Pega Autonomic Event Services

Not only a monitoring console, Pega Autonomic Event Services[™] is an intelligent agent that predicts and notifies administrators about system performance and business logic problems. The application provides suggestions and administration tools to correct these issues.

You can use Pega Autonomic Event Services in development and production environments.

In a development environment

Pega Autonomic Event Services is useful when building enterprise-level applications for discovering issues of scale and load that may significantly affect processing performance in a production environment. The application accelerates process optimization by identifying potential performance issues early in the development and testing phases. For example, a work object might have a list that is loaded from the database for the user to review. In a test system, the list might be small. However, when that system goes into production, there are many more items on the list and more users that are loading the list at the same time, which places greater stress on system performance. By using Pega Autonomic Event Services, you can identify trouble spots when they are small and before they cause a larger impact on application performance.

In a production environment

Pega Autonomic Event Services flags issues that might arise due to increased workload or reconfigured applications. For example, you might want to run processes during non-work periods that formerly were spread out during longer work periods. The concentration of server and database interactions might trigger alerts that reveal the need for better load balancing or hardware upgrades. As another example, you might configure a flow to automate a manual flow action, thus creating new demands on server and database interactions.

Pega Autonomic Event Services FAQ

Pega Autonomic Event Services (AES) is an application used to closely monitor and precisely assess the performance of your Pega Platform[™] applications. You can use the knowledge that AES gives you of the areas that need improvement, to thoroughly investigate and effectively deal with unexpected and unwanted behaviors in your system.

Find the most frequently asked questions about AES and its functionality:

- What is the difference between Pega Predictive Diagnostic Cloud[™] (PDC) and AES?
- What databases does AES support?
- What are the requirements for installing AES?
- Can I upgrade to AES 8.3 from an earlier version?
- Which versions of Pega Platform can I monitor with AES?
- Is AES 8.3 compatible with Pega Platform 8.4?
- <u>Can I use AES to monitor any systems other than my production system?</u>
- How does AES notify me about important events in my system?
- <u>Can I change the time zone for which AES displays data?</u>
- <u>Can I monitor my Pega Platform applications with my current APM tool instead of AES?</u>
- Which system initiates the communication?
- <u>Do monitored nodes send alerts and exceptions through an agent?</u>
- My company frequently generates large data dumps into the PegaRULES log for audit and investigation purposes. Can this affect the operation of AES?

What is the difference between Pega Predictive Diagnostic Cloud™ (PDC) and AES?

PDC is a service, whereas AES is a licensed application. PDC will always be **better software**, with **better support**, at a **better price**:

• Better software

PDC receives weekly enhancements and updates. For more information, see <u>What's new in Pega</u> <u>Predictive Diagnostic Cloud</u>. Development efforts focus on improving PDC. The latest AES version is 8.3, which was released in April 2020 and offers functionality comparable to PDC 2.31.

• Better support

A dedicated PDC team maintains and fixes problems in the PDC service. Global Client Support engineers and the Customer Success team can access your instance of PDC (unless you specify that this access is restricted) to help you learn about any application and environment issues that PDC identifies.

• Better price

Pegasystems fully maintains and updates PDC weekly. To run AES, you must pay for and maintain infrastructure (Java, database, application server), and data center chargebacks for servers. Running AES also requires additional staff to install and maintain the application. The AES application is made available for a limited group of clients who do not want to or cannot use Pega Cloud® Services, for example, government organizations that are subject to exceptionally strict regulations.

Note: Because AES 8.3 shares a substantial part of its features with PDC 2.31, most of the PDC documentation also applies to AES. For more information, see <u>Pega Predictive Diagnostic Cloud</u>.

What databases does AES support?

AES 8.3 supports PostgreSQL.

What are the requirements for installing AES?

You install AES 8.3 on a Pega Platform 8.3 system with multitenancy enabled and the required hotfixes installed. For more information, see <u>Installing Pega Autonomic Event Services 8.3</u> and <u>Pega Autonomic Event Services hotfixes</u>.

Can I upgrade to AES 8.3 from an earlier version?

No, only a first-time installation is possible. For more information, see <u>Installing Pega Autonomic Event</u> <u>Services 8.3</u>.

Which versions of Pega Platform can I monitor with AES?

AES 8.3 can monitor Pega Platform 6.2 and later versions.

Is AES 8.3 compatible with Pega Platform 8.4?

AES 8.3 can monitor Pega Platform 8.4, but you must deploy AES 8.3 on a node that runs Pega Platform 8.3. For more information, see <u>Installing Pega Autonomic Event Services 8.3</u>.

Can I use AES to monitor any systems other than my production system?

AES provides governance and monitoring services for all environments. However, to ensure that the data that AES gathers is correct, you must give each of your systems a unique name. For more information, see <u>Configuring the system name</u>.

How does AES notify me about important events in my system?

You can choose to receive notifications about alerts, exceptions, and other events in your system, as well as periodic summaries of urgent issues. To manage your notification settings, on the right side of the AES

header, click the Properties icon > Notifications > Manage notifications. For more information, see <u>Managing notifications in Pega Predictive Diagnostic Cloud</u>. Because AES shares most functionality with PDC 2.31, this article applies also to AES.

Can I change the time zone for which AES displays data?

You can change the time zone that PDC uses to display data for your monitored systems by editing your profile settings. To access the settings, on the right side of the AES header, click User Icon > Profile.

Can I monitor my Pega Platform applications with my current APM tool instead of AES or PDC?

AES and PDC provide a low-code Pega perspective of Pega applications, rather than a lower-level Java perspective, which makes working with your Pega Platform easier and more comfortable by automating detection, diagnosis, and even some resolution activities. On the other hand, an APM tool only gives you a perspective on the internals of your application. To learn more, see <u>Why PDC is a better choice for</u> <u>monitoring Pega Platform than your APM tool</u>.

Which system initiates the communication?

AES does not send messages to the monitored systems. Only the monitored systems can send data to AES.

Do monitored nodes send alerts and exceptions through an agent?

AES uses Apache Log4j to implement alerts and exceptions in its messaging infrastructure. An AsyncAppender thread adds the messages to an in-memory queue, and then a thread that runs the Pega SOAP appender processes them.

My company frequently generates large data dumps into the PegaRULES log for audit and investigation purposes. Can this affect the operation of AES?

Because AES has no access to data that Pega Platform writes to the PegaRULES log, the large size of the log does not directly affect AES.

Pega Autonomic Event Services 8.3 architecture overview and hardware requirements

Pega Autonomic Event Services 8.3 is an application that monitors the performance status of your Pega Platform[™] systems. You install it on a stand-alone multitenant Pega Platform server. Planning your deployment requires that you are familiar with the application's architecture and hardware requirements.

Before making decisions about the server, database, and monitored systems, review the following information:

- Architecture overview
- <u>Hardware requirements</u>

Architecture overview

The Pega Platform management daemon runs every two minutes and checks current system health, including memory usage, CPU usage, recent response time, requestor count, agent count, and the time of the last system pulse. After you enable the integration between a monitored system and Pega Autonomic Event Services, Pega Platform sends a Health Status (HLTH0001) message to Pega Autonomic Event Services via SOAP over HTTP or HTTPS.

Pega Platform includes the PegaAESRemote ruleset, which supports Pega Autonomic Event Services integration. When you enable integration between a monitored system and Pega Autonomic Event

Services, agents in the ruleset periodically gather and send data to Pega Autonomic Event Services. This data contains a summary of the standard Pega Platform log usage records, as well as schema metadata, primarily consisting of index definitions. For more information, see <u>Enhanced PegaAESRemote ruleset to</u> <u>support the latest Pega Autonomic Event Services features</u>.

You install Pega Autonomic Event Services 8.3 on a Pega Platform 8.31 system with multitenancy enabled and the HFIX-59331 hotfix installed. For more information, see <u>Installing Pega Autonomic Event Services</u> 8.3 and <u>Pega Autonomic Event Services hotfixes</u>.

The following image is an overview of a typical Pega Autonomic Event Services deployment, and demonstrates the relationship between the application and monitored systems:





Pega Autonomic Event Services deployment overview

Alert processing

When a Pega Platform system generates alerts, it saves them in the alert log and sends them by using SOAP to Pega Autonomic Event Services. Pega Autonomic Event Services then parses the alerts and stores the records in the pegaam_alert database table. The application parses alert-specific data to determine how to correlate alerts with a similar root cause. Every five minutes, an agent accumulates recent alerts based on correlation, and either creates new cases for newly observed issues or updates the cases for existing issues. Pega Autonomic Event Services stores these cases in the pegaam_action_work table.

Exception processing

When a Pega Platform system generates exceptions, it sends them by SOAP to Pega Autonomic Event Services, which parses the exceptions and stores the records in the pegaam_exception database table. Depending on how often an exception occurs and the system events that triggered the exception, Pega Autonomic Event Services accumulates these records into exception cases. Pega Autonomic Event Services saves these cases in the database in the pegaam_exception_work table.

Hardware requirements

For optimal performance and reliability, ensure that you use production-grade servers with load balancing and failover for monitoring production deployments. As with any Pega Platform system, a Pega Autonomic Event Services deployment can grow based on needs and resource availability, but a starting deployment for Pega Autonomic Event Services 8.3 includes a dedicated database, load balancer, two WebUser nodes and a node to run agents. Ensure that you use hardware with at least the following specifications:

- A dedicated database server with:
 - 8 virtual processors (vCPUs)
 - 64 GB RAM
 - 750GB GB disk space
 - 500 GB database
 - PostgreSQL 11 with PG Stat Statements enabled
- Load balancer with sticky session support
- Two servers to run WebUser nodes:
 - 4 vCPUs
 - Tomcat 8 and Java 1.8
 - 16 GB RAM
 - $\circ~$ 100 GB disk space
 - 8 GB heap space
- A server to host a node to which you assign the following types: Search, BIX, BackgroundProcessing, Stream. For more information, see <u>Classifying nodes</u>.
 - 4 vCPUs
 - Tomcat 8 and Java 1.8
 - 24 GB RAM
 - 200 GB disk space
 - 16 GB heap space

Important: To optimize performance, all nodes must run with node types enabled. For more information, see <u>Classifying nodes</u>.

For additional information about system requirements, see the *Pega Platform Installation Guide* for your environment, available on the <u>Deploy Pega Platform</u> page.

Installing Pega Autonomic Event Services 8.3

Pega Autonomic Event Services 8.3 is an intelligent application monitoring tool that runs on Pega Platform[™]. You install Pega Autonomic Event Services 8.3 on stand-alone multitenant servers.

Note: You cannot upgrade from a previous version to Pega Autonomic Event Services 8.3. Only a first-time installation is possible.

To complete the installation, review the following information:

- 1. Prerequisites
- 2. Increasing the thread pool size
- 3. Importing the application bundle
- 4. Installing the required hotfixes
- 5. Partitioning the database
- 6. Configuring the email server account
- 7. Configuring a Pega Platform tenant
- 8. Optional: Configuring operators

Prerequisites

Before you install Pega Autonomic Event Services, complete the following tasks:

- 1. Verify that the Pega Autonomic Event Services deployment package contains the following files:
 - AES.zip The Pega Autonomic Event Services application bundle
 - The following table partitioning scripts:
 - alerts partitions.sql used for configuring the pegaam_alert database table
 - alerts_aggregates_partitions.sql used for configuring the pegaam_alert_aggregate database table
 - exceptions_partitions.sql used for configuring the pegaam_exception database table
 - exceptions_aggregates_partitions.sql used for configuring the pegaam_exception_aggregate database table
 - index_events_partitions.sql used for configuring the pegaam_index_events database table
 - nodestats partitions.sql used for configuring the pegaam_node_stats database table
 - palalerts_partitions.sql used for configuring the pegaam_palalert database table

- 2. If you use a non-standard Pega Platform installation with schema names other than the default_{pegadata}, replace the schema names in the partitioning scripts with your custom schema names:
 - a. Open a database tool, for example, the PostgreSQL tool pgAdmin.
 - b. Run the following query:

SELECT DISTINCT schemaname FROM pg_indexes WHERE tablename = ' <table_name>';

In the query, replace *<table_name>* with the appropriate table name, as listed in the following table, for example, for the alerts_partitions.sql file, enter pegaam_alert.

| File name | Database table name |
|--------------------------------------|----------------------------|
| alerts_partitions.sql | pegaam_alert |
| alerts_aggregates_partitions.sql | pegaam_alert_aggregate |
| exceptions_partitions.sql | pegaam_exception |
| exceptions_aggregates_partitions.sql | pegaam_exception_aggregate |
| index_events_partitions.sql | pegaam_index_events |
| nodestats_partitions.sql | pegaam_node_stats |
| palalerts_partitions.sql | pegaam_palalert |

- c. Use a text editor to open the file that contains the table partitioning script.
- d. Find all occurrences of the phrase pegadata in the script file, and replace them with the result of the query in step a.
- Ensure that you understand the deployment architecture and hardware requirements of Pega Autonomic Event Services. For more information, see <u>Pega Autonomic Event Services 8.3 architecture</u> <u>overview and deployment best practices</u>. **Note:** To run Pega Autonomic Event Services on PostgreSQL, you must install the PG Stat Statements module.
- 4. Install a new instance of Pega Platform 8.3 with the Apache Tomcat 8 application server and the PostgreSQL 11 database, and then verify your installation, as described in the Pega Platform Installation Guide for your environment, available on the Deploy Pega Platform page. Important: During the installation, in the Database Setup stage, select Multitenancy Edition.

Increasing the thread pool size

To avoid scenarios in which the default thread pool size in Pega Platform is not sufficient to run Pega Autonomic Event Services efficiently, increase the number of threads in the thread pool. As a result, you ensure the correct operation of Pega Autonomic Event Services and you prevent insufficient thread pool size exceptions.

- 1. Log in to Dev Studio.
- 2. Create a prconfig/agent/threadpoolsize/default dynamic system setting in the Pega-Engine ruleset with the value of 50. For more information, see <u>Using dynamic system settings</u>.
 - a. In the header of Dev Studio, click Create > SysAdmin > Dynamic System Settings.
 - b. In the Short description field, enter Thread pool size.
 - c. In the Owning Ruleset field, enter Pega-Engine.
 - d. In the Setting purpose field, enter prconfig/agent/threadpoolsize/default
 - e. Click Create and open.
 - f. In the Value field, enter 50.
 - g. Click Save.
- 3. Restart the application server.

Importing the application bundle

Pega Platform loads the system data and rulesets for Pega Autonomic Event Services during this step.

- 1. Log in to Pega Platform by entering the administrator credentials that you used when you installed the new instance of this server. The default user name is administrator@pega.com and the password is install12345! **Note:** If you are accessing the system for the first time, change the default password.
- 2. Click Configure > Application > Distribution > Import
- 3. On the Application: Import wizard page, click Choose File or Browse, and then browse for the AES.zip file from your distribution media.
- 4. Click Next.
- 5. Select the Enable advanced mode to provide more granular control over the import process check box, and then click Next.
- 6. In the subsequent steps, click Next until you see the Operators tab.
- 7. Select the Enable new operators and overwrite existing operators on import check box.
- 8. Click Next.
- 9. In the subsequent steps, click Next until you see the following error messages: Import complete to database from the file AES.zip, and Errors encountered during library compilation. See log for details.
- 10. Click Done.
- 11. Restart the Pega Autonomic Event Services server.
- 12. Log in to Pega Autonomic Event Services as AESDeveloper with the password Install12345! For security reasons, change the default password when you log in for the first time.

Installing the required hotfixes

After you import the application bundle for Pega Autonomic Event Services 8.3, install the required hotfixes for this version. For more information, see <u>Pega Autonomic Event Services hotfixes</u>.

Partitioning the database

To partition the database, for each of the table partitioning scripts that are listed in step $\frac{1}{2}$ of the prerequisites, perform the following steps:

- 1. Open a database tool, for example, the PostgreSQL tool pgAdmin.
- 2. Run the script in the database tool. For more information, see the documentation for your database tool.

Configuring the email server account

Pega Autonomic Event Services sends event-based notifications and daily digests through your company's email system. Configure the account that you want Pega Autonomic Event Services to use for sending email.

- 1. Log in to Dev Studio.
- 2. Click Configure > Integration > Email > Email Accounts.
- 3. Click the Default account.
- 4. In the Email account settings window, complete the Sender section. To learn more about email accounts in Pega Platform, see <u>Viewing your email accounts</u>.
- 5. Click Submit.

Configuring a Pega Platform tenant

Before you start using Pega Autonomic Event Services, configure at least one tenant and tenant

administrator. When you create the tenant, the system automatically creates the tenant organization, division, and unit, as well as a Data-Admin-Tenant class instance for the tenant.

- 1. Log in to Dev Studio.
- 2. Click Configure > System > Tenant Management > Create.
- 3. In the Tenant Name field, enter the name of the system tenant.
- 4. In the Description field, enter a short (64-character) description to help distinguish systems with multiple shared-region applications.
- 5. In the Contact Full Name field, enter the name of the person who is the contact for this tenant.
- 6. In the Contact Email field, enter the email address of the tenant contact.
- 7. In the Setup Activity field, select AESasService.
- 8. Optional: The default manager password and user password are autogenerated and are both complex passwords that are automatically sent to your email after you create a tenant. To override the default passwords, in the Parameters section, enter a manager password and user password that comply with the password policies for your Pega Platform instance. **Important:** If you decide to override the default passwords, ensure that your passwords comply with the password policies, which you can view by clicking Configure > System > Settings > Security Policies. Although Pega Platform sends a confirmation email for non-compliant passwords, you cannot access the accounts by using such passwords.
- 9. In the Administrator field, enter the user identifier for the tenant administrator.
- 10. In the Password field, enter the password for the tenant administrator. Important: Although you are required to complete the Administrator and Password fields, completing them does not actually create an operator. To create a tenant administrator, run the TemporaryOperatorInTenant activity, as described in steps 12 to 18.
- 11. Click Create Tenant to create the tenant and the organization. This operation creates an instance of Data-Admin-Tenant.

The previous steps imply that the operator who creates the Rule-File-Binary also creates the tenant. However, a different operator can also create the tenant. In this case, the operator who creates the tenant must have access to the Rule-File-Binary through the operator's primary access group.

12. In the navigation pane of Dev Studio, click Records > Technical > Activity, and then double-click the TemporaryOperatorInTenant activity.

You can filter the list of activities by clicking the Click to filter icon in the Activity Name column header. 13. Click Actions > Run.

- 14. In the tenantName field, enter the name of the tenant that you entered in step 3.
- 15. In the Operation field, enter create.
- 16. In the EmailInput field, enter the email address to which you want to send the administrator password.
- 17. In the OperatorName field, enter the user identifier of the tenant administrator.
- 18. Click Run.

The TemporaryOperatorInTenant activity copies your shared-layer administrator user to the tenant that you are creating, and then sends the administrator password to your email.

- 19. In the navigation pane of Dev Studio, click Records > SysAdmin > Dynamic System Settings, and then click the SharedURL dynamic system setting.
- 20. In the Value field, enter the URL of the Pega Autonomic Event Services host system, for example, https://aes831prod.pegacloud.net/prweb.
- 21. Click Save.

Optional: Configuring operators

By default, Pega Autonomic Event Services contains the following standard operators with access to all clusters in the enterprise:

- AESDeveloper Configures and manages Pega Autonomic Event Services data and rules from the developer portal. This operator has access only to the shared layer but cannot access the tenant layer.
- DiagnosticCloudManager Uses the manager portal to monitor the operational status of nodes and clusters across the enterprise. The manager assigns work, monitors process operations, and performs administrative tasks in this portal. This operator has access only to the tenant layer.
- DiagnosticCloudUser Uses the user portal, which includes a uniform approach to finding, entering, and completing work within one or more clusters. This operator has access only to the tenant layer.

Different stakeholders within your organization, such as business sponsors, operational managers, and developers, might require access to the Pega Autonomic Event Services server to review summaries, route work items, and resolve issues. For information about editing the existing operators and adding new ones, see <u>Managing Pega Autonomic Event Services operator records</u>.

What to do next

After you install and configure Pega Autonomic Event Services 8.3, configure the systems that you want to monitor. For more information, see <u>Configuring your systems for monitoring with Pega Autonomic Event</u> <u>Services 8.3</u>.

Check whether your monitored system needs an enhanced version of the PegaAESRemote ruleset to support the latest features. For more information, see <u>Enhanced PegaAESRemote ruleset to support the latest Pega Autonomic Event Services features</u>.

Configuring your systems for monitoring with Pega Autonomic Event Services 8.3

After you install Pega Autonomic Event Services 8.3, configure the Pega Platform systems that you want to monitor.

For each Pega Platform system that you want to monitor with Pega Autonomic Event Services, complete the following tasks:

Ensure that each system has a unique name

Pega Autonomic Event Services refers to monitored systems by their names, which are configured on Pega Platform. For example, to view the Improvement Plan for a specific system, select the system name from the monitored nodes list.

- 1. In Dev Studio, click Configure > System > Settings > System Name.
- 2. In the New Name field, enter the new name, and then click Submit.
- 3. Restart all nodes in the system to apply the new name.

Enable Pega Autonomic Event Services integration on monitored systems

So that Pega Autonomic Event Services can receive alerts and exceptions from a system, update the system's configuration with the correct URL.

- 1. Log in to Pega Autonomic Event Services.
- 2. On the Welcome page, in the Adding a new monitored system section, in step 2, click the CLICK HERE link.

The endpoint SOAP URL is copied to your clipboard.

- 3. Log in to Dev Studio.
- 4. In the Dev Studio header, click Configure > System > Settings > Predictive Diagnostic Cloud.
- 5. In the ENDPOINT SOAP URL field, enter the endpoint SOAP URL that corresponds to the Pega Autonomic Event Services server's SOAP URL.
- Click Update Configuration.
 The new system displays in Pega Autonomic Event Services after five minutes.

Managing Pega Autonomic Event Services operator records

As a Pega Autonomic Event Services administrator, you can create, modify, and delete operator records, and define operators' roles. Use the operator records to grant or deny access to Pega Autonomic Event Services or to update login information for an operator.

Creating operator records

Different stakeholders within your organization, such as business sponsors, operational managers, and developers, might require access to the Pega Autonomic Event Services server to review summaries, assign cases, and resolve issues. For each user, you must create an operator record.

- 1. In the Pega Autonomic Event Services header, click the Properties icon, and then select System Administration > Create Operators.
- 2. On the Create Operators form, click Add Item to add more than one operator record.

3. For each operator, enter the personal details, time zone, and select a role.

You can select one of the following roles:

- Manager Assign to users who administer Pega Autonomic Event Services. A user with this role can access the Properties menu, manage notification subscriptions, and look at other users' work queues.
- User Assign to users who monitor the application or who are responsible for resolving cases.
- 4. Click Next, and then click Finish to save the operator record information.

Managing existing operator records

Depending on stakeholder needs or on changes within your organization, you might need to update existing operator records, for example, reset an operator's password or delete an operator that you no longer need.

You can change only one setting at a time.

- 1. In the Pega Autonomic Event Services header, click the Properties icon, and then select System Administration > Manage Operators.
- 2. In the Operator field, enter an operator identifier to modify, and click Next.
- 3. Select one of the following options:
 - To change the operator's email address, select Change Operator Email.
 - a. Click Next.
 - b. Enter the new email address.
 - c. Click Finish to confirm the email and save the changes.
 - To reset the current password and send a new autogenerated password to the operator's email address, select Reset password.
 - a. Click Next.
 - b. Click Finish to confirm the password reset.
 - To delete an operator record, select Delete user.
 - a. Click Next.
 - b. Click Finish to confirm the deletion.

Pega Autonomic Event Services hotfixes

Review the hotfixes that are required by the Pega Autonomic Event Services[™] application, and request them from the Pega <u>My Support Portal</u>.

To request a hotfix:

- 1. On My Support Portal, log in to your account.
- 2. Click Create, and from the Request Type list, click Existing Hotfix Request.
- 3. Complete the required fields.
- 4. Click Submit.

Import hotfixes in the following order:

- Apply Pega Platform[™] hotfixes immediately after a Pega Platform installation or upgrade.
- Apply Pega Autonomic Event Services hotfixes right after you complete the application bundle import.
- Apply monitored systems hotfixes right after you configure a system for monitoring with Pega Autonomic Event Services.

For information about the hotfix installation, see the readme file that is included with the hotfix.

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| number | since | Observed behavior | Additional notes |
|----------------|----------------|--|---|
| HFix- 59331 | Jan 7, 2020 | New tenants are unable to process REST service requests. | This hotfix is required for the correct functioning of Pega Autonomic Event Services. |

| Hotfix number | Available since | The node count on the Enterprise tab is incorre Obact ved bebavio r every refresh | This hotfix is required for the correct functionin AdditionaAnotes mic Event Services |
|------------------|--------------------|---|--|
| HFix- 65024 | Nov 25, 2020 | If a system name includes special characters, the Enterprise tab displays the unexpected character errors. | To install this hotfix, you need to click Dev Studio > Application > Distribution > Import. |
| HFix- 68119 | Dec 29, 2020 | User is wrongly allowed to configure conditional "Notify when" AES Notification on edit. | To install this hotfix, you need to click Dev Studio > Application > Distribution > Import. |
| HFix- 69298 | Dec 29, 2020 | Adobe Flash Player is no longer supported as of December 2020 and Flash based charts can not be rendered. | This hotfix changes the render method for all existing Flash based charts to use Report Definition rules. To install this hotfix, you need to click Dev Studio > Application > Distribution > Import. |

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| Hotfix number | Available since | Observed behavior | Additional notes |
|------------------|-----------------------|---|------------------|
| HFix- 39121 | December 6, 2017 | The perfdatamode property in the cluster record is reset, although a monitored Pega Platform instance is configured to use push mode. | |
| HFix- 39225 | December 6, 2017 | Managers cannot restrict system visibility by using the Manage Operator Systems flow. | |
| HFix- 39044 | December 6, 2017 | When a user views a rule instance cache, an error in an activity causes a misleading error message. | |
| HFix- 39086 | December 6, 2017 | In Internet Explorer 11, Total Alerts by Node, Alerts by Category, and Exceptions by PCF reports might be incorrectly displayed. | |
| HFix- 39267 | December 6, 2017 | On the Agents tab and the Requestors tab, for a cluster with multiple nodes, Pega Autonomic Event Services displays data for one node only. | |
| HFix- 44436 | July 3, 2018 | The AES 7.3 user interface is not rendered correctly when running on Pega Platform 7.4. | |
| HFix- 46747 | September 27, 2018 | The nightly purge process deletes entries only from the PegaAES-Work-Exception and PegaAES-Work-Action class tables. As a result, unneeded entries in the PEGAAM_ACTION_INDEX table cause performance issues. | |
| HFix- 46796 | October 4, 2018 | For a system with multiple active nodes, on the Enterprise landing page Summary tab, Pega Autonomic Event Services displays data for one node only. | |
| HFix- 47290 | October 4, 2018 | For a system with multiple nodes, on the Enterprise landing page Requestors tab, Pega Autonomic Event Services displays duplicates of requestors. | |
| | | | |

| H utifix n4176Der | Avaibabke Siglæ | Data about newly added nodes is not available, because the D ORSECNED ARTIES to page is not refreshed. | Additional notes |
|---------------------------------|---------------------|--|---|
| HFix- 47601 | October 12, 2018 | In the Agents tab, the Enabled column displays information incorrectly. | |
| HFix- 48448 | November 2, 2018 | The ExecuteGetActivityData activity always returns the same message, regardless of the result of the node reachability test. | |
| HFix- 48132 | November 5, 2018 | In the Recent Alerts report, clicking an alert does not open the corresponding case. | |
| HFix- 49975 | January 14, 2019 | In the Action Item Reports section, the Exception Items - By Exception Class and Alerts - By Category reports run for all systems by default, because they do not use the current system as a filter condition. | This hotfix does not contain a readme file. Use the Import wizard to import the HFix- 49975.zip file. |
| HFix- 50178 | January 31, 2019 | Data that is displayed on the Dashboard is two days old. | This hotfix does not contain a readme file. Use the Import wizard to import the HFix- 50178.zip file. |

You can use Pega Autonomic Event Services 7.3 to monitor PRPC 5.4, 5.5, 6.1, 6.2, and 6.3, and Pega Platform 7.1, 7.2, 7.3, 7.4, and 8.1.

Enhanced PegaAESRemote ruleset to support the latest Pega Autonomic Event Services features

You can use Pega Autonomic Event Services to monitor all versions of Pega Platform[™], starting with Pega Platform 6.22. To ensure that your system sends all of the information that is required for Pega Autonomic Event Services features that were introduced after your version of Pega Platform, ensure that you always install the most recent version of the PegaAESRemote ruleset.

The PegaAESRemote ruleset contains agents that gather and send data to Pega Autonomic Event Services. Pega frequently adds new features to Pega Autonomic Event Services that might require your system to send data that earlier versions of the PegaAESRemote ruleset did not support. To ensure that you have the most recent version of the ruleset, install the appropriate hotfix or product rule for your version of Pega Platform. These enhancements consist of rules only, and you can apply them by using the Hotfix Manager or the Import wizard without interrupting the availability of your system.

To apply the latest version of the PegaAESRemote ruleset for Pega Platform versions 7.1, 8.1, 8.2, 8.3, and newer, perform the following steps:

- Download the correct version of the component for your Pega Platform version. For more information, see <u>Enhanced PDC Integration for Pega</u>. **Note:** Although the article refers to Pega Predictive Diagnostic Cloud (PDC), the same PegaAESRemote ruleset provides enhanced Pega Autonomic Event Services features.
- 2. Install the product rule by using the Import wizard. For more information, see <u>Importing rules and data</u> <u>from a product rule by using the Import wizard</u>.

To apply the latest version of the PegaAESRemote ruleset for Pega Platform versions 7.2.1, 7.2.2, 7.3, 7.3.1, and 7.4, perform the following steps:

- 1. Go to My Support Portal and log in to your account.
- 2. Click Create, and from the Request Type list, click Existing Hotfix Request.
- 3. In the Requested Hotfix ID field, enter the hotfix appropriate for your version of Pega Platform.
- 4. Complete the required fields.
- 5. Click Submit.
- 6. Install the hotfix by using the Hotfix Manager. For more information, see <u>Installing hotfix packages</u>.

The enhanced PegaAESRemote ruleset is available for the following versions of Pega Platform:

| Pega Platform version | Hotfix ID | Product rule package | PegaAESRemote ruleset version | Available since |
|--------------------------|-------------------|--------------------------------------|----------------------------------|---------------------|
| 7.1 | Not applicable | Enhanced PDC Integration for Pega | 7.1.4 | January 29, 2020 |
| 7.2.1 | HFix- 53697 | Not applicable | 07-21-04 | June 26, 2019 |
| 7.2.2 | HFix- 51553 | Not applicable | 07-22-04 | March 13, 2019 |
| 7.3 | HFix- 51554 | Not applicable | 07-30-04 | March 13, 2019 |
| 7.3.1 | HFix- 51555 | Not applicable | 07-31-04 | March 13, 2019 |
| 7.4 | HFix- 51556 | Not applicable | 07-40-04 | March 13, 2019 |
| 8.1 | Not applicable | Enhanced PDC Integration for Pega | 8.1.4 | January 29, 2020 |
| 8.2 | Not applicable | Enhanced PDC Integration for Pega | 8.2.4 | January 29, 2020 |
| 8.3 | Not applicable | Enhanced PDC Integration for Pega | 8.3.4 | January 29, 2020 |

Troubleshooting

Introduction to Pega Autonomic Event Services

Pega[®] Autonomic Event Services is an independent, self-contained system that gathers, monitors, and analyzes performance and health indicators from multiple Pega BPM systems across the enterprise. Pega Autonomic Event Services combines server-level and BPM-level enterprise monitoring in a single web-based tool.

Not only a monitoring console, Pega Autonomic Event Services is an intelligent agent that can predict and notify administrators when system performance or business logic problems occur. Pega Autonomic Event Services provides suggestions and administration tools to correct them.

- Designed for rapid deployment
- Alerts and exceptions summary notifications
- Putting alerts and exceptions into workflows
- <u>Sharing Pega Autonomic Event Services information</u>
- <u>Weekly Scoreboard reports</u>
- Monitoring enterprise health
- Why use Pega Autonomic Event Services?
- <u>A technical overview</u>

Designed for rapid deployment

Pega Autonomic Event Services can be quickly deployed on any Pega BPM enterprise configuration. The installation and configuration package contains all of the necessary files needed to set up the Pega Autonomic Event Services server and configure the nodes for monitoring. The processes are straightforward and do not require deep technical expertise.



Alerts and exceptions summary notifications

Pega Autonomic Event Services gathers and organizes Alert log messages and Pega log exceptions into comprehensive summary notifications that parse the log data into a format that is easy to read and use as a diagnostic tool.

- Alerts identify individual system events that exceed performance thresholds or failures. Messages are triggered when system events degrade performance or compromise Web node security. These include events such as excessive browser interaction time, a requestor running too long, excessive data retrieved from the database, or excessive time executing a database guery.
- Exceptions indicate abnormal processing behavior, which are not triggered as alerts. A properly operating system should not show any exceptions. Exceptions contain messages (with stack trace statements) created by your activities as well as by standard rules.

A wide range of data is associated with each alert and exception notification. The information includes a session description, a stack frame list, clipboard data, a list of other alerts that occurred during the same requestor interaction, and more. Performance (PAL) statistics supplement the summaries giving additional insight into the overall performance impact. Here is an example alert notification:

| Alert Summ | mary | | | | | |
|--|--|---|----------------------------------|--|--|---|
| Occurred At | | Jun 29 | , 2009 5:10:3 | 7.PM | Occurred On Gluster | AESDevelopment |
| Operator | | aesdev | veloper | | Occurred on Node | d23f00cd7e14278ff91f29fa5e6dd94e |
| Database opera pxRuleFamilyNa pxObjClass = ? | ation took mor ame as "pxRuk ' order by pzIn | e than the thre eFamilyName" f sKey | eshold of 500 r from pr_index | ns: 1,583 ms SQL: s ,reference where po | elect pzinsKey as "pzinsKey" , ; dinsindexedClass in (? , ? , ? , ? | pxObyClass as "pxObyClass" , , , , , , , , , , , , , , , , , , |
| Execution | Summary | | | | | |
| Requested Proc | cessing A | ctivity=WBChe | sckin | | | |
| First Activity Ex | vecuted R | ule-Obj-Activit | y:WBCheckIn | | | |
| Last Step Exec | uted R | ULE-OBJ-ACTT | VITY VALIDATI | #20080220T18424 | 49.031 GMT Step: 17 Circum: 0 | |
| | | | | | | |
| Session Info | Call Stack | Trace List | Clipboard | Performance | | |
| Category | | | | DB Time | Work Pool | PegaAES-Work-Action |
| Msg ID | | | | PEGA0005 | Application | AES:03.03.01 |
| KPI Value | | | | 1,582 | Requestor | HF8FBCA906CE51AF1AC8F4AA5806C6852 |
| KP1 Threshold | | | | 500 | Server ID | d23f00cd7e14278ff91f29fa5e6dd94e |
| Rule Check Ena | bled | | | Y | Thread | http-8080-4 |
| Interaction | | | | 80 | Pega Thread | Developer |
| Alert Version | | | | 6 | Logger | com.pega.pegarules.engine.database.DatabasePreparedStatement |
| Unique Integer | | | | 468 | | |
| Problem G | orrelation | | | | | |
| Label select | t pzlnsKey as pxObjClass = | "iteral value" , ? order by pzin | pxObjClass as | "literal value" , pxRu | ileFamilyName as 'literal value' f | rom pr_index_reference where pxInsIndexedClass in (? , ? , ? , ? , ? , ? , ? , ? , ?) and pxRuleObjClass = ? |
| Value AESC | Developmentse | 51a256a41a2 | 53cc278cbfc3 | f3bec94 | | |
| Related Al | lerts | | | | | |
| Related W | ork | | | | | |

Putting alerts and exceptions into workflows

As recurring patterns develop among key alerts and exceptions, Pega Autonomic Event Services aggregates them and their associated data into work objects (action items or exception items). These appear in the AES Manager portal for use in Pega Autonomic Event Services work flows.

This capability enables you to assign resources for information gathering, diagnosis, and remediation. Hovering over an item gives you a snapshot summary of the alert and prioritizes it (via the urgency column) as shown in this example.

| | | | Assignment De | tails | | | - |
|---------|-----------------|--------|----------------|---|----------------------------|--------|-----|
| Urgency | Cluster | ID | (issignment be | Mus reverse | | | 1 |
| | | | ID | DB-4198 | Urgency | 31 | |
| 31 | PRPCDevelopment | DB-419 | First Event | 4/14/2009 12:39 AM | Total Occurrences | 10,714 | BUG |
| 74 1 | PRPCDevelopment | 1 | Last Event | 5/5/2009 8:53 AM | Frequency (/day) | 510.19 | ev |
| | | | Total Time | 2 hr 31 min 45.9 sec | | | |
| 24 | PRPCDevelopment | DBCOL | Average Time | 0 hr 0 min 0.85 sec | | | ev |
| 21 | PRPCDevelopment | DB-343 | Description | Review stored proced sppr_sys_reserveque | ure ueitem_b and make c | hanges | sta |
| | | | | as necessary. | | | ind |

Drilling down into an item displays the item's work form, which includes the alert's (or exception's) frequency and total occurrences during a given time span. Most importantly, Pega Autonomic Event Services diagnoses the degree of benefit derived by remediating the item, describes the issues that contributed to causing the item, and suggests what you should do to fix each issue.

For example, Pega Autonomic Event Services creates a Memory Utilization (MU) action item when a PEGA0028 alert occurs. The event indicates that JVM garbage collection processing did not reclaim enough memory to remedy the performance impact. Here is an example:

| ✓ Sta | atus New-AttentionRequ | ired Urgency 0 ID MU-41 | 👌 🖉 👙 🎒 📩 |
|---|---------------------------------|--|---|
| Description | JVM heap space usage of | exceeded 859 MB in a node in the PRPCDev | elopment duster. |
| Created | 7/2/2009 3:02 PM | Total Occurrences | 2 |
| First Event | 6/8/2009 8:50 AM | Frequency (/day) | 2 |
| Last Event | 6/8/2009 8:52 AM | Total Occurences for Current Week | 0 |
| | | Total Occurences Last Week | 0 |
| Advice Benefit | Observation | | Peronmendation |
| High | JVM heap space PRPCDevelopme | usage exceeded 859 MB in a node in the nt duster. | Use the timeline in the Event Correlation tab to investigate relevant alerts that occurred in the 30 minutes prior to the first memory alert. Mouse over an alert to see summary information. The popup for a PEGA0004 will list the total number of bytes in the interaction, when available. Click on an alert to bring up an alert detail display. Investigate if there are particular users or activities that may be throwing PEGA0001, PEGA0004, PEGA0005, or PEGA0027 alerts. |

To access information that is relevant to your investigation, the work form contains additional data and drill-down capabilities.

Because troubleshooting memory issues can be complex, Pega Autonomic Event Services tracks alerts that are likely correlated to the MU action item as shown below:

| Cause | Alert Details | Event Correlation | Explanation | Applications | |
|-------|---------------|-------------------|-------------|--------------|--|
|-------|---------------|-------------------|-------------|--------------|--|

Memory Alerts

| DateTime Generated | Event ID |
|------------------------|----------|
| Jun 8, 2009 8:50:33 AM | PEGA0028 |
| Jun 8, 2009 8:52:11 AM | PEGA0028 |

Trails for Memory-Relevant Interactions

| DateTime Generated 🔺 | Event ID |
|------------------------|----------|
| Jun 8, 2009 8:26:21 AM | PEGA0027 |
| Jun 8, 2009 8:26:21 AM | PEGA0001 |
| DateTime Generated 🔺 | Event ID |
| Jun 8, 2009 8:26:53 AM | PEGA0027 |
| Jun 8, 2009 8:26:54 AM | PEGA0001 |
| DateTime Generated 🔺 | Event ID |
| Jun 8, 2009 8:32:48 AM | PEGA0027 |
| Jun 8, 2009 8:32:48 AM | PEGA0001 |
| DateTime Generated 🔺 | Event ID |
| Jun 8, 2009 8:32:59 AM | PEGA0005 |
| Jun 8, 2009 8:33:05 AM | PEGA0027 |
| Jun 8, 2009 8:33:06 AM | PEGA0005 |
| DateTime Generated 🔺 | Event ID |
| Jun 8, 2009 8:40:45 AM | PEGA0001 |
| Jun 8, 2009 8:40:45 AM | PEGA0027 |

A time-series plot of the data shows the temporal relationships among the alerts.

| Cause | Alert Details | Event Correlation | Explanation | Applications |
|-------|---------------|--------------------|-------------|--------------|
| ₩ Me | emory Alerts | (PEGA0028) | | |
| | | | | |
| | | | | |
| 00 | | | | 13:00 |
| | | | | |
| 🔻 In | teraction Int | ervals (PEGA0001) | | |
| | | | | |
| | | | | |
| 00 | <u> </u> | | | 12:00 |
| 00 | | | | 15.00 |
| - Bv | te Threshold | Events (DECA0004 |) | |
| U Uy | ce micsiloiu | Events (FEGA0004 | , | |
| 00 | | | | 13:00 |
| | | | | |
| T DB | Time Thresh | old Intervals (PEG | A0005) | |
| | | | | |
| | | | | |
| 00 | | | | 13:00 |
| | | | | 10.00 |
| T DB | Number Rov | vs Events (PEGA002 | 27) | |
| | | | | |
| | | | | |
| | | | | 40.00 |
| 00 | | | | 13:00 |

Sharing Pega Autonomic Event Services information

To facilitate enterprise-wide communication and team coordination during system optimization, you can set up email subscriptions for any user in the enterprise that automatically send notifications of current system events. These include the creation of new alerts, exceptions, and work items, or changes to a cluster's health status. The subscriptions can also issue daily or weekly Pega Autonomic Event Services scorecard reports, as well as the Top Offenders scorecard.

Weekly Scoreboard reports

Pega Autonomic Event Services provides two scoreboards to help quickly identify the top performance

issues, as well as summarizing weekly performance statistics and comparing them to the previous week.

The Top Offenders report highlights the five action items that are contributing the most time to overall browser time. By focusing on the top issues, users can ensure that they spend their efforts on the action items that will make the most difference in the performance of the system.

The scorecard also shows the current status of these action items, how long they have existed, and whether the problem has gotten better or worse in the past week. This allows managers to quickly track the progress towards fixing the top issues in a particular system. Here is an example of a Top Offenders scorecard.



The weekly scorecard shows daily performance statistics as well as the highest urgency action and exception items. Here is an example of a weekly scorecard.

25,862

Number of Exceptions

59,068



For the period of Jun 22, 2009 to Jun 29, 2009 , 1.10 % of the interactions took 260.40 % of the total elapsed time

| | | | | | | | Weekly P | erformance Me | trics | | | | | | | |
|------------------|-------------------------------------|--|--------------------|----------------------------------|-------------------------------|--------------------|-----------------------------------|---------------------------|------------|---------------|------------------------|------------------------|----------------------------|----------|---------------------|-------------|
| Date | 1 | verage Response | Time | Alert Average | Response T | fime | Total Users | Total Interaction | s Intera | actions Causi | ing Alert ⁵ | 6 Tot | tal Response | e Time | Alert Respon | use Time% |
| Mon 6/22 | 09 | | 0.34 | | | 6.37 | 1 | 1,1 | 195 | | 3.7 | 7 % | | 403.12 | | 71.07 % |
| Tue 6/23/ | 09 | | 0.76 | | | 3.05 | 1 | | 57 | | 49.1 | 2 % | | 43.09 | 1 | 198.50 % |
| Wed 6/24 | /09 | | 0.76 | | | 4.14 | 1 | | 253 | | 15.4 | 2 % | | 192.61 | | 83.77 % |
| Fri 6/26/0 | 9 | | 0.07 | | | 17.82 | 2 | 2,5 | 06 | | 2.3 | 4 % | | 212.67 | | 569.63 % |
| Sat 6/27/ | 09 | | 0.02 | | | 0.00 | 1 | 8,5 | 98 | | 0.0 | 0 % | | 151.44 | | 0.00 % |
| Sun 6/28/ | 09 | | 0.03 | | | 25.01 | 2 | 8,5 | 906 | | 0.6 | 8 % | | 253.11 | | 602.84 % |
| | Totals: | (overa | 11) 0.06 | | | 13.57 | 8 | 21,5 | 915 | | 1.1 | 0 % | | 1,256.03 | 1 | 260.40 1 |
| | | | | | | | Top 10 Acti | on Items by Un | gency | | | | | | | |
| ID | Descript | ion | | | | | | F | inst Event | Last Event | Total Events | Events This Week | Events Previous Week | Urgency | Avg KPI (if any) | PDN Article |
| Browsint- 327 | One or m statistics threshold | ore interactions for L (OTHERIOCOUNT, O | ast Inpu COMMIT | t * Activity=Rule COUNT,CONNE | Obj-Activity E CTCOUNT, IN | Executed DEXCOL | MayStartActivit JNT) exceeding | y " had PAL certain 6/ | 8/2009 | 6/29/2009 | 86 | 63 | 5 | 18 | 00:00:35.74 | More Info |

Monitoring enterprise health

The Pega Autonomic Event Services Enterprise Health console provides up-to-the-minute enterprise, cluster, and node level monitoring. The console tracks these key statistics and events:

- Number of active requestors
- Number of agents running
- Percentage of JVM memory being used
- Last time of system pulse
- Process CPU usage
- Number of database connections
- SQL exceptions
- Average HTTP (browser or portal requestor) response time
- Rule cache enabled
- Alerts and exceptions the require immediate attention

The console associates each metric with a color-coded indicator signifying a normal (green), warning (yellow), or critical (red) condition. An indicator changes to yellow or red when a reading exceeds a specified threshold value. Easy to spot on the console, these indicators tell you to investigate and resolve the trouble spots before they worsen into chronic performance issues.

Here is an example of a node's health information. Agents are in critical condition as defined by its threshold. You can modify the values to suit your custom requirements.

Updates all indicators at rapid intervals

| | | | | / | / \ | | | | |
|--|---|------------------------|------------------|--|---|--|--|--|---|
| Cluster AESDevelopm | snt | | | / | | | | | |
| luster A escription A roduction Level ystem Management URL | ESDevelopment ESDevelopment 2 Development ttp://sdevrulese: | 83/prsysmamt (Ed | 11 | | | | | | |
| ealth Summary R | eports Reque | stors Agents | Listeners / | - | 1 | | | | |
| Node ¥ | | Requestors | Agents | Memory | y Pulse | CPU | Database | Cache | Urgent Events |
| \$ d23f00cd7e14278ff9: | f29fa5e6dd94e | Normal | Critical | Norm | al Norma | al Normal | Normal | Normal | Normal |
| Agents Memory Pulse ORU Database Cache Urgent Events | Count % Used Last Pulse Process CPU U Connections Rule Cache En Count | sage abled | un 29, 2009 5:57 | 11 36 2:41 PM 0 5 true 0 | Im No Change No Change No Change No Change No Change | Node (remove) Default Default Default Default Default | Create a <u>duster</u> Create a <u>duster</u> Create a <u>duster</u> Create a <u>duster</u> Create a <u>duster</u> | or node specific or node specific or node specific or node specific or node specific | rule. rule. rule. rule. rule. |
| Last Health Received Client Health Sent | An 29, 2009 5 | 52:58 PM 5:52:58 PM | | | Node PRPC URL Node SOAP URL | http://sdovid2k8:8 http://sdovid2k8:8 | 180 for web BRSOAPS | ervlet | |
| | do's eve | tom boolt | h statistics | | | Lets you r | nodify indic | ator | |
| splays each n | oue s sys | tern near | i otoriorioi | | 100 | | | | |
| splays each n | oue s sys | terri nealu | - otorionoo | | thre | sholds at e | nterprise, c | luster, or | |

To aid your research, Pega Autonomic Event Services correlates Critical indicators to alerts reports or to current console information.



From one console, you can manage requestors, agents, and listeners across your enterprise. As shown here on the Requestors form, you can stop, interrupt, get clipboard size, and so on for each requestor on every node.

| Enterpris | e Health | | | | | | \$ |
|--------------------|----------------------|----------------------------------|-------------------|---------------------------------|----------------------------------|--------|----------------------------|
| > Cluster | PMF | | | | | | |
| Health S | ummary Repo | rts Requestors Age | ents Listeners | | | | |
| Search User Nam | e: le Requestor I | Application N | user Name | Application | imate Requesto Last Access | r Size | Search Last Input |
| >> PMF | HEFA43AC1E65 | E 1CD 35CA 3529372C97388 | JainM | EngPMF 02.02 | 5/5/09 2:33:51 PM CMT | 2 | Activity=Data-Admin-Worl |
| >> PMF | HE5CF9C6B164 | Stop | pasinghe @virtusa | .comPegaProjectManager 02.02 | nent5/5/09 2:47:57 PM GMT | 2 | Activity = ShowOuterHarne |
| >> PMF | HE5AE3A 16863 | Clipboard Size | ыR | EngPMF 02.02 | 5/5/09 2:38:34 PM GMT | 2 | Activity=Rule-Obj-ListView |
| >> PMF | HDDDA4821F0: | Clipboard Performance Details | νN | EngPMF 02.02 | 5/5/09 2:44:57 PM GMT | 3 | Activity =getXMLForTreeGr |
| >> PMF | HD87464F67C1 | Requestor Details | зM | EngPMF 02.02 | 5/5/09 2:38:26 | 4 | Activity=PegaProjMgmt-W |

You can use the console to drill down and display active graphs of system run-time behavior. This example shows the amount of memory used by a node:



Additionally, you can view charts and reports that describe node or cluster activity over a specified duration. Here is a chart showing the number of each type of user over a number of days.



Why use Pega Autonomic Event Services?

Pega Autonomic Event Services is a key tool for use in both development and production environments.

In a development environment

Pega Autonomic Event Services is useful when building enterprise-level applications and discovering issues of scale and load that can significantly affect processing performance in a production environment. Pega Autonomic Event Services can accelerate process optimization by identifying potential performance issues early in the development and testing phases, as well as giving users suggestions for how to fix the issues.

For example, a work object may have a list loaded from the database for the user to review. In a test system, this list may be small. However, when that system goes into production, there will be many more items on the list and more users loading the list at the same time, which will place greater stress on system performance. Using Pega Autonomic Event Services, you can identify trouble spots when they are small and before they cause a larger impact on application performance.

In a production environment

Pega Autonomic Event Services flags issues that may arise due to increased workload or reconfigured applications.

For example, you may want to run some processes during non-work periods, which formerly had been spread out during longer work periods. As a result, the concentration of server/database interactions may trigger alerts that reveal the need for better load balancing or hardware upgrades. As another example, you may reconfigure a flow to automate a manual flow action, thus creating new demands on server/database interactions.

A technical overview

Pega Autonomic Event Services is installed on a standalone Pega Platform server that monitors the

performance status of one or more Pega Platform nodes and clusters in an enterprise deployment. Here is a high-level illustration of the Pega Autonomic Event Services architecture.



Real-time system data, such as the number of active requestors or CPU usage, are sent by a SOAP service from the monitored Pega Platform node to the Pega Autonomic Event Services system server. Pega Autonomic Event Services parses these messages and stores the records in *pegaam_node_health* and *pegaam_node_stats* tables in the Pega Autonomic Event Services database. These records are used to generate the data used in the Enterprise Health console. These messages also contain the information necessary to create the cluster and node records for the Pega Autonomic Event Services system.

When a Pega Platform node generates alerts, they are written to the node's Alert log and sent by SOAP to the Pega Autonomic Event Services server. It parses the alerts and stores the records in the *pegaam_alert* table in the Pega Autonomic Event Services database. Based upon how often an alert occurs and the system events that triggered those alerts, Pega Autonomic Event Services aggregates these records into work objects called Pega Autonomic Event Services action items. These items are written to the Pega Autonomic Event Services database in the *pegaam_action_work* table as one of several action-item types.

Exception processing is similar. When a Pega Platform node generates exceptions, they are sent by SOAP to the Pega Autonomic Event Services server. It parses the exceptions and stores the records in the *pegaam_exception* table in the Pega Autonomic Event Services database. Based upon how often an exception occurs and the system events that triggered those exceptions, Pega Autonomic Event Services aggregates these records into work objects called Pega Autonomic Event Services exception items. These items are written to the Pega Autonomic Event Services database in the *pegaam_exception_work* table.

Pega Autonomic Event Services queries daily the monitored nodes for Log-Usage data by way of SOAP. This data, which includes PAL statistics, is used to update requestor-related reports and graphs. These statistics enable you to view and analyze the data in many contexts and help you target and solve performance issues that may not be captured in the alert or action item data.

How to use the Pega Autonomic Event Services Enterprise Health console

The Pega[®] Autonomic Event Services Enterprise Health console provides current enterprise, cluster, and node-level monitoring for key system statistics. The monitor uses visual indicators to alert you to abnormal operating conditions that may be hindering performance or threaten a processing failure. The console provides access to diagnostic information by way of reports and current statistics.

The Enterprise Health console provides a view of the enterprise at the following levels:

- Enterprise
- Cluster
- Node

This article describes how to use the console's functions and features at each level to ensure quick recognition and remediation of abnormal operating conditions.

This article describes Pega Autonomic Event Services 3.3.1. If you are using a newer version, there might be user interface and functional differences that do not correspond exactly with the information presented here.

- Enterprise view
- <u>Cluster view</u>
- <u>Summary tab</u>
- <u>Reports tab</u>
- <u>Requestors tab</u>
- Agents tab
- Listeners tab
- <u>Management tab</u>
- <u>Node Health Information</u>
- Indicator threshold settings
- <u>Node view</u>
- <u>Node view tabs</u>

Enter your manager ID and password on the Pega Autonomic Event Services welcome screen and click Log In. Remember that passwords are case-sensitive.

The AES Manager Portal displays the Enterprise Health home view (the other navigation bars — Action Items, Reporting, and Administration — are not shown in the image below).

| Autonomic Event S | lervices. | | | | | | | | | | | |
|-------------------|------------------|-----------------|---------------------|------------|------------|------------|------------|------------|--------------|------------|------------------|------------------|
| AES Manager | Enterprise He | ith | | | | | | | | | • | • • 0 6 |
| Enterprise Health | ~ Cluster Health | | | | | | | | | | | |
| | Cluster Name | Prod Level 4 | Nodes (Up/Total) | Requestors | Agents | Memory | Pulse | CPU | Database | Cache | HTTP Response | Urgent Events |
| | AESDevelopment | 2 | 1 of 1 | Normal (1) | Critical (1) | Normal (1) | Normal (1) | Urgent (1) |
| | PRPC54 | 3 | 10f1 | Normal (1) | Normal (1) | Normal (1) | Normal (1) |
| | PRPCDevelopment | 0 | 1of 2 | Normal (1) | Normal (1) | Warn (1) | Normal (1) | Normal (1) | Normal (1) | Normal (1) | Normal (1) | Normal (1) |

As you work with the monitor, use the navigation arrows to go to views that you have previously opened. You can also click Enterprise Health in the navigation panel to return to the enterprise view.

Enterprise view

The top view of the Enterprise Health console displays a list of clusters comprising the enterprise. The Prod Level column shows the cluster's production level (the level set in the System data instance). The Nodes (Up/Total) column contains a count of active (up) and total monitored nodes in the cluster.

Health indicators

A row displays color-coded indicators showing the collective health of the cluster's nodes. These indicators include:

- Requestors Number of active requestors
- Agents Number of agents running
- Memory Percentage of JVM memory being used
- Pulse Last time of system pulse
- CPU Process CPU usage
- Database Number of database connections, or the occurrence of SQL exceptions
- Cache Rule cache enabled (yes/no)
- HTTP Response Average HTTP (browser or portal requestor) response time (in seconds)
- Urgent Events Alerts or exceptions that require immediate attention

Each indicator condition (Normal, Warn, or Critical) is defined by a set of threshold values set in a related decision table. You can use controls in the console to modify the thresholds at the enterprise, cluster, or node levels as described in section <u>Indicator Threshold Settings</u> in this article.

An agent named Monitor Health Status updates the indicator status for all nodes across the enterprise every two minutes. The indicators refresh automatically when the agent pulses.

Under normal conditions the indicators are green. However, when a node metric exceeds a threshold, the indicator can turn yellow (Warn condition) or red (Critical condition), depending upon the incoming value. For example, if the CPU usage exceeds 80% (but less than 90%), the CPU indicator turns yellow. If it exceeds 90%, the indicator turns red. Warn and Critical indicators help you quickly detect problems and correct the trouble spots before they worsen into chronic performance issues.

The Cache, Pulse, and Urgent Events indicators do not have a Warn condition; they are either Normal or Critical. The Urgent Events indicator is triggered by alerts or exceptions. There is no indicator threshold setting.

If you are a subscriber to the HealthStatusChange scorecard, you will get an email notification when indicator changes level (for example, the HTTP Response indicator changes from Warn to Critical).

In the example below, the cluster PRPCDevelopment shows that all seven nodes have a normal status for requestor count. However, one node is showing an Agents Critical condition. This indicates that the number of running agents is fewer than the critical threshold of four. In addition, two nodes indicate a Memory Warn condition. This means that more than 80% but less than 90% of total memory is being used.

| Cluster Name | Prod Level | Nodes (Up/Total) | Requestors | Agents | Memory |
|-----------------|---------------|---------------------|------------|--------------|------------|
| pega | 2 | 1 of 1 | Normal (1) | Normal (1) | Normal (1) |
| PMF | 2 | 1 of 1 | Normal (1) | Normal (1) | Normal (1) |
| PRPCDevelopment | 2 | 7 of 7 | Normal (7) | Critical (1) | Warn (2) |

Use the cluster view to display the conditions of the individual nodes as described in the <u>Cluster View</u> section in this article.

The node indicators show counts at the most serious level. For instance, if one node in cluster PRPCDevelopment had an Agents Warn condition and another node (in the same cluster) had an Agents Critical condition, only the critical count (1) and red indicator would display.

Urgent Events indicator

All health indicators except Urgent Events are constantly updated by way of the Monitor Health Status agent. This functionality provides a steady-state overview of the clusters and nodes across the enterprise.

The Urgent Events indicator, on the other hand, turns red when a critical exception or any of the following alerts occur:

| Alert | Category |
|---|------------------------|
| PEGA0001 - HTTP interaction time exceeds limit | Browser Time |
| PEGA0010 - Agent processing disabled | Agent Disabled |
| PEGA0017 - Cache exceeds limit | Cache Force Reduced |
| PEGA0019 - Long-running requestor detected | Long Requestor Time |
| PEGA0022 - Rule cache has been disabled | Rule Cache Disabled |
| PEGA0027 - Number of rows exceeds database list limit | DB List Row |
| PEGA0035 - A Page List property has a number of elements that exceed a threshold | Clipboard List Size |

These include alerts where KPI or PAL values far exceed their logical limits. Urgent events should be remediated as soon as possible as their impact will seriously degrade system performance. In many cases, these events are related to Critical conditions among the other health indicators.

To investigate the individual events within a node, expand the console as described in the <u>Node View</u> section in this article. Doing so enables you display and open the alerts or exceptions from a list report.

The indicator remains red for 30 minutes from the last Urgent Event, after which it returns to green. If the console has not been monitored by an operator for an extended period, go to node view and open the Urgent Events tab to display an event history.

Subscribers to the HealthStatusChange scorecard will get an email notification when the indicator changes status.

Nodes status indicators

Gray health indicators (Offline or Unknown) appear when one or more monitored nodes in a cluster is not operational. This occurs when the Pega Autonomic Event Services server has not received, within two minutes, a node health message. The Nodes (Up/Total) column uses color indicators to show whether the inactive nodes are shut down as the result of an administrative action or due to an unknown reason such as a communication interruption or system failure. Here is an example:

| ✓ Cluster Healt | th | | | | | | | | | | |
|-------------------|-----------------|---------------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|------------------|------------------|
| Cluster Name 🔺 | Prod Level 4 | Nodes (Up/Total) | Requestors | Agents | Memory | Pulse | CPU | Database | Cache | HTTP Response | Urgent Events |
| AESDevelopment | t 2 | 0 of 2 | Offine (2) | Offine (2) | Offline (2) | Offline (2) | Offline (2) | Offline (2) | Offline (2) | Offline (2) | Offine (2) |
| AESDevMon | 2 | 0 of 1 | Unknown (1) | Unknown (1) | Unknown (1) | Unknown (1) | Unknown (1) | Unknown (1) | Unknown (1) | Unknown (1) | Unknown (1) |
| doridsys | 4 | 0 of 1 | Unknown (1) | Unknown (1) | Unknown (1) | Unknown (1) | Unknown (1) | Unknown (1) | Unknown (1) | Unknown (1) | Unknown (1) |
| pega | 2 | 2 of 12 | Normal (2) | Normal (2) | Critical (2) | Normal (2) | Normal (2) | Normal (2) | Normal (2) | Normal (2) | Normal (2) |

- When all nodes in a cluster are operational, the cluster's Nodes (Up/Total) value has no color indicator. The health indicators appear as usual.
- When one or more nodes in a cluster are intentionally offline, the Node indicator is yellow. If all nodes are not operational, Offline appears in every health indicator.
- When one or more nodes are shut down due to an unknown reason, the Node indicator is red. If all
 nodes are non-operational, Unknown appears in every health indicator. Have your system
 administrator restart the node. If it is running, verify that the monitored node is correctly configured to
 send health messages. Instructions for making the settings are described in <u>Troubleshooting Pega</u>
 <u>Autonomic Event Services configuration and installation issues</u>.
- When one or more nodes is not operational (Offline or Unknown) but at least one node is up, the health indicator columns appear as usual.
- When there are Unknown and Offline nodes in a cluster, the Node indicator is red.

In the above example:

- Both nodes in the AESDevelopment cluster are intentionally offline.
- Each node in the AESDevMon and doridsys clusters is shut down for unknown reasons.
- Ten of the 12 nodes in the pega cluster are not operational.

To view a node's operational status at the cluster level, click a Node indicator.

| Cluster | Prod | Nodes |
|----------------|---------|------------|
| Name 🔺 | Level 🔺 | (Up/Total) |
| AESDevelopment | 2 | 0 of 2 |

Selecting the AESDevelopment Node indicator shows that both nodes are Offline.

| Health | Summary | Reports | Requestors | Agents | Listener | s Manager | ment | | | | | |
|--------|----------------|--------------|------------|--------|----------|-----------|--------|--------|----------|--------|------------------|------------------|
| No | ide 🔻 | | Reques | tors A | jents | Memory | Pulse | CPU | Database | Cache | HTTP Response | Urgent Events |
| | | | | | | alk | Office | Office | Office | Office | Office | Office |
| » d23 | f00cd7e14278ff | 91f29fa5e6dd | 194e Offin | e | Offine | Offine | Omne | Omne | Ottane | Othere | Othere | Umne |

Selecting the Pega Node indicator shows that of the ten non-operational nodes, two are Offline and eight are Unknown (at the Enterprise level, the cluster's node indicator is red).

| > Cluste | r pega | | | | | | | | | | | |
|----------|-----------------|---------------|---------------|---------|----------|----------|---------|---------|----------|---------|------------------|------------------|
| Health | Summary | Reports | Requestors | Agents | Listener | s Manag | ement | | | | | |
| Nod | le 🔻 | | Requesto | ors Age | nts | Memory | Pulse | CPU | Database | Cache | HTTP Response | Urgent Events |
| >> ec6d | 66754238aaabbi | a94d45f8fe0a | b49 Offline | 0 | ffine | Offline | Offine | Offine | Offine | Offine | Offine | Offine |
| >> ec68 | 7469eacd40ef0f | efe27f48ae23 | 7f Unknown | 1 Un | known | Unknown | Unknown | Unknown | Unknown | Unknown | Unknown | Unknown |
| » d41d | 8cd98f00b204e9 | 800998ecf84 | 27e Unknown | 1 Un | known | Unknown | Unknown | Unknown | Unknown | Unknown | Unknown | Unknown |
| >> d0c5 | 40d6a4d3e8235 | 23e2aae941a | 5d2b Offline | C | ffine | Offline | Offline | Offline | Offline | Offine | Offine | Offline |
| >> 98c7 | 5985f7fcc3a4b6 | 3c0b2eb003c5 | iee Normal | N | ormal | Critical | Normal | Normal | Normal | Normal | Normal | Normal |
| » 7011 | e6363ae6f53aec | do 1a62adc793 | unknown | n Un | known | Unknown | Unknown | Unknown | Unknown | Unknown | Unknown | Unknown |
| >> 51ca | b8a9d68447993 | 217eba49b89 | tites Unknown | ı Un | known | Unknown | Unknown | Unknown | Unknown | Unknown | Unknown | Unknown |
| >> 2e36 | 0d957b812f9f83 | 7b6ab055cc9 | 599 Unknown | un Un | known | Unknown | Unknown | Unknown | Unknown | Unknown | Unknown | Unknown |
| >> 24de | b21e549b863e0 | 09aaa8ffd72d | cc4 Normal | . N | ormal | Critical | Normal | Normal | Normal | Normal | Normal | Normal |
| » 2046 | 975b75e708fffb | ea8341ab29b | 714 Unknown | u Un | known | Unknown | Unknown | Unknown | Unknown | Unknown | Unknown | Unknown |
| >> Oac6 | f5d10f50a4717o | db0acfaceee1 | 60 Unknown | 1 Un | known | Unknown | Unknown | Unknown | Unknown | Unknown | Unknown | Unknown |
| » 0610 | 05cc44f4f189e6i | b54b13f2fef1 | 8d Unknown | un Un | known | Unknown | Unknown | Unknown | Unknown | Unknown | Unknown | Unknown |

There are two additional indicators, Disabled and Redirected, which appear when management commands are applied at the cluster or node levels. See <u>Management tab</u> for descriptions.

Removing non-operational node indicators from the console

The system periodically removes nodes displaying Unknown or Offline node status indicators from the console. This occurs when Pega Autonomic Event Services has not detected the node from between 24 hours to 48 hours. If all the nodes in a cluster are not operational, the cluster is removed.

To manually remove a non-operational node, go to the cluster view and click the Delete icon located in the node's last column.



To remove a cluster, open the Administration section, select the cluster from the drop-down list, and click Delete Cluster.



Monitoring may have been turned off when a node was configured (Pega Autonomic Event Services 3.3.1 or later). Alerts, exceptions, health messages, and PAL statistics from this node are not sent to the Pega Autonomic Event Services server. The node does not appear on the Enterprise Health console. For more information, see <u>Autonomic Event Services (AES) 7.2 Monitored Node Configuration Guide</u>.

Cluster view

Click on a cluster name to view cluster-level information. The Health tab displays a list of nodes and their individual indicators. Expand the Cluster header to display cluster names, description, production level, and a link to the System Management Application (SMA) URL. In this example, the AES_55SP1 cluster is displayed.

| Cluste | # AES_555P1 | | | | | | | | | | | | |
|---|----------------------------------|--|---------|-------------|-----------------|--------------------|----------------------------|------------------------|-----|----------|-------|----------------------------|----------------------------|
| luster lescriptio roduction lystem M | n h Level anagement URL | AES_555P1 AES_555P1 3 Test http://10.60 | .57.102 | 1:8090/prsy | ismamt (Ed | 細 | | | | | | | |
| tealth | Summary | Reports | Requ | estors | Agents | Listeners | Manageme | ent | | | | | |
| lealth Nor | Summary de Y | Reports | Requ | Request | Agents ors A | Listeners | Manageme Memory | ent Pulse | CPU | Database | Cache | HTTP Response | Urgent Events |
| Nor Nor >> b25c | Summary de ¥ 739:21407:b24 | Reports | Requ | Request | Agents ors A | Listeners gents | Manageme Memory Warn | ent Pulse Normal | CPU | Database | Cache | HTTP Response Normal | Urgent Events Normal |

For additional statistics and controls, start SMA by clicking the URL link or the SMA icon located on the right side of the Cluster section header. If necessary, you can modify the link by clicking Edit to the right of the URL address.

The cluster view contains tabs for accessing system reports for the cluster and current (runtime) operating statistics for all the nodes within the cluster. The Monitor Health Status agent refreshes the statuses of the various indicators for the various nodes. The tabs are described in the following sections.

Summary tab

Displays a summary snapshot of the cluster's operational status including up time and counts for active requestors, agents, listeners, and database connections. To update the statistics, click the \Im Refresh icon.

| fealth | Summary | Reports | Requestors | Agents | Listeners | Management | |
|--------|---------|---------|---------------|--------|-----------|--------------------------------------|-------|
| | | | | | | | 0 |
| | | | | | | | 20 |
| Node | Versio | in Pi | roduction Lev | vel | Up Time | #Requestors #Agents #Listeners #DBCo | ND NO |

Reports tab

Displays three interactive charts showing cluster-level system statistics for a given date or date range. The charts provide the following controls:

• • Use the slider control to adjust the date range:

Wed Feb 4 2009 🛆 Tue Feb 17 2009

- Hover over a vertical line (date) to display an exact count.
- Click the Maximize icon to present the chart in a larger, full-screen window.
- Click the Show Data icon to view the summary view output as numeric data.

To view and interact with the charts, your workstation web browser must include the Adobe Flash Player 9, a free download is available at **www.adobe.com/products/flashplayer**.

The charts are as follows:

- Average browser response time The average processing time (in seconds) for all browser requestors on a given date or date range. This number does not include network time.
- Maximum unique user in a day The number of Pega Autonomic Event Services users logged onto the nodes. The users are categorized by the standard requestor types. In this example, there were nine browser requestors on 2/12/09:



• Alerts by category — Alerts received by Pega Autonomic Event Services for the selected cluster. The report displays the name and count in each alert category. Select a row to drill down for more information.

Requestors tab

Displays a list view of requestors currently running in memory on all nodes on all applications. Note the number of nodes running per node. If one node has a much higher number of requestors than other nodes, this can indicate load-balancing issues across the system. Because the node is doing more of the work, users on that node may experience performance issues.

You can perform a search to open a specific node or click Search to open all of them.

| alth | Summary | Reports | Requestors | Agents | Listeners | Management | | |
|------------------|-----------------|------------|----------------|----------|---------------------|------------------------------|--------------|--------------|
| arch | | | | | | | | |
| ser Na | me: | | Applicatio | n Name: | | | Estimate Rec | questor Size |
| No | da Dagua | etor ID | | licor | Application | Last | Thread | Last Input |
| 140 | ne keque | storito | | Name | Application | Access | Count | Last input |
| VERE | BE7DDF3/ | A44DF82AAB | 67CD9C78164483 | ISB none | PegaVER 05.05.01 | 4/29/09 2:39:19 PM EDT | | 1 |
| Last I Client | nput Address | none | | | Java Thre | ead | | |
| Last / | locess | 4/29/09 | 2:39:19 PM EDT | | Last Thre | ad STA | NDARD | |

An item displays this information:

- Node Node name or hex code identifier
- Requestor ID The unique ID of the requestor. The first character of the name indicates how the requestor is used:
 - A is being used by a listener or service rule.
 - B is a batch requestor, used by agent processing.
 - H is being used by a user (an HTTP interaction).
 - P is used for portlet support.
- User Name The user ID associated with this requestor. None signifies that this requestor is being used by an agent or other process, or that the user is not currently logged in.
- Application The PRPC application
 Last Access The date and time the requestor last performed an operation.
- Thread Count Number of threads associated with this requestor.
- Last Input The last activity or stream that was executed.

Click on a node's Expand icon to display additional details, including:

- Client Address The IP address of the machine sending the requestor information. If User Name is none, the client address is a process.
- Profiling Whether the agent is enabled for this requestor.
- Java Thread The thread ID of an active requestor, if the requestor is operating in the context of a Java thread. The field can be empty if there is no activity at the time of the snapshot. As one example, SMA on WebSphere runs on a SOAP connector, and in that case the thread number in the SOAP connector thread pool is shown in this column.
- Last Thread Name of the last thread running
- Traced Whether Tracer is enabled for this requestor.

Select a requestor on the list and right-click to display a drop-down list of commands.

| lealth | Sumn | nary | Reports | Requ | estors | estors Agents List | | | | |
|---------------|---------------|-------------------|-----------------------------|---------------|----------------|--------------------|--------|--|--|--|
| Search | | | | | | | | | | |
| User N | lame: | | | | Applica | ation Name: | | | | |
| ſ | Node | | | | Requ | estor ID | | | | |
| ¥ d23 | 3f00cd7e | ■14278 For thi | iff91f29fa5e is requesto | -6dd94e 0r | BEB0319 | A3C7C8AB | 92E83C | | | |
| Last Clier | Inpu nt Ad | Stop Interru | ipt | | aemon aemon |) | | | | |
| Last Prof | Acce (| Clipbo | ard Size | շիտ | 51 PM | EDT | | | | |
| » d2 | 3f00cc | Clipbo Perfor | oard mance De | tails | 9A9F8 | 2961812BE | C0D5F | | | |
| » d2 | 3f00cc | Reque | estor Detai | ls | 6521F | 9D64D9288 | 4169D | | | |

- Stop Stops the requestor, removes it from the requestor status display, and deletes it from the svstem.
- Interrupt Stops the processing of the selected requestor at the beginning of the next activity step. If the requestor is in an error condition, such as executing a Java block that is in a loop, this command may be unable to stop the requestor.
- Clipboard Size Displays the estimated data size (KB) of requestor and all threads.
- Clipboard Displays the data on the Clipboard for the selected requestor. If the default security properties file is still in effect, clipboard access is denied with a message like:

Access to the MBean operation/attribute RequestorManagement.Clipboard[java.lang.String] has been denied. If you believe that you should have access to this operation or attribute, please check your MBean security settings or contact your System Administrator.

For more information about the Clipboard, see Data Structures.

Performance Details — Displays PAL statistics for the selected requestor. See Overview of the Performance Tools (PAL) for information about the statistics.

• Requestor Details — Displays a Trace Entry that shows trace lines for the operations performed by the selected requestor. This is a snapshot display that does not update in real time. Access to the Trace Entry is denied if the default security properties file is still in effect, as noted above for the Clipboard.

Locked requestors

To display a java stack trace of the last accessed thread that locked a requestor, select it in the list.



Right-click and select Requestor Details. Here is an example:

| I | Failed to get details for requestor: H6B315A2A60DBF86E0571D2A1106D2CA9 |
|---|--|
| | StackTrace if Requestor Locked |
| I | java.lang.Thread.sleep(Native Method) |
| | com.pegarules.generated.activity.sh_action_sample_f6bbe7f6701d9f6e5319c75298af423c.step1_circum0 (sh_action_sample_f6bbe7f6701d9f6e5319c75298af423c.java:170) |
| | com.pegarules.generated.activity.sh_action_sample_f6bbe7f6701d9f6e5319c75298af423c.perform (sh_action_sample_f6bbe7f6701d9f6e5319c75298af423c.java:74) |

In the list, requestors executing activities are displayed as locked. When you click Requestor Details, the system tests the current status by attempting a lock. If the activity has finished and has released the lock (before the list is updated), Pega Autonomic Event Services successfully gets the details. A stack trace is not displayed.

An infinite loop or a request made to a database or external system that is failed, disconnected, or unavailable can cause an abnormally long locking condition. As a result, the node does not receive a response from that external system within the time limit. This may generate a <u>PEGA0019 alert</u>, or trigger a Critical CPU indicator condition.

Agents tab

Displays the agents configured for the nodes comprising the cluster. Each agent item shows the following:

- Node The node on which the agent is running .
- Enabled Shows whether the agent is running (a green checkmark) or not (a red 'x').
- Ruleset The name of the agent's ruleset
- # The index number of the Agent Activity entry as listed in the Rule-Agent-Queue. Numbering starts with 0.
- Description Short description of the agent, which can include the Agent Activity class and name.
- Scheduling Displays either the current wakeup interval for the agent, in milliseconds (for a periodic agent), or the description of settings chosen for the next time the Agent Activity runs, which can be a string like daily, weekdays only (for a recurring agent).
- Last run start The start time of the last run for this Agent Activity.
- Last run finish The end time of the last run for this Agent Activity.
- Next run time The next time this Agent Activity is scheduled to run.
- Exception information A warning icon appears under the Exception column (see image below) when an agent has stopped running due to an exception. Expand the item to display the message.

| No | ode | Enabled | Ruleset | # | Description | | | | Scheduling | Last Run Start | Last Run Finish | Next Run Start | Exception |
|---------|-------|---------|---|--|--|--|--|---|---|-------------------------------|--------------------|-------------------|-----------|
| \$ d23f | 00111 | × | Pega-ProCom | 0 | Pega-ProCom: Correspondent (@baseclass.Email_CheckIncs | ce, SLA events, 8 ming) | & Bulk Processing | | Every 30000 ms | | | | ▲ |
| Rulese | t | | Pega-ProCo | m | | | 0 | | | | | | |
| Except | ion | | Exception a (BD334836) com.pegaru (ra_action_ com.pegaru (ra_action_ | t 200 3F086 Jes.g email Jes.g email | 91016T161138.551 GMT: com SSCC38E4C7737CA70748) at enerated.activity.ra_action_e _checkincoming_4ade987b1b4 enerated.activity.ra_action_et _checkincoming_4ade987b1b4 | .pega.pegarules. mail_checkincomir 3a611f6cc6f837e mail_checkincomir 3a611f6cc6f837e | pub.PRAppRunting_4ade987b1b4 b489c1.java:515 ng_4ade987b1b4 b489c1.java:482 | neException: No 3a611f6cc6f837e) at 3a611f6cc6f837e) at | Receive accounts eb489c1\$Pz_3_0_1 eb489c1.step3_circ | found From: Listep cum0 | | | |

A Critical condition with a description of All Agents Disabled indicates that the agent enable setting in the node's prconfig.xml file has been disabled (set to false). Although the Agent and Pulse indicators will indicate Critical, an alert or exception will not be triggered. Consult your application administrator for more information.

| ¥ | Enabled X | Ruleset | # | Description All Agents Disabled | Scheduling Never | Last Run Start | L | | | | |
|-----|--|---------|---|------------------------------------|---------------------|----------------|---|--|--|--|--|
| Al | All agents for this node are disabled | | | | | | | | | | |
| Ple | Please configure the systems setting agent/enable. | | | | | | | | | | |

Right-click on a row to show a list of commands you can use with the agent. They are categorized for a single activity and for all activities in the queue. Click Query Rulesets to open in a separate browser a list of ruleset names associated with the agent.

| » | DEV C | × | BugTrackAppl | 0 | BrowseTe | st agentACT Every 3600 | s | | | |
|----|-------|---|--------------|---|-----------|-------------------------|------|---------------------------|---------------------------|-----------|
| » | DEV C | ~ | BugTrackAppl | 1 | SaveBug | queue | 1 | 2/17/09 9:00:00 PM EST | 2/17/09 9:00:06 PM EST | 2/1 PM |
| » | Dev D | ~ | Agent-Test | 0 | ActivityW | Start | days | 2/17/09 6:00:00 PM EST | 2/17/09 6:00:00 PM EST | 2/1 PM |
| » | Dev D | × | Pega-ProCom | 0 | Email_Ch | Restart | | | | |
| » | Dev D | ~ | Pega-ProCom | 1 | ServiceLe | Is Alive? | | 2/18/09 2:05:45 PM EST | 2/18/09 2:05:45 PM EST | 2/1 PM |
| » | Dev D | ~ | Pega-ProCom | 2 | AgentBul | Query | | 2/18/09 2:05:24 PM EST | 2/18/09 2:05:24 PM EST | 2/1 PM |
| * | Dev D | ~ | Pega-ProCom | 3 | SendCori | For all activities in | | 2/18/09 2:05:46 PM EST | 2/18/09 2:05:46 PM EST | 2/1 PM |
| * | Dev D | ~ | Pega-ProCom | 4 | GetConv | queue | 1 | 2/18/09 2:02:56 PM EST | 2/18/09 2:02:56 PM EST | 2/1 PM |
| >> | Dev D | × | Pega-ProCom | 5 | RunTest | Start All | | | | |
| » | Dev D | ~ | Pega-ProCom | 6 | Generate | Restart All | | 2/18/09 2:05:12 PM EST | 2/18/09 2:05:12 PM EST | 2/1 PM |
| * | Dev D | x | KendmTest | 0 | FOAgent | Are All Alive? | | | | |
| » | Dev D | ~ | Pega-RULES | 0 | SystemC | Query All | 0 s | 2/17/09 7:29:10 | 2/17/09 7:29:13 | 2/1 PM |
| * | Dev D | ~ | Pega-RULES | 1 | SystemPi | Other Query Rulesets | | 2/18/09 2:05:10 PM EST | 2/18/09 2:05:10 PM EST | 2/1 PM |
| » | Dev D | ~ | Pega-RULES | 2 | SystemIr | | | 2/18/09 2:05:40 | 2/18/09 2:05:40 | 2/1 PM |

For a single activity in queue

These commands operate on a single agent activity:

- Start Starts the selected agent activity.
- Stop Stops an agent activity that is currently running; sets the Enabled column to false, and prints an exception in the Exception section.
- Restart Stops the selected agent activity and then restarts it.
- Is Alive? Shows the RuleSet name, queue number, and enabled status (true or false) for the selected agent activity.
- Query Displays information on the selected agent activity.
- Delay Delays the next start of this activity to permit Tracer startup. The execution of an Agent Activity can go by too fast to enable the Tracer. This button sets the Agent Activity's status to waiting. When the Tracer is enabled, the activity can be started.

For all activities in queue

The commands in this section work the same as the For single activity in queue commands, operating on all activities in a ruleset's queue. Selecting any single activity in effect selects all activities for that ruleset queue.

- Start All Starts all agent activities in a ruleset queue.
- Stop All Stops all agent activities in a queue or ruleset that are currently running; for each activity in the ruleset, sets the Enabled column to false, and prints an exception in the Exception section.
- Restart All Stops and then restarts all agent activities in a queue or ruleset.
- Are All Alive? Shows for a selected agent activity whether all queued agent activities for that ruleset are enabled or disabled.
- Query All Displays information on all agent activities in a queue or ruleset.

Listeners tab

This tab contains a list of active listeners for all nodes comprising the cluster. Expand an item in the list to display its details including the time started and the Listener class.

| > Clust | er PRPCDeve | elopment | | | | | |
|-----------|--------------|-------------------|-----------|------------------|-------------|------------------------|-------------|
| Nodes | Reports | Requestors Agents | Listeners | | | | |
| Node | Se | lect 💌 | | | | | |
| Available | Listeners Se | sect 💌 | | | | | |
| | | Start Listener | | | | | |
| N | ode | Listener Name | Status | Listener ID | Invocations | Last Access | Error Count |
| IN DEV | F DM DD | NDOR LC DDDOR LC | CLEEDING | FMAIL-Thread-721 | 0 | 2/17/20 0-16-01 RM RCT | 0 |

To start a listener, select a node and an available listener in the drop-down menus and click Start Listener. It will appear in the list after it has been started.

RIght-click on a row to display a list of commands you can use with this listener, this listener type, or all listeners running on the node.

| > Clus | ter PRPCDe | evelopment | | |
|------------------|-------------|--|--------------|-----------------|
| Nodes | Reports | Requestors | Agents | Listeners |
| Node Availabl | e Listeners | DEV B V Data-Admin-Con Start Listene | nect-FileLis | tener:ParthaTe: |
| N DE | VEPM P | Listener Name | e IC | Status |
| 1 02 | VI FPI F | For this list | tener | 1140 |
| | | Query | | |
| | | Listener R | ule Data | |
| | | Restart | | |
| | | Stop | | |
| | | For this list | tener type. | |
| | | Restart this | s type | |
| | | Stop this ty | pe | |
| | | For all liste | ners | |
| | | Restart All | | |
| | | Stop All | | |
| | | | | |

For this listener

- Query Displays information about the selected listener.
- Listener Rule Data Data provided about this listener from the Data-Admin-Connect instance.
- Restart Stops and then restarts the selected listener.
- Stop Stops the selected listener and removes it from the active listener list.

For this listener type

These commands affect all listeners of the same type as the selected listener in the For this listener section. The types include Email, File, JMS, JMSMDB, and MQ.

- RestartType Stops and then restarts all listeners of the specified type.
- StopType Stops all listeners of the specified type.

For all listeners

These commands affect all listeners in the Running Listeners section. It is not necessary to select a specific listener in order to use them.

- RestartAll Restarts all listeners on this node.
- StopAll Stops all listeners on this node.

Management tab

As of Pega Autonomic Event Services 3.3.1, this tab appears in the AESManager and AESDeveloper portals. It does not appear in the AESUser portal.

When you use the prremoteutil utility to configure nodes and clusters, then by default:

- Monitoring is enabled when the node starts.
- Alerts and exceptions are broadcast to the Pega Autonomic Event Services server that you specify.

The commands in this tab allow you to dynamically change these settings without having to shut down the cluster and repeat the configuration process.

| Health | Health Summary Reports Requestors Agents Listeners Management | | | | | | | | | | | |
|------------------|---|---------|--|--|--|----------|--|--|--|--|--|--|
| Clus | Cluster Monitoring | | | | | | | | | | | |
| Enable/I | Enable/Disable monitoring on all nodes in this duster: Enable Disable | | | | | | | | | | | |
| AES | Server Redi | rection | | | | | | | | | | |
| AES Serv URL: | ver | | | | | Redirect | | | | | | |

You can also perform these commands at the node level. See the Management tab topic in Node view tabs.

Before you use these commands, verify the following:

- All clusters and the nodes comprising them are operational.
- All nodes have been upgraded to Pega Autonomic Event Services 3.3.1 or later.
- The target server is operational if you are redirecting clusters or nodes to it.

Use the commands as follows:

Cluster Monitoring — Click Disable to stop monitoring this Pega Autonomic Event Services server for this cluster. Alerts and exceptions are logged on the nodes but are not sent to the server. Health messages are not sent. The health indicators display Disabled as of the next node health pulse. This has no effect on the Node (Up/Total) color indicator. For instance, when a cluster is disabled, the indicator does not turn red. Click Enable to start monitoring again.

Use case: As you build a multi-cluster system, you do not want to receive alerts from individual clusters until the entire system is complete. To do this, you disable the cluster after the nodes are configured and re-enable it (and the other clusters) when the system is ready for service.

AES Server Redirection — To disable monitoring on this Pega Autonomic Event Services server for this cluster and redirect and enable monitoring on another Pega Autonomic Event Services server, enter the target server URL (Pega Autonomic Event Services SOAP servlet URL) in the New AES URL field and click Redirect Cluster.

Alerts and exceptions are reported to the new server immediately. The cluster appears on the new server's Enterprise Health console as of the next health indicator pulse. The health indicators display Redirected on the original server as of the next node health pulse. This has no effect on the Node (Up/Total) color indicator.

The target server can be running any Pega Autonomic Event Services version. However, the Management tab commands on the target server will not be available unless it is upgraded to Pega Autonomic Event Services 3.3.1 or later.

At the Enterprise view, the Disabled or Redirected indicators appear only if none of the nodes in a cluster have Normal, Unknown, or Offline indicators. If all the nodes are both disabled and redirected, only the Disabled indicators appear.

A group of clusters is deployed on a UAT system, which is monitored by a dedicated Pega Autonomic Event Services server. When UAT is complete, you want to deploy the clusters to a production system, which is monitored by its own AES server. Rather than having to manually re-configure these nodes, you can redirect the clusters from the UAT server to the production server.

When a node is configured for Pega Autonomic Event Services, the Enable / Disable and Redirect commands may be turned off. The node is monitored and appears on the console but the commands cannot be applied to it. For more information, see <u>Autonomic Event Services (AES) 7.2 Monitored Node</u> <u>Configuration Guide</u>.

Node Health Information

From the cluster view, you can expand each node row (using the Expand icon) to display the Node Health Information panel. It is organized into two functional areas as shown below:

| Node ¥ | | Requestors | Agents | Memory | Pulse | CPU | Database | Cache | HTTP Response | Urgent Events |
|----------------------|---------------|--------------|---------|-----------------|----------------|------------------|-------------------|----------------------------------|--------------------|------------------|
| f56f1038840815ce5a2e | e7dd91b2cf99a | Normal | Normal | Warn | Normal | Normal | Normal | Normal | Normal | Normal |
| iode Health Informat | tion | | | | | | | | | |
| Health Indicator | Metric | | | Metric Value | Last Change | d Criteria S | cope Mair | tenance | | |
| Requestors | Count | | | 13 | No Change | e Default | Creat | te a <u>cluster</u> or <u>ne</u> | ede specific rule. | |
| lgents | Count | | | 16 | No Change | e Default | Creat | te a <u>cluster</u> or ne | de specific rule. | |
| Memory | % Used | | | 86 | No Change | e Default | Creat | te a <u>cluster</u> or ne | de specific rule. | |
| tube | Last Pulse | | Aug 10, | 2009 5:35:46 PM | No Change | e Default | Creat | te a cluster or ne | de specific rule. | |
| ORU | Process CPU | Usage | | 0 | No Change | Default | Creat | te a cluster or ne | de specific rule. | |
| Database | Connections | | | 4 | | | - | | | |
| | Oueries | | | No Error | No Change | e <u>Default</u> | Creat | te a <u>cluster</u> or <u>ti</u> | ode specific rule. | |
| Cache | Rule Cache I | Enabled | | true | No Change | e Default | Creat | te a <u>cluster</u> or re | de specific rule. | |
| ITTP Response | Average | | | 0 | No Change | e Default | Creat | te a cluster or ne | de specific rule. | |
| Irgent Events | Count | | | 0 | No Change | e | | | | |
| ast Health Received | Aug 10, 200 | 9 5:36:38 PM | | | Node PRPC LIRL | http://sser | vicesxp2:8089/brw | eb/PRServlet | | |
| Client Health Sent | Aug 10, 200 | 9 5:36:38 PM | | | Node SOAP URL | http://sser | vicesxp2:8089/prw | eb/PRSOAPServ | let | |
| | | o | | | | | dia stor T | brooke | Ida | |
| Ir | ndicator | Statistic | s | | | In | dicator i | nresho | as | |

Indicator statistics

To help you monitor the health status of each indicator, the left area displays the following information:

- Health Indicator The name of the indicator
- Metric The indicator value's unit of measure
- Metric Value Indicator value generated by the node as of the last health agent pulse (Last Pulse). When received, the system evaluates this value against its threshold setting. If the value changes the status, the indicator automatically changes color. Use the refresh icon to display the most current statistics in the panel.
- Last Changed The time that has elapsed since the indicator changed status. The value will be No Change if there have been no changes since the node was started. To see when the change occurred, hover over a value to display the date and time as shown in this example:

| <u>1m</u> | <u>Default</u> | Creat |
|--------------------|----------------|------------------|
| <u>1d 1h 17m</u> | <u>Default</u> | Creat |
| <u>1d 1h 17m</u> | <u>Default</u> | Creat |
| <u>1d 1h 1</u> Jun | 9, 2009 | 4:28:16 PM Creat |
| 1d 1h 17m | Default | Creat |

Click on the value to open an indicator history report. Here is an example of an Agents report:

| Indicator History for 'processCPUUsage' on Node | | | | | | | |
|---|-------------------------|------------|------------|--|--|--|--|
| | Change Time | Time Since | New Status | | | | |
| » | Jun 23, 2009 1:31:34 PM | 3h 7m | Normal | | | | |
| » | Jun 23, 2009 1:29:34 PM | 3h 9m | Warn | | | | |

Expand an item to display its details. Both of the items are expanded here:

| Indicator History for 'processCPUUsage' on Node | | | | | | | |
|---|-----------|------------|------------|--|--|--|--|
| | | - | - | | | | |
| Change Ti | ne | Time Since | New Status | | | | |
| Jun 23, 2009 1:31:34 PM 3h 2m Normal | | | | | | | |
| normal. | | | | | | | |
| Health Status Change Information | | | | | | | |
| Indicator | processCP | | | | | | |
| | | | | | | | |

| | Metric | Value | Comp | Ihreshold | | | | |
|------------------------------|--|-------|------|-----------|--|--|--|--|
| | processCPUUsage | 24 | < | 30 | | | | |
| Current Status | normal | | | | | | | |
| Previous Status | warn | | | | | | | |
| Status Change Occurred at | Jun 23, 2009 1:31:34 PM | | | | | | | |
| Occurred on Node | DEV B (8dd44b4ab7f99edbc0ee78dbe4b8de47) | | | | | | | |
| Cluster | PRPCDevelopment | | | | | | | |

Solution 23, 2009 1:29:34 PM 3h 4m Warn

Indicator 'processCPUUsage' has changed from normal to warn.

| Health Status Change Information | | | | | | | |
|----------------------------------|-------------------------|---------|--------|--------------|--|--|--|
| Indicator | processCPUUsage | | | | | | |
| | Metric | Value | Comp | Threshold | | | |
| | processCPUUsage | 34 | >= | 30 | | | |
| Current Status | warn | | | | | | |
| Previous Status | normal | | | | | | |
| Status Change Occurred at | Jun 23, 2009 1:29:33 PM | | | | | | |
| Occurred on Node | DEV B (8dd44b4ab | 7f99edb | c0ee78 | dbe4b8de47) | | | |
| Cluster | PRPCDevelopment | t | | | | | |

The Warn item's Indicator section shows that the CPU usage value (34) exceeded the threshold (30). As of the pulse timestamp in the **Status Change Occurred at** row, the status changed back to Normal when the value fell below the threshold. The Occurred on Node row displays the node name (if any) and the hex code identifier in parentheses.

The status is Unknown or Offline if the last change was caused by a system shutdown.

About the database change indicator

The database indicator status changes to Warn or Critical if either of the following is true:

- The total number of database connections exceeds a threshold value
- An SQL exception occurs. The indicator is No Error if the last operation was successful.

Open the Database Events tab (Node view) to display a list of the events that tripped the indicator. Click on an item to for more information. If there were no database exceptions in the past 30 minutes, the list is cleared by the system.

| | Node | Ccd7e14278ff91f29fa5e6dd94e Normal | | s Ager | Agents M | | Pulse | CPU | | Database | | |
|-----|--|------------------------------------|-----------------|----------------|-----------------------|-------------------------|-------------|---|------|--------------------------------|---------------------|--|
| » | d23f00cd7e1 | | | Normal | N | Normal | | Normal | Norr | rmal Critical | | |
| 5ys | ystem Info Reports Requestors Agents I | | | | Listeners | Urgent | Events | ents Database Events | | | Correlations | |
| ~ | Database | Exceptio | ons | | | | | | | | | |
| | Generated Date Time | i sql e | rror Type | | Root E Class | Root Exception Class | | Root Exception Message | | Top Level Exception Message | | |
| | Sep 10, 2009 12:15:54 PM | Syntax | Error or Access | Rule Violation | java.sql.S | java.sql.SQLException | | ORA-00942: table or view does not exist | | Error in RD8-Delete | | |
| | Sep 10, 2009 12:15:52 PM | Syntax | Error or Access | Rule Violation | java.sql.SQLException | | n ORA-00942 | ORA-00942: table or view does not exist | | Error in RDB-Delete | | |
| | Sep 10, 2009 12:15:49 PM | Syntax | Error or Access | Rule Violation | java.sql.S | java.sql.SQLException | | ORA-00942: table or view does not ex | | st Error in RDB-Delete | | |
| | Sep 10, 2009 12:15:46 PM | Syntax | Error or Access | Rule Violation | java.sql.S | java.sql.SQLException | | ORA-00942: table or view does not exist | | Error in RDB-Delete | | |
| | Sep 10, 2009 12:15:43 PM | Syntax | Error or Access | Rule Violation | java.sql.s | java.sql.SQLException | | ORA-00942: table or view does not exist | | | Error in RDB-Delete | |

These events also trip the Urgent Events indicator and appear in the Exceptions report on the Urgent Events tab.

Indicator threshold settings

It is advised that you do not modify the default health indicator thresholds, which are set to levels that fully utilize available resources and optimize system performance. If necessary, you can modify threshold values under the Criteria Scope and Maintenance columns as described in this section.

Criteria Scope — Indicates the specificity of the criteria being used to evaluate the indicator on a monitored node. A decision table is used to define the logic for evaluating the statistic values against their criteria. The Default tables contain criteria that are applied to all nodes across the enterprise. To open the decision table, click the Default link next to the health statistic name. Here is the default table used for the Requestors statistic. The values apply to all clusters in the enterprise.

| DECISION TABLE PegaAES-Data-NodeHealth • RequestorCluster | | | | | | | | | |
|--|------------------------------------|------------------|---|--|--|--|--|--|--|
| ~ | Ap | plies To | PegaAES-Data-NodeHealth | | | | | | |
| \checkmark | F | urpose | RequestorCluster | | | | | | |
| | Short Description RequestorCluster | | | | | | | | |
| Table Pages | s & Classes History | | | | | | | | |
| | | 🏸 🛛 Sh | how Conflicts Show Completeness Edit in Excel | | | | | | |
| | Conditions | A | Actions | | | | | | |
| | requestorCount >= | F | Return | | | | | | |
| • if | 80 | → "c | "critical" | | | | | | |
| else if | 60 | → [*] v | "warn" | | | | | | |
| otherwise | | → 1 | 'normal" | | | | | | |

You can modify the values and save the rule. Doing so updates all the criteria values for all Requestors throughout the enterprise.

Maintenance — Provides cluster or node level overrides for the default indicator logic. Clicking on one of these links creates a circumstanced version, which overrides the default table. There are two override links:

- Cluster The criteria is defined for a cluster (overriding criteria defined for the enterprise scope).
- Node The criteria is defined for a node (overriding criteria defined for both the cluster and the enterprise scopes)

For example, if you want to change the default Requestors criteria only at the cluster level, do the following:

1. Click the cluster link under the Maintenance column on the Requestor row.

| Criteria Scope | Maintenance |
|----------------|---|
| Default | Create a <u>cluster</u> or <u>node</u> specific rule. |
| Default | Create a <u>cluster</u> or <u>node</u> specific rule. |
| <u>Default</u> | Create a <u>cluster</u> or <u>node</u> specific rule. |

Pega Autonomic Event Services creates a new circumstanced instance of the default requestor table. The circumstance is defined by the cluster to which the node belongs.

| DECE | SION TABLE PegaAES-Dat | PegaAESCriteria : 01-01-01 ⊙ 🛠 | | | | |
|-----------------------------|------------------------|--------------------------------|--------------------------|----------------------|--------------|--------------------------------|
| 0 | Applies T | o Pe | egaAES-Data-Node | Health | Circumstance | .ClusterName = PRPCDevelopment |
| ~ | Purpos | e Re | equestorCluster | | Last Update | Feb 18, 2009 - 14:49:28 EST |
| | Short Description | requ | r duster PRPCDevelopment | | | |
| Table Pag | es & Classes History | | | | | |
| ► | ti de time d | 2 | Show Conflicts | Show Completeness Ed | it in Excel | |
| | Conditions | | Actions | | | |
| | requestorCount >= | | Return | | | |
| ∘ ¥f | ◦ if 80 — | | | | | |
| else if | ◦ else if 60 → | | | | | |
| otherwise | Call base decision | → | "normal" | | | |

2. You can either keep the existing values and exit the rule form, or you can modify the values and save the rule. When you exit the form, the Criteria Scope and Maintenance columns look like this:

| Criteria Scope | Maintenance |
|------------------|--|
| Cluster [remove] | Create a node specific rule. |
| Default | Create a <u>cluster</u> or <u>node</u> speci |
| | |

3. The values in the Cluster rule apply to all the nodes within the specified cluster (the one to which the node belongs). The above configuration appears when you open any node in this cluster view.

If you had created a node-specific rule, the Maintenance column is empty — you cannot create a cluster rule to override a node rule. To delete the circumstanced instance and return to the default table, click [remove].

Node view

From within the cluster view, select an indicator (not the expand icon) to open a set of reports and charts associated with the node.

| > Cluster AESDevelopment | | | | | | | | | |
|--------------------------|------------------------------------|--|--|--|-------------------|-----------|------------|---------|--|
| Heal | ealth Summary Reports Request | | | | Agents | Listeners | Management | | |
| | Node 🔻 | | | | Requestors Agents | | Memory | Pulse | |
| >> | » d23f00cd7e14278ff91f29fa5e6dd94e | | | | Normal N | | Normal | Normal | |
| » | » 61c63abd9ee706a061b404206293c9ec | | | | Offline | Offline | oft} | Offline | |

Here is an example of a node view:

| Node | | | Requestors | Agents | | Memory | Pulse | CPU | Database | Cache | HTTP Response | Urgent Events |
|-------------|--------------|--------------|------------|-----------|--------|----------|----------|--------|--------------|---------|------------------|------------------|
| » d23f00cd7 | e14278ff91f2 | 29fa5e6dd94e | Normal | Norr | mal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| System Info | Reports | Requestors | Agents | Listeners | Urgenl | t Events | Database | Events | Correlations | Request | or Pools | Management |
| > Runtim | e | | | | | | | | | | | |
| > Version | Info | | | | | | | | | | | |
| > Configu | ration | | | | | | | | | | | |
| > Module | Info | | | | | | | | | | | |
| > Load In | fo | | | | | | | | | | | |
| > Cache S | iummary | | | | | | | | | | | |

Tip: While in cluster view, selecting a Requestor, Agents, Database, or Urgent Events indicator opens the indicator's respective tab. Selecting the HTTP Response indicator does not open a node view.

Expand the Cluster header to display details about the node. It also contains links to the SMA tool (editable) and to the Process Commander application. Use the Cluster link in the top header to return to cluster view at any time.

➤ Cluster PRPCDevelopment Node f56f1038840815ce5a2e7dd91b2

| Description | f56f1038840815ce5a2e7dd91b2cf99a f56f1038840815ce5a2e7dd91b2cf99a |
|-------------------|--|
| Host Name | sservicesxp2 |
| Cluster | PRPCDevelopment |
| Connection String | http://sservicesxp2:8089/prweb/PRSOAPServlet |
| System Management | http://sdevrulese:92/prsysmqmt [Edit] |
| PRPC URL | http://sservicesxp2:8089/prweb/PRServlet |

Return to Top

Node-view tabs

The node view contains ten tabs.

| System Info | Reports | Requestors | Agents | Listeners | Urgent Events | Database Events | Correlations | Requestor Pools | Management |
|-------------|---------|------------|--------|-----------|---------------|-----------------|--------------|-----------------|------------|
| > Runtim | e | | | | | | | | |
| A Bender | 1-6- | | | | | | | | |

System Info tab — has six expandable sections:

- Runtime Interactive charts displaying data from the prior two weeks to the most current agent pulse. These include memory used (MB), CPU used (percentage), and number of active requestors (by type).
- Version Info Displays node, build, and JVM information, and a count of system-wide requestor starts (by type).
- Configuration Displays the contents of the monitored node's prconfig.xml file.
- Module Info Displays versions for all currently loaded java classes that make up the Process Commander rules engine. This is useful troubleshooting information where you need to determine whether a particular hot fix was applied to a Process Commander system.
- Load Info Displays four interactive charts showing node load trends. Charts include average browser response time, average compilation (CPU) time for all the assembled classes, compilation count, and assembly count.
- Cache Summary Displays in real time an interactive chart showing the sizes (in megabytes) of the FUA and Rule caches.



MaxPruned Entries in FUA Cache is greater than zero, please refer to pdn article to resolve the issue

For a detailed report about each cache, click a link located under the chart.

A link to the article <u>Understanding the PEGA0017 alert - Cache exceeds limit</u> appears when the Max Pruned value in these caches is greater than 0.

FUA Cache — The Max Pruned value in FUA Alias Entries (Max Pruned in Assembled Class Entries is not used as a threshold).

| FUA Alias Entries | | | |
|-------------------------|-----|---------------------------|-----|
| Total Alias Count | 190 | Checked-out Alias Count | 0 |
| Personal Drain Size | 40 | Personal Drain Age (mins) | 20 |
| Limit Pruned | 0 | Max Pruned | 0 |
| Limit Size | 200 | Max Size | 240 |
| Total Pruned (MRU only) | 0 | | |
| Assembled Class Entries | | | |
| Limit Pruned | 0 | Max Pruned | 48 |
| Drain Size | 10 | Drain Age (mins) | 20 |
| Limit Size | 50 | Max Size | 60 |

Rule Instance Cache — The Max Pruned values in either Instance MRU or Rule Resolution Alias MRU caches.

| Size of blobs reused (HB) | 12 | Limit Prune Age (min) | 5 | Draining Prune Age (min) | 10 |
|---------------------------|--------|-----------------------|--------------|--------------------------|---------|
| | | Instanc | e MRU | | |
| Target Size | 900 | Limit Size | 3,000 | Max Size | 3,750 |
| Limit Pruned | 0 | Maxed Pruned | 0 | Cur. Size | 216 |
| Drain Target Size | 225 | Draining Pruned | 0 | | |
| | | Rule Resoluti | on Alias MRU | | |
| Target Size | 72,000 | Limit Size | 90,000 | Max Size | 108,000 |
| Limit Pruned | 0 | Maxed Pruned | 0 | Cur. Size | 520 |
| Drain Target Size | 18,000 | Draining Pruned | 0 | | |

When the Cache Size reaches its Max Size (about 125% the Limit value), there is no physical space to increase cache size. The system prunes the entries and Max Pruned shows a non-zero value. This condition is serious as it is likely to cause erroneous processing behavior.

Reports, Requestors, Agents, and Listeners tabs — provide, at the node level, information as described previously for the cluster-level tabs.

The Urgent Events tab contains two lists of events (alerts and exceptions) that triggered the indicator (only Alerts shown in the example below).

| ealth | | | | | | | | | |
|---|-------------|----------------|-----------------|-----------------|----------------|---------------------|----------------|------------------|-------------------|
| Node 1 | Requestors | Agents | Memory | Pulse | CPU | Database | Cache | HTTP Response | Urgent Events |
| > DEV 8 | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Urgent |
| stem Info | Reports | Requestors | Agents Liste | ners Urgent E | vents | Database Events | s Cor | relations | Requestor Po |
| Jear All Eve | ents | | | | | | | | |
| Alerts | i . | | | | | | | | |
| Event Date | Event Type | e Key | | | | | | Description | |
| August 10, 2009 6:20:03 PM EDT | PegaAES-Dat | a-Alert PEGAAE | S-DATA-ALERT 20 | 090810T222003.1 | 64 GMT!80D448 | 4A87F99ED8C0EE78 | DBE488DE47!956 | PEGA0019 : Lon | g-running request |
| August 10, 2009 6:18:03 PM EDT | PegaAES-Dat | a-Alert PEGAAE | S-DATA-ALERT 20 | 0908107221803.1 | 58 GMT180D448 | 4AB 7F 99EDBC0EE 78 | DBE4B8DE471955 | PEGA0019 : Lon | g-running request |
| August 10, 2009 6:14:03 | PegaAES-Dat | a-Alert PEGAAE | S-DATA-ALERT 20 | 090810T221403.1 | 46 GMT!8DD 448 | 4AB7F99ED8C0EE78 | DBE488DE471951 | PEGA0019 : Lon | g-running request |

When an event occurs, the item is appended to the list. Click on an item to open it. Items remain in the list indefinitely. To remove all of them, click Clear All Events.

Database Events tab — Displays a list of the SQL exceptions that tripped a Warn or Critical Database indicator. Click on an exception for more information. The list remains in the tab for thirty minutes and is then cleared by the system. These events also trip the Urgent Events indicator and are reported in the Urgent Events tab.

Correlations tab — Provides links to alerts reports or to other tabs that are related to Critical indicators (Requestors are not included). The links are grouped by indicator. For example, if the Memory indicator is critical, open the Correlations tab and select each of the links in the Memory group. Note that some changes to a health indicator do not necessarily produce correlated alerts. For example, a critical Memory condition is probably related to a PEGA0028 alert, but a PEGA0035 alert may not be correlated to the condition.



To use this tab, select the time range for the report data you want to display. For example, if you select 1d ago and click View Recent Memory Alerts, the report will include all PEGA0028 alerts generated in the previous 24 hours. The default is thirty minutes. Note that the Time Range setting does not affect the View

Agents Not Running or the View the Current Status of the Pulse Agent correlations. The links in the indicator groups are as follows:

- Memory Displays lists of <u>PEGA0028</u>, <u>PEGA0004</u>, <u>PEGA0027</u>, and <u>PEGA0035</u> alerts.
- Pulse Opens the Agents tab, which displays a list of the running agents. Displays a list of <u>PEGA0010</u> alerts.
- CPU Displays a list of <u>PEGA0019</u> alerts.
- Agents Opens the Agents tab, which displays a list of the agents that are disabled. Displays a list of <u>PEGA0010</u> alerts.
- Cache Displays a list of <u>PEGA0022</u> alerts.
- Urgent Events Opens the Urgent Events tab, which lists the events that occurred within the specified time range.

Click on an item in an alerts report to display the form. Open the related action item by selecting Click to find related work in the Related Work section.

| > Alert Sum | mary | | | | | | |
|----------------------|-----------------------|------------|-----------|-------------|--|--|--|
| > Execution | Summary | | | | | | |
| Session Info | Call Stack | Trace List | Clipboard | Performance | | | |
| Category | | | Long Requ | lestor Time | | | |
| Msg ID | | | | PEGA0019 | | | |
| KPI Value | | | | 1,225,399 | | | |
| KPI Threshold | KPI Threshold 600,000 | | | | | | |
| Rule Check Enabled ? | | | | | | | |
| Interaction 10,945 | | | | | | | |
| Alert Version | | | | 6 | | | |
| Unique Integer | | | | 1604 | | | |
| > Problem C | orrelation | | | | | | |
| > Related A | erts | | | | | | |
| ✓ Related ₩ | ork | | | | | | |
| Click to find r | elated work | | | | | | |

Application Changes — Displays a list of ruleset versions that have been added or deleted from the cluster (to which the node belongs). The list also includes the operator and time an update was made. A Pega Autonomic Event Services agent checks the application once every twenty four hours. If there have been updates between two consecutive agent pulses, the system adds entries to the list. If no updates have occurred, there are no entries. Here is an example of a report entry made on August 10, 2009 (the date and time in the header indicate when the last pulse occurred):

| Date 🔻 | | Description | Description | | | | | |
|-----------------|--------------|-------------------|--|-------------------------|--|--|--|--|
| Aug 10, 2009 5: | 37:52 PM | Added (DoridRMSAE | Added (DoridRMSAES:01-01-21(2 total)) and removed (DoridRMSAES:01-01-19(3 total)) rule | | | | | |
| Added | Rulesets | | | | | | | |
| | Ruleset | Version | Update Operator | Update Time | | | | |
| | DoridRMSAES | 01-01-21 | Dave Dority | Aug 10, 2009 5:37:39 PM | | | | |
| | DoridRMSAES | 01-01-22 | Dave Dority | Aug 10, 2009 5:37:37 PM | | | | |
| Remov | ved Rulesets | | | | | | | |
| | Ruleset | Version | Update Operator | Update Time | | | | |
| | DoridRMSAES | 01-01-19 | Dave Dority | Aug 10, 2009 5:29:03 PM | | | | |
| | DoridRMSAES | 01-01-18 | Dave Dority | Aug 5, 2009 2:26:49 PM | | | | |
| | DoridRMSAES | 01-01-17 | Dave Dority | Aug 5, 2009 2:26:38 PM | | | | |

Investigate groupings of critical Memory and Database events that occur soon after the ruleset update times — these events may be correlated to the updates.

Requestor Pools tab — Contains statistics for a set of idle and active requestors that PRPC reserves for use by the services in a service package.

| Package | Group | Application | Last Access | Idle Count | Active Count | Most Idle | Most Active Count | Max Idle Count | Max Active Count | Max Wait Count | Longest Wait Count | TimeOuts Count |
|---------------|--------------|-------------|------------------------|---------------|-----------------|--------------|-------------------------|----------------------|------------------------|----------------------|--------------------------|-------------------|
| PEGAAES | AESDeveloper | | 8/12/09 7:49:34 PM EDT | 4 | 0 | 4 | 4 | 5 | 50 | 10 | 0 | 0 |
| PEGAAESREMOTE | AESRemote | | 8/12/09 7:49:39 PM EDT | 0 | 1 | 1 | 1 | 5 | 20 | 10 | 0 | 0 |

Clear

When an active requestor completes processing, PRPC checks the limit for idle requestors before returning that requestor to the pool. If the pool is under the limit, the requestor becomes idle and PRPC returns it to the pool. If the pool is at the limit, PRPC deletes the requestor. To delete an idle requestor, select it in the ServicePackage drop-down and click Clear.

Management tab — Contains commands to:

- Turn monitoring off or on for this node on this Pega Autonomic Event Services server.
- Redirect monitoring for this node on this Pega Autonomic Event Services server to another.

As of Pega Autonomic Event Services 3.3.1, this tab appears in the AESManager and AESDeveloper portals. It does not appear in the AESUser portal.

For descriptions of the commands, see the Management tab section in this article.

How to use charts and reports in Pega Autonomic Event Services

The Reporting area in the AES Manager Portal provides access to a wide array of Pega[®] Autonomic Event Services-specific list reports, summary reports, and charts. These include:

- Enterprise and cluster-level alerts and exception reports
- Enterprise-level action item and exception item reports
- Enterprise-level charts showing requestor statistics
- Cluster/Application-level alert performance charts

This article describes Pega Autonomic Event Services 3.4. If you are using a newer version, there may be user interface and functional differences that do not correspond exactly with the information presented here.

- The Reporting area
- AES Cluster Reports
- AES Enterprise Reports
- AES Enterprise Charts
- Analyze Application Performance for Alerts
- <u>Action Items by Status</u>

Accessing the Reporting area

- 1. On the Pega Autonomic Event Services welcome screen, enter your manager ID and password and click Log In. Remember that passwords are case-sensitive.
- 2. In the navigation panel, click the Reporting bar to open the work area as shown below:

| AES Manager | 🔻 Reporting 🗧 👄 😂 g | 3 | | | | |
|-------------------|--|---|--|--|--|--|
| Enterprise Health | ✓ AES Cluster Reports | | | | | |
| Action Items | Select a duster sde V Select a start date (/14/2010 2) Select a node Select V | | | | | |
| Reporting | Cluster Reports Node Reports | | | | | |
| Find Select | With Time Range With Time Range With Time Range With Time Range • Recent Alerts tilla • Total Alerts by Node tilla • Browser Interactions by Node tilla • Alert Counts by Type tilla • All Alerts • Total Alerts by Day tilla • Average Response Time by Node tilla • Average Response Time by Day tilla • Restarts by Day tilla • Average Response Time by Day tilla • Avalability • Restarts by Day tilla • Total Alerts by Node tilla • Avalability | | | | | |
| | ✓ AES Enterprise Reports | | | | | |
| | Nodes Summary Alerts By Category By Daytin All Exceptions By Class Open Action Items By Type Alerts By Category Alerts By Category | | | | | |
| | > AES Enterprise Charts | | | | | |
| | > Monitor Process Assignments | | | | | |
| | > Monitor Processes | | | | | |
| | > Analyze Process Quality | | | | | |
| | > Analyze Process Performance | | | | | |
| | > Analyze Application Performance For Alerts | | | | | |

The Reporting navigational panel contains the following:

- Search bar Search for a report by name
- A Report wizard drop-down list Create custom version of a report using the Report wizard.

| Reporting | |
|--|---|
| Find | |
| Select | ~ |
| Select Monitor Assignments Monitor Processes | |
| Analyze Quality Analyze Performance | |

The Reporting area

The Reporting area includes these sections with Pega Autonomic Event Services-specific list and summary reports.

- AES Cluster Reports
- AES Enterprise Reports
- AES Enterprise Charts
- Analyze Application Performance for Alerts
- Action Items by Status

The other sections contain standard PRPC reports. For more information, see the PDN article <u>Standard</u> <u>Monitor Activity Reports</u>.

Using interactive graphs

This area contains interactive graphs that display statistical information. Use the following controls on the chat:

• Use the slider control to adjust the date range:

Wed Feb 4 2009 🛆 Tue Feb 17 2009

- Hover over a vertical line (date) to display an exact count.
- Click the Maximize icon to present the chart in a larger, full-screen window.
- Click the Show Data icon to view the summary view output as numeric data.

To view and interact with the charts, your workstation web browser must include the Adobe Flash Player 9, a free download available at **www.adobe.com/products/flashplayer**.

AES Cluster Reports

This section provides reports for clusters and the nodes that comprise them.

| ✓ AES Cluster Repo | orts | | |
|-----------------------------------|--|--|---|
| Select a duster | sde Select a st Select an e | tart date 4/14/2010 | Select a node Select 💌 |
| Recent Alerts Illi All Alerts | Cluster Repo With Time Range • Total Alerts by Node Illi • Total Alerts by Day Illi • Browser Alerts by Day Illi • Restarts by Day Illi • Uptime Timeline by Node Illi | with Time Range Browser Interactions by Node III Average Response Time by Node III Average Response Time by Day III Total Response Time by Day III | Node Reports With Time Range • Alert Counts by Type Illi • Restarts Illi • Availability |

To access the reports:

- 1. Select a cluster from the pull-down list.
- 2. For Time Range reports, select a start and end date.
- 3. For node reports, select a node from the pull-down list.

Cluster reports (no time range)

- Recent Alerts Alerts received by Pega Autonomic Event Services for the selected cluster during the last ten minutes. The data is presented as a summary report and in a chart. Hover over a bar to display the numbers of alerts comprising the bar.
- All Alerts Displays a list of alert types and counts for all the nodes within the cluster. The list is sorted by count. Click on a row to display the problem correlations for that alert type and the count of alerts associated with each problem.

| Cluster: AESDevelopment Category: DB Time Export | t To Excel < <back< th=""></back<> |
|--|------------------------------------|
| Problem Correlation | Count |
| select literal value',pxObjClass as literal value', literal value',snapshotTime as literal value', literal value',memoryUsed as lit literal value',pztinskey as literal value' from pepaam, node_stats literal value' where literal value',pxObjClass = ? and ((lite value',oneQtin = ?) and literal value'.snapshotTime > ? and literal value',snapshotTime <= ?) | ral value', ral 38 |
| delete from pr_sys_locks where pzInsKey = ? and pxOwnerId = ? | 30 |
| {call sppr_purge_table(?,?,?)} | 25 |
| insert into pr_sys_jodis (pxCreateDateTime, pxCreateOpName, pxCreateOperator, pxCreateSystemID, pxExpireDateTime, pxObjClass, pxOvinerId, pxSystemName, pxSystemNode, pxUpdateDateTime, pxUpdateOpAme, pxUpdateOperator, pxUp pxUserNost, pyLabel, pzInsKey) values (?, ?, ?, ?, ?, ?, Titeral value, ?, ?, ?, ?, ?, ?, ?, ?, Titeral value, ?) | pxLockHandle, xdateSystemID, 24 |

Click a row to display creation time, operator, and KPI threshold information about each of the alerts comprising the problem correlation.

| Cluster: AESDevelo | Cluster: AESDevelopment Category: DB Time | | | | | | | |
|----------------------------|---|------------------------|-----------------------|--------------------------------|-------------------------------|----------------|--|--|
| select 'literal value'.px0 | bjClass as 'literal valu | e', 'literal value'.sn | apshotTime as 'litera | I value' , 'literal value'.mem | oryUsed as 'literal value', 1 | iteral value'. | | |
| Created | Operator | Alert ID | KPI Value | KPI Threshold | KPI OverThresho | bld | | |
| 6/18/2009 8:09 AM | System | PEGA0005 | 7,124 | 500 | 6,624 | | | |
| 6/16/2009 5:23 PM | System | PEGA0005 | 1,931 | 500 | 1,431 | | | |
| 6/16/2009 5:10 PM | System | PEGA0005 | 1,929 | 500 | 1,429 | | | |
| 6/16/2009 4:40 PM | System | PEGA0005 | 2,313 | 500 | 1,813 | | | |
| 6/16/2009 4:20 PM | System | PEGA0005 | 10,212 | 500 | 9,712 | | | |
| 6/16/2009 4:11 PM | System | PEGA0005 | 2,193 | 500 | 1.693 | | | |

Click a row to open an alert item. This report is also available using the Alerts by Category option in the Action Items area.

Cluster reports with time range

The items included in these reports are defined by the start date and end dates you selected.

- Total Alerts by Node Displays a chart and a list showing the alert count for each node in the cluster. Click a node name to open the list of alerts.
- Total Alerts by Day Displays a chart and a list showing the daily count for all alerts. Click the cluster name to open the list of alerts.
- Browser Alerts by Day Displays a chart and a list showing the daily count of PEGA0001 alerts for the cluster. Click the cluster name to open the list of alerts.
- Restarts by Day Displays a chart and a list showing the daily count of PEGA0008 alerts. Click the

cluster name to open the list of alerts.

• Uptime Timeline by Node — Displays a bar chart showing the duration of uptime for each node in the cluster. The yellow bar indicates uptime. Hover over a bar to display the statistics. Use the Day, Week, and Show All buttons to control the timeline within the defined date range.

| 2e360d957b812f9f837b6ab055cc9599 | | | |
|------------------------------------|------------------|-------------------------|---|
| | | | |
| | | MAY 3 | |
| | | | |
| 2e8c0719c8d30c8b292b52a3ae12d48d | | | |
| | | HAV 2 | |
| | | INAT 5 | |
| 20175-6626220-20064260-002264.0ch | Linking Internal | | - |
| - 3ed/5cf6ziz39c308i4zi0eccazi18cb | Optime interval | | - |
| | | | |
| | | | _ |
| - 4e551a623205e87f70bbb1fd06160a70 | Start Time | Apr 28, 2010 2:20:59 PM | _ |
| 46351802323568717000011800180870 | End Time | Apr 29, 2010 5:20:15 PM | 1 |
| | | | |
| | | | |
| db3ea1ea35f534a18ead4be75c9e6157 | - | | - |
| | | | |
| | | MAY 3 | |
| | | | |
| f537cfaf144ecc1ae4d79482244e2c96 | | | |
| | | | |
| | | MAY 3 | |
| | | | |
| | | | |
| | | | |
| | | | |
| DAY WEEK SHOW ALL | | | |
| | | | |
| | | | |

• Browser Interactions by Node — Displays a chart and a list showing the total count of browser interactions for each node in the cluster.

The following reports display a chart and list or browser requestor times (in seconds). The charts use data retrieved from the monitored nodes as daily Log-Usage statistics. Network time is not included.

- Average Response Time by Node Displays a chart showing, during the defined time range, the average times for each node in the cluster.
- Average Response Time by Day Displays a chart showing the daily average times for the cluster.
- Total Response Time by Day Displays a chart showing the daily cumulative times for the cluster.

Node reports with time range

The items included in these reports are defined by the start date and end dates, and by the node you select.

- Alert Counts by Type Displays a chart and a list showing the count for each alert type. Click the alert type to open the list of alerts.
- **Restarts** Displays a chart and a list showing the daily count of PEGA0008 alerts. Click the node name to open the list of alerts.
- Availability Displays a list of time stamps indicating when the node started and when the last health message for that start time was received (beyond which the node was no longer available). The difference in times defines the duration of node uptime. The **Uptime Timeline by Node** cluster report provides the same information for all nodes in graphical format.

AES Enterprise Reports

This section provides the following reports:

| ~ | AES Enterprise F | Reports | |
|---|-----------------------------|--|--|
| : | Nodes Summary Nodes List | Alerts By Category By Dayllin All Exceptions B Alerts By Dayllin All Alerts By Category | y Class • Open Action Items By Type • Open Exception Items By Class |

 Nodes Summary — Displays a summary snapshot of the cluster's operational status including up time and counts for active requestors, agents, listeners, and database connection. To update the statistics, click the ²Refresh icon. This report is also available Enterprise Health work area on the Summary tab

| | Cluster 🔺 | Node | Version | Production Level | Up Time | # Requestors | # Agents | # Listeners | # DB Conn | |
|-----------------|----------------|----------------------------------|---------|------------------|------------------|--------------|----------|-------------|-----------|----|
| | PRPC55 | 13c82d40171510b12ce60d9315e83b23 | 05-05 | 4 Preproduction | 0 d 02 hr 59 min | 10 | 4 | 0 | 1 | 5 |
| | PRPC53 | PRPC 53 SP3 8083 | 05-03 | 3 Test | 0 d 02 hr 04 min | 8 | 3 | 0 | | \$ |
| | PRPC54 | 106a8d4ca556fa93f7ec75444b885316 | 05-04 | 3 Test | 0 d 02 hr 03 min | 10 | 3 | 0 | | 5 |
| at cluster view | AESDevelopment | d23f00cd7e14278ff91f29fa5e6dd94e | 05-04 | 2 Development | 0 d 08 hr 04 min | 13 | 4 | 5 | | 5 |

• Nodes List — Contains a list of Node Information data instances (*PegaAES-Data-Nodes*) that comprise the clusters across the enterprise.

| Cluster | Feedblad | Description | Eusteen Node ID | Eusteen Node | Connection Etring |
|-------------|----------|----------------------------------|----------------------------------|----------------------------------|---------------------------|
| v | chabica | Description | System Hode ID | System Hode | connection string |
| soapUITest | true | 8dd44b4ab7f99edbc0ee78dbe4b8de47 | 8dd44b4ab7f99edbc0ee78dbe4b8de47 | 8dd44b4ab7f99edbc0ee78dbe4b8de47 | nul |
| sdeUnitTest | true | fb1c8f81072ec8448dbabb6fd37e0304 | fb1c8f81072ec8448dbabb6fd37e0304 | SFUNGF2K8 | http://SFUNGF2K8.rpega. |
| sde | true | a93fe23cde7438410a6197667902d1d1 | a93fe23cde7438410a6197667902d1d1 | a93fe23cde7438410a6197667902d1d1 | http://sfungf2k8.rpega.co |
| sde | true | da99eeb71d119f16df7f216ac31cfc7c | da99eeb71d119f16df7f216ac31cfc7c | da99eeb71d119f16df7f216ac31cfc7c | http://sfungf2k8.rpega.co |
| sde | true | d9973d338aaad7827196e952b5447ff0 | d9973d338aaad7827196e952b5447ff0 | d9973d338aaad7827196e952b5447ff0 | http://sfungf2k8.rpega.cr |
| pega | true | f537cfaf144ecc1ae4d79482244e2c96 | f537cfaf144ecc1ae4d79482244e2c96 | WCHAIK1XP | [unable to determine] |
| pega | true | db3ea1ea35f534a18ead4be75c9e6157 | db3ea1ea35f534a18ead4be75c9e6157 | WCHAIK1XP | http://WCHAIK1XP.rpega |
| Deca | true | 3ad75-6526230-30864260acca2618cb | 3ad75-f62f230-309f42f0acca2f18cb | educid0k9 | http://indorid%@.rpega.co |

Click a node in the list to open its Node Information data instance form. You can use the form to enable or disable the node, or to modify the Description, Connection String, or Original Connection String values.

• Alerts By Category By Day — Provides an interactive graph and list of counts for each alert category. The counts are grouped daily over the previous two weeks.



1 231

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The graph updates automatically as of each system pulse. To display the daily statistics, hover over a graph line where it intersects with a vertical date line.

9

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mbly

\$2

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- Alerts By Day Displays a chart and a list showing the daily count of alerts for all nodes across enterprise.
- All Alerts by Category Provides counts of alerts in each category across the enterprise.

| Alerts for Enterprise | Export To Excel |
|---------------------------|-----------------|
| Category | Count |
| Browser Time | 27,659 |
| Reading Blob Need Columns | 4,370 |
| DB Time | 3,954 |
| Connect Total Time | 2,153 |

Click a category item to display a list and count of problem correlations in that alert category.

| Enterprise Alerts for Category: Browser Time | Export To Excel | < <back< th=""></back<> |
|--|-----------------|-------------------------|
| Expand All | | |
| Label > Problem Correlation | | Count |
| -Browser Time | | |
| pega:Activity=FinishAssignment | | 4,639 |
| pega:Activity=GenerateActionFrame | | 3,853 |
| pacprd:Activity=AtPega-SSO.GetWorklist | | 2,114 |
| pega:Activity=ReloadSection | | 1,483 |
| pega:Activity=ShowOuterHarness | | 1,442 |
| pacprd:Activity=SaveReport | | 1.049 |

Click on a problem correlation item to display the list of alerts related to it.

| Enterprise Alerts | for Category | : Browser Time | | | | Export To Excel | < <b< th=""></b<> |
|---------------------|------------------|----------------|----------|-----------|---------------|-----------------|-------------------|
| Browser Time > pega | :Activity=Finish | Assignment | | | | | |
| Created | Cluster | Operator | Alert ID | KPI ¥alue | KPI Threshold | KPI OverThree | shold |
| 6/11/2009 9:58 AM | pega | webstore 100 | PEGA0001 | 29112 | 1000 | 28112 | |
| 6/11/2009 9:58 AM | pega | webstore 14 | PEGA0001 | 30666 | 1000 | 29666 | |
| 6/11/2009 9:58 AM | pega | webstore47 | PEGA0001 | 32407 | 1000 | 31407 | |
| 6/11/2009 9:58 AM | pega | webstore 16 | PEGA0001 | 31685 | 1000 | 30685 | |
| 6/11/2009 9:58 AM | pega | webstore 48 | PEGA0001 | 14764 | 1000 | 13764 | |
| 6/11/2009 9:58 AM | pega | webstore90 | PEGA0001 | 40133 | 1000 | 39133 | |
| 6/11/2009 9:58 AM | pega | webstore 15 | PEGA0001 | 9980 | 1000 | 8980 | |
| 6/11/2009 9:58 AM | pega | webstore 198 | PEGA0001 | 39917 | 1000 | 38917 | |

• All Exceptions By Class — Provides counts of all exceptions across the enterprise.

| Exceptions for Enterprise | Export To Excel |
|--|-----------------|
| Root Exception | Count |
| org.xml.sax.SAXParseException | 1489 |
| com.pega.pegarules.pub.context.InvalidConfigurationException | 592 |
| java.lang.ArithmeticException | 37 |
| com.microsoft.sqlserver.jdbc.SQLServerException | 28 |
| com.pega.pegarules.pub.database.BadClassDefinitionException | 19 |
| com.pega.pegarules.pub.PRException | 15 |
| com.pega.pegarules.pub.generator.RuleNotFoundException | 13 |
| java.lang.IllegalArgumentException | 9 |
| com.pega.apache.lucene.queryParser.ParseException | 8 |
| com.pega.pegarules.pub.PRRuntimeException | 8 |
| java.lang.NullPointerException | 8 |

Click an exception item to display a list of problem correlations associated with that exception. Exceptions for Enterprise

| iavax.mana | agement.Ser | viceNotFour | dException |
|------------------|-------------|-------------|-----------------------|
| jar vazen nar na | gennennener | | renew coup or or or o |

| Date/Time | Message | Problem Correlation | |
|-------------------------|---|-------------------------------------|--|
| Jun 2, 2009 11:27:14 PM | Operation RequestorSize not in ModelMBeanInfo | PRPC53:2c41a149f76a1081cc54e77b13b6 | |

Jun 2, 2009 11:27:14 PM Operation RequestorSize not in ModelMBeanInfo PRPC53:2c41a149f76a1081cc54e77b13b6ca Jun 2, 2009 11:27:37 PM Operation RequestorSize not in ModelMBeanInfo PRPC54:2c41a149f76a1081cc54e77b13b6ca

Jun 3, 2009 2:55:33 AM Operation RequestorSize not in ModelMBeanInfo PRPC53:2c41a149f76a1081cc54e77b13b6ca

Jun 3, 2009 3:30:59 AM Operation RequestorSize not in Model/MBeanInfo PRPC53:2c41a149f76a1081cc54e77b13b6ca Click an item to display the exception message.

DisplayException: Cluster not allowed for user. Cluster: PRPC53

 Open Action Items By Type — Provides counts of open (unresolved) action items organized by class type.

| Open Items by Class Type: | Export To Excel |
|--|--------------------|
| Туре | Total Action Items |
| PegaAES-Work-Action-InteractionTime | 124 |
| PegaAES-Work-Action-QueryPerformance | 117 |
| PegaAES-Work-Action-MemoryAccumulator | 30 |
| PegaAES-Work-Action-AgentDisabled | 28 |
| PegaAES-Work-Action-DBRowsExceeded | 25 |
| PegaAES-Work-Action-LongRunningRequestor | 19 |
| PegaAES-Work-Action-ServiceTime | 19 |
| PegaAES-Work-Action-ColumnNotExposed | 15 |
| PegaAES-Work-Action-DBCommitTime | 6 |
| PegaAES-Work-Action-ByteThreshold | 5 |
| PegaAES-Work-Action-ConnectTime | 2 |
| PegaAES-Work-Action-DBConnectionPool | 2 |
| PegaAES-Work-Action-ClipboardListSize | 1 |
| PegaAES-Work-Action-DBAnomaly | 1 |
| PegaAES-Work-Action-DBRollbackTime | 1 |
| PegaAES-Work-Action-HTMLStreamThreshold | 1 |
| PegaAES-Work-Action-PRPCFailedStart | 1 |
| Grand Total | 397 |

Click an item to display a list of items in the class.

| Open | Items by C | lass Type: | | Export To Excel | < <back< th=""></back<> |
|--------------|--------------|-----------------|---|---------------------------------------|-------------------------|
| PegaAE | S-Work-Actio | n-QueryPerf | formance | | |
| ID | Urgency | Total Events | Description | | |
| DB- 13423 | 27 | 9,618 | Run database statistics utility on table and run an EXPLAIN this query. Consider reorganizing table indices (a | test). | |
| DB- 13421 | 26 | 1,600 | Run database statistics utility on table and run an EXPLAIN this query. Consider reorganizing table indices (a | test). | |
| DB- 13115 | 21 | 202 | Consider rewriting query on table pegaam_node_stats to incorporate an appropriately indexed column in its of the following columns: PEGAAM_NODE_STATS.NODE (SELECT "PC0".pxObjClass AS "pxObjClass", "PC0".c | WHERE dause or in napshotTime AS " | dexing one .). |

Click a row to open the action item.

 Open Exception Items By Class — Provides counts of open (unresolved) exceptions organized by exception class:

| Exception Items by class for cluster | Export To Excel | |
|--|------------------|-----------------------|
| Root Exception Class | Total Exceptions | Total Exception Items |
| org.xml.sax.SAXParseException | 1,489 | 3 |
| com.pega.pegarules.pub.context.InvalidConfigurationException | 510 | 6 |
| java.lang.ArithmeticException | 37 | 1 |
| com.microsoft.sqlserver.jdbc.SQLServerException | 28 | 1 |
| com.pega.pegarules.pub.PRException | 15 | 1 |
| com.pega.pegarules.pub.generator.RuleNotFoundException | 13 | 1 |

Click an item to display a list of items in the class.

| Exceptio | n Items by e | lass for clus | ter |
|------------------|---------------|-----------------|--|
| com.pega.p | egarules.pub. | context.Inval | dConfigurationException |
| ID | Urgency | Total Events | Description |
| Exception- 78 | 7 | 195 | No such Access Group: AESRemote for thread STANDARD in requestor (AF6876C99FF1C250ABF0CBC623BDAF00C:PegaAESRemote)From: (AF6876C99FF1C250ABF0CBC623BDAF00C:PegaAESRemote) |
| Exception- 80 | 7 | 154 | No such Access Group: AESRemote for thread STANDARD in requestor (AF6876C99FF IC250ABF0CBC623BDAF00C:PegaAESRemote)From: (AF6876C99FF IC250ABF0CBC623BDAF00C:PegaAESRemote) |
| | | | |

Click a row to open the exception item.

AES Enterprise Charts

This section displays a set of interactive charts that use requestor data collected during the prior two weeks from all nodes in the enterprise. You can create reports for an enterprise production level (set in the System data instance) or for all production levels.

| ↔ AES Enterprise Charts | | | | | | |
|--|---|--|--|--|--|--|
| Select a production level Select | | | | | | |
| AvgBrowserResponseTime | InteractionsByRequestorType | | | | | |
| BrowserAlertsByDay | MaxUniqueUsers | | | | | |
| All Reports | | | | | | |

To open a chart, select a production level and click the report that you want to display:

• Enterprise Browser Average Response Time — The average processing time (in seconds) for browser requestors for a given date. The chart uses log usage data collected nightly from all nodes in the enterprise. This number does not include network time.



 Enterprise Interactions by Requestor Type — A count of application, batch, and browser interactions. The chart uses log usage data collected nightly from all nodes in the enterprise. Each requestor type is represented by a its own line.



• Enterprise Max Unique Users in Day — A count of the maximum number of browser users. The chart uses log usage data collected nightly from all nodes in the enterprise.



 Enterprise Browser Interaction Alerts — A count of browser interaction alerts (<u>PEGA0001 - HTTP</u> <u>interaction time exceeds limit</u>). The chart uses real-time alert data generated by all nodes in the enterprise. This data correlates to the Enterprise Browser Average Response Time chart shown above.



• All Reports — Displays the four Enterprise charts for all production levels.

Analyze Application Performance for Alerts

This section enables you to produce interactive charts that profile system statistics in the cluster and application you select in the drop-down lists.



• Elapsed Time Profile for Browser Interactions

These charts correlate an application's performance to system changes over a span of two weeks.



• Elapsed Time Profile for all alerts





Action Items by Status

This section contains interactive charts that indicate the trend of alert counts for open, resolved, and new action items over a span of 15 days. To generate cluster reports, select one in the Select a cluster list and click the desired report. For enterprise-wide reports, make a selection in the Action Items For All Clusters

group.

| ✓ Action Items By Status | | | | | | |
|----------------------------------|-------------------|--|------------------|--|--|--|
| Select a cluster | PRPCDevelopment 💌 | | | | | |
| Open Action | Items | | New Action Items | | | |
| Resolved Act | tion Items | | | | | |

- Action Items For All Clusters
- Open Action Items
- Resolved Action Items

New Action Items