

Application Management With JBoss Operations Network

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AGENDA

- Business need for Application Management
- Operational challenges
- User group specific scenarios
- Our Approach to the solution
- JBoss ON 2.3
 - Architecture
 - Product Walk-through
- Q&A

Application Management – Business Need

Increasing Costs

- Increasing Application Complexity
- High Rate of Change

Increasing Risks

- Lack of Understanding of Business Impact of Incidents
- Lack of Understanding of Change

Inconsistent Quality of Service

- Lack of Consistent set of tools and practices
- Silo management



Operational Challenges

Our Customers tell us that...

- **Managing middleware is complex**
 - Multiple solutions, multiple versions, mixed source, mixed vendor environment
 - Lack of tools / too many tools
- **Development vs. Operations**
 - Conflicting requirements (innovation vs. stability)
 - Varying priorities for long term support
 - Different criteria for evaluating software

Management Scenarios

<java>



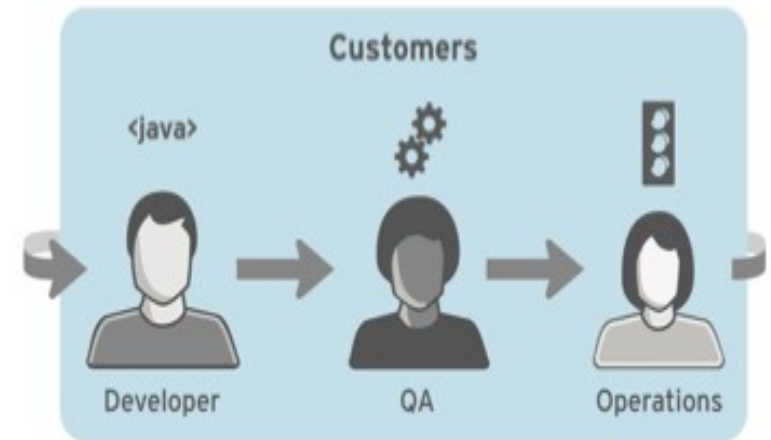
Developer

- Configuration Management
- Deploy/Update Application
- Test for Performance, Scale

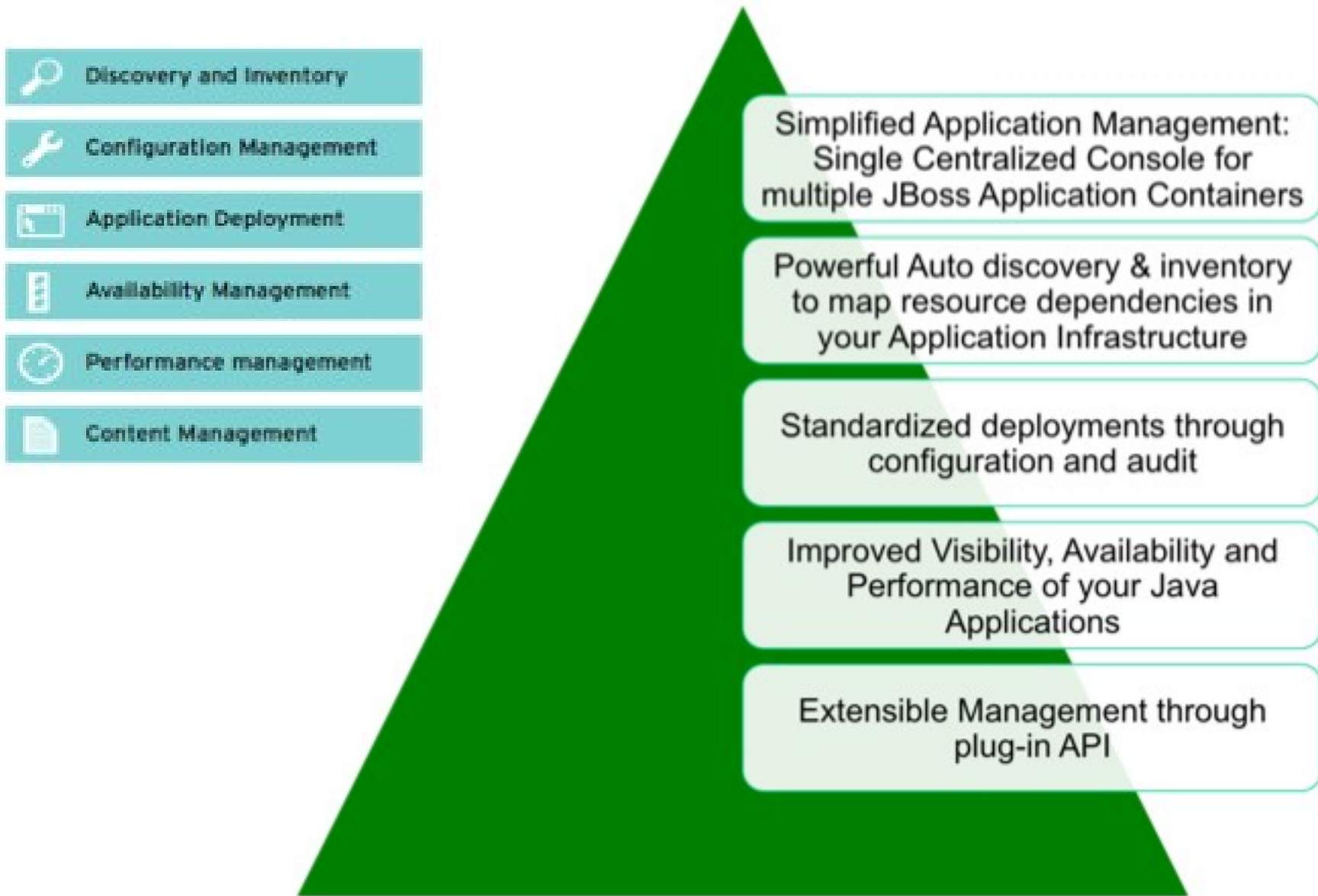


Operations

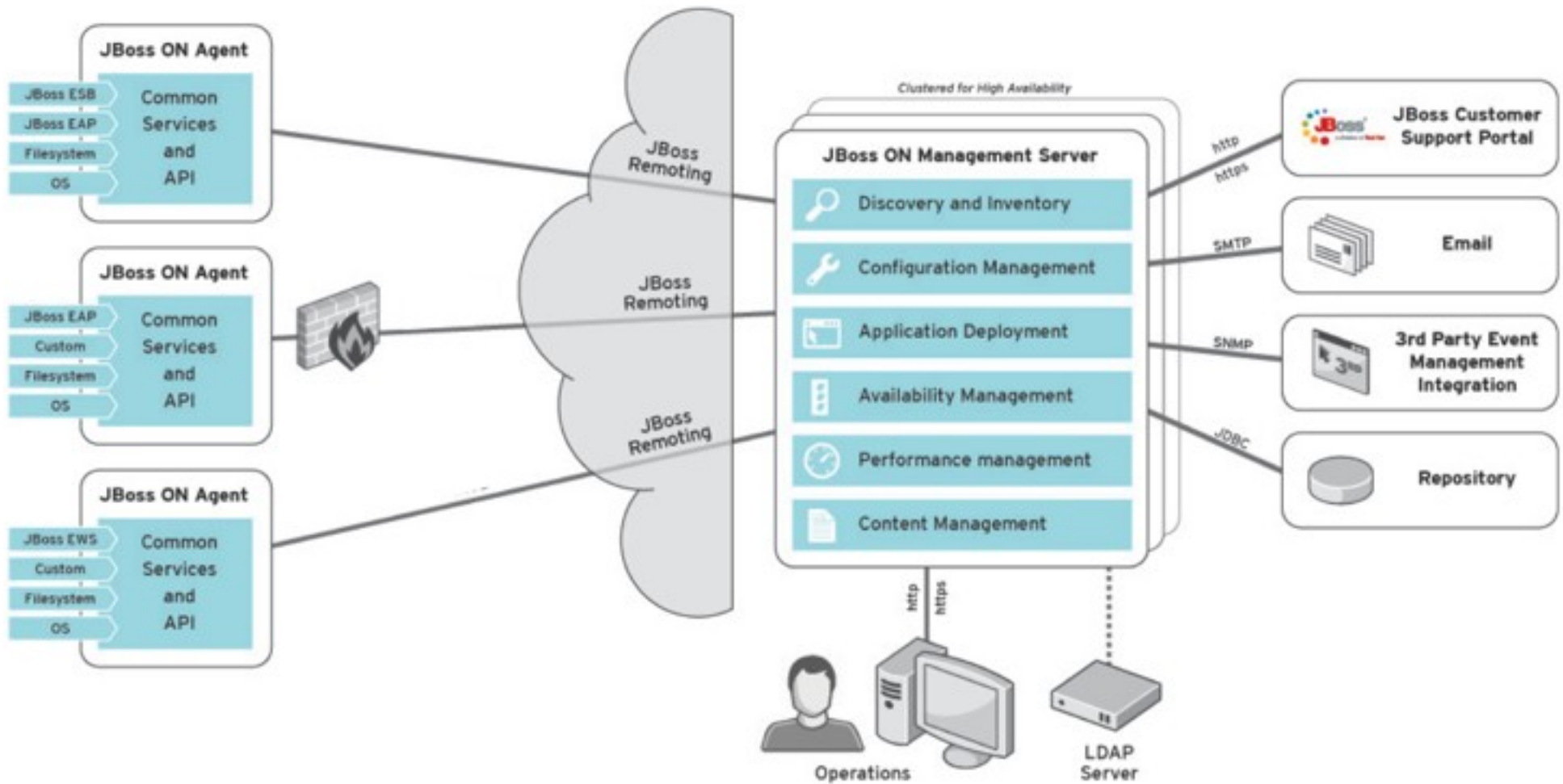
- Availability & Performance Monitoring
- Reducing MTTR
- Change Management



Our approach to a solution



JBoss ON: Architecture



Product Walkthrough

Dashboard

- Overview of the latest happenings with your resources
- Import newly discovered resources

The screenshot displays the JBoss Resource Manager Dashboard with the following sections:

- Navigation:** Overview, Resources, Groups, Administration, Help. Logged in as rhqadmin.
- Search Resources:** Input fields for Resource Name and Platforms.
- Auto-Discovery:** Shows a resource: ec2-72-44-35-44.compute-1.amazonaws.com - Linux Operating System (COMMITTED). Buttons: IMPORT, IGNORE, VIEW ALL ...
- Saved Charts:** No charts to display.
- Summary Counts:**
 - Platform Total: 2
 - Server Total: 16
 - Service Total: 286
 - Compatible Group Total: 1
 - Mixed Group Total: 0
 - Group Definition Total: 0
 - Average Metrics per Minute: 122
- Recently Added Resources:**

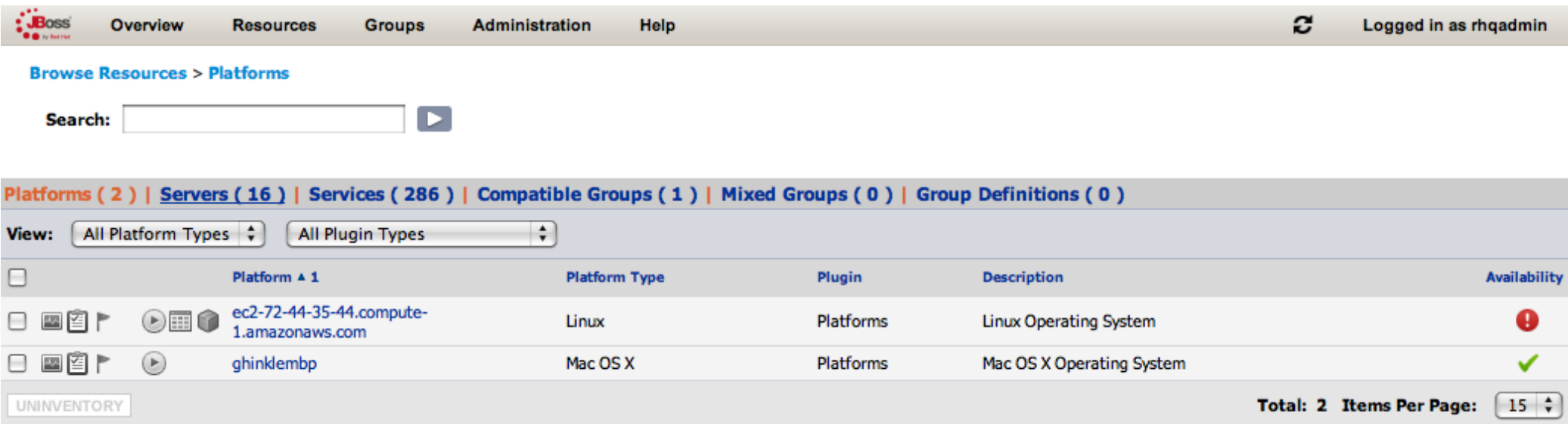
Resource Name	Date / Time
ghinklembp	08/27/2009 01:17:00 PM
Twitter feed	08/27/2009 01:17:00 PM
AWS Account	08/27/2009 04:22:56 AM
ghinklembp Jopr Server	08/27/2009 04:21:53 AM
ghinklembp RHQ Agent	08/27/2009 04:21:53 AM
Trapd (ghinklembp)	08/27/2009 04:21:53 AM
Hosts Service	08/27/2009 04:21:53 AM
ec2-72-44-35-44.compute-1.amazonaws.com	08/27/2009 01:16:51 PM
- Favorite Resources:** XML icon. Table with 4 columns: Resource Name, Resource Type, Alerts, Availability.

Resource Name	Resource Type	Alerts	Availability
ec2-72-44-35-44.compute-1.amazonaws.com	EC2 Instance	0	✓
- Recent Alerts:** XML icon. No recent alerts to display.
- Operations:**
 - Recent Operations: No operations to display
 - Scheduled Operations: No operations to display
- Has Alerts or Currently Unavailable:** XML icon. Table with 3 columns: Resource Name, Alerts, Current Availability.

Resource Name	Alerts	Current Availability
Agent Measurement Subsystem	0	!

Resource Hub

- The resource hub is available from the resources menu
- Displays platforms, servers and services that make up the physical inventory
- Displays groups that have been created to manage access and perform management of groups and clusters of resources

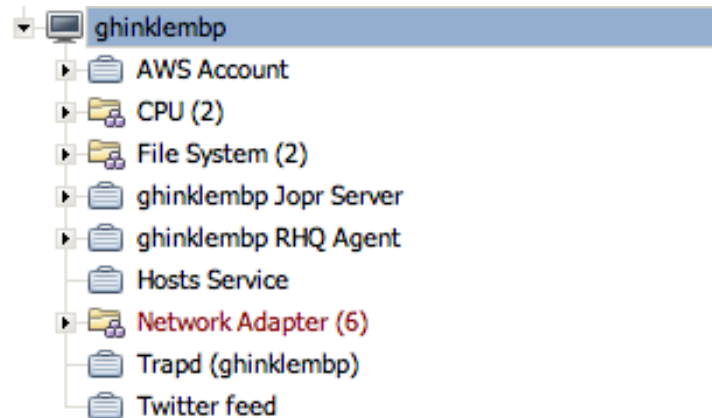


The screenshot shows the JBoss Resource Hub interface. At the top, there is a navigation bar with tabs for Overview, Resources, Groups, Administration, and Help. The user is logged in as 'rhqadmin'. Below the navigation bar, there is a search bar and a breadcrumb trail: 'Browse Resources > Platforms'. The main content area displays a list of platforms with columns for Platform Type, Plugin, Description, and Availability. The list includes two entries: 'ec2-72-44-35-44.compute-1.amazonaws.com' (Linux) and 'ghinklembp' (Mac OS X). The bottom of the interface shows a 'UNINVENTORY' button and a summary: 'Total: 2 Items Per Page: 15'.

Platform	Platform Type	Plugin	Description	Availability
ec2-72-44-35-44.compute-1.amazonaws.com	Linux	Platforms	Linux Operating System	!
ghinklembp	Mac OS X	Platforms	Mac OS X Operating System	✓

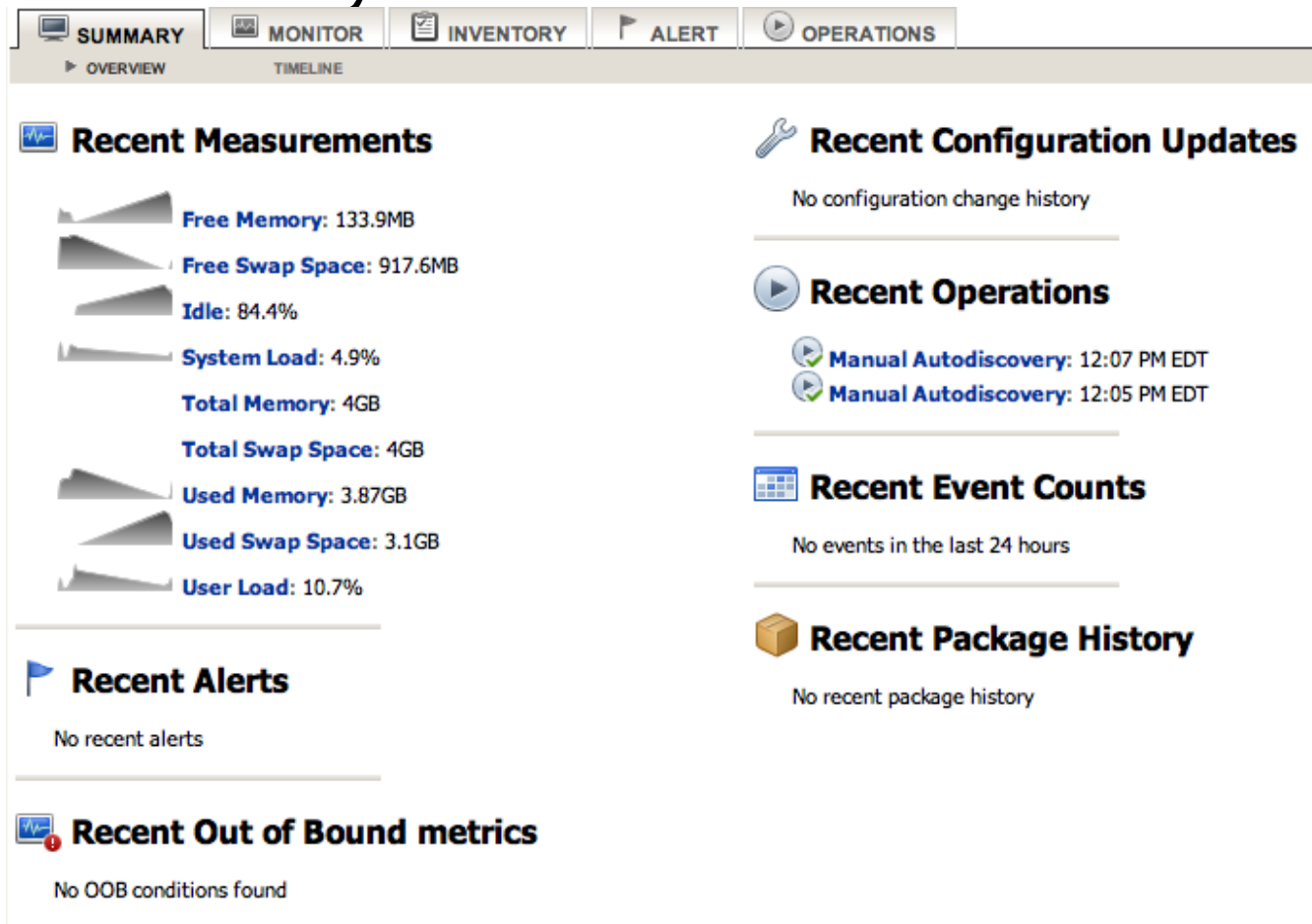
Resource View

- See all the resources on one box in tree view
- Select other resources or use right-click menus to access functionality quickly



Summary Tab

- Quick overview of the latest information on a resource
- Sparklines show recent metric history
- Recent history for other resource information



SUMMARY | MONITOR | INVENTORY | ALERT | OPERATIONS

OVERVIEW | TIMELINE

Recent Measurements

- Free Memory: 133.9MB
- Free Swap Space: 917.6MB
- Idle: 84.4%
- System Load: 4.9%
- Total Memory: 4GB
- Total Swap Space: 4GB
- Used Memory: 3.87GB
- Used Swap Space: 3.1GB
- User Load: 10.7%

Recent Alerts

No recent alerts

Recent Out of Bound metrics

No OOB conditions found

Recent Configuration Updates

No configuration change history

Recent Operations

- Manual Autodiscovery: 12:07 PM EDT
- Manual Autodiscovery: 12:05 PM EDT

Recent Event Counts

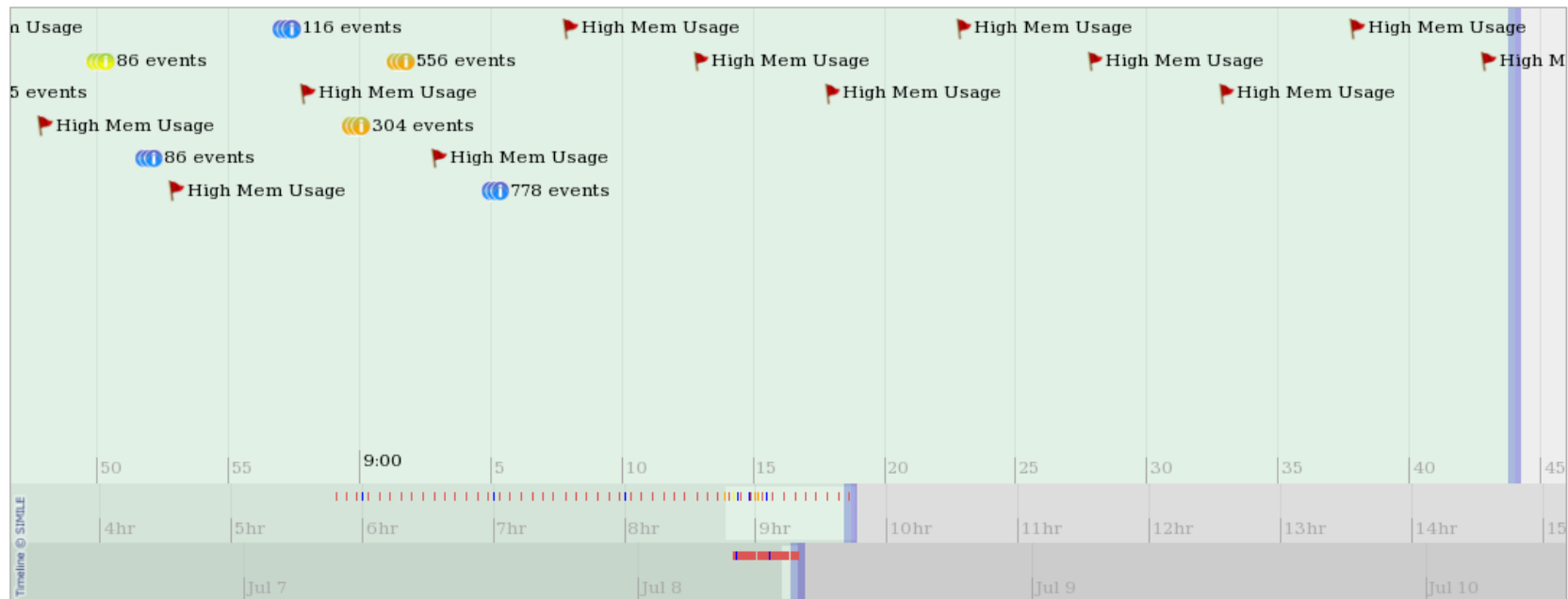
No events in the last 24 hours

Recent Package History

No recent package history

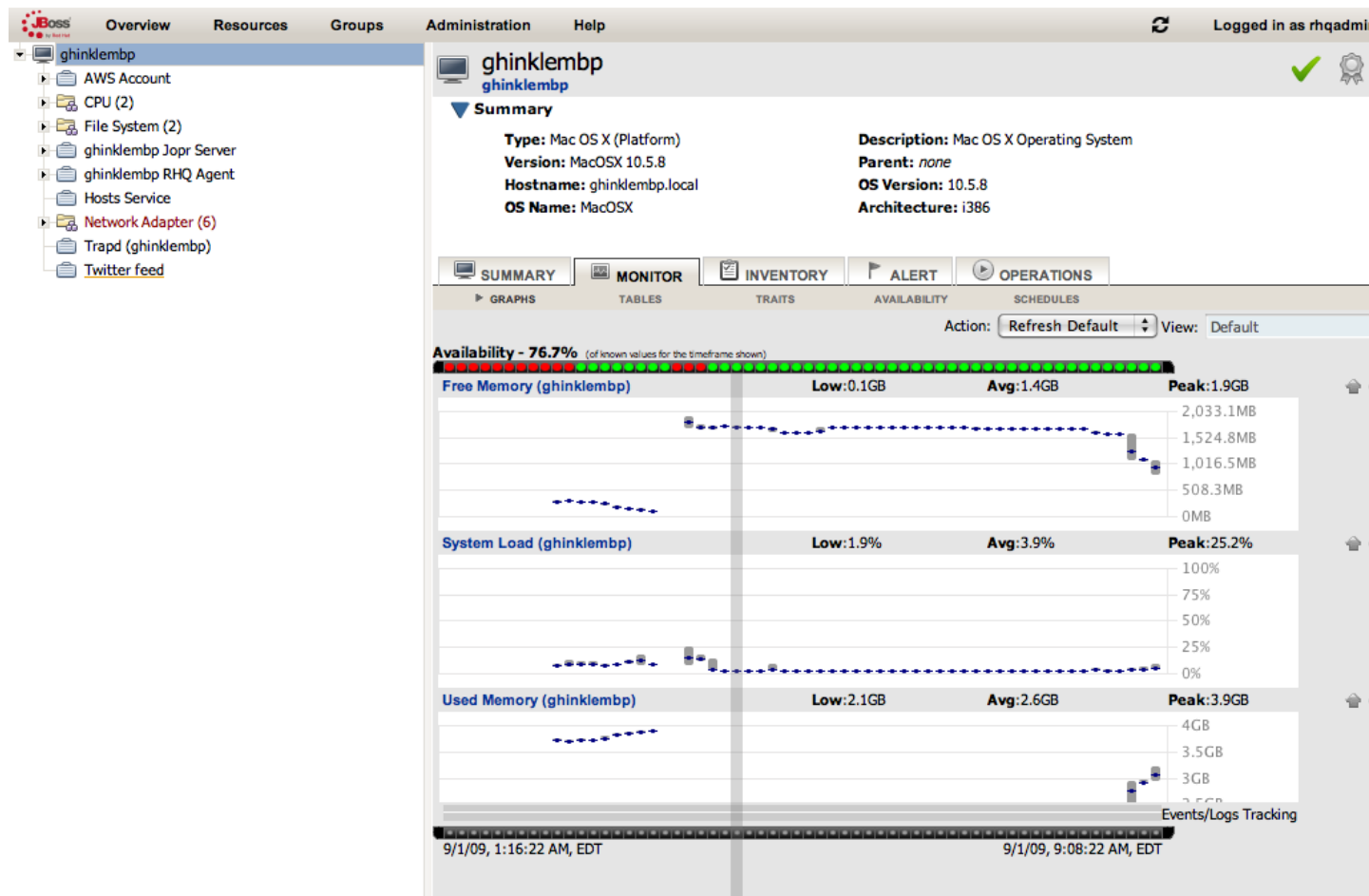
Timeline

- Correlated information timeline regarding the resource
 - Configurations
 - Events
 - Alerts
 - Content Changes
 - Operations



Monitoring

- Charts view of default metrics
- New charts can be added by right-clicking on any resource in the tree and using the add metric menu



Availability History

- View the history of a resources availability

The screenshot shows the JBoss ON web console for 'Banking AppServer Node 1'. The left sidebar lists various system components. The main panel displays the following summary information:

- Type:** JBossAS Server (Server)
- Version:** 4.2.1.GA
- Version Name:** Trinity
- Build Date:** July 13 2007
- Description:** JBoss Application Server hosting the RHQ Server
- Parent:** Linux 'Banking Server 1 - Phoenix'
- Start Date:** Mon May 18 22:06:59 EDT 2009

Below the summary, there are tabs for SUMMARY, MONITOR, INVENTORY, ALERT, OPERATIONS, and EVENT. Under the 'AVAILABILITY' tab, a table shows the resource's history:

Resource has been UP since: 5/18/09, 8:30:24 PM, EDT

Availability: 92.59% **Failures:** 13
Down for: 20 hours, 33 minutes **Up for:** 10 days, 16 hours, 51 minutes
MTBF: 21 hours, 20 minutes **MTTR:** 1 hour, 34 minutes

Availability	Start	End	Duration
✓ UP	Mon May 18 20:30:24 EDT 2009		2 hours, 7 minutes
! DOWN	Mon May 18 19:29:19 EDT 2009	Mon May 18 20:30:24 EDT 2009	1 hour, 1 minute
✓ UP	Fri May 15 07:09:47 EDT 2009	Mon May 18 19:29:19 EDT 2009	3 days, 12 hours, 19 minutes
! DOWN	Thu May 14 13:21:49 EDT 2009	Fri May 15 07:09:47 EDT 2009	17 hours, 47 minutes
✓ UP	Thu May 14 10:18:42 EDT 2009	Thu May 14 13:21:49 EDT 2009	3 hours, 3 minutes
! DOWN	Thu May 14 10:13:41 EDT 2009	Thu May 14 10:18:42 EDT 2009	5 minutes
✓ UP	Wed May 13 23:09:11 EDT 2009	Thu May 14 10:13:41 EDT 2009	11 hours, 4 minutes
! DOWN	Wed May 13 22:17:13 EDT 2009	Wed May 13 23:09:11 EDT 2009	51 minutes
✓ UP	Wed May 13 11:38:44 EDT 2009	Wed May 13 22:17:13 EDT 2009	10 hours, 38 minutes
! DOWN	Wed May 13 11:25:42 EDT 2009	Wed May 13 11:38:44 EDT 2009	13 minutes
✓ UP	Wed May 13 08:57:51 EDT 2009	Wed May 13 11:25:42 EDT 2009	2 hours, 27 minutes
! DOWN	Wed May 13 08:49:46 EDT 2009	Wed May 13 08:57:51 EDT 2009	8 minutes
✓ UP	Tue May 12 16:08:37 EDT 2009	Wed May 13 08:49:46 EDT 2009	16 hours, 41 minutes

Monitoring Schedules

- Control what metrics are collected and how often

The screenshot shows the JBoss Monitoring console interface. The left sidebar displays a tree view of resources under the 'ghinklembp' host, including AWS Account, CPU (2), File System (2), ghinklembp Jopr Server, ghinklembp RHQ Agent, Hosts Service, Network Adapter (6), Trapd (ghinklembp), and Twitter feed. The main panel shows the host details for 'ghinklembp', including a summary of system information: Type: Mac OS X (Platform), Version: MacOSX 10.5.8, Hostname: ghinklembp.local, OS Name: MacOSX, Description: Mac OS X Operating System, Parent: none, OS Version: 10.5.8, and Architecture: i386. Below the summary, there are tabs for SUMMARY, MONITOR, INVENTORY, ALERT, and OPERATIONS. The 'MONITOR' tab is active, and the 'SCHEDULES' sub-tab is selected, displaying a table titled 'Configure Metric Collection Schedules'.

<input type="checkbox"/>	Metric	Description	Type	Enabled	Collection Interval
<input type="checkbox"/>	Free Memory	The total free system memory	MEASUREMENT	Yes	00:01:00
<input type="checkbox"/>	Used Memory	The total used system memory	MEASUREMENT	Yes	00:01:00
<input type="checkbox"/>	Total Memory	The total system memory	MEASUREMENT	Yes	00:02:00
<input type="checkbox"/>	Free Swap Space	The total free system swap	MEASUREMENT	Yes	00:02:00
<input type="checkbox"/>	Used Swap Space	The total used system swap	MEASUREMENT	Yes	00:01:00
<input type="checkbox"/>	Total Swap Space	The total system swap	MEASUREMENT	Yes	00:02:00
<input type="checkbox"/>	Idle	Idle percentage of all CPUs	MEASUREMENT	No	00:02:00
<input type="checkbox"/>	System Load	Percentage of all CPUs running in system mode	MEASUREMENT	Yes	00:01:00
<input type="checkbox"/>	User Load	Percentage of all CPUs running in user mode	MEASUREMENT	Yes	00:01:00
<input type="checkbox"/>	Wait Load	Percentage of all CPUs waiting on I/O	MEASUREMENT	No	00:02:00
<input type="checkbox"/>	Hostname	Name that this platform is known as	TRAIT	Yes	00:10:00
<input type="checkbox"/>	OS Name	Name that the operating system is known as	TRAIT	Yes	00:10:00
<input type="checkbox"/>	OS Version	Version of the operating system	TRAIT	Yes	00:10:00
<input type="checkbox"/>	Architecture	Hardware architecture of the platform	TRAIT	Yes	00:10:00

Inventory

- The inventory tab exposes configuration of the management component under **Connection Properties**
- Exposes functionality to deploy child resources in JBoss AS like EARs, WARs, datasources, queues and topics

The screenshot shows the JBoss Management Console interface. At the top, there are navigation tabs: SUMMARY, MONITOR, INVENTORY (selected), ALERT, OPERATIONS, EVENTS, and CONTENT. Below these, there are sub-tabs: OVERVIEW, CONNECTION (selected), and AGENT. The main content area is titled 'Connection Properties' and contains a 'Connection Info' section with a 'Collapse' button. This section is a table with the following data:

Name	Unset	Value	Description
Naming Provider URL		<input type="text" value="jnp://127.0.0.1:2099"/>	The JNP URL with which to connect to the JBoss Application Server Instance (e.g. jnp://127.0.0.1:1099).
Principal	<input checked="" type="checkbox"/>	<input type="text"/>	The name of the principal (i.e. user) to authenticate.
Credentials	<input checked="" type="checkbox"/>	<input type="text"/>	The credentials (i.e. password) that should be used to authenticate the principal.
JBoss Home Directory		<input type="text" value="/projects/jbosson/dev-container/jbossas"/>	The absolute path to the directory where JBossAS is installed (e.g. /opt/jboss-4.2.2.GA).
Configuration Path		<input type="text" value="/projects/jbosson/dev-container/jbossas/server/default"/>	The path to the configuration directory under which this instance operates (e.g. /opt/jboss-4.2.2.GA/server/default);

Alerts

- Create complex alerts fired from metric or baseline values, configuration changes, availability changes, operation results or important log messages

The screenshot displays the JBoss Alert configuration interface. At the top, there is a navigation bar with links for Overview, Resources, Groups, Administration, and Help, along with a refresh icon and the text 'Logged in as rhqadmin'. Below the navigation bar, the user 'ghinklembp' is identified, and a link to '< Return to Alert Definitions' is provided.

The main configuration area is divided into two sections:

- Alert Properties:** This section includes a text input for the name, currently set to 'High CPU Load'. There is also a larger text area for the description. The priority is set to '!! - Medium' via a dropdown menu. The active status is set to 'YES' with a radio button.
- Condition Set:** This section defines the conditions for the alert. The expression is 'Fire an alert when ALL of the following conditions become(s) true.' The 'If Condition' is set to 'Metric: User Load'. The condition is 'is > (Greater than) 50% (absolute value)'. Other options include 'is > (Greater than) % of Select...', 'value changes', 'Trait: Select... value changes', 'Availability: Select...', and 'Operation: Select... = (Equal to) Select...'. There is a link to 'Add Another Condition'.

Below the condition set, there are options for a 'Recovery Alert' (for Select...), a 'Dampening Rule' (radio buttons for 'Each time condition set is true', 'Once every 2 times condition set is true consecutively', 'Once every times condition set is true during the last evaluations', and 'Once every times condition set is true within a time period of minutes'), and 'Action Filters' (checkbox for 'Disable alert until re-enabled manually or by recovery alert').

Configuration

- View or edit current configuration values for a resource
- View historical values and rollback to previous versions

The screenshot shows the JBoss ON configuration interface for the 'DefaultDS Datasource'. The interface includes a navigation tree on the left, a top menu bar, and a main configuration area. The configuration area is divided into 'CURRENT' and 'HISTORY' tabs, with 'CURRENT' selected. Below the tabs are 'SAVE', 'RESET', and 'CANCEL' buttons. A note indicates that an asterisk (*) denotes a required field. The configuration is presented in a table format with columns for Name, Unset, Value, and Description.

Name	Unset	Value	Description
Type *		<input type="radio"/> No TX Datasource <input checked="" type="radio"/> Local TX Datasource <input type="radio"/> XA Datasource	<No Description Available>
JNDI Name *		DefaultDS	The JNDI name under which the DataSource wrapper will be bound.
Driver Class *		org.hsqldb.jdbcDriver	The fully qualified name of the JDBC driver or datasource class
Connection Url *		jdbc:hsqldb:\${jboss.server.data.dir}\${//}hyperson	The JDBC driver connection URL string
User Name	<input type="checkbox"/>	sa	<No Description Available>
Password	<input type="checkbox"/>		<No Description Available>
Min Pool Size	<input type="checkbox"/>	Member Values Differ	<No Description Available>
Max Pool Size	<input type="checkbox"/>	Member Values Differ	<No Description Available>

Operations

- Execute an operation such as a restart of JBoss AS
- Schedule operations for the future or on a regular basis
- See the history of executed operations

Supported Operations	
Name	Description
Manual Autodiscovery	Run an immediate discovery to search for resources
View Process List *	View running processes on this system

View Hibernate Query Statistics

- Use the search in the resource menu to find “RHQ Hibernate Statistics”
- Browse to the operations page and execute “View Queries”

Queries						
Query	Execution Count	Execution Row Count	Execution Min Time	Execution Max Time	Execution Avg Time	Actions
SELECT a FROM Agent a	2	0	0	2	1	View
SELECT r.agent.id FROM Resource r WHERE r.id = :resourceId	5	5	0	0	0	View
SELECT count(ac.id) FROM AlertCondition AS ac JOIN ac.alertDefinition ad JOIN ad.resource res JOIN ac.measurementDefinition md, MeasurementSchedule ms JOIN ms.baseline mb WHERE (ad.recoveryId = 0 OR (ad.recoveryId <> 0 AND EXISTS (SELECT lad FROM AlertDefinition lad WHERE lad.id = ad.recoveryId AND lad.deleted = FALSE AND lad.enabled = FALSE))) AND (res.agent.id = :agentId OR :agentId IS NULL) AND ad.enabled = TRUE AND ad.deleted = FALSE AND ms.definition = md AND ms.resource = res AND mb IS NOT NULL AND ac.category = 'BASELINE'	3	3	0	39	23	View
SELECT new org.rhq.core.domain.operation.OperationDefinition (od.id, od.name, od.resourceVersionRange, od.description, od.timeout, od.displayName) FROM OperationDefinition AS od WHERE od.resourceTypeId = :resourceTypeId AND (od.name = :operationName or :operationName IS NULL) ORDER BY od.displayName	2	3	0	0	0	View
SELECT res FROM Resource res LEFT JOIN FETCH res.currentAvailability JOIN FETCH res.resourceType WHERE res.id = :resourceId	30	30	0	12	0	View
SELECT h FROM GroupOperationHistory h WHERE h.status = :status AND NOT EXISTS (SELECT roh.id FROM ResourceOperationHistory roh WHERE roh.groupOperationHistory.id = h.id)	1	0	0	1	1	View

Subsystem Overviews

- Select a Subsystem view from the Overview menu
- Displays information across all resources you have access to
 - See all recent configuration changes and operations
 - See alerts that are firing
 - See metrics that have been detected to be outside of their typical baselines

Metric	Resource	Parent	Real	Outlier value	Out of range factor (%)
Delete Count	org.rhq.core.domain.content.InstalledPackage	RHQ Hibernate statistics	0.0, 7.0	330.0	4614%
Used	ghinkle File System (local) /	Banking Server 1 - Phoenix	24.5GB, 24.8GB	22.9GB	497%
Free Space	ghinkle File System (local) /	Banking Server 1 - Phoenix	1.7GB, 2.0GB	3.6GB	497%
Table Size	rhq_measurement_bin	rhq Database	0.0B, 96.0KB	184.0KB	92%
Total Size	rhq_measurement_bin	rhq Database	24.0KB, 240.0KB	416.0KB	81%
Table Size	rhq_alert	rhq Database	48.0KB, 80.0KB	104.0KB	75%
Table Size	rhq_alert	rhq Database	48.0KB, 80.0KB	104.0KB	75%
Insert Count	org.rhq.core.domain.configuration.ResourceConfigurationUpdate	RHQ Hibernate statistics	0.0, 3.0	4.0	33%
Table Size	rhq_measurement_data_num_id	rhq Database	400.0KB, 640.0KB	720.0KB	33%
Total Size	rhq_alert	rhq Database	160.0KB, 240.0KB	264.0KB	30%
Table Size	rhq_installed_package	rhq Database	8.0KB, 54.0KB	80.0KB	29%
Table Size	rhq_meas_data_num_19	rhq Database	920.0KB, 4.2MB	16.0KB	27%
Total Size	rhq_installed_package	rhq Database	24.0KB, 112.0KB	136.0KB	27%
Create Count per Minute	ContentUIManagerBean	Banking AppServer Node 1	0.0, 0.4	0.5	25%
Total Size	rhq_package_version	rhq Database	56.0KB, 656.0KB	808.0KB	25%
Table Size	rhq_package_version	rhq Database	16.0KB, 512.0KB	632.0KB	24%

QUESTIONS?

**TELL US WHAT YOU THINK:
[REDHAT.COM/JBOSSWORLD-SURVEY](https://redhat.com/jboss-world-survey)**