

IBM Tivoli Monitoring  
6.3 Fix Pack 2

*Linux OS Agent Installation and  
Configuration Guide*





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**Note**

Before using this information and the product it supports, read the information in “Notices” on page 21.

This edition applies to version 6, release 3, fix pack 2 of IBM Tivoli Monitoring (product number 5724-C04) and to all subsequent releases and modifications until otherwise indicated in new editions.

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## Chapter 1. Overview of the agent

The Monitoring Agent for Linux OS provides you with the capability to monitor and perform basic actions on Linux-based operating systems. IBM Tivoli Monitoring is the base software for the Monitoring Agent for Linux OS.

### IBM Tivoli Monitoring overview

IBM Tivoli Monitoring provides a way to monitor the availability and performance of all the systems in your enterprise from one or several designated workstations. It also provides useful historical data that you can use to track trends and to troubleshoot system problems.

You can use IBM Tivoli Monitoring to achieve the following tasks:

- Monitor for alerts on the systems that you are managing by using predefined situations or custom situations.
- Establish your own performance thresholds.
- Trace the causes leading to an alert.
- Gather comprehensive data about system conditions.
- Use policies to perform actions, schedule work, and automate manual tasks.

The Tivoli Enterprise Portal is the interface for IBM Tivoli Monitoring products. You can use the consolidated view of your environment as seen in the Tivoli Enterprise Portal to monitor and resolve performance issues throughout the enterprise.

### Features of the Monitoring Agent for Linux OS

The Monitoring Agent for Linux OS offers a central point of management for your UNIX server environment. This monitoring agent provides a way to monitor the availability and performance of all the systems in your enterprise from one or several designated workstations. This monitoring agent also provides useful historical data that you can use to track trends and to troubleshoot system problems. Information is standardized across all systems.

The Monitoring Agent for Linux OS lets you easily collect and analyze server-specific information, such as the following:

- Operating system and CPU performance
- Linux disk information and performance analysis
- Process status analysis
- Network performance

The Monitoring Agent for Linux OS provides the following benefits:

- Simplifies application and system management by managing applications, platforms, and resources across your system.
- Increases profits by providing you with real-time access to reliable, up-to-the-minute data that allows you to make faster, better informed operating decisions.
- Scales and ports to a wide variety of Linux platforms.

- Enhances system performance because you can integrate, monitor, and manage your environment, networks, console, and mission-critical applications. For example, the Monitoring Agent for Linux OS can alert you when a condition in your environment meet or exceed the thresholds you set. These alerts notify your system administrator to limit and control system traffic. You can view data gathered by the Monitoring Agent for Linux OS in reports and charts that inform you of the status of your managed Linux systems.
- Enhances efficiency by monitoring diverse platforms and networks. Depending on the configuration of this monitoring agent, you can collect and monitor data across platforms. The Monitoring Agent for Linux OS gathers and filters status information at the managed system rather than at the Hub, eliminating unnecessary data transmission and sending only data that is relevant to changes in status conditions.

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## New in this release

For version 6.3 Fix Pack 2 of the monitoring agent, enhancements include:

- The Tivoli Common Reporting data model exposes the Managed System List. You can use the Managed System List in combination with, or as an alternative to, the Managed System Name. This capability is available for custom reporting only and the specified metrics are aggregated using the default aggregation function.
- The Infrastructure Management Dashboards for Servers (Server Dashboards) managed system dashboard has new tabs: Properties, CPU, Memory, Disk, and Network. Several tabs have a new time selector bar for changing from real time to showing historical data; and the situation event results dashboard Details tab has a new time selector bar for setting a time range of data samples before or after the event time.
- The monitoring agent complies with the Federal Information Processing Standard (FIPS) 140-2. This computer security standard requires stronger checksum algorithms (for example, SHA-256 and SHA-512) when you define situations for checking file changes.
- For the Utilization Details for Single Resource report, you can specify the resources to display (CPU, Memory, Disk, Network, or Process).
- An internal caching mechanism improves agent performance, in terms of response time and CPU consumption while collecting process information. The agent updates process information in cache, related to process PID, command, and arguments, every 120 seconds by default. To change the cache refresh time from this default value, specify the cache refresh value for the environment variable `KLZ_PROCESS_CMD_SAMPLE_SECS` (minimum valid value is 30 seconds). If the environment variable is set to 0, the internal caching mechanism is disabled.

For version 6.3 of the monitoring agent, enhancements include:

- New attributes, Processes Waiting RunTime and Processes Blocked State, added to the VM Stats attribute group. The Virtual Memory Information view of the Virtual Memory Statistics workspace displays data for the new attributes, Processes Waiting RunTime and Processes Blocked State.
- New attributes, LPAR Name, Maximum Physical CPUs, Number of Physical CPUs, added to the LPAR attribute group.
- New attribute, Virtual Machine Identifier, added to the Machine Information attribute group.
- For attribute values calculated as an average of the cumulative CPU ticks between two samples, note that the sample time differs depending on how the agent is invoked to return the values. If the agent is invoked to return the values

on-demand (for example, after a workspace refresh), the sample time is 30 secs. If, however, the agent is invoked to return the values by a situation or an historical collection request, the sample time is the same as that of the situation or of the collection interval. The affected attributes include:

- CPU attribute group: User CPU (Percent), User Nice CPU (Percent), System CPU (Percent), Idle CPU (Percent), Busy CPU (Percent), I/O Wait (Percent), User to System CPU (Percent), and Steal CPU (Percent) attributes
- CPU Averages attribute group: Estimated Days Until CPU Upgrade, Total CPU Used Current Average (Percent), Total CPU Used Moving Average (Percent), User Nice CPU Current Average (Percent), User Nice CPU Moving Average (Percent), User CPU Current Average (Percent), User CPU Moving Average (Percent), System CPU Current Average (Percent), System CPU Moving Average (Percent), Idle CPU (Percent), Idle CPU Moving Average (Percent), Wait CPU (Percent), and Wait CPU Moving Average (Percent) attributes
- LPAR attribute group: Total Steal Time (Percent) attribute
- Process attribute group: Process Instant Busy CPU (Percent) attribute

You can customize the attribute values by specifying two variables in the `lz.ini` file: `KLZ_CPUSTAT_SAMPLE_SECS` for the total CPU metrics (default value: 30 seconds) and `KLZ_PROCESS_SAMPLE_SECS` for the CPU metrics per process (default value: 60 seconds). If these variables are set to 0, the sampling interval is variable: the samples are taken when the requests come to the agent (for example, at each workspace refresh), and the sampling interval is the difference in time between last two samples (with a minimum of at least 5 seconds).

- The Summarization and Pruning agent automatically creates and maintains the shared dimensions tables. For instructions to enable this feature, see “Configuring the Summarization and Pruning agent to maintain the dimension tables” in the *IBM Tivoli Monitoring Administrator’s Guide*. To enhance this feature for the OS Agents Reports package, the installer now prompts you to provide JDBC connection details and credentials for the TDW database. This RegisterPackage script execution step inserts data into the `WAREHOUSEETCRCONTROL` table. After this step, the `MANAGEDSYSTEM` table and the `TIME_DIMENSION` table are kept up to date automatically by the Summarization and Pruning agent. However, if you opt not to use this feature and prefer, instead, to manually maintain the dimensions tables, skip this step. For instructions to perform any required manual steps, see “Manually creating and maintaining the dimension tables” in the *IBM Tivoli Monitoring Administrator’s Guide*.
- The agent provides ComputerSystem and IPAddress resources for the Open Services for Lifecycle Collaboration Performance Monitoring (OSLC-PM) service provider. The service provider registers monitoring resources with the Registry Services. Registry Services is a Jazz for Service Management integration service that provides a shared data repository for products in an integrated service management environment.
- The IBM Tivoli Monitoring Infrastructure Management Dashboards for Servers is a web-based application that runs in the Dashboard Application Services Hub. The server dashboards give the overall status of the service areas in your managed network. Use the server dashboards to assess the event and system status of your managed network that is filtered by your area of responsibility. The information ranges from a high-level overview of all managed system groups and the situation events associated with them, to more detailed dashboards with key performance information about the selected group, managed system, or situation event.

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## Components of the monitoring agent

After you install and set up the Monitoring Agent for Linux OS (product code: klz or lz), you have an environment with a client, server, and monitoring agent implementation for IBM Tivoli Monitoring.

This IBM Tivoli Monitoring environment contains the following components:

- Tivoli Enterprise Portal client with a Java-based user interface for viewing and monitoring your enterprise.
- Tivoli Enterprise Portal Server that is placed between the client and the Tivoli Enterprise Monitoring Server and enables retrieval, manipulation, and analysis of data from the monitoring agents.
- Tivoli Enterprise Monitoring Server, which acts as a collection and control point for alerts received from the monitoring agents, and collects their performance and availability data.
- Monitoring Agent for Linux OS, which collects and distributes data to a Tivoli Enterprise Monitoring Server. This component also embeds the Agent Management Services function.
- Operating system agents and application agents installed on the systems or subsystems you want to monitor. These agents collect and distribute data to the Tivoli Enterprise Monitoring Server.
- Tivoli Data Warehouse for storing historical data collected from agents in your environment. The data warehouse is located on a DB2<sup>®</sup>, Oracle, or Microsoft SQL database. To collect information to store in this database, you must install the Warehouse Proxy agent. To perform aggregation and pruning functions on the data, install the Warehouse Summarization and Pruning agent.
- Tivoli Enterprise Console event synchronization component for synchronizing the status of situation events that are forwarded to the event server. When the status of an event is updated because of IBM<sup>®</sup> Tivoli Enterprise Console<sup>®</sup> rules or operator actions, the update is sent to the monitoring server, and the updated status is reflected in both the Situation Event Console and the Tivoli Enterprise Console event viewer. For more information, see *IBM Tivoli Monitoring Installation and Setup Guide*.

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## Agent Management Services

Two watchdog monitors run as part of the Monitoring Agent for Linux. One monitor runs as part of the OS Monitoring Agent process, which is referred to as the *Agent Watchdog*. The other watchdog monitor runs as a separate process named 'kcawd'. The kcawd process is also called the *Agent Management Services Watchdog*. This watchdog watches the OS Agent, so as long as its Availability Status is showing 'Running' in the Agents' Runtime Status view of the Agent Management Services workspace. No setup or configuration is required.

The Agent Watchdog monitors agent processes other than the OS Agent. By using the communication facility of the OS Agent, it is able to respond to Tivoli<sup>®</sup> Enterprise Portal Desktop queries and Take Actions performed against these other agent processes. This is the data that is seen in the Agent Management Services workspace. In the Tivoli Enterprise Portal Desktop, the Agent Management Services workspace lists the agents that can be monitored by this watchdog running as part of the OS Agent. These are non-OS agents, so the Monitoring Agent for Linux is not listed in the workspace, except for in the Agents'

Management Definitions view. One of the agents listed in the workspace is the Agent Management Services Watchdog. Its purpose is to monitor the OS Agent's availability.

The Agent Management Services Watchdog monitor is responsible for watching just the OS Monitoring Agent and restarting it if it goes down. It is enabled by default and does not need to be configured. It is started automatically when the Monitoring Agent for Linux is started. This watchdog does not have a communication facility, so it cannot report information to the Tivoli Enterprise Portal or respond to Take Actions. It is not an agent per se, but a separate process that always monitors the OS Monitoring Agent.

You can temporarily disable the Agent Management Services Watchdog by using the *InstallDir/bin/itmcmd* execute `lz disarmWatchdog.sh` command. This disables the Watchdog process for the OS Monitoring Agent and all Agent Management Services managed agents. If there is local administrative work to be performed, and you do not want the auto-restart of the agents to interfere with it, run the *InstallDir/bin/itmcmd* execute `lz disarmWatchdog.sh` command before proceeding. When the work is complete, recycle the OS Monitoring Agent to reenable Agent Management Services, or use the *InstallDir/bin/itmcmd* execute `lz rearmWatchdog.sh` command.

If you use the *itmcmd* interface to stop or start an Agent Management Services managed agent, its watchdog will be disabled if stopping the agent and enabled if starting the agent.

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## User interface options

Installation of the base IBM Tivoli Monitoring software and other integrated applications provides a variety of interfaces that you can use to work with your resources and data.

The following interfaces are available:

### **Tivoli Enterprise Portal browser client interface**

The browser interface is automatically installed with Tivoli Enterprise Portal. To start Tivoli Enterprise Portal in your Internet browser, enter the URL for a specific Tivoli Enterprise Portal browser client installed on your Web server.

### **Tivoli Enterprise Portal desktop client interface**

The desktop interface is a Java-based graphical user interface (GUI) on a Windows workstation.

### **IBM Tivoli Enterprise Console**

Event management application

### **Manage Tivoli Enterprise Monitoring Services window**

The window for the Manage Tivoli Enterprise Monitoring Services utility is used for configuring the agent and starting Tivoli services not already designated to start automatically.



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## Chapter 2. Agent installation and configuration

Agent installation and configuration requires the use of the *IBM Tivoli Monitoring Installation and Setup Guide* and agent-specific installation and configuration information.

To install and configure the monitoring agent, use the “Installing monitoring agents” procedures in the *IBM Tivoli Monitoring Installation and Setup Guide*.

If you are installing silently by using a response file, see “Performing a silent installation of IBM Tivoli Monitoring” in the *IBM Tivoli Monitoring Installation and Setup Guide*.

In addition to the installation and configuration information in the *IBM Tivoli Monitoring Installation and Setup Guide*, use this agent-specific installation and configuration information to install the monitoring agent.

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### Requirements for the monitoring agent

In addition to the requirements described in the *IBM Tivoli Monitoring Installation and Setup Guide*, the Monitoring Agent for Linux OS requires the environment described in Table 1.

Table 1. System requirements

Operating system versions	System requirements
Linux on zSeries	<ul style="list-style-type: none"><li>• RedHat Enterprise Linux 5 on zSeries (64 bit)</li><li>• RedHat Enterprise Linux 5 on zSeries (31 bit)</li><li>• RedHat Enterprise Linux 6 on zSeries (31 bit)</li><li>• RedHat Enterprise Linux 6 on zSeries (64 bit)</li><li>• SuSE Linux Enterprise Server 10 for zSeries (64 bit)</li><li>• SuSE Linux Enterprise Server 11 for zSeries (64 bit)</li></ul>
Linux on Intel (32-bit)	<ul style="list-style-type: none"><li>• Asianux 3.0 for Intel x86-32 (32 bit)</li><li>• Red Flag 5.0 for Intel x86-32 (32 bit)</li><li>• RedHat Enterprise Linux 5 Intel x86-32 (32 bit)</li><li>• RedHat Enterprise Linux 6 Intel x86-32 (32 bit)</li><li>• SuSE Linux Enterprise Server 10 Intel x86-32 (32 bit)</li><li>• SuSE Linux Enterprise Server 11 on Intel x86-32 (32 bit)</li></ul>
Linux on iSeries and pSeries	<ul style="list-style-type: none"><li>• RedHat Enterprise Linux 5 on iSeries and pSeries (64 bit)</li><li>• RedHat Enterprise Linux 6 on iSeries and pSeries (64 bit)</li><li>• SuSE Linux Enterprise Server 10 for iSeries and pSeries (64 bit)</li><li>• SuSE Linux Enterprise Server 11 for iSeries and pSeries (64 bit)</li></ul>

Table 1. System requirements (continued)

Operating system versions	System requirements
Linux on x86-64	<ul style="list-style-type: none"> <li>• Asianux 3.0 on Intel x86-64 (64 bit)</li> <li>• RedHat Enterprise Linux 5 on Intel x86-64 (64 bit)</li> <li>• RedHat Enterprise Linux 6 on Intel x86-64 (64 bit)</li> <li>• SuSE Linux Enterprise Server 10 on Intel x86-64 (64 bit)</li> <li>• SuSE Linux Enterprise Server 11 on Intel x86-64 (64 bit)</li> </ul>
Natively on VMWare	<ul style="list-style-type: none"> <li>• ESX Server 3.0.1 x86-32</li> <li>• ESX Server 3.0.1 x86-64</li> <li>• ESX Server 3.5 x86-32</li> <li>• ESX Server 3.5 x86-64</li> <li>• ESX Server 4.0 x86-32</li> <li>• ESX Server 4.0 x86-64</li> </ul>
The Linux version must support the Korn shell (ksh) and Motif Window Manager (libmotif) for installation of the monitoring agent.	
Memory	<ul style="list-style-type: none"> <li>• 30 MB RAM for the Monitoring Agent for Linux OS</li> </ul>
Disk space	<p>The Monitoring Agent for LINUX OS needs 180 MB of disk space in the file system where it is to be installed through the local install method. It needs 135 MB of disk space in the /tmp file system and 185 MB of disk space in the file system where the agent is to be installed through the <b>tacmd createNode</b> command. It needs 268 MB of disk space when it is updated by using the command <b>tacmd updateAgent</b>.</p> <p>Historical data space varies, depending on the tables collected. Refer to general installation guidelines for disk space requirements in the <i>IBM Tivoli Monitoring Installation and Setup Guide</i> and “Disk capacity planning for historical data” in the <i>IBM Tivoli Monitoring Linux OS Agent Reference</i>.</p>
Other requirements	<ul style="list-style-type: none"> <li>• IBM Tivoli Monitoring OS agents require that the hub monitoring server and portal server be at the same version or at a later version relative to the OS agent version.</li> <li>• The monitoring agent must have the permissions necessary to perform requested actions. For example, if the user ID you used to log onto the system to install the monitoring agent (locally or remotely) does not have the permission to perform a particular action being monitored by the monitoring agent (such as running a particular command), the monitoring agent will be unable to perform the requested action.</li> <li>• Linux versions require some compatibility libraries to be installed for the agent to work correctly. The latest versions of libstdc++, libgcc, and compat-libstdc++, are required for the agent to work correctly. <sup>2</sup></li> <li>• On 64-bit systems, both the 32-bit RPM files (or the 31-bit RPM files, in the case of zLinux systems) and the 64-bit RPM files need to be installed.</li> </ul>
<b>Note:</b> 1. In native 64-bit mode, not tolerance mode.	



**Note:** For the most current information about the operating systems that are supported, see the following URL: <http://publib.boulder.ibm.com/infocenter/prodguid/v1r0/clarity/index.html>.

When you get to that site, click on the relevant link in the **Operating system reports** section.

The Linux OS Monitoring Agent requires the installation of the latest versions of the following libraries:

- libstdc++
- libgcc
- compat-libstdc++

These libraries are available on the Linux operating system installation media and Service Packs. Each library can have multiple packages and each should be installed. If you are on a 64-bit system you must have the 32-bit and 64-bit versions of these libraries.

Silent installation: If you are performing a silent installation by using a response file, see the IBM Tivoli Monitoring Installation and Setup Guide, "Performing a silent installation of IBM Tivoli Monitoring."

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## Naming instances

If you have multiple instances of a monitoring agent, you must decide how to name the monitoring agents. This name is intended to uniquely identify that monitoring agent

The agent's default name is composed of three qualifiers:

- Optional instance name
- Machine network host name
- Agent product node type

An agent name truncation problem can occur when the network domain name is included in the network host name portion of the agent name. For example, instead of just the host name myhost1 being used, the resulting host name might be myhost1.acme.north.prod.com. Inclusion of the network domain name causes the agent name in the example above to expand to SERVER1:myhost1.acme.north.prod.com:KXX. This resulting name is 39 characters long. It is truncated to 32 characters resulting in the name SERVER1:myhost1.acme.north.prod.

The agent name truncation is only a problem if there is more than one monitoring agent on the same system. In this case, the agent name truncation can result in collisions between agent products attempting to register by using the same truncated name value. When truncated agent names collide on the same system, this can lead to Tivoli Enterprise Monitoring Server problems with corrupted EIB tables. The agent name collision in the Tivoli Enterprise Monitoring Server might cause a registered name to be associated with the wrong product.

In general, create names that are short but meaningful within your environment. Use the following guidelines:

- Each name must be unique. One name cannot match another monitoring agent name exactly.
- Each name must begin with an alpha character.
- Do not use blanks or special characters, including \$, #, and @.
- Each name must be between 2 and 32 characters in length.
- Monitoring agent naming is case-sensitive on all operating systems.

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## Running as a non-Administrator user

The monitoring agent can be run by a non-Administrator user (a non-root user), however some functionality becomes unavailable.

The Machine BIOS information uses the dmidecode executable to extract the relevant information. This Linux provided executable must be run by the Administrator user to extract BIOS information. This attribute group does not report data if the agent is not run by the Administrator user. This information is also used by Tivoli Application Dependency Discovery Manager.

A non-Administrator user can only access the directories that it has permissions to read. Therefore, functionality of the File Information attribute group might be reduced.

For Agent Management Services, data reported in the Agent Active Runtime Status attribute group, for example the PID, the command line, the CPU, and the memory, might also be affected when the non-Administrator user is monitoring agents running as a different non-Administrator user.

Also for Agent Management Services, the watchdog cannot stop or start any agent that it does not have privileges to stop or start. If the OS agent is running as a user other than Administrator but you would still like to use it to stop and start other agents, the sudo facility on UNIX and Linux provides one way of supporting this capability. In the example that follows, the OS agent user is a member of a group called 'itm'. Also, it is assumed that Agent Management Services will not be prompted for a password to perform these operations and that the target agents' user IDs are 'user1' and 'user2':

```
# sudoers file.
#
# This file MUST be edited with the 'visudo' command as root.
# Failure to use 'visudo' may result in syntax or file permission errors
# that prevent sudo from running.
#
# See the sudoers man page for the details on how to write a sudoers file.
#

# Host alias specification

# User alias specification

# Cmnd alias specification
Cmnd_Alias AMSAGENTSTART = /opt/PAS/ITMTEST/bin/itmcmd agent -[po] [[\:alnum\:]]*
start [[\:alnum\:]] [[\:alnum\:]],/opt/PAS/ITMTEST/bin/itmcmd agent start
[[\:alnum\:]] [[\:alnum\:]]
Cmnd_Alias AMSAGENTSTOP = /opt/PAS/ITMTEST/bin/itmcmd agent -[po] [[\:alnum\:]]*
stop [[\:alnum\:]] [[\:alnum\:]],/opt/PAS/ITMTEST/bin/itmcmd agent stop
[[\:alnum\:]] [[\:alnum\:]]
Cmnd_Alias ITMAMSCMD = AMSAGENTSTART,AMSAGENTSTOP
```

```
# Defaults specification

# Runas alias specification

Runas_Alias ITMAGENTIDS = user1,user2

# Same thing without a password
%itmusers ALL=( ITMAGENTIDS ) NOPASSWD: ITMAMSCMD
```

This is just one possible example. The sudo facility has many advanced capabilities including the ability to audit and to alert administrators of usage of the sudo command by unauthorized users. See your operating system's sudo man pages for more information.

In the agentInstanceCommand.sh script, replace calls to 'su' with calls to 'sudo'. For example:

```
if [ -z "$USR" ]; then
    $START_CMD
else
    # su - $USR -c "$START_CMD"
    sudo -u $USR $START_CMD
fi

...
if [ -z "$USR" ]; then
    $STOP_CMD
else
    # su - $USR -c "$STOP_CMD"
    sudo -u $USR $STOP_CMD
fi
```

Ensure that the user1 and user2 users also have write permission to any files to which an application agent needs to write.

---

## Filtering capabilities on the names of processes

You can distinguish process names that are longer than 768 characters, so that situations can be defined on the relevant part of the name. You can also use this enhancement for filtering processes of any length.

To improve filtering on the processes, a Process Filter has been added to the Process attribute group. Its content, a regular expression, is sent to the agent as a filter object and is intended to act only on the Process Command (Unicode) attribute. For example, the agent uses the value provided in the Process Filter attribute to match with the process name, and then fills the Process Command Unicode attribute.

In a Tivoli Enterprise Portal workspace view, you see only the processes whose names match the specified regular expression. The Process Command (Unicode) column is filled with the matching patterns separated by blanks, as defined in the regular expression. The Process Filter column is filled with the regular expression that matches it.

To use this enhancement, create queries and situations on the Process attribute group containing the Process Filter attribute and define a regular expression in it. More rows and more regular expressions are allowed. Use the query in a workspace view or distribute the situation to the target managed systems.

There are a few predefined regular expressions for the Process Filter attribute when you use it in the query or situation editor:

- Java processes (\*.java.\*)
- IBM\_Java\_processes\_entry\_method\_only\_(\*.java.\*(com.ibm.\*))
- System Admin installed processes\_(/usr.\*)

## Complying with FIPS requirements

The monitoring agent complies with the Federal Information Processing Standard (FIPS) 140-2. This computer security standard requires stronger checksum algorithms (for example, SHA-256 and SHA-512) when you define situations for checking file changes.

To enforce compliance at the agent, specify checksum algorithms with the KDEBE\_FIPS\_MODE\_ENABLED environment variable in the lz.ini file. Table 2 lists the supported algorithms for each setting of the environment variable.

*Table 2. Setting the environment variable KDEBE\_FIPS\_MODE\_ENABLED*

Environment variable setting	CRC32	MD5	SHA - 1	SHA - 256	SHA - 512
KDEBE_FIPS_MODE_ENABLED not set	<b>default</b>	allowed	allowed	allowed	allowed
KDEBE_FIPS_MODE_ENABLED=yes	N/A	N/A	<b>default</b>	allowed	allowed
KDEBE_FIPS_MODE_ENABLED=sp800-131a	N/A	N/A	<b>default</b>	allowed	allowed
KDEBE_FIPS_MODE_ENABLED=suiteb128	N/A	N/A	N/A	<b>default</b>	allowed
KDEBE_FIPS_MODE_ENABLED=suiteb192	N/A	N/A	N/A	<b>default</b>	allowed

Create a situation on the File Information group that specifies a File Name, a Path, and File Content Changed = YES. Optionally, add a checksum algorithm-specific value to the situation definition to change the defaults. The situation fires when the file content is changed. The value of the computed file checksum is reported in the situation details. This value is in the “Checksum” attribute.

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## Documentation library

Various publications are relevant to the use of IBM Tivoli Monitoring and to the commonly shared components of Tivoli Management Services.

These publications are listed in the following categories:

- IBM Tivoli Monitoring library
- Related publications

Documentation is delivered in the IBM Tivoli Monitoring and OMEGAMON<sup>®</sup> XE Information Center at <http://pic.dhe.ibm.com/infocenter/tivihelp/v61r1/index.jsp> and also in the **Files** section of the Application Performance Management community.

For information about accessing and using the publications, select IBM Tivoli Monitoring → **Using the publications** in the **Contents** pane of the IBM Tivoli Monitoring and OMEGAMON XE Information Center at <http://pic.dhe.ibm.com/infocenter/tivihelp/v61r1/index.jsp>.

To find a list of new and changed publications, click the **New in this release** topic on the IBM Tivoli Monitoring welcome page. To find publications from the previous version of a product, click **Previous versions** under the name of the product in the **Contents** pane.

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## IBM Tivoli Monitoring library

The IBM Tivoli Monitoring library provides information about the commonly shared components of Tivoli Management Services.

- *Quick Start Guide*  
Introduces the components of IBM Tivoli Monitoring.
- *Installation and Setup Guide, SC22-5445*  
Provides instructions for installing and configuring IBM Tivoli Monitoring components on Windows, Linux, and UNIX systems.
- *Installation Roadmap* available on Service Management Connect  
Provides a roadmap that covers the installation of IBM Tivoli Monitoring.
- *High Availability Guide for Distributed Systems, SC22-5455*  
Gives instructions for several methods of ensuring the availability of the IBM Tivoli Monitoring components.
- *Program Directory for IBM Tivoli Management Services on z/OS, GI11-4105*  
Gives instructions for the SMP/E installation of the Tivoli Management Services components on z/OS<sup>®</sup>.
- *Administrator's Guide, SC22-5446*  
Describes the support tasks and functions required for the Tivoli Enterprise Portal Server and clients, including Tivoli Enterprise Portal user administration.
- *Command Reference* available on Service Management Connect  
Provides detailed syntax and parameter information, as well as examples, for the commands you can use in IBM Tivoli Monitoring.
- *Messages* available on Service Management Connect

Lists and explains messages generated by all IBM Tivoli Monitoring components and by z/OS-based Tivoli Management Services components (such as Tivoli Enterprise Monitoring Server on z/OS and TMS:Engine).

- *Troubleshooting Guide* available on Service Management Connect  
Provides information to help you troubleshoot problems with the software.
- *Tivoli Enterprise Portal User's Guide* available on Service Management Connect  
Complements the Tivoli Enterprise Portal online help. The guide provides hands-on lessons and detailed instructions for all Tivoli Enterprise Portal features.
- Tivoli Enterprise Portal online help  
Provides context-sensitive reference information about all features and customization options of the Tivoli Enterprise Portal. Also gives instructions for using and administering the Tivoli Enterprise Portal.

## Documentation for the base agents

If you purchased IBM Tivoli Monitoring as a product, you received a set of base monitoring agents as part of the product. If you purchased a monitoring agent product (for example, an OMEGAMON XE product) that includes the commonly shared components of Tivoli Management Services, you did not receive the base agents.

The following publications provide information about using the base agents.

- Agentless operating system monitors
  - *Agentless Monitoring for Windows Operating Systems User's Guide*, SC23-9765
  - *Agentless Monitoring for AIX Operating Systems User's Guide*, SC23-9761
  - *Agentless Monitoring for HP-UX Operating Systems User's Guide*, SC23-9763
  - *Agentless Monitoring for Solaris Operating Systems User's Guide*, SC23-9764
  - *Agentless Monitoring for Linux Operating Systems User's Guide*, SC23-9762
- OS agent documentation is delivered in the following locations:

### Agent Installation and Configuration Guide

Available in the Information Center:

- *IBM i OS Agent Installation and Configuration Guide*, SC27-5653
- *Linux OS Agent Installation and Configuration Guide*, SC27-5652
- *UNIX OS Agent Installation and Configuration Guide*, SC27-5651
- *Windows OS Agent Installation and Configuration Guide*, SC27-5650

### Agent Reference

Available on Service Management Connect

### Agent Troubleshooting Guide

Available on Service Management Connect

### Infrastructure Management Dashboards for Servers Reference

Available on Service Management Connect

- Warehouse agent documentation is delivered in the following locations:

### Agent Installation and Configuration Guide

Available in the Information Center:

- *Warehouse Proxy Agent Installation and Configuration Guide*, SC27-5655
- *Warehouse Summarization and Pruning Agent Installation and Configuration Guide*, SC27-5654

### Agent Reference

Available on Service Management Connect

### Agent Troubleshooting Guide

Available on Service Management Connect

- System P agents
  - *AIX Premium Agent User's Guide*, SA23-2237
  - *CEC Base Agent User's Guide*, SC23-5239
  - *HMC Base Agent User's Guide*, SA23-2239
  - *VIOS Premium Agent User's Guide*, SA23-2238
- Other base agents
  - *Agent Builder User's Guide*, SC32-1921
  - *Performance Analyzer User's Guide*, SC27-4004
  - *Systems Director base Agent User's Guide*, SC27-2872
  - *Tivoli Log File Agent User's Guide*, SC14-7484
  - *Tivoli zEnterprise Monitoring Agent User's Guide*, SC14-7359 and the *Tivoli zEnterprise Monitoring Agent Installation and Configuration Guide*, SC14-7358

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## Related publications

For information about related products and publications select **OMEGAMON XE shared publications** or other entries in the **Contents** pane of the IBM Tivoli Monitoring and OMEGAMON XE Information Center.

You can access the IBM Tivoli Monitoring and OMEGAMON XE Information Center at <http://pic.dhe.ibm.com/infocenter/tivihelp/v61r1/index.jsp>.

You can also access other information centers at IBM Tivoli Documentation Central (<https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/Tivoli%20Documentation%20Central>).

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## Tivoli Monitoring community on Service Management Connect

Connect, learn, and share with Service Management professionals: product support technical experts who provide their perspectives and expertise.

For information about Tivoli products, see the Application Performance Management community on SMC at IBM Service Management Connect > Application Performance Management (<http://www.ibm.com/developerworks/servicemanagement/apm>).

For introductory information, see IBM Service Management Connect (<http://www.ibm.com/developerworks/servicemanagement>).

Use Service Management Connect in the following ways:

- Become involved with transparent development, an ongoing, open engagement between other users and IBM developers of Tivoli products. You can access early designs, sprint demonstrations, product roadmaps, and prerelease code.
- Connect one-on-one with the experts to collaborate and network about Tivoli and the (enter your community name here) community.
- Read blogs to benefit from the expertise and experience of others.
- Use wikis and forums to collaborate with the broader user community.

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## Other sources of documentation

You can obtain additional technical documentation about monitoring products from other sources.

- Tivoli wikis

IBM Service Management Connect > Application Performance Management (<http://www.ibm.com/developerworks/servicemanagement/apm>) includes a list of relevant Tivoli wikis that offer best practices and scenarios for using Tivoli products, white papers contributed by IBM employees, and content created by customers and business partners.

Two of these wikis are of particular relevance to IBM Tivoli Monitoring:

- The IBM Tivoli Monitoring Wiki (<https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/Tivoli%20Monitoring>) provides information about IBM Tivoli Monitoring and related distributed products, including IBM Tivoli Composite Application Management products.
- The Tivoli System z<sup>®</sup> Monitoring and Application Management Wiki provides information about the OMEGAMON XE products, NetView<sup>®</sup> for z/OS, Tivoli Monitoring Agent for z/TPF, and other System z monitoring and application management products.

- IBM Integrated Service Management Library

<http://www.ibm.com/software/brandcatalog/ismlibrary/>

IBM Integrated Service Management Library is an online catalog that contains integration documentation and other downloadable product extensions.

- Redbooks<sup>®</sup>

<http://www.redbooks.ibm.com/>

IBM Redbooks and Redpapers include information about products from platform and solution perspectives.

- Technotes

Technotes provide the latest information about known product limitations and workarounds. You can find Technotes through the IBM Software Support Web site at <http://www.ibm.com/software/support/>.



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## Support information

If you have a problem with your IBM software, you want to resolve it quickly. IBM provides ways for you to obtain the support you need.

### Online

The following sites contain troubleshooting information:

- Go to the IBM Support Portal (<http://www.ibm.com/support/entry/portal/software>) and follow the instructions.
- Go to IBM Service Management Connect > Application Performance Management (<http://www.ibm.com/developerworks/servicemanagement/apm>) and select the appropriate wiki.

### IBM Support Assistant

The IBM Support Assistant (ISA) is a free local software serviceability workbench that helps you resolve questions and problems with IBM software products. The ISA provides quick access to support-related information and serviceability tools for problem determination. To install the ISA software, go to IBM Support Assistant (<http://www-01.ibm.com/software/support/isa>).

### Troubleshooting Guide

For more information about resolving problems, see the product's Troubleshooting Guide.

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## Using IBM Support Assistant

The IBM Support Assistant is a free, stand-alone application that you can install on any workstation. You can then enhance the application by installing product-specific plug-in modules for the IBM products you use.

The IBM Support Assistant saves you the time it takes to search the product, support, and educational resources. The IBM Support Assistant helps you gather support information when you need to open a problem management record (PMR), which you can then use to track the problem.

The product-specific plug-in modules provide you with the following resources:

- Support links
- Education links
- Ability to submit problem management reports

For more information, and to download the IBM Support Assistant, see <http://www.ibm.com/software/support/isa>. After you download and install the IBM Support Assistant, follow these steps to install the plug-in for your Tivoli product:

1. Start the IBM Support Assistant application.
2. Select **Updater** on the Welcome page.
3. Select **New Properties and Tools** or select the **New Plug-ins** tab (depending on the version of IBM Support Assistant installed).
4. Under **Tivoli**, select your product, and then click **Install**. Be sure to read the license and description.

If your product is not included on the list under **Tivoli**, no plug-in is available yet for the product.

5. Read the license and description, and click **I agree**.
6. Restart the IBM Support Assistant.

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## Obtaining fixes

A product fix might be available to resolve your problem. To determine which fixes are available for your Tivoli software product, follow these steps:

1. Go to the IBM Software Support website at <http://www.ibm.com/software/support>.
2. Under **Select a brand and/or product**, select **Tivoli**.  
If you click **Go**, the **Search within all of Tivoli support** section is displayed. If you don't click **Go**, you see the **Select a product** section.
3. Select your product and click **Go**.
4. Under **Download**, click the name of a fix to read its description and, optionally, to download it.  
If there is no **Download** heading for your product, supply a search term, error code, or APAR number in the field provided under **Search Support (this product)**, and click **Search**.

For more information about the types of fixes that are available, see the *IBM Software Support Handbook* at <http://www14.software.ibm.com/webapp/set2/sas/f/handbook/home.html>.

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## Receiving weekly support updates

To receive weekly e-mail notifications about fixes and other software support news, follow these steps:

1. Go to the IBM Software Support website at <http://www.ibm.com/software/support>.
2. Click **My support** in the far upper-right corner of the page under **Personalized support**.
3. If you have already registered for **My support**, sign in and skip to the next step. If you have not registered, click **register now**. Complete the registration form using your e-mail address as your IBM ID and click **Submit**.
4. The **Edit profile** tab is displayed.
5. In the first list under **Products**, select **Software**. In the second list, select a product category (for example, **Systems and Asset Management**). In the third list, select a product sub-category (for example, **Application Performance & Availability** or **Systems Performance**). A list of applicable products is displayed.
6. Select the products for which you want to receive updates.
7. Click **Add products**.
8. After selecting all products that are of interest to you, click **Subscribe to email** on the **Edit profile** tab.
9. In the **Documents** list, select **Software**.
10. Select **Please send these documents by weekly email**.
11. Update your e-mail address as needed.
12. Select the types of documents you want to receive.
13. Click **Update**.

If you experience problems with the **My support** feature, you can obtain help in one of the following ways:

**Online**

Send an e-mail message to [erchelp@ca.ibm.com](mailto:erchelp@ca.ibm.com), describing your problem.

**By phone**

Call 1-800-IBM-4You (1-800-426-4968).

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## Contacting IBM Software Support

IBM Software Support provides assistance with product defects. The easiest way to obtain that assistance is to open a PMR or ETR directly from the IBM Support Assistant.

Before contacting IBM Software Support, your company must have an active IBM software maintenance contract, and you must be authorized to submit problems to IBM. The type of software maintenance contract that you need depends on the type of product you have:

- For IBM distributed software products (including, but not limited to, Tivoli, Lotus®, and Rational® products, as well as DB2 and WebSphere® products that run on Windows or UNIX operating systems), enroll in Passport Advantage® in one of the following ways:

**Online**

Go to the Passport Advantage website at [http://www-306.ibm.com/software/howtobuy/passportadvantage/pao\\_customers.htm](http://www-306.ibm.com/software/howtobuy/passportadvantage/pao_customers.htm).

**By telephone**

For the telephone number to call in your country, go to the IBM Software Support website at <http://techsupport.services.ibm.com/guides/contacts.html> and click the name of your geographic region.

- For customers with Subscription and Support (S & S) contracts, go to the Software Service Request website at <https://techsupport.services.ibm.com/ssr/login>.
- For customers with Linux, iSeries, pSeries, zSeries, and other support agreements, go to the IBM Support Line website at <http://www.ibm.com/services/us/index.wss/so/its/a1000030/dt006>.
- For IBM eServer™ software products (including, but not limited to, DB2 and WebSphere products that run in zSeries, pSeries, and iSeries environments), you can purchase a software maintenance agreement by working directly with an IBM sales representative or an IBM Business Partner. For more information about support for eServer software products, go to the IBM Technical Support Advantage website at <http://www.ibm.com/servers/eserver/techsupport.html>.

If you are not sure what type of software maintenance contract you need, call 1-800-IBMSERV (1-800-426-7378) in the United States. From other countries, go to the contacts page of the *IBM Software Support Handbook* on the web at <http://www14.software.ibm.com/webapp/set2/sas/f/handbook/home.html> and click the name of your geographic region for telephone numbers of people who provide support for your location.



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