CA Performance Management Data Aggregator

Basic Self-Certification Guide

2.4.1

CA Technologies Product References

This document references the following CA Technologies products:

- CA Performance Management Data Aggregator (Data Aggregator)
- CA Performance Management Data Collector (Data Collector)
- CA Performance Center

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Contact CA Support

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Contents

Chapter 1: Introduction

This section contains the following topics:

About This Guide

This guide describes how to configure Data Aggregator to support vendor devices that are not supported out-of-the-box. Administrator privileges are required to complete the self-certification process.

Note: Data Aggregator provides basic and advanced methods for creating custom vendor certifications and metric families. The basic method is a simpler process, consisting of adding vendor support for existing supported technologies (metric families), using the user interface. This method meets the requirements of many users. However, the advanced method is based on the factory certification format and exposes a complete set of capabilities. This guide explains the basic certification method. For information about the advanced certification method, see the *Data Aggregator Power User Certification Guide*.

How Device Support Works

Data Aggregator supports a vendor device using metric families and vendor certifications. Working together, these components determine how Data Aggregator collects configuration and operational metrics for a device. Understanding how device support works in Data Aggregator helps you determine whether your devices are properly supported in Data Aggregator. If they are not, understanding this process can help you adjust your settings to get the results you need.

Note: If needed, you can customize a metric family, vendor certification, or both to add support for a vendor device.

Data Aggregator supports devices using the following configuration features:

1. **Discovery Profile**—Determines which items in your environment Data Aggregator discovers, typically based on a range of IP addresses. The discovery process identifies the "type" for each item it finds.
2. **Device Collections**—Organizes your inventory into groups of related items. Based on the item type and IP address, items are automatically added to a device collection.

3. **Monitoring Profile**—Controls the polling rate for a device collection and determines which metric families to poll. Monitoring profiles can poll one or more metric families.

   Note: To ensure that your system is not overloaded with polling traffic, use monitoring profiles to adjust the polling rate for different sets of metrics.

4. **Metric Family**—Controls which metrics are gathered for a monitoring profile. Metric families are associated with one or more vendor certifications (see definition on page 28), which are listed in priority order.

   Note: Reuse metric families in your monitoring profiles to help ensure consistent data reporting.

5. **Vendor Certification**—Maps attributes from a vendor MIB to the metrics in a metric family. Also determines how metrics that are collected from an item are formatted for use in the CA Performance Center UI and reports. Metrics that are provided for an item can vary, depending on the item vendor . Mapping these values ensures that the metric values are reported consistently, regardless of the vendor. Multiple vendor certifications can be associated with a single metric family. In such cases, Data Aggregator maps metric values using a ranked list of vendor certifications. Data Aggregator calculates a metric value using the highest-priority vendor certification that matches the polled item.

   Note: MIBs, such as SNMP MIBs, can be imported into the system and compiled as part of building a vendor certification.

Example: Support for a Router Device

When running your discovery profile, Data Aggregator finds and identifies an item as a router. The router managed item is automatically added to the All Routers device collection. This device collection is associated with the Routers monitoring profile, which uses the CPU and Memory metric families to discover the CPU and Memory components on the device. These metric families also determine the vendor certification to use when calculating the metric values for these components. Based on this monitoring profile, Data Aggregator polls your router every 5 minutes for the metric data in these metric families. For example, the CPU metric family includes CPU idle utilization, CPU system utilization, and CPU nice utilization. Finally, the vendor certifications that are associated with a metric family determine how to calculate and format the raw metric data consistently. Data Aggregator stores the collected metric data for your router, which CA Performance Center uses in the UI and reports.

Device Support through Self-Certification

Data Aggregator supports common vendor devices using predefined *certifications*. Certifications specify how to collect configuration and operational metrics for a device. Data Aggregator uses the following methods for certification:

- Metric families
- Vendor certifications

How do you collect data when Data Aggregator does *not* provide a predefined certification for your device? You can *self-certify* support for a device.

Note: Metric families and vendor certifications are global (that is, *not* tenant aware). For more information about tenants, see the *CA Performance Center Administrator Guide*.

The *self-certification* support in Data Aggregator lets you create a custom vendor certification, a custom metric family, or both. Determine which method you need, as follows:

- **Vendor certification only**—A set of metrics you want are polled by default, but Data Aggregator does not support your device vendor MIB for these metrics. For example, Data Aggregator provides a CPU metric family to collect data such as CPU utilization. However, you want to gather CPU data for a server that Bargain Server Company manufactures. Using the MIB that the manufacturer provided, you can create a custom vendor certification for your server CPUs.
- **Metric family only**—Support for your device vendor MIB is included by default, but some metrics that the MIB supports are not polled. For example, your vendor MIB supports metrics for processes, but Data Aggregator does not provide a "Processes" metric family to gather that metric data.
- **Both methods**—Create both a metric family and vendor certification when Data Aggregator does not provide support for a device vendor MIB or its metrics.

Note: This guide describes the basic self-certification process of creating custom vendor certifications by using the user interface to import a MIB. To self-certify by creating a custom metric family, vendor certification, or both by using the more robust REST web services, see the *Data Aggregator Power User Certification Guide.*

Chapter 2: Creating and Editing Custom Vendor Certifications

This section contains the following topics:

How to Create a Custom Vendor Certification

An administrator can create a vendor certification for third-party devices for which Data Aggregator does not provide a factory certification (see definition on page 27).

Note: Data Aggregator provides basic and advanced methods for creating custom vendor certifications and metric families. The basic method is a simpler process, consisting of adding vendor support for existing supported technologies (metric families), using the user interface. This method meets the requirements of many users. However, the advanced method is based on the factory certification format and exposes a complete set of capabilities. This guide explains the basic certification method. For information about the advanced certification method, see the *Data Aggregator Power User Certification Guide*.

To create a vendor certification, follow this process:

1. Review the list of available vendor certifications and metric families to determine whether a new vendor certification is needed (see page 12).
2. Create a custom vendor certification (see page 12).

   Note: We support linking rows of multiple tables using their indexes in factory vendor certifications to model more complicated devices. However, multiple table support is not available in the custom vendor certification wizard.
3. (Optional) Prioritize the custom vendor certification within the metric family (see page 15).
4. Verify That Data Aggregator is Correctly Polling Metric Data (see page 16).

Important! To avoid possible data loss, always back up your deploy directory each time you create or update a vendor certification, metric family, or component.

View Vendor Certifications

You can view the vendor certifications that are in the system and can view how they map to metric families. This information helps you determine whether to add or modify certifications when you add new devices to the system. You can also identify vendor certifications that are no longer in use and can be removed.

Follow these steps:

1. Click Vendor Certifications from the Monitoring Configuration menu for a Data Aggregator data source.

   A list of vendor certifications displays, including factory and custom certifications. Predefined certifications display a lock symbol.

2. Select a vendor certification from the list.

   Details for the selected vendor certification populate the tabs. You can click an associated metric family name to view the associated metric names and expressions that are used.

   Note: You can use the Search feature in any pane to locate specific information that is related to that pane. Alternatively, you can navigate between pages in a pane using the arrows.

Create a Custom Vendor Certification

A *vendor certification* maps attributes from a vendor MIB to the metrics specified in a metric family. Also, vendor certifications determine how metrics collected from an item are formatted for use in the CA Performance Center UI and reports. Metrics that are provided for an item can vary, depending on the vendor for the item. Mapping these values helps ensure that the metric values are reported consistently, regardless of the vendor. Different vendor certifications can associate with the same metric family. If multiple vendor certifications apply to a metric family, Data Aggregator maps metric values using a ranked list of vendor certifications. Therefore, Data Aggregator calculates a metric value using the highest priority vendor certification that matches the polled item. If a vendor certification does not exist for a device, you can create one to measure the device data you want to collect.

To determine if a given device supports a given vendor certification, the device is queried for each of the key attributes defined in the specified vendor certification. For a device to support an attribute, the device simply must respond to a SNMP GET NEXT request on a given Object ID. A device supports a vendor certification only if all of the key attributes are supported. For *custom* vendor certifications created with the Vendor Certification wizard, any attribute used in an expression is considered “key” and therefore the device supports it.

Follow these steps:

1. View your list of vendor certifications:

   a. Click Vendor Certifications from the Monitoring Configuration menu for a Data Aggregator data source.

      A list of vendor certifications displays, including factory and custom certifications. Factory certifications display a lock symbol.

   b. Select a vendor certification from the list.

      Details for the selected vendor certification populate the tabs. You can click an associated metric family name to view the associated metric names and expressions that are used.

      Note: You can use the Search feature in any pane to locate specific information that is related to that pane. Alternatively, you can navigate between pages in a pane using the arrows.

2. Click New.

   The New Vendor Certifications wizard opens, guiding you through the following steps to define your vendor certification:

   - Selecting the MIB for your device
   - Importing a new MIB when one does not exist

     Notes:

     - You can delete unused MIBs using this wizard. Deleting a MIB does not affect your existing vendor certifications. These certifications still work the same, and you can edit the metrics in your certifications that are based on the deleted MIB.
     - Only this wizard uses MIBs. MIBs are not required to poll, or to import a vendor certification.
     - Import any MIBs that are used by your MIB to prevent MIB compilation failures. You do not need to import standard SMI MIBs such as SNMPv2-SMI and SNMPv2-TC, however you do need to import the SNMP-FRAMEWORK-MIB.
     - Validate the MIB with a MIB validator if your MIB fails to compile. You can search the Internet for “snmp mib validation,” which gives you a choice of several online validation services.

   - Selecting the metric family to which you want to map.

     Note: Only scalar metric families or table metric families with a single index appear in the list.

- Defining the expressions between the metrics in a selected metric family and the vendor certification variables from the selected MIB.

  Note: The Names and Indexes metric names require an expression. For a custom vendor certification created with the Vendor Certification wizard, Data Aggregator automatically provides the Indexes metric expression for your selected MIB table.

3. Follow the prompts.

   The new vendor certification is created and automatically added to the end of the priority list for the selected metric family. The vendor certification is automatically associated with the All Manageable Devices device collection.

More information:

How to Create a Custom Vendor Certification (see page 11)
Troubleshooting: Failure to Create Vendor Certification (see page 24)
Troubleshooting: MIB Fails to Compile (see page 23)
Troubleshooting: A Vendor Certification Expression is Erroneous (see page 24)

64-bit Counters

Data Aggregator supports the polling of 64-bit counters, which in turn supports the collection of data for high speed interfaces. As the speed of network media increases, the minimum time in which a 32-bit counter wraps decreases. Using 64-bit counters lengthens the time it takes for a counter to wrap and enables polling at a normal rate.

Specify which table to use in a vendor certification as follows:

- ifxTable for 64-bit counters
- ifTable for 32-bit counters

You can view the values for the metrics in the CA Performance Center Interface page.

Display Interface Reports with Gaps in Data During Counter Rollovers

By default, Data Collector attempts to calculate deltas when 32-bit and 64-bit counters wrap. If deltas are calculated, the rollover is displayed in interface reports.

Note: If a delta is not calculated, it is possible that the wrong counter is being used for polling.

Sometimes, Data Collector determines that a counter delta is large. There can be an agent bug, or polling in Data Aggregator can be misconfigured. In such cases, recording the large delta value would result in spikes in trend views or pollution of top N reports. Therefore, Data Collector will show a gap in views when the delta value of certain counters exceeds a threshold.

For example, interfaces that are being polled with the ifTableMib that report BitsIn or BitsOut corresponding to an ifSpeed of greater than 20 Mbps will result in a gap in a trend view.

Important! Polled interfaces with low-speed counters are not to be greater than 20 Mbps. Poll interfaces that are greater than 20 Mbps with the high-speed ifXTable MIB counter.

You can configure Data Aggregator to display interface reports with gaps in data when counter rollovers occur.

Follow these steps:

1. Create a file, named com.ca.im.dm.snmp.collector.SnmpCollector.cfg. Put the file in the Data Collector *Data_Collector_installation_ directory*/apache-karaf-2.3.0/etc directory.
2. Add the following line to the com.ca.im.dm.snmp.collector.SnmpCollector.cfg:

   showGapsOnCounterRollover=true
3. Save the file.

(Optional) Prioritize the Custom Vendor Certification Within the Metric Family

Imported and newly created custom vendor certifications are added to the bottom of the priority list of the metric family with which it is associated. You can change the priority order of the factory and custom vendor certifications at any time to meet your needs.

Note: To take advantage of any new vendor certifications that are part of an installation upgrade, manually change the vendor certification priorities. For example, F5 CPU vendor certifications are modeled as normal CPUs but do not get discovered because F5 also supports Host Resources. After an upgrade, the Host Resources CPU priority entry will be higher than the F5 entries appended to the end of the priority list. To discover F5 CPU devices and components, update the vendor certification priority for the CPU metric family. A fresh installation does not have this issue.

If the metric family for a device supports more than one vendor certification, the vendor certification with the highest priority is selected as the backing vendor certification for the metric family.

When you change the priority order of the vendor certifications on a metric family, the metric family will be updated automatically on all affected devices. An event is generated on the metric family, indicating that the vendor certification priority on the metric family has changed.

If the backing vendor certification changes on a device as a result of the reevaluation, an event is generated on the device. The event indicates that a vendor certification has changed. A second event is also generated, indicating what has changed on the device (how many components have been created, changed, and retired).

Follow these steps:

1. Log in to the CA Performance Center user interface and navigate to a Data Aggregator data source.
2. Click Monitoring Configuration, Metric Families. Select a metric family, and click the Vendor Certification Priorities tab.

   The list of prioritized vendor certifications displays.
3. Review the list and determine what priorities you want.

   Note: Priorities for some metric families cannot be changed.
4. Click the Manage button.

   A dialog opens so you can specify priority order.
5. Arrange the priority order as needed and click Save.

   The dialog closes and the priority order you specified displays in the Vendor Certification Priorities tab.

More information:

How to Create a Custom Vendor Certification (see page 11)

Verify That Data Aggregator is Correctly Polling Metric Data

After you have created a custom vendor certification, run a discovery and verify that Data Aggregator is correctly polling the metric data for your devices. For information about how to run a discovery, see the *Data Aggregator Administrator Guide*.

Note: Data Aggregator polls for only metrics that have an expression defined in the vendor certification. If you try to report on metrics without a defined expression, your reports display a "no data available" message.

Import a Custom Vendor Certification

Custom vendor certifications can be shared between Data Aggregator users. Custom vendor certifications let users gather metrics for vendor devices when a factory certification is not yet available. To use a shared vendor certification, import it into your installation of Data Aggregator. You are not required to import the MIB. Instead, import the certification in XML format.

Note: Log in as the administrator to perform this task.

Follow these steps:

1. View your list of vendor certifications:
   a. Click Vendor Certifications from the Monitoring Configuration menu for a Data Aggregator data source.

      A list of vendor certifications displays, including factory and custom certifications. Factory certifications display a lock symbol.

   b. Select a vendor certification from the list.

      Details for the selected vendor certification populate the tabs. You can click an associated metric family name to view the associated metric names and expressions that are used.

      Note: You can use the Search feature in any pane to locate specific information that is related to that pane. Alternatively, you can navigate between pages in a pane using the arrows.

      A list of vendor certifications displays, including factory (see definition on page 27) and custom certifications. Factory certifications display a lock symbol.
2. Click Import.
3. Browse to select the custom vendor certification file, click Open, and then click Import.

   Note: The metric family that is associated with the vendor certification must be available in CA Performance Center before importing. The import fails when the associated metric family is unavailable.

   Your custom vendor certification is imported. Data Aggregator immediately begins collecting metrics for the metric families that are associated with the newly imported custom vendor certification.

   Important! To avoid possible data loss, always back up your deploy directory each time you create or update a vendor certification, metric family, or component.

Export a Custom Vendor Certification

After you create a custom vendor certification, you can share it with other Data Aggregator users who want to gather metrics for the same vendor. To share it, you can export your vendor certification, which can be easily provided to others.

Note: Log in as the administrator to perform this task.

Follow these steps:

1. View your list of vendor certifications:
   a. Click Vendor Certifications from the Monitoring Configuration menu for a Data Aggregator data source.

      A list of vendor certifications displays, including factory and custom certifications. Factory certifications display a lock symbol.

   b. Select a vendor certification from the list.

      Details for the selected vendor certification populate the tabs. You can click an associated metric family name to view the associated metric names and expressions that are used.

      Note: You can use the Search feature in any pane to locate specific information that is related to that pane. Alternatively, you can navigate between pages in a pane using the arrows.

      A list of vendor certifications displays, including factory (see definition on page 27) and custom certifications. Factory certifications display a lock symbol.

2. Select your custom vendor certification and click Export.

   Note: You cannot export the factory vendor certifications that CA Technologies provides.

3. Select a location to save your vendor certification file, and click Save.

   Your custom vendor certification is exported and ready to be shared with other Data Aggregator users.

Edit a Custom Vendor Certification

You can edit existing custom vendor certifications to collect additional data for reporting. For example, you can add metrics or can edit the expression that maps to the normalized metric family variables.

Note: Data Aggregator polls for only metrics that have an expression defined in the vendor certification. If you try to report on metrics without a defined expression, your reports display a "no data available" message.

Follow these steps:

1. View your list of vendor certifications:
   a. Click Vendor Certifications from the Monitoring Configuration menu for a Data Aggregator data source.

      A list of vendor certifications displays, including factory and custom certifications. Factory certifications display a lock symbol.

   b. Select a vendor certification from the list.

      Details for the selected vendor certification populate the tabs. You can click an associated metric family name to view the associated metric names and expressions that are used.

      Note: You can use the Search feature in any pane to locate specific information that is related to that pane. Alternatively, you can navigate between pages in a pane using the arrows.

      A list of vendor certifications displays, including factory (see definition on page 27) and custom certifications. Factory certifications display a lock symbol.
2. Select a custom vendor certification from the list.

   The Metric Families tab displays a list of associated metric families and metric expressions.
3. Select a metric family, and click Edit.

   The Edit the Metric Expressions dialog opens.
4. Manually edit the expression.

   Common edits include the following changes:

   - Change a value that is assigned to the expression, such as an average.
   - Add multiple vendor certification variables to the expression.
   - Remove an expression from a metric family variable by clearing the Expression text box.

   Note: The Names and Indexes metric names require an expression. For a custom vendor certification created with the Vendor Certification wizard, Data Aggregator automatically provides the Indexes metric expression for your selected MIB table.

5. Click Accept Expression.

   The expression is mapped and the top table is populated with the updated values.

6. Repeat steps 3–5 for each metric name you want to edit.

7. Click Save.

   Your changes are saved. You return to the vendor certification details grid which is updated with the changes to the metric family variables.

   Important! To avoid possible data loss, always back up your deploy directory each time you create or update a vendor certification, metric family, or component.

More information:

About Editing Expressions (see page 20)

About Editing Expressions

You can edit the vendor certification expression that maps to the normalized metric family variables. Examples include changing the averages or adding more than one vendor certification variable to an expression.

Consider the following information when you are editing expressions:

- Expressions must be edited manually in the Edit the Metric Expressions dialog.
- Multiple vendor certification variables require delimiters to separate them.
- The expressions are mapped to the correct metric family variables.
- MVEL functions and custom functions are valid.
- The Names and Indexes metric names require an expression. The remaining metric names are optional. For a custom vendor certification created with the Vendor Certification wizard, Data Aggregator automatically provides the Indexes metric expression for your selected MIB table.

Example: Change the Value for Averages

Cisco router CPU statistics are mapped to the normalized variable 'CPU Utilization', as shown in the following expression:

```
cpmCPULoadAvg5min+cpmCPUUseravg5min
```

You can change the 5- minute average to a 1- minute average by editing the expression as follows:

```
cpmCPULoadAvg1min+cpmCPUUseravg1min
```

Example: Use of Advanced Expression

The following expression checks if hrStorageSize < 0 and returns the value of hrStorageSize converted to an Unsigned value multiplied by 100. Otherwise the expression value returned is hrStorageUsed/hrStorageSize * 100.

```
(hrStorageSize &lt; 0) ?
(hrStorageUsed/convertSignedIntToUnsignedDecimal(hrStorageSize)) * 100 :
hrStorageUsed/hrStorageSize * 100
```

More information:

Edit a Custom Vendor Certification (see page 19)

Appendix A: Troubleshooting

This section contains the following topics:

Troubleshooting: MIB Fails to Compile

Symptom:

When reviewing the list of MIBs in the Select MIB page of the Create Vendor Certification wizard, I receive an error message that a MIB did not compile.

Solution:

If a MIB failed to compile, follow these steps:

1. Check the error message in the Select MIB page.
2. Perform one of these actions, depending on the error type:
   - Syntax error—Using details in the error message, correct the syntax error in your MIB and import the corrected MIB.
   - Dependency error—Upload the required MIB to resolve the dependency issue.

   When a new MIB is imported, any existing MIB that failed to compile is recompiled in addition to the new or modified MIB.

Troubleshooting: Failure to Create Vendor Certification

Symptom:

I tried to create a vendor certification and received an error message that it failed.

Solution:

Open the karaf log files in the Data Aggregator installation directory, and follow these steps:

1. Look for the MIB name string or the name of the metric family you selected.
2. Review the stack trace of the exception and look for the CertManagerException and the reason for the error. The reason for the error follows the exception.

   Example: The expression parser did not expect the token after ++, as shown:

   ```
   Caused by: com.ca.im.dm.certmgr.interfaces.CertManagerException: Tech Cert:
   {http://im.ca.com/normalizer}NormalizedCPUInfo, Unable to compile expression:
   [Error: expected end of statement but encountered: e]
   [Near : {... stemID ++ extremeSystemBoardID ....}]
   ```

3. Fix the error based on the reason provided. Verify that the following requirements are met:
   - The expression group must not contain a mix of scalar and table entries.
   - Expressions must contain valid syntax.
   - At least one expression is defined for a metric family variable.
   - At least two metric family variables are defined; specifically Names and Indexes are required (except for scalar-only metrics).
   - The vendor certification variable used in the expression must be from the chosen MIB table (valid in the user interface).

Troubleshooting: A Vendor Certification Expression is Erroneous

Symptom:

The MVEL compiler may not give an evaluation exception (error) for bad expressions. This situation can happen for somesyntax errors, including but not limited to missing or open parentheses, and multiple asterisks.

The incorrect expression is compiled and no error condition is visible until an expression evaluation is performed with the appropriate variables. Database columns that are the target for the intended expression are not populated.

Solution:

Turn on debug logging for the ExpressionEvaluator using the following steps:

1. Locate the IMDataAggregator/apache-karaf-2.3.0/etc directory.
2. Open the org.ops4j.pax.logging.cfg file and create the following entry:

   ```
   log4j.logger.com.ca.im.core.expressionevaluator=DEBUG
   ```

3. Restart Data Aggregator by running the following command:

   ```
   service dadaemon restart
   ```

4. Search for evaluation exceptions in the karaf.log file in the IMDataAggregator/apache-karaf-2.3.0/data/log directory.

Glossary

baseline averages

Depending on the amount of polled data that is collected, *baseline averages* are calculated in two ways:

- Initially, as an average of the hourly averages for the same hour (regardless of day).
- After enough data is collected, as an average of the hourly averages for the same day of the week, same hour.

Baseline averages help to characterize past performance for selected monitored metrics, and helps to assess present performance. Baseline averages and related standard deviations are continually calculated as each hour passes. The standard deviation provides a statistical indicator of how much variability exists in the population data that factored into the baseline average calculations.

In Data Aggregator, what is considered to be "normal" for a specified duration within a window of time is based on the calculated baseline average.

component

A *component* is an item that is associated with a device (for example, a device can be associated with CPUs, interfaces, and process components). Using the component type helps you categorize the items that are associated with a device.

configuration data

Configuration data is a value that a metric family collects and that remains relatively constant. This value generally defines configuration information of an item, such as a device name or location.

factory

The term "*factory*" in Data Aggregator describes items that CA Technologies provides and are often installed with the product. For example, Data Aggregator provides factory vendor certifications, monitoring profiles, and more. These out-of-the-box items can help you get Data Aggregator operational upon installation. They can also serve as examples for creating or importing custom versions of the same item. Mostly, Data Aggregator users cannot edit these factory items.

metric family

A *metric family* defines the set of values to collect and report on for a given technology. These values are normalized so that reporting is uniform regardless of the data source. When included in a monitoring profile, metric families determine which values to collect for the devices that are associated with that monitoring profile.

monitoring profile

A *monitoring profile* is associated with a collection of devices to specify the information to poll and the polling rate. These parameters are applied to each device in the device collection. A selection of default monitoring profiles that are based on types of devices such as routers, switches, and servers is provided.
The monitoring profile also contains the event rules that are applied to each device item in the associated device collection. Rule evaluations occur on each device item in the device collection, and on each metric that you specify in the event rules. These rule evaluations generate either raised or clear events. These events are then sent to Event Manager in CA Performance Center, CA Spectrum, and to CA Performance Center Notifier for further action.

operational metric

An *operational metric* is a value that a metric family collects, which describes the state of an item at a particular point in time. Typically, the system polls for this value at regular intervals. Operational metrics can provide baselines, and you can set threshold values against them. For example, CPU utilization is an operational metric.

vendor certification

A *vendor certification* maps attributes from a vendor MIB to the metrics specified in a metric family. Also, vendor certifications determine how metrics collected from an item are formatted for use in the CA Performance Center UI and reports. Metrics that are provided for an item can vary, depending on the vendor for the item. Mapping these values helps ensure that the metric values are reported consistently, regardless of the vendor. Different vendor certifications can associate with the same metric family. If multiple vendor certifications apply to a metric family, Data Aggregator maps metric values using a ranked list of vendor certifications. Therefore, Data Aggregator calculates a metric value using the highest priority vendor certification that matches the polled item.