverage the **logoffCurrentUser()** *(page 25)* step.

Operating systems supported: Windows

Example

```
giveCurrentUserAdminRights(10, false, "All Operating Systems", "Halt on Fail")
logoffCurrentUser(" ", "All Operating Systems", "Halt on Fail")
```

impersonateUser()

Enter a username, password, and domain for the agent to logon with. This command is used in a procedure before an **executeFile()** *(page 18)*, **executeFileInDirectoryPath()** *(page 18)* or **executeShellCommand()** *(page 19)* that specifies the **Execute as the logged on user** option. Leave the domain blank to log into an account on the local machine. Use **impersonateUser()** to run an agent procedure using a credential specified *by agent procedure*. Use **useCredential()** to run an agent procedure using a credential specified *by managed machine*.

Example

```
impersonateUser("administrator", "********", " ", "All Operating Systems", "Halt on
Fail")
```

installAptGetPackage()

Silently installs a package using the `apt-get` command in Linux. Install options include:

- Install
- Install package and recommended packages
- Install without recommended packages
- Install but do not upgrade
- Reinstall

- Download only
- No Download - uses local packages only
- Simulate
- Install with autofix

Operating systems supported: Linux

Example

```
installAptGetPackage("ruby", "Install package and recommended packages
(--install-recommends)", "All Operating Systems", "Halt on Fail")
```

installDebPackage()

Silently installs a Debian package on any Linux OS that supports `.deb` packages. Options include:

- Install/Upgrade
- Reinstall/Upgrade
- Install and Downgrade if package exists
- Use custom switches

Operating systems supported: Linux

Example

```
installDebPackage("apache2", "Install/Upgrade (-i -G -E)", " ", "All Operating
Systems", "Halt on Fail")
```

installDMG()

Silently installs a `.DMG` package in OS X. If the package is formatted as an `Application`, it is copied to the `/Applications` folder. If the `.DMG` contains a `.PKG` installer within it, Kaseya attempts to install it.

Operating systems supported: OS X

Example

```
installDMG("/path/to/file.dmg", "Mac OS X", "Halt on Fail")
```

installMSI()

Installs an MSI file for Windows. Options can be selected to either run a quiet installation or to avoid automatically restarting the computer after installation if it is requested. You must specify the location of the MSI being installed.

Operating systems supported: Windows

Example

```
installMSI("c:\temp\7z938.msi", true, false, "All Operating Systems", "Halt on Fail")
```

installPKG()

Silently installs a `.PKG` package in OS X.

Operating systems supported: OS X

Example

```
installPKG("/path/to/pkg.pkg", "Mac OS X", "Halt on Fail")
```

installRPM()

Silently installs an RPM package on any Linux OS that supports installing RPMs. Install options include:

- Install/Upgrade
- Install Only

- Reinstall

Operating systems supported: Linux

Example

```
installRPM("/path/to/awstats.i386.rpm", "Linux", "Halt on Fail")
```

logoffCurrentUser()

Automatically logs off the current user from the agent machine. An optional warning that the log-off process is about to begin can be entered and displayed to the end-user.

Operating systems supported: Windows, OS X

Example

```
If isUserLoggedIn(" ")
  logoffCurrentUser(" ", "All Operating Systems", "Halt on Fail")
```

pauseProcedure()

Pause the procedure for N seconds. Use this command to give Windows time to complete an asynchronous task, like starting or stopping a service.

Example

```
pauseProcedure(2, "All Operating Systems", "Halt on Fail")
```

reboot()

Unconditionally reboots the managed machine. To warn the user first, use the **isYesFromUser()** *(page 12)* command before this command. A **isYesFromUser()** command prompts the user before rebooting their machine.

Example

```
reboot("All Operating Systems", "Halt on Fail")
```

rebootWithWarning()

Reboots a machine, displaying a warning message to the end-user before the reboot process occurs.

Operating systems supported: Windows, OS X

Example

```
rebootWithWarning("Your computer is rebooting in 10 minutes", 10, "All Operating
Systems", "Halt on Fail")
```

removeWindowsFileShare()

Removes file sharing for a folder on the Windows agent machine. Specify the name of the file share to remove, not the local folder name. The Audit > Machine Summary > Hardware > Disk Shares tab lists the shares on an agent machine as of the latest audit. You can create a file share using the **createWindowsFileShare()** *(page 16)* command.

Operating systems supported: Windows

Example

```
removeWindowsFileShare("#sharename#", "All Operating Systems", "Halt on Fail")
```

renameLockedFile()

Renames a file, including any file that is currently in use. The file is renamed the next time the system is rebooted. The specified filename is a complete file path name. Can be used to delete a file that is currently in use if the "new file name" is left blank. The file is deleted when the system is rebooted.

Example

```
renameLockedFile("c:\temp\unlocked_file.txt", "c:\temp\locked_file.txt", "All
Operating Systems", "Halt on Fail")
```

renameLockedFileInDirectoryPath()

Renames a file that is currently in use that is located in the path returned from a **getDirectoryPathFromRegistry()** *(page 20)* command. The file is renamed the next time the system is rebooted. Can be used to delete a file that is currently in use if the "new file name" is left blank. The file is deleted when the system is rebooted.

Example

```
getDirectoryPathFromRegistry("HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Dell\Client
SystemUpdate\InstallPath", "All Operating Systems", "Halt on Fail")
renameLockedFileInDirectoryPath("core.dll", "core.dll", "All Operating Systems",
"Halt on Fail")
```

scheduleProcedure()

Schedules a procedure to run on a specified machine. Optionally specifies the time to wait after executing this step before running the procedure and the specified machine ID to run the procedure on. If no machine is specified, then the procedure is run on the same machine running the agent procedure. Enter the complete name of the machine,   for example, `machine.unnamed.org`. *This command allows an agent procedure running on one machine to schedule the running of an agent procedure on a second machine.* You can use this command to run a system procedure. You can nest procedures to 10 levels.

Example

```
scheduleProcedure("Reboot", "10", "ag-blue-732.root.unnamed", "All Operating
Systems", "Halt on Fail")
```

sendAlert()

This step command takes no parameters. Instead one or more **getVariable()** *(page 22)* steps—*run prior to the* **sendAlert()** *step*—specify *alert action variables* that determine the actions triggered by the **sendAlert()** step. All alert action variables are optional. If no alert action variables are defined, an alarm will be created with a system default message. An alert action variable can be used to disable the default alarm action. Alert action variables, if used, must use the specific names corresponding to their actions:

- `alertSubject` - Subject for alert message. A system default message is used if you do not define one in the agent procedure. See *System Parameters* below.
- `alertBody` - Body for alert message. A system default message is used if you do not define one in the agent procedure. See *System Parameters* below.
- `alertDisableAlarm` - When a default alarm enabled, enter any value to disable.
- `alertGenerateTicket` - Enter any value to generate.
- `alertScriptName` - Valid agent procedure name to execute on current machine.
- `alertEmailAddressList` - Comma-separated email addresses. Required to send email.
- `alertAdminNameList` - Comma-separated list of VSA user names. Required to send messages to the Info Center > Inbox.
- `alertNotificationBarList` - Comma-separated list of VSA user names. Required to send messages to the Notification Bar.
- `alertNotificationBarMasterAdmins` - Enter any value to send notifications to the **Notification Bar** for all master users.

System Parameters

You can override the default `alertSubject` and `alertBody` text sent by the **sendAlert()** command. If you do you can embed the following *system parameters* in the `alertSubject` and `alertBody` variables you create using **getVariable()** commands. *Double* angle brackets are required when embedding them in text. You do not create these embedded system parameters using a **getVariable()** command. They are always available.

- `<<id>>` - Machine display name on which the agent procedure is being executed.
- `<<gr>>` - Machine group name on which the agent procedure is being executed.
- `<<at>>` - Alert date/time (server time).
- `<<ata>>` - Alert date/time (agent time).
- `<<apn>>` - Agent procedure name being executed.

Custom Parameters

You can embed *custom parameters* in `alertSubject` and `alertBody` **getVariable()** commands. First, create another variable using the **getVariable()** command. The value stored with this first variable can be dynamic, determined when the agent procedure is run. Second, insert the name of this first variable—surrounded by `#` and `#` brackets—into the text value specified by the `alertSubject` and `alertBody` **getVariable()** commands.   Examples include:

- `#filename#`
- `#logentry#`
- `#registrykey#`
- `#registryvalue#`

Specifying getVariable() Commands before sendAlert() in an Agent Procedure

For example, assume an agent procedure:

1. Creates a variable called `runTimeVar` using the **getVariable()** command. The values entered are:
   - ➢ `Constant Value`
   - ➢ `Procedure terminated. Could not access 'File Server 123'.`
   - ➢ `runTimeVar`
   - ➢ `All Operating Systems`
   - ➢ `Continue on Fail`
2. Then a second **getVariable()** command is created in the same agent procedure. This second **getVariable()** command specifies the *body* of a **sendAlert()** message. This body message embeds both system and custom parameters. The values entered for this second **getVariable()** command are:
   - ➢ `Constant Value`
   - ➢ `This alert was generated by <<apn>> on machine <<id>> at <<ata>>: #runTimeVar#.`
   - ➢ `alertBody`
   - ➢ `All Operating Systems`
   - ➢ `Continue on Fail`
3. Finally the **sendAlert()** command is run and the alert message is created.

> **Note:** The sequence of parameter variables and alert action variables does not matter. *But all of them have to run before the sendAlert() command that makes use of them.*

Example

```
getVariable("Constant Value", "Procedure terminated. Could not access 'File Server 123'.", "runtimeVar", "All Operating Systems", "Halt on Fail")
getVariable("Constant Value", "This alert was generated by <<apn>> on machine <<id>> at <<ata>>: #runTimeVar#.", "alertBody", "All Operating Systems", "Halt on Fail")
sendAlert("All Operating Systems", "Halt on Fail")
```

sendEmail()

Sends an email to one or more recipients. Specifies the subject and body text of the email.

Example

```
sendEmail("yourhelpdesk@yourcompany.com", "Ping Test Failed", "#pingtest#", "All Operating Systems", "Halt on Fail")
```

sendMessage()

Sends the entered message to a managed machine. An additional checkbox, if checked, sends the message immediately. If unchecked, sends the message after the user clicks the flashing agent system tray icon.

Example - Sample Procedures.Managed Services.Workstation Management.Send Message if Logged On

```
If isUserLoggedIn(" ")
  getVariable("Prompt When Procedure is Scheduled", "Please enter a message to send", "promptMsg", "All Operating Systems", "Halt on Fail")
  sendMessage("#promptMsg#", "Display now", "All Operating Systems", "Halt on Fail")
```

sendURL()

Displays the entered URL in a web browser window on the managed machine. An additional checkbox, if checked, displays the URL immediately. If unchecked, the URL is displayed after the user clicks the flashing agent system tray icon.

Example

```
If isUserLoggedIn(" ")
  getVariable("Prompt When Procedure is Scheduled", "Enter URL to display", "promptURL", "All Operating Systems", "Halt on Fail")
  sendURL("#promptURL#", "Display now", "All Operating Systems", "Halt on Fail")
```

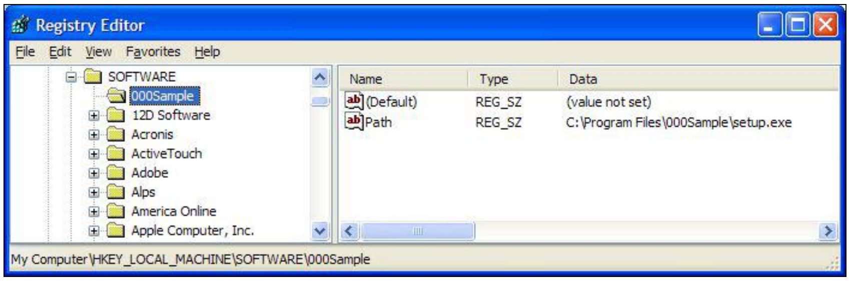
setRegistryValue() / set64BitRegistryValue()

Warning: Certain registry locations require **64-Bit Commands** *(page 34)* for 64-bit Windows machines.

Writes data to the specified registry value. This function takes three parameters:

- **Enter the full path to a registry key containing a value**
  - Specify the `(Default)` value for a registry key by adding a trailing backslash `\`. Otherwise specify a name for an existing value or to create a new value. See the `Name` column in image below.
    Example of setting the `(Default)` value: `HKEY_LOCAL_MACHINE\SOFTWARE\000Sample\`
  - The *last single backslash* in a string is used to delimit the registry key from the registry value. To include backslashes as part of the value string, specify *double slashes* for each slash character. For example, the string `HKEY_LOCAL_MACHINE\SOFTWARE\SomeKey\Value\\Name` is interpreted as the key `HKEY_LOCAL_MACHINE\SOFTWARE\SomeKey` with a value of `Value\Name`.
- **Enter the data to write to the registry value**
- **Select the data type**

- `REG_SZ` - String value.
- `REG_BINARY` - Binary data displayed in hexadecimal format.
- `REG_DWORD` - Binary data limited to 32 bits. Can be entered in hexadecimal or decimal format.
- `REG_EXPAND_SZ` - An "expandable" string value holding a variable. Example: %SystemRoot%.
- `REG_MULTI_SZ` - A multiple string array. Used for entering more than one value, each one separated by a `\0` string. Use `\\0` to include `\0` within a string array value.



SOFTWARE
000Sample
12D Software
Acronis
ActiveTouch
Adobe
Alps
America Online
Apple Computer, Inc.

Name	Type	Data
(Default)	REG_SZ	(value not set)
Path	REG_SZ	C:\Program Files\000Sample\setup.exe

My Computer\HKEY_LOCAL_MACHINE\SOFTWARE\000Sample

Note: On 64-bit machines the example image above requires **set64BitRegistryValue()** because of the **registry location** *(page 34)*.

Example

```
setRegistryValue("HKEY_CURRENT_USER\KaseyaAgent-HKCUTest\TestDirectoryPath",
"c:\temp", "REG_SZ", "All Operating Systems", "Halt on Fail")
```

sqlRead()

Returns a value from the database and stores it to a named variable by running a selected SQL "read" statement. Global "read" statements are specified in the following location: `<Kaseya_Installation_Directory>\xml\Procedures\AgentProcSQL\0\SQLRead\<filename.xml>` Filenames can be any name with an `.xml` extension so long as they are formatted correctly internally. Multiple statements specified using one or more XML files display as a single combined combo box list in the user interface. Each SQL statement in the XML file has a unique label, and only the labels are shown in the combo box. If no SQL statements are defined, then `*No Approved SQL*` displays in the combo box.

Partition-Specific Statements

Partition-specific folders can contain partition-specific SQL statements. For example: `<Kaseya_Installation_Directory>\xml\Procedures\AgentProcSQL\123456789\SQLRead\<filename.xml>.` Users can select and run all `0` folder SQL "read" statements and all SQL "read" statements located in the partition path that matches the partition they are using.

Example Format

```
<?xml version="1.0" encoding="utf-8" ?>
<queryList>
    <queryDef label="Agent Machine Name" sql="SELECT machName FROM dbo.machNameTab WHERE agentGuid =
#vMachine.agentGuid#" />
</queryList>
```

Example

```
sqlRead("Agent Machine Name", "machname", "All Operating Systems", "Halt on Fail")
sendMessage("#machname#", "Display now", "All Operating Systems", "Halt on Fail")
```

sqlWrite()

Updates the database—such as updating the value in a column or inserting a row—by running a selected SQL "write" statement. Global "write" statements are specified in the following location: `<Kaseya_Installation_Directory>\xml\Procedures\AgentProcSQL\0\SQLWrite\<filename.xml>` Filenames can be any name with an `.xml` extension so long as they are formatted correctly internally. Multiple statements specified using one or more XML files display as a single combined combo box list in the user interface. Each SQL statement in the XML file has a unique label, and only the labels are shown in the combo box. If no SQL statements are defined, then `*No Approved SQL*` displays in the combo box.

Partition-Specific Statements

Partition-specific folders can contain partition-specific SQL statements. For example: `<Kaseya_Installation_Directory>\xml\Procedures\AgentProcSQL\123456789\SQLWrite\<filename.xml>`. Users can select and run all `0` folder SQL "write" statements and all SQL "write" statements located in the partition path that matches the partition they are using.

Example Format

```
<?xml version="1.0" encoding="utf-8" ?>
<queryList>
   <queryDef label="Update Table" sql="UPDATE table1 SET column2 = value2 WHERE column1 = value1" />
</queryList>
```

Example

```
sqlWrite("Update Table", "All Operating Systems", "Halt on Fail")
```

startWindowsService()

Runs a Start command for a Windows service, if it exists. See **stopWindowsService()** *(page 30)*, **disableWindowsService()** *(page 17)* and **windowsServiceRecoverySettings()** *(page 32)*.

> **Note:** Be sure to use the *service name* of the service, not the *display name* of the service. For example, the *display name* of the service for Microsoft SQL Server is `SQL Server (MSSQLSERVER)`, but the *service name* of the service is `MSSQLSERVER`. For Windows machines, right click any service in the **Services** window and click the **Properties** option to see the *service name* of that service.

Operating systems supported: Windows

Example

```
startWindowsService("btwdins", false, "All Operating Systems", "Halt on Fail")
```

stopWindowsService()

Runs a Stop command for a Windows service if it exists. See **startWindowsService()** *(page 30)*, **disableWindowsService()** *(page 17)* and **windowsServiceRecoverySettings()** *(page 32)*.

> **Note:** Be sure to use the *service name* of the service, not the *display name* of the service. For example, the *display name* of the service for Microsoft SQL Server is `SQL Server (MSSQLSERVER)`, but the *service name* of the service is `MSSQLSERVER`. For Windows machines, right click any service in the **Services** window and click the **Properties** option to see the *service name* of that service.

Operating systems supported: Windows

Example

```
stopWindowsService("btwdins", "All Operating Systems", "Halt on Fail")
```

transferFile()

Transfers a file from the agent machine running this step to another agent machine. Enter the fully qualified machine ID of the *target machine*, for example, `mymachine.root.kaseya`. Then enter the full path and file name of the source file you wish to send *from the currently selected agent*. Then enter the full path and file name of the target file on the target machine. Similar to—but in the opposite direction from—the **writeFileFromAgent()** *(page 33)* command.

Operating systems supported: Windows

Example

```
transferFile("ag-gold-w732.root.unnamed", "c:\temp\testfile.txt",
"c:\temp\testfile.txt", "All Operating Systems", "Halt on Fail")
```

uninstallbyProductGUID()

Silently uninstalls a product based on its MSI GUID. When entering the GUID, do not include the surrounding brackets, but do include the hyphens. In many cases, you can use the **Uninstall String** column on the Audit > Add/Remove page to identify the MSI GUID of an installed application.

Operating systems supported: Windows

Example

```
uninstallbyProductGUID("23170F69-40C1-2701-0938-000001000000", "Quiet with No
Restart", "All Operating Systems", "Halt on Fail")
```

unzipFile()

Extracts the contents of a specified zip file to a target folder, with an option to automatically overwrite any previously existing target files or folders.

Operating systems supported: Windows, OS X, Linux

Example

```
unzipFile("c:\temp\changedXMLs.zip", "c:\schema_validation", false, "All Operating
Systems", "Halt on Fail")
```

updateSystemInfo()

Updates the selected **System Info** field with the specified value for the machine ID this procedure runs on. The **System Info** fields you can update include all columns in vSystemInfo except `agentGuid`, `emailAddr`, `Machine_GroupID`, `machName`, and `groupName`. **vSystemInfo** column information is used by Audit > System Info, Agent > System Status, the Filter Aggregate Table in **View Definitions**, and the Aggregate Table report.You can update a **System Info** field using any string value, including the value of any previously defined agent procedure variable.

> **Note:** *Changes to system info data are reset the next time a* **System Information** *audit is run on an agent machine.*

Example

```
updateSystemInfo("Motherboard Serial Num", "12345678", "All Operating Systems",
"Halt on Fail")
```

useCredential()

Uses the agent credential set for the machine ID using Agent > Manage Agents. This command is used in a procedure before an **executeFile()**, **executeFileInDirectoryPath()** or **executeShellCommand()** that specifies the **Execute as the logged on user** option. Also used to access a network resource requiring a credential from a machine when a user is not logged on. Use **impersonateUser()** to run an agent procedure using a credential specified *by agent procedure*. Use **useCredential()** to run an agent procedure using a credential specified *by managed machine*.

> **Note:** A procedure execution error is logged if a **Set Credential** procedure command encounters an empty username.
>
> **Note:** Patch Management > Patch Alert can alert you—or run an agent procedure—if a machine ID's credential is missing or invalid.

Example

```
useCredential("All Operating Systems", "Halt on Fail")
```

windowsServiceRecoverySettings()

Sets the Service Recovery Settings for any given service in Windows. Specify the name of the service you wish to modify, then set both the first and second restart failure options and any subsequent restart failure options. See **startWindowsService()** *(page 30)* **stopWindowsService()** *(page 30)*, and **disableWindowsService()** *(page 17)*.

> **Note:** Be sure to use the *service name* of the service, not the *display name* of the service. For example, the *display name* of the service for Microsoft SQL Server is `SQL Server (MSSQLSERVER)`, but the *service name* of the service is `MSSQLSERVER`. For Windows machines, right click any service in the **Services** window and click the **Properties** option to see the *service name* of that service.

Operating systems supported: Windows

Example

```
windowsServiceRecoverySettings("btwdins", "Restart the Service", "Restart the
Service", "All Operating Systems", "Halt on Fail")
```

writeDirectory()

Writes a selected directory, including subdirectories and files, from **Manage Files Stored on Server** *(page 38)* to the full path directory name specified on the managed machine.

Example - Core.1 Windows Procedures.Desktops.Machine Control.Networking.Wireless.Enable Wireless Networking Devices

```
writeDirectory("VSASharedFiles\3rd Party Utils\DevCon\", "#agenttemp#\DevCon",
"Windows 8.1", "Halt on Fail")
```

writeFile()

Writes a file selected from **Manage Files Stored on Server** *(page 38)* to the full path filename specified on the managed machine. Enter a new filename if you want the file to be renamed.

Each time a procedure executes the **writeFile()** command, the agent checks to see if the file is already there or not by hashing the file to verify integrity. If not, the file is written. If the file is already there, the procedure moves to the next step. You can repeatedly run a procedure with **writeFile()** that sends a large file to a managed machine and know that the VSA only downloads that file once.

> **Note:** Environment variables are acceptable if they are set on a user's machine. For example, using the path `%windir%\notepad.exe` would be equivalent to `C:\windows\notepad.exe`.
>
> **Note:** This command can download files from a LAN file source instead of the VSA using Agent > Configure Agents > LAN Cache. Files have to be larger than 4k bytes.

Example - Core.1 Windows Procedures.Desktops.Auditing.Share and NTFS.Audit Non-Admin Shares (SRVCHECK)

```
writeDirectory("VSASharedFiles\3rd Party Utils\DevCon\ResKit\srvcheck.exe",
"#agenttemp#\srvcheck.exe", "Windows 8.1", "Halt on Fail")
```

writeFileFromAgent()

Transfers a file from another agent machine to the agent machine running this step. First enter the full path and file name of the file you wish to send from the source machine. Then enter the full path and the file name to be created on the target machine. Similar to—but in the opposite direction from—the **transferFile()** *(page 30)* command.

Operating systems supported: Windows

Example

```
writeFileFromAgent("ag-gold-732.root.unnamed", "c:\temp\testfile.txt",
"c:\temp\testfile.txt", "Windows 7", "Halt on Fail")
```

writeFileInDirectoryPath()

Writes the specified filename to the path returned from a **getDirectoryPathFromRegistry()** *(page 21)* command.

Example

```
getDirectorPathFromRegistry("HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Skype\Phone\
SkypeFolder", "All Windows Operating Systems", "Halt on Fail")
writeFileInDirectoryPath("desktop.ini", "desktop.ini", "All Windows Operating
Systems", "Halt on Fail")
```

writeProcedureLogEntry()

Writes the supplied string to the Agent Procedure Log for the machine ID executing this agent procedure.

Example - Core.0 Common Procedures.Reboot/Shutdown/Logoff.Shutdown Computer

```
writeProcedureLogEntry("Agent is shutting down the computer.", "All Operating
Systems", "Halt on Fail")
```

writeTextToFile()

Writes text to a file on the agent machine, either by appending text to an existing file or by creating a new file if none exists. You enter the text to write to the file, then enter the full path and file name on the agent machine the text will be written to. You can optionally overwrite the entire file with the text you have entered if the file already exists.

Operating systems supported: Windows, OS X, Linux

Example

```
writeTextToFile("#appsettings#", "c:\temp\appsettings.txt", false, "All Operating
Systems", Halt on Fail")
```

zipDirectory()

Compresses a directory and any subdirectories or files it contains into a zip file on the agent machine. Enter the full path to be compressed, which can contain wildcards. Then enter the full path and file name of the zip file to be created or updated. If the target zip file already exists, optionally check a box to overwrite it.

Operating systems supported: Windows, OS X, Linux

Example

```
zipDirectory("c:\logs\data*", "#log_archive_dir#\archive.zip", true, "All Operating
Systems", "Halt on Fail")
```

zipFiles()

Compresses a single file or files into a zip file on the agent machine. Enter the full path of the file or files to be compressed. Then enter the full path and filename of the zip file to be created or updated. If the target zip already exists, optionally check a box to overwrite it.

Operating systems supported: Windows, OS X, Linux

Example

zipFiles("c:\logs\data*.log", "#log_archive_dir#\archive.zip", true, "All Operating Systems", "Halt on Fail")

64-Bit Commands

Accessing 64-bit Registry Values

Five 64-bit registry commands and one 64-bit parameter are available in agent procedures. 64-bit Windows isolates registry usage by 32-bit applications by providing a separate logical view of the registry. The redirection to the separate logical view is enabled automatically and is transparent for the following registry keys:

- `HKEY_LOCAL_MACHINE\SOFTWARE`
- `HKEY_USERS\*\SOFTWARE\Classes`
- `HKEY_USERS\*_Classes`

Since the Kaseya agent is a 32-bit application, you must use the following commands and parameter to access the registry data that are stored in the above keys by the 64-bit applications.

IF Commands

- get64BitRegistryValue()
- has64bitRegistryKey()

STEP Commands

- delete64BitRegistryValue()
- delete64BitRegistryKey()
- set64BitRegistryValue()
- 64-bit Registry Value parameter in the getVariable() command

Specifying 64-bit Paths in File Commands

The following commands...

- **deleteFile()**
- **writeFile()**
- **executeFile()**
- **renameLockedFile()**
- **getFile()**
- **get-variable()** `File Content` parameter

... can specify 64-bit directories using the following variables:

Use This Environment Variable	**To Target This Directory**
`%windir%\sysnative`	`<drive>:\Windows\System32`
`%ProgramW6432%`	`<drive>:\Program Files`
`%CommonProgramW6432%`	`<drive>:\Program Files\Common Files`

For compatibility reasons, Microsoft has placed 64-bit system files in the `\Windows\system32` directory and 32-bit system files in the `\Windows\SysWOW64` directory. Similarly, 64-bit application files are installed to the `\Program Files` and 32-bit application files are installed to the `\Program Files (x86)` folder. Since the Kaseya agent is a 32-bit application, when a file path containing `\Windows\system32` or `\Program Files` is specified on a 64-bit machine, the file access is automatically redirected to the `\Windows\SysWOW64` or `\Program Files (x86)` folders. To access files in `\Windows\system32` and `\Program Files` folders, use these environment variables when specifying parameters for these file commands.

In Directory Path Commands

The **getDirectoryPathFromRegistry()** command—and any subsequent **...In Directory Path** command—cannot be used to access files in the `\Program Files` and `\Windows\System32` directories on a target 64-bit machine. These commands can still access 32-bit or 64-bit files in any other folder.

Identifying 64-bit Machines

64-bit machine IDs typically display a `x64` in the **Version** column of audit pages.

Using Variables

Use variables to store values that can be referenced in multiple procedure steps. Variables are passed automatically to nested procedures.

- **Three Methods for Creating Variables:**
  - ➢ **Procedure Variables** - Use the **getVariable()** command within a procedure to create a new variable name without any special characters. Example: `VariableName`. In subsequent steps, including steps in nested procedures, reference the variable by bracketing the variable name with the `#` character. Example: `#VariableName#`.

    > **Note:** *Procedures variables cannot be referenced outside of the procedure or nested procedures that use them except for GLOBAL variables.* A procedure variable is only visible to the section of the procedure it was created in and any child procedures. Once a procedure leaves the THEN clause or ELSE clause the variable was created in, the variable is out of scope and no longer valid. Use *GLOBAL Variables*, described below, to maintain visibility of a variable after leaving the THEN clause or ELSE clause the variable was created in.

  - ➢ **Managed Variables** - Use the **Variable Manager** *(page 37)* to define variables that can be used repeatedly in different procedures. You can maintain multiple values for each managed variable, with each value applied to one or more group IDs. Managed variables cannot be re-assigned new values within a procedure. Within a procedure, reference a managed variable by bracketing the variable name with the `<` and `>` character. Example: `<VariableName>`.
  - ➢ **GLOBAL Variables** - Non-GLOBAL variables cannot return a changed value of a procedure variable defined by its parent procedure. Non-GLOBAL variables initialized in the child procedure also cannot be passed back to the parent. Variables named with the prefix `GLOBAL:` (case-insensitive followed by a colon) can pass changed values from the child to the parent, whether the variable is initialized in the parent or the child procedure. Subsequent child procedures can makes use of any GLOBAL variable initialized in any earlier step, regardless of whether that global variable is initialized in a parent procedure or another child procedure.
- **Variable Names** - Variable *names* cannot include the following characters: `, % ' " / \ : * ? < > |` and the space character.
- **Where Used** - Once variables are created you can include them, in their bracketed format, *in any text entry field* displayed by an IF-ELSE-STEP dialog box.
- **Case Sensitivity** - Variable names are case sensitive.

- **Reserved Characters** - Because the `<`, `>` and `#` characters are used to identify variable names, these characters must be entered *twice* as regular text in a command line. For example the following command `c:\dir >> filelist.txt` is interpreted at procedure runtime as `c:\dir > filelist.txt`.
- **Types of Variable Values Possible -** The following are the types of variable values typically obtained by using the **getVariable()** parameter.
  - **Registry Value** and **64-Bit Registry Value** - See **64-Bit Commands** *(page 34)* - Data from the specified registry value on the managed machine. The *last single backslash* in a string is used to delimit the registry key from the registry value. To include backslashes as part of the value string, specify *double slashes* for each slash character. For example, the string `HKEY_LOCAL_MACHINE\SOFTWARE\SomeKey\Value\\Name` is interpreted as the key `HKEY_LOCAL_MACHINE\SOFTWARE\SomeKey` with a value of `Value\Name`.
  - **File Content** - Data from a specified file on the managed machine. See **64-Bit Commands** *(page 34)*.
  - **Constant Value** - Specified constant as typed in the procedure editor.
  - **Agent Install Directory Path** - Directory in which the agent is installed on the managed machine.
  - **Agent Install Drive** - Drive in which the agent is installed on the managed machine, such as `c:\`.
  - **Agent Working Directory Path** - Working directory on the managed machine as specified using Agent > Manage Agents.

> **Warning: Do not delete files and folders in the working directory.** The agent uses the data stored in the working directory to perform various tasks.

  - **User Temporary Directory Path** - The temporary directory for the user currently logged on the managed machine. This path is the expansion of the `%TEMP%` environment variable for the currently logged on user. If no user is logged on, it is the default Windows temporary directory.
  - **Machine.Group ID** - Machine ID of the agent executing the procedure.
  - **File Version Number** - The software version number of the specified file on the managed machine. For example, an `exe` or `dll` file often contain the version number of their release.
  - **File Size** - Size in bytes of the specified file on the managed machine.
  - **File Last Modified Date** - The last modified date and time in universal time, coordinated (UTC) of the specified file on the managed machine in the format of `yyyy/mm/dd hh:mm:ss`.
  - **Automatic SQL View Data Variables** - SQL view parameters are available as automatically declared procedure variables. Automatic variables enable you to skip using the **GetVariable** command before making use of the variable in a step. Use the format `#SqlViewName.ColumnName#` in a procedure to return the value of a **dbo.SqlView.Column** *for the agent running the agent procedure*. See System > Database Views for a list of the SQL views and columns that are available.

> **Note: SQL View Data** - This older method of returning a database view value is only necessary if you are trying to return a value from a *different machine than the machine running the agent procedure*. Use the **GetVariable** command with the **SQL View Data** option to create a new procedure variable and set it to the value of a **dbo.SqlView.Column** value. Use the format `SqlViewName/ColumnName/mach.groupID` or `SqlViewName/ColumnName`. If the optional machine ID is omitted, then the value for the agent executing the procedure is retrieved. If `ColumnName` contains a space, surround it with square brackets. Example: `vSystemInfo/[Product Name]`. See System > Database Views for a list of the SQL views and columns that are available.

  - **Automatic Administrator Variables** - Three administrator variables are declared automatically. These automatic administrator variables allow agent procedures to access values not present from an SQL view.
    - ✓ `#adminDefaults.adminEmail#` - Email address of the VSA user who scheduled the agent procedure.
    - ✓ `#adminDefaults.adminName#` - Name of the VSA user who scheduled the agent procedure.
    - ✓ `#scriptIdTab.scriptName#` - Name of the agent procedure.
  - **WMI Property** - A WMI namespace, class, and property. The format of the specified WMI property is `NameSpace:Class.Property`. For example, `root\cimv2:Win32_OperatingSystem.FreePhysicalMemory`. Specify an instance using the following syntax: `NameSpace:Class[N].Property` where `[N]` is the instance number. For example, `root\cimv2:Win32_OnboardDevice[3].Description`. The first instance may be specified with or without specifying the `[1]` instance number.
  - **Expression Value** - Specify an expression that consists of procedure variables and six mathematical operators `+`, `-`, `*`, `/`, `(`, and `)` that are evaluated and assigned to a new procedure variable. For example, `((#variable1# + #variable2#) + 17.4) / (#variable3# * 4)`. The procedure variables must contain numeric values.
  - **Prompt when procedure is scheduled** - Displays a message prompt to enter a value when an agent procedure is run. The value is stored in the variable name you specify. Specify the prompt text and variable name. For example, each time this procedure is run, a VSA user could enter a different machine directory.
- **Alert Variables** - An agent procedure can be assigned to run when an alert is triggered. In most cases the alert passes predefined variables to the agent procedure. These alert variables are documented by alert topic. See Alerts - New Agent Installed for an example.
- **Windows Environment Variables** - You can reference Windows environmental variables within the **executeFile()**, **Execute File in Path** and **executeShellCommand()** only. Enclose the whole command in quotes, because the environmental variable may contain spaces which might affect execution. For other agent procedure commands, use **getVariable()** to get the registry key containing the environmental variables, located under `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session Manager\Environment`.

Variable Manager

Use the **Variable Manager** to define variables that can be used repeatedly in different agent procedures. You can maintain multiple values for each managed variable, with each value applied to one or more group IDs. Managed variables cannot be re-assigned new values within a procedure. Within a procedure, reference a managed variable by bracketing the variable name with the `<` and `>` character. Example: `<VariableName>`. See **Using Variables** *(page 35)*.

Using managed variables, managed machines can run agent procedures that access *locally available resources* based on the group ID or subgroup ID.

> **Note:** Using System > Naming Policy, this benefit can be applied automatically by IP address even to a highly mobile workforce that travels routinely between different enterprise locations.

Select Variable

Select a variable name from the drop-down list or select `<New Variable>` to create a new variable. Variable *names* are **case sensitive** and cannot include the following characters: `, % ' " / \ : * ? < > |` and the space character.

Rename/Create Variable

Enter a new name for the new variable you are creating or for an existing variable you are renaming. Select the delete icon ✗ to delete the entire variable from all groups.

Public

Selecting the **Public** radio button allows the variable to be used by all users. However, only master role users can create and edit shared variables.

Private

Selecting the **Private** radio button allows the variable to be used only by the user who created it.

Apply

Enter the initial value for a variable. Then select one or more **Group IDs** and click **Apply**. Empty values are not allowed.

Remove

Select one or more group IDs, then click **Delete** to remove the value for this variable from the group IDs it is assigned to.

Select All/Unselect All

Click the **Select All** link to check all rows on the page. Click the **Unselect All** link to uncheck all rows on the page.

Group ID

Displays all group IDs the logged in user is authorized to administer.

Value

Lists the value of the variable applied to the group ID.

Manage Files Stored on Server

Agent Procedures > Manage Procedures > Schedule / Create > Manage Files

Use the **Manage Files Stored on Server** popup window to upload a file and store it on the Kaseya Server. You can also list, display and delete files already stored on the Kaseya Server. Agent procedures can distribute these files to managed machines using the **writeFile()** or **writeFileInDirectoryPath()** commands.

> **Note:** This store of files is not machine-specific. **getFile()** *(page 47)* uploads and stores machine-specific files on the server.

To upload a file:

- Click **Private files** or **Shared files** to select the folder used to store uploaded files. Files stored in the **Private files** folder are not visible to other users.
- Click **Browse...** to locate files to upload. Then click **Upload** to upload the file to the Kaseya Server.

To delete a file stored on the Kaseya Server:

- Click **Private files** or **Shared files** to select the folder used to store uploaded files.
- Click the delete icon ✗ next to a file name to remove the file from the Kaseya Server.

> **Note:** *An alternate method of uploading files is to copy them directly to the managed files directory on the IIS server. This directory is normally located in the* `C:\Kaseya\WebPages\ManagedFiles` *directory. In that directory are several sub-directories. Put private files into the directory named for that user. Put shared files into the* `VSASharedFiles` *directory. Any files located in this directory will automatically update what is available in the* **Manage Files Stored on Server** *user interface at the next user logon.*

Folder Rights

Private Folders

Objects you create—such as reports, procedures, or monitor sets—are initially saved in a folder with your user name underneath a **Private** cabinet. This means only you, the creator of the objects in that folder, can view those objects, edit them, run them, delete them or rename them.

To share a private object with others you first have to drag and drop it into a folder underneath the **Shared** cabinet.

> **Note:** *A master role user can check the* **Show shared and private folder contents from all users** *checkbox in System > Preferences to see all shared and private folders. For Private folders only, checking this box provides the master role user with all access rights, equivalent to an owner.*

Shared Folders

The following **Share Folder** guidelines apply to folders underneath a **Shared** cabinet:

- All child folders inherit rights from their parent folder unless the child's folders are explicitly set.
- If you have rights to delete a folder, deleting that folder deletes all objects and subfolders as well, regardless of share rights assigned to those subfolders.

> **Note:** *Scopes have nothing to do with the visibility of folders and objects in a folder tree. Scopes limit what your folder objects can work with. For example, you can be shared folders containing reports, procedures or monitor sets but you will only be able to use these objects on machine groups within your scope.*

- To set share rights to a folder, select the folder, then click the **Share Folder** button to display the **Share Folder** dialog.
  - ➢ You can share specific rights to a folder with any individual user or user role you have visibility of. You have visibility of:
    - ✓ Any user roles you are a member of, whether you are currently using that user role or not.
    - ✓ Any individual users that are members of your current scope.
  - ➢ Adding a user or user role to the **Shared Pane** allows that user to run any object in that folder. No additional rights have to be assigned to the user or user role to run the object.
  - ➢ Checking any *additional rights*—such as **Edit**, **Create**, **Delete**, **Rename**, or **Share**—when you add the user or user role provides that user or user role with those additional rights. You have to remove the user or user role and re-add them to make changes to their additional rights.
  - ➢ **Share** means the user or user role can assign share rights for a selected folder using the same **Share Folder** dialog box you used to assign them share rights.

Distribution

Agent Procedures > Manage Procedures > Distribution

The **Distribution** page spreads network traffic and server loading by executing agent procedures evenly throughout the day or a specific block of time in a day. Applies to agent procedures currently scheduled to run on a **recurring basis** only**.**

> **Note:** Recurring procedures listed here include function-specific procedures *that are not visible as agent procedures in the Schedule / Create (page 1) folder tree*, such as procedures created using a **Patch Management** wizard.

Procedures can cause excessive network loading by pushing large files between the Kaseya Server and agent. Performing these operations with hundreds of agents simultaneously may cause unacceptable network loading levels.

Procedure Histograms

The system plots a histogram for each procedure currently scheduled to run on a recurring basis. Setting the histogram period to match the recurring interval of the procedure counts how many machines execute the procedure in a specific time interval. Peaks in the histogram visually highlight areas where a lot of machines are trying to execute the procedure at the same time. *Click a peak to display a popup window listing all machine IDs contributing to that peak load.* Use the controls, described below, to reschedule the procedure such that the network loading is spread evenly over time. **Only machine IDs currently matching the Machine ID / Group ID filter are counted in the histogram.**

Reschedule selected procedure evenly through the histogram period

Pick this radio control to reschedule selected procedures running on all machines IDs currently matching the Machine ID / Group ID filter. Procedure execution start times are staggered evenly across the entire histogram period.

Reschedule selected procedure evenly between <start time> and <end time>

Pick this radio control to reschedule selected procedures running on all machines IDs currently matching the Machine ID / Group ID filter. Procedure execution start times are staggered evenly, beginning with the start time and ending with the end time.

Run recurring every <N> <periods>

This task is always performed as a recurring task. Enter the number of times to run this task each time period.

Skip if Machine Offline

Check to perform this task only at the scheduled time, within a 15 minute window. If the machine is offline, skip and run the next scheduled period and time. Uncheck to perform this task as soon as the machine connects after the scheduled time.

Distribute

Click the **Distribute** button to schedule selected procedures, using the schedule parameters you've defined.

> **Note:** The procedure recurring interval is replaced with the histogram period.

Select Histogram Period

Selects the schedule time period to display histograms.

Histogram Plots

Each recurring procedure displays a histogram of all the machine IDs that are scheduled to run that procedure within the selected histogram period. Only machine IDs currently matching the Machine ID / Group ID filter are counted in the histogram.

Above the histogram is a:

- **Procedure name** - name of the procedure. Check the box next to the procedure name to select this procedure for distribution.
- **Peak** - the greatest number of machines executing the procedure at the same time.
- **Total** - total number of machines executing the procedure.

Agent Procedure Status

Agent Procedures > Manage Procedures > Agent Procedure Status

- *Similar information is displayed in the Pending Procedures tab of the Live Connect and Machine Summary pages.*

The **Agent Procedure Status** page displays the status of agent procedures for a selected machine ID. The list of machine IDs you can select is based on the Machine ID / Group ID filter. Users can, at a glance, find out what time a agent procedure was executed and whether it was successfully executed. Use the **Agent Procedure Status** page to identify the list of recurring agent procedures assigned to each agent. See Agent Procedures > **Schedule / Create** *(page 1)* for more information about agent procedures.

Check-in status

These icons indicate the agent check-in status of each managed machine. Hovering the cursor over a check-in icon displays the agent Quick View window.

🟢 Online but waiting for first audit to complete

🟢 Agent online

🔵 Agent online and user currently logged on.

🟡 Agent online and user currently logged on, but user not active for 10 minutes

⚪ Agent is currently offline

▣ Agent has never checked in

◐ Agent is online but remote control has been disabled

🛑 The agent has been suspended

🔵 An agent icon adorned with a red clock badge is a temporary agent.

Machine.Group ID

The list of Machine.Group IDs displayed is based on the Machine ID / Group ID filter and the machine groups the user is authorized to see using System > User Security > Scopes.

Procedure Name

The name of the agent procedure.

Time

The date and time the agent procedure was last executed.

Status

Displays the results of the executed agent procedure. Overdue date/time stamps display as red text with yellow highlight. Recurring agent procedures display as red text.

Admin

Displays the VSA user who scheduled the agent procedure.

Pending Approvals

Agent Procedures > Manage Procedures > Pending Approvals

The **Pending Approvals** page approves *signed* agent procedures, enabling them to be run using the **Schedule / Create** *(page 1)* page, or selected and run elsewhere throughout the VSA.

Enabling/Disabling Signing and Approval

The signing and approval of user saved agent procedures is enabled and disabled using the System > Default Settings > **Enable Agent Procedure Signing** option. Defaults to disabled.

Two Factor Authentication

A user can approve his or her signed agent procedure using *two factor authentication*. See AuthAnvil > **Agent Procedure Approval** *(http://help.kaseya.com/webhelp/EN/AAPSFK/9040000/index.asp#31557.htm)*.

Signed Agent Procedures

A **signed** agent procedure helps detect unauthorized changes to an agent procedure. *Unsigned* agent procedures cannot be run anywhere in the VSA.

- An agent procedure is digitally *signed* when it is saved by *any user* using the agent procedure editor.
- *Signed* agent procedures created by standard users require **approval** using the **Pending Approvals** page.
- Only *users* who are using a *role* that provides access rights to the **Pending Approvals** page can manually *approve* pending, signed agent procedures.
- An agent procedure signed by a standard user can only be approved by a second user.
- Agent procedures imported by standard users are *signed* but not yet *approved*.

Automatically Signed and Approved Agent Procedures

Agent procedures are automatically signed and approved when they are:

- Created by master role users.
- Imported by master role users.
- In the database when the VSA is upgraded from 6.5 to 7.0 or R8.

Approval History

When a procedure is selected in the folder tree, clicking the **Approval History** *(page 3)* tab in the right hand pane displays a list of dates and users that approved the procedure.

Actions

- **Approve Procedure** - Approves selected *signed* agent procedures.
- **Refresh** - Refreshes the page.

Table Columns

- **Script Name** - The name of the agent procedure.
- **Modified By** - The user who last edited the agent procedure.
- **Date Modified** - The date/time the agent procedure was last modified.
- **Location** - The location of the agent procedure in the agent procedure folder tree.

Patch Deploy

Agent Procedures > Installer Wizards > Patch Deploy

The **Patch Deploy** wizard is a tool that creates an agent procedure to distribute and apply Microsoft patches. The wizard walks you through a step by step process resulting in an agent procedure you can schedule, to deploy a patch to any managed machine.

Microsoft releases many hot fixes as patches for very specific issues that are not included in the Microsoft Update Catalog or in the Office Detection Tool, the two patch data sources the **Patch Management** module uses to manage patch updates. **Patch Deploy** enables customers to create a patch installation procedure for these hot fixes, via this wizard, that can be used to schedule the installation on any desired machine.

See Methods of Updating Patches, Configuring Patch Management, Patch Processing, Superseded Patches, Update Classification and Patch Failure for a general description of patch management.

Step 1: Enter 6-digit knowledge base article number.

Microsoft publishes a vast assortment of information about its operating system in the **Microsoft Knowledge Base**. Each article in the Knowledge Base is identified with a 6-digit Q number (e.g. Q324096.) All Microsoft patches have an associated knowledge base article number.

> **Note:** Entering the article number is optional. Leave it blank if you do not know it.

Step 2: Select the operating system type.

Sometimes patches are specific to a certain operating system. If the patch you are trying to deploy applies to a specific OS only, then select the appropriate operating system from the drop-down control. When the wizard creates the patch deploy procedure, it restricts execution of the procedure to only those machines with the selected OS. This prevents inadvertent application of operating system patches to the wrong OS.

Step 3: Download the patch.

This step is just a reminder to fetch the patch from Microsoft. Typically there is a link to the patch on the knowledge base article describing the patch.

Step 4: How do you want to deploy the patch?

The Patch Deploy wizard asks you in step 4 if you want to **Send the patch from the KServer to the remote machine and execute it locally** or **Execute the patch from a file share on the same LAN as the remote machine.** Pushing the patch down to each machine from the VSA may be bandwidth intensive. If you are patching multiple machines on a LAN no internet bandwidth is used to push out the patch. Each machine on the LAN can execute the patch file directly from a common file share.

Step 5: Select the patch file or Specify the UNC path to the patch stored on the same LAN as the remote machine.

If **Send the patch from the KServer to the remote machine and execute it locally** was selected, then the patch must be on the VSA server. Select the file from the drop-down list.

> **Note:** If the patch file does not appear in the list then it is not on the Kaseya Server. Click the **Back** button and upload the file to the Kaseya Server by clicking the first **here** link.

If **Execute the patch from a file share on the same LAN as the remote machine** was selected, then the patch must be on the remote file share prior to running the patch deploy procedure. The specified path to the file must be in **UNC format** such as `\\computername\dir\`.

> **Note:** If the file is not already on the remote file share, you can put it their via FTP. Click the **Back** button and then the second **here** link takes you to FTP.

Step 6: Specify the command line parameters needed to execute this patch silently.

To deploy a patch silently you need to add the appropriate command line switches used when executing the patch. Each knowledge base article lists the parameters for silent install. Typical switch settings are `/q /m /z`.

> **Note:** Command line parameters are optional. Leave it blank if you do not know it.

Step 7: Name the procedure.

Enter a name for the new agent procedure you can run to deploy the patch.

Step 8: Reboot the machine after applying the patch.

Check this box to automatically reboot the managed machine after applying the patch. The default setting is to *not* reboot.

Click the Create button.

A new agent procedure is created. Use Agent Procedure > **Schedule / Create** *(page 1)* to display the new agent procedure in the folder tree, under your private folder user name. You can run this new agent procedure to deploy the patch to any managed machine.

Application Deploy

Agent Procedures > Installer Wizards > Application Deploy

The **Application Deploy** page is a wizard tool that creates an agent procedure to distribute vendor installation packages, typically `setup.exe`. The wizard walks you through a step by step process resulting in an agent procedure you can schedule, to deploy an application to any managed machine.

Deploying Software Vendor's Install Packages

Most vendors provide either a single file when downloaded from the web or set of files when distributed on a CD. Executing the installer file, typically named `setup.exe` or `abc.msi`, installs the vendor's application on any operating system.

The **Application Deploy** wizard takes you though an interview process to determine the type of installer and automatically generates a procedure to deploy install vendor packages.

The VSA provides a small utility to automatically identify all supported installer types. Download and run `kInstId.exe` to automatically identify the installer type.

> **Note:** See ***Creating Silent Installs*** *(page 45)* to ensure vendor installation packages don't pause for user input during installation.

Step 1: How do you want to deploy the application?

The wizard generated procedure tells the managed machine where to get the application installation file to execute. The **Application Deploy** wizard asks you in step 1 if you want to **Send the installer from the VSA server to the remote machine and execute it locally** or **Execute the installer from a file share on the same LAN as the remote machine**.

Pushing the application installation file to each machine from the VSA may be bandwidth intensive. If you are installing to multiple machines on a LAN no internet bandwidth is used to push out the application installation file. Each machine on the LAN can execute the application installation file directly from a common file share.

Step 2: Select the application install file or Specify the UNC path to the installer stored on the same LAN as the remote machine.

If **Send the installer from the VSA server to the remote machine and execute it locally** was selected, then the installer file must be on the VSA server. Select the file from the drop-down list.

> **Note:** *If the installer file does not appear in the list then it is not on the VSA server. Click the* **here** *link to upload the file to the server.*

If **Execute the installer from a file share on the same LAN as the remote machine** was selected, then the installer file must be on the remote file share prior to running the application deploy procedure. The specified path to the file must be in **UNC format** such as `\\computername\dir\`. When specifying a UNC path to a share accessed by an agent machine—for example `\\machinename\share`—ensure the share's permissions allow read/write access using the **agent credential** *(http://help.kaseya.com/webhelp/EN/VSA/9040000/index.asp#3492.htm)* specified for that agent machine in Agent > Manage Agents.

> **Note:** *If the file is not already on the remote file share, you can put it there via FTP. Click the* **here** *link to start FTP.*

Step 3: What kind of installer is this?

The wizard need to know what kind of installer was used by your software vendor to create the install package. The VSA provides a small utility to automatically identify all supported installer types. Download and run `kInstId.exe` to automatically identify the installer type. Supported installer types are:

- Windows Installer (MSI files)
- Wise Installer
- Installshield - Package For The Web
- Installshield - Multiple Files
- Other

Step 4: Name the agent procedure.

Enter a name for the new agent procedure you can run to install the application.

Step 5: Reboot the machine after installing the application.

Check this box to automatically reboot the managed machine after running the install. The default setting is to *not* reboot.

Click the Create button.

A new agent procedure is created. Use Agent Procedure > **Schedule / Create** *(page 1)* to display the new agent procedure in the folder tree, under your private folder user name. You can run this new agent procedure to install the application to any managed machine.

Creating Silent Installs

Most vendors provide either a single file, when downloaded from the web, or set of files, when distributed on a CD. Executing the installer file, typically named `setup.exe`, installs the vendor's application on any operating system. Vendors typically use one of three applications to create install packages: **InstallShield**, **Windows Installer**, or **Wise Installer**. Each of these applications provides a method for creating silent installs. When automating the installation of vendor install packages, you'll want to ensure the installation package does not pause for user input during installation.

Silent Installs with InstallShield

InstallShield has a record mode that captures answers to all dialog boxes in the installation procedure. InstallShield requires the recorded response `iis` file to be on the managed machine during the installation. To deploy, the agent procedure must use the **writeFile()** command to send both the `setup.exe` and `record.iis` files from VSA server to the managed machine and then use **executeFile()** *(page 18)* to run `setup.exe` with the options `/s /f"<path>\record.iis"`. Refer to your InstallShield help guide for more information regarding the silent installation capability with a recorded response file.

Create a custom install package by following these steps:

1. Verify the install package was made with InstallShield.
   a. Launch the install package.
   b. Confirm `InstallShield Wizard` displays at the end of the window title bar.
2. Launch the install package in record mode from a command prompt.
   a. **If the install package is a single file** - Run `setup.exe /a /r /f1c:\temp\record.iss.` `Setup.exe` is the name of the install package. `c:\temp\record.iss` is the full path filename to save the recorded output.
   b. **If the Install package is a set of files** - Run `setup.exe /r /f1c:\temp\record.iss.` `Setup.exe` is the name of the install package. `c:\temp\record.iss` is the full path filename to save the recorded output.
3. Deploy the install package with the recorded dialog box responses. Use the **writeFile()** agent procedure command to copy both the vendor's install package and `record.iss` file to each managed machine or to a file server accessible by each managed machine.
4. Execute the install package with silent mode command line parameters using the **executeFile()** procedure command.
   a. **If the install package is a single file** - Run `setup.exe /s /a /s /f1c:\temp\record.iss.` `Setup.exe` is the name of the install package. `c:\temp\record.iss` is the full path filename location of the recorded settings.
   b. **If the Install package is a set of files** - Run `setup.exe /s /f1c:\temp\record.iss.` `Setup.exe` is the name of the install package. `c:\temp\record.iss` is the full path filename location of the recorded settings.

Silent Installs with Windows Installer

Windows Installer does not have a record mode. As such it can only silently install the **Typical** install configuration. To silently install a Windows Installer package write a procedure to perform the following:

1. Use the **writeFile()** agent procedure command to copy the vendor's install package to each managed machine or to a file server accessible by each managed machine.
2. Run the install package with the `/q` parameter using the **executeFile()** agent procedure command.

Silent Installs with Wise Installer

Wise Installer does not have a record mode. As such it can only silently install the **Typical** install configuration. To silently install a Wise Installer package write a procedure to perform the following:

1. Use the **writeFile()** agent procedure command to copy the vendor's install package to each managed machine or to a file server accessible by each managed machine.
2. Run the install package with the `/s` parameter using the **executeFile()** agent procedure command.

Get File

Agent Procedures > File Transfer > Get File

The **Get File** page accesses files previously uploaded from a managed machine. Files can be uploaded to a machine-specific directory on the Kaseya Server using the **getFile()** or **getFileInDirectoryPath()** commands. Clicking the machine ID displays *all* uploaded files for that machine ID. Click the link underneath a file to display the file or run it.

> **Note:** The files stored on the Kaseya Server using the **getFile()** command are machine-specific. Use **Manage Files Stored on Server** *(page 38)* to access files stored on the Kaseya Server that are not machine-specific.

- Each file is displayed as a link. Click any filename to access that file.
- Remove files by clicking the delete icon ✕ next to the file.

Example 1: Checking Large Number of Managed Machines Simultaneously

Get File is designed to support automated checks on a large number of managed machines simultaneously.

> **Note:** If all you want to do is get a file from a managed machine as a one-time event then Remote Control > FTP is the simplest way.

Use **Get File** in conjunction with an agent procedure to perform some automated task on a set of managed machines. For example, if you have a utility that reads out some information unique to your client computers you can write a procedure to do the following:

1. Send the utility to the managed machine using either the **writeFile()** procedure command or the **Distribute File** page.
2. Execute the utility using either the **executeShellCommand()** or **executeFile()** agent procedure command and pipe the output to a text file, such as `results.txt`.
3. Upload the file to the Kaseya Server using the **getFile()** command.

Example 2: Comparing Versions of a File

As an option in the **getFile()** agent procedure command, existing copies of uploaded files can be renamed with a `.bak` extension prior to the next upload of the file. This allows you to examine both the latest version of the file and the previous version. For example, use the IF-ELSE-STEP agent procedure editor to create a simple **getFile()** agent procedure.

The first time the **getFile()** agent procedure command executes on a managed machine the agent sends `c:\temp\info.txt` to the Kaseya Server and the Kaseya Server stores it as `news\info.txt`. The second time **getFile()** agent procedure executes, the Kaseya Server renames the original copy of `news\info.txt` to `news\info.txt.bak` then uploads a fresh copy and saves it as `news\info.txt`.

Also as an option, an email alert can be sent when a change in the uploaded file has been detected, compared to the last time the same file was uploaded. The **getFile()** command must have either the **Overwrite existing file and send alert if file changed** setting or the **Save existing version, get file, and send alert if file changed** setting selected.

Example 3: Get File Changes Alerts

To perform continuous health checks on managed machines, run the agent procedure on a recurring schedule and activate a **Get File Changes** alert using Monitor > Alerts - Get Files. The VSA instantly notifies you of any changes to the results.

Troubleshooting Patch Installation Failures

When patch scan processing reports patch installations have failed, a `KBxxxxxx.log` (if available) and the `WindowsUpdate.log` are uploaded to the Kaseya Server. Additionally, for those patches that required an "Internet based install", a `ptchdlin.xml` file will be uploaded to the Kaseya Server. These files can be reviewed using Agent Procedures > **getFile()** *(page 47)* for a specific machine and can help you troubleshoot patch installation failures. Info Center > Reporting > Reports > Logs > Agent Procedure Log contains entries indicating these log files have been uploaded to the Kaseya Server for each machine.

Distribute File

Agent Procedures > File Transfer > Distribute File

The **Distribute File** function sends files stored on your VSA server to managed machines. It is ideal for mass distribution of configuration files, such as virus foot prints, or maintaining the latest version of executables on all machines. The VSA checks the integrity of the file every full check-in. If the file is ever deleted, corrupted, or an updated version is available on the VSA, the VSA sends down a new copy prior to any procedure execution. Use it in conjunction with recurring procedures to run batch commands on managed machines.

> **Note:** The procedure command `writeFile()` performs the same action as **Distribute File**. Each time a procedure executes the `writeFile()` command, the agent checks to see if the file is already there or not. If not, the file is written. `writeFile()` is better than **Distribute File** for sending executable files you plan to run on managed machines using agent procedures.

Select server file

Select a file to distribute to managed machines. These are the same set of files managed by clicking the **Manage Files...** link on this page.

> **Note:** The only files listed are your own private managed files or shared managed files. If another user chooses to distribute a private file you can not see it.

Specify full path and filename to store file on remote machine

Enter the path and filename to store this file on selected machine IDs.

Manage Files...

Click the **Manage Files** *(page 38)*... link to display the **Manage Files Stored on Server** popup window. Use this window to add, update, or remove files stored on the Kaseya Server. This same window displays when you click the **Managed Files** button using **Schedule / Create** *(page 1)*. Private files are listed with `(Priv)` in front of the filename.

Distribute

Click the **Distribute** button to start distribution management of the file selected in **Select server file** and write it to the location specified in **Specify full path and filename to store file on remote machine**. This effects all checked machine IDs.

Clear

Click the **Clear** button to remove the distribution of the file selected in **Select server file** from all checked machine IDs.

> **Warning: Clear** and **Clear All** do *not* delete the file from either managed machines or the Kaseya Server. These functions simply stop the integrity check and update process from occurring at each full check-in.

Clear All

Clear All removes all file distributions from all checked managed machines.

Select All/Unselect All

Click the **Select All** link to check all rows on the page. Click the **Unselect All** link to uncheck all rows on the page.

Check-in status

These icons indicate the agent check-in status of each managed machine. Hovering the cursor over a check-in icon displays the agent Quick View window.

- 🟢 Online but waiting for first audit to complete
- 🟢 Agent online
- 🔵 Agent online and user currently logged on.
- 🟡 Agent online and user currently logged on, but user not active for 10 minutes
- ⚪ Agent is currently offline
- 🟧 Agent has never checked in
- ◐ Agent is online but remote control has been disabled
- 🛑 The agent has been suspended
- 🕒 An agent icon adorned with a red clock badge is a temporary agent.

Machine.Group ID

The list of Machine.Group IDs displayed is based on the Machine ID / Group ID filter and the machine groups the user is authorized to see using System > User Security > Scopes.

Server File

The name of the file being distributed.

Agent File Location

The target directory on the managed machine. To the left of each target file location for a specific machine ID are two icons. Click ✗ to cancel that file distribution for that machine ID. Click 📝 to edit the destination path and filename for that machine ID.

Application Logging

Agent Procedures > Administration > Application Logging

The **Application Logging** page displays a log of **Agent Procedures** module activity by:

- **Event ID**
- **Event Name**
- **Message**
- **Admin**
- **Event Date**

This table supports **selectable columns, column sorting, column filtering and flexible columns widths** *(http://help.kaseya.com/webhelp/EN/VSA/9040000/index.asp#6875.htm)*.

Index