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Clarity Housekeeping and Maintenance

Your Guides:

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Agenda

- Introduction
- Keeping Clarity Healthy
 - Why is housekeeping required?
 - When to perform housekeeping?
 - What does housekeeping involve?
- Rego's Approach
 - Rego's Recommendations
 - Rego's Health Check Assets

Introduction



Introductions

- Take 5 Minutes
- Turn to a Person Near You
- Introduce Yourself
- Business Cards

Understanding Clarity and Housekeeping

- Clarity is flexible and customizable, both in their latest MUX and Clarity Studio. Admins can easily:
 - Manage Clarity's modules like: Custom Investments, Roadmaps, Demand/Project Management, Resources, Financials, etc
 - Implement automations and background processing of data through Jobs and Processes
- In most cases Clarity will store the data indefinitely, its capabilities depend on the data being always available for analysis. Therefore, it's an “ever-growing” application
- This increase in data, changes in functionality and user activity can easily impact performance and/or the user experience.
- Like any other application, Clarity is limited in resources to handle concurrent activity between: User Activity, APIs, Processes and Jobs

Keeping Clarity Healthy



Why is Housekeeping Required?

- Software Maintenance is the process of modifying a system or component without modifying the software itself to:
 - Improve Performance
 - Adapt to latest usage and changes
 - Deliver the service without faults or issues
- Housekeeping/Maintenance is key during the multiple stages of the maintenance process to ensure:
 - Latent risks and issues can be identified and avoided
 - Monitor the impact of releases and/or implementations
 - Ensure the best performance and service is provided

When to Perform Housekeeping?

- When to perform Maintenance/Housekeeping
 - As a Preventive Process:
 - On a scheduled basis
 - Monitoring key metrics and thresholds
 - As an Adaptive Process:
 - When the software is upgraded, or new functionality is released
 - After implementing changes or customizations
 - Decommissioning/Cleaning up previous functionality
 - As a Corrective Process:
 - When a fault is detected
 - When performance issues occur

Quick Round Table

- Does your organization perform any Clarity maintenance activities?
- Describe the activities performed in your organization
- How often are this activities performed?

What Does Housekeeping Involve?

- Processes
 - Number of processes running and throughput
 - Number of processes in error state
 - Common failing processes
- Jobs
 - Review Job schedules
 - Monitor Job Failures
 - New jobs and changes (Specially with MUX, several jobs have been released)
 - Financial Processing
 - Jobs
 - Invalid Transactions
 - Timesheets without transactions
 - DWH Processing

Housekeeping - Processes

- Processes must be proactively maintained and monitor because:
 - Historic data generated a paper trail in the Processes, Their messages and notifications
 - Performance overhead when too many instances are running, due to:
 - Error State
 - Long running processes
 - High throughput
 - Given how customizable they are, they must be monitored
- Using the organizer helps identify and monitor process executions

The screenshot displays the 'Processes' section of a software interface. At the top, there are tabs for 'ACTION ITEMS', 'TASKS', 'PROCESSES', and 'NOTIFICATIONS'. A dropdown menu is open under 'PROCESSES', showing 'Available' and 'Initiated' options. The main area is titled 'Organizer - Initiated' and contains several search and filter fields: 'PROCESS NAME' (with 'time' entered), 'PROCESS ID', 'PRIMARY OBJECT', 'FROM START DATE', 'TO START DATE', 'STATUS' (set to 'All'), and 'INITIATED BY'. Below these fields are 'FILTER', 'SHOW ALL', and 'CLEAR' buttons. A table lists the processes:

Process	ID	Primary Object	Object Name	Progress	Steps In Progress	Status	Messages	Initiated By	Start Date	Finish Date
Time Tracking Stalker - Resource v13	rego_time_stalking_v13			Progress bar (7/7)		Running (Green diamond)	Yellow flag icon	Clarity Administrator	9/2/22 1:00 PM	9/2/22 1:00 PM
Timesheet Validations	pf_ts_validations			Progress bar (0/1)	Start	Error (Red diamond)	Red flag icon	Clarity Administrator	9/2/22 1:18 PM	

At the bottom, there are 'CANCEL PROCESS' and 'DELETE' buttons, and a legend for process states: Running (Yellow diamond), Completed (Green diamond), Error (Red diamond), Aborting (Red diamond), and Aborted (Orange diamond). The text 'Displaying 1 - 2 of 2' is visible at the bottom right of the table area.

Housekeeping - Processes

- When rolling out new processes is key to ensure best practices:
 - When setting up conditions for automatic processes, avoid unnecessary executions
 - Be conscious of subprocesses and calling jobs
 - Keep processes simple and short lived
 - Avoid long running processes
 - Handle errors and logging to avoid leaving a significant paper trail or running instances behind

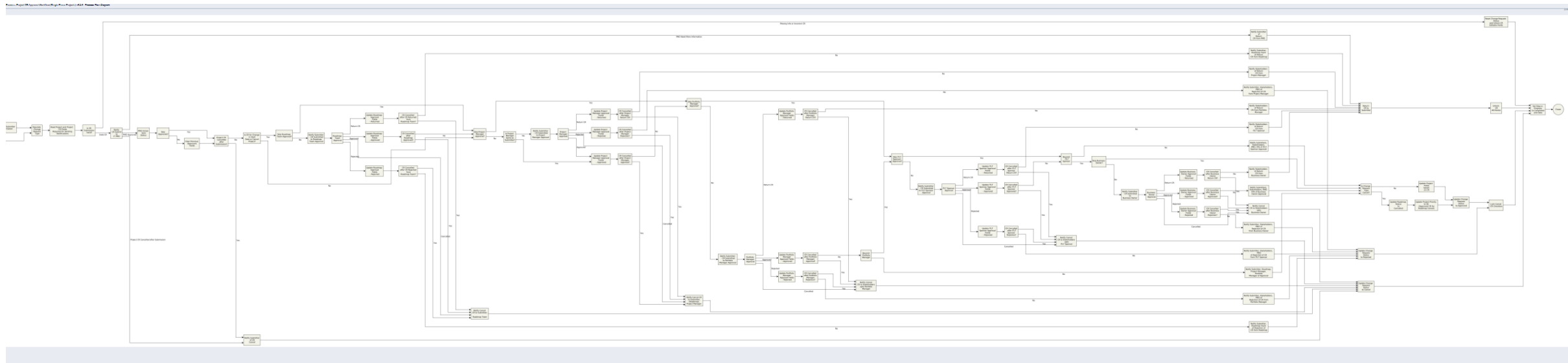
Process: Timesheet Validations - *Initiated Process Messages*

Step	Action	Description	Message	New Assignees	User Action	Date
<input type="checkbox"/> Start	Validation Logic		Timesheet Data incomplete			9/2/22 1:18 PM
<input type="checkbox"/> Start	Validation Logic		BPM-0545: An error occurred when executing custom action.			9/2/22 1:18 PM

Displaying 1 - 2 of 2

RETRY
 SKIP PROBLEM
 DELETE
 CANCEL PROCESS
 SHOW DETAILS
 RETURN

🚫 = System Errors
 📄 = Application Errors
 ⚠️ = Warnings
 ℹ️ = Information
 🟩 = Processed Errors

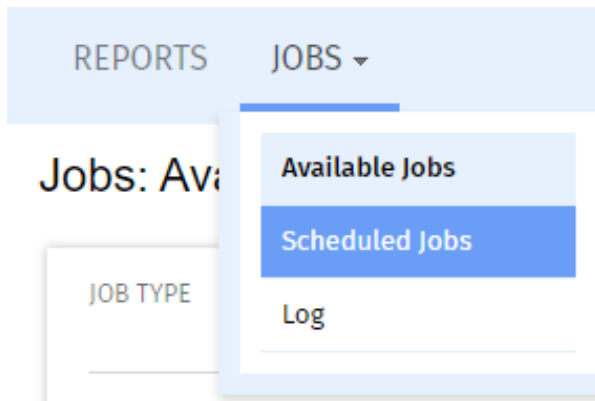


Housekeeping - Jobs

- Jobs in Clarity serve multiple purposes, providing background processing of automatic features and heavy data processing like:
 - Time Slicing
 - DWH Jobs
 - Financial Processing
 - Running Processes on a schedule
- Even though executions are logged, they normally don't represent a significant risk for volume. They can still be cleaned up via the job
- When it comes to housekeeping, it is key to monitor the schedules and ensure they run to best fit the organization without disrupting user traffic/activities

Housekeeping - Jobs

- All available jobs can be visualized under: Administration -> Reports and Jobs, in some cases some jobs are not active unless required
- Schedules and executions can be reviewed under: Home -> Reports and Jobs -> Jobs
- Easily visualize all scheduled jobs by filtering by “Recurring” jobs
- Quick Tips:
 - Its always best to schedule using CRON expressions, using the other options are sensitive to time zones depending on the logged in user.
 - Ensure the job schedules are shared through an admin group



Clarity PPM CA Hi, Clarity Administrator

REPORTS **JOBS**

Jobs: Scheduled Jobs

JOB NAME: |

JOB STATUS: All

JOB TYPE: All

FROM SCHEDULED DATE: |

JOB ID: |

TO SCHEDULED DATE: |

CATEGORY: All

RECCURENCE: Recurring

FILTER SHOW ALL CLEAR

<input type="checkbox"/>	Job	Job Type	Job ID	Job Status	Scheduled
<input type="checkbox"/>	Import Financial Actuals	Import Financial Actuals	1002	Scheduled	9/3/22 2:30 PM
<input type="checkbox"/>	Remove Job Logs and Report Library entries	Remove Job Logs and Report Library entries	5226044	Scheduled	9/4/22 3:17 AM
<input type="checkbox"/>	Index contents and documents for searches	Index contents and documents for searches	50000	Scheduled	9/3/22 3:00 PM

Housekeeping - DWH

- Ensure DWH is properly configured, and the key jobs are scheduled as expected. We've seen plenty of customers with incorrect schedules.
- Be conscious of how many fields are included in the DWH, this requires additional processing and volume.
- This is an intensive data processing process, that queries key tables for resources, investments and financials. It is best to:
 - Scheduled incremental runs during the day and allowing other incompatible jobs to run between schedules
 - Full runs are best overnight
- The key jobs for DWH and Reporting should be run in the following order:
 - Time Slices
 - Investment Allocation (Once a day before RME)
 - Rate Matrix Extraction (RME)
 - Datamart Extraction
 - Update Report Tables
 - Create and Update Jaspersoft Users
 - Load DWH
 - Load DWH Access Rights
 - Trending Jobs (schedule varies depending on how many snapshots are required)

Housekeeping – Handling High Volume Data

- There are some components in Clarity, that retain data for auditing or reporting purposes.
- Its key to ensure their configuration and proper maintenance takes place to avoid an increase in load times for certain locations/queries within Clarity:
 - Audit Trail
 - Clarity mechanism to detect new, updated or deleted instances. Logging on a per attribute basis
 - Ensure retention is configured and “Purge Audit Trail” job is configured
 - Only audit fields required by governance, monitoring, etc. “Select All” approach is not recommended
 - Time Slices
 - Time Slices are flat structures within Clarity derived from Time scaled values. This structures are populated by the Time Slicing job. Which allow for queries, portlets and reports to be built against them.
 - Because of this flat structures, data can easily become high volume.
i.e. An environment with 500 resources, daily slices covering 5 years automatically becomes:
 $500 * 5 * 365 = 912,500$ records
 - Housekeeping required during setup, to ensure the data is available based on the Org’s expectation
- Access Rights

Housekeeping – Access Rights

- Instance Rights play a key role in Clarity and they can be assigned via: Instance, OBS and Global rights; but not all rights are created equal.
- Rights are validated on every action, as you load a screen, a record, through webservice, etc. Therefore, high volume can cause system slowness for most users.
- Rights can also impact your licensing given specific rights will increase the licensing level required.
- Recommendations:
 - Assign rights through Groups or OBS; instead of assigning directly to a user
 - Avoid duplicating rights i.e. Edit Rights super seed View Rights
 - Minimize the use of instance rights
 - When developing integrations or processes that rely on XOG, each insert will automatically assign instance rights. Use dedicated accounts and clean those up on a recurring basis.
 - Review your permission model at least once a year
- Potential Symptoms:
 - Slowness throughout the application except for admin users
 - Portlets with SECURITY clauses perform slower
 - Degradation happened over time without significant changes to the environment

Housekeeping – Volatile Data

- Volatile Data is Data that can be purged and has no impact to your environment. i.e.:
 - Audit Trail
 - Process Instances
- Cleanup is primarily done via jobs and most jobs will allow a retention period to be specified

Housekeeping – Volatile Data

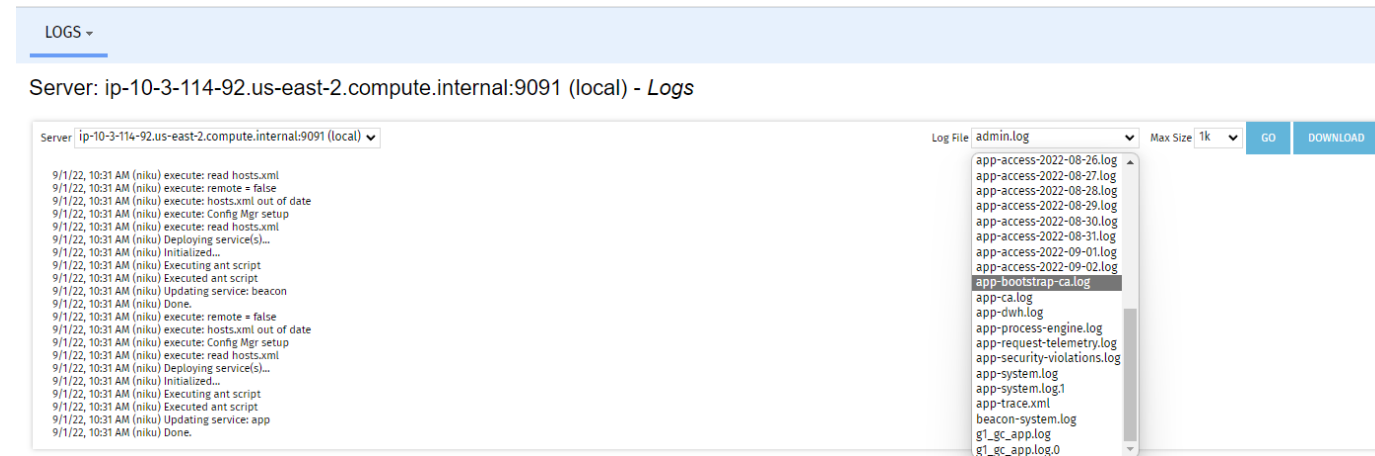
Job	Description
Clean User Session Job	This job removes expired session-based user data stored in the product for the resource logged in.
Purge Picklist Data Job	This job removes purged picklist data that may have accumulated over time for deleted pick lists and values.
Delete Log Analysis Data Job	This job removes the Clarity PPM log analysis-related data.
Delete Process Instance Job	This job deletes process instances with a status of <i>Done</i> or <i>Aborted</i>
Purge Audit Trail Job	This job removes all audit trail records according to their retention period.
Purge Notifications Job	Deletes system notifications. Notifications are logged under certain conditions like Process/Job executions, action items, when an event triggers a system notification.
Purge Temporary Aggregated Data Job	This job cleans up the data that is created as a part of computing aggregated costs for generating chargeback invoices. The job is scheduled to run once a day automatically but can be run on demand too.
Remove Job Logs and Report Library Entries Job	This job removes old job log entries and report library entries from the database after they have exceeded a specified number of days.

Housekeeping – Additional Tips

- Review Clarity logs on a periodic basis, for recurring errors. Most portlets, jobs or processes will log messages on error. Logs can be viewed by admins by navigating to:

`/niku/nu#action:security.logs`

- Use OOTB Health Report to review misconfigurations (On Prem Environments)
- Use Performance Portlets and Log Analysis Job to identify slow running components
- Use Admin Pages to:
 - Monitor running jobs and time slices
 - DWH Volume and errors

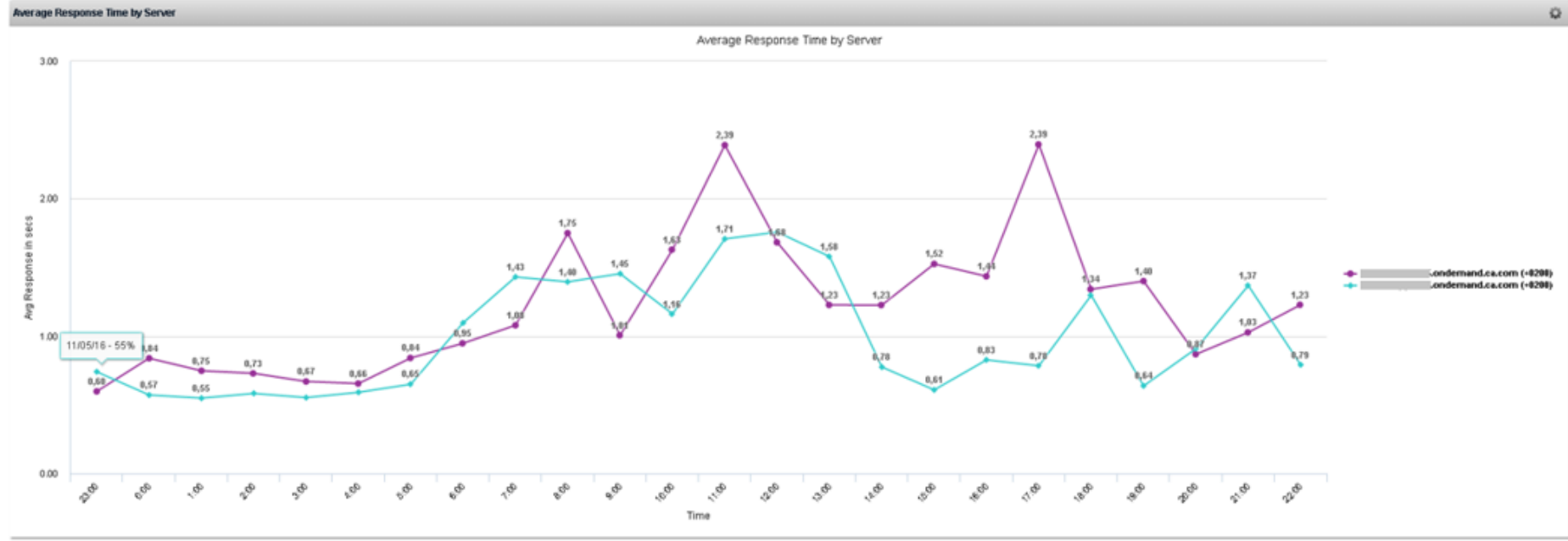


Housekeeping – Additional Tips

SUMMARY APPLICATION DATABASE DATA WAREHOUSE REPORTING

Health Report

Category	Value	Status
General		
Server	tomcat	
Document Store	File Store	
sharedDir		
LDAP Directory Server	Disabled	
On-the-fly RateMatrix	Disabled	Enable
Application Instance(app)		
SSO	Enabled	
HTTP Entry URL	https [REDACTED]	
Run Job Scheduler	No	
Run Process Engine	No	
New User Experience		
ppm-ux	16.0.3.594	◆
Activate New User Experience	Yes	
Activate Timesheets	Yes	
BG Service (bg)		
Run Job Scheduler	Yes	
Run Process Engine	Yes	
Primary Service	Yes	
Max Concurrent Jobs	10	
Governor Limits		
Document Size		
Export to Excel		
Objects/NSQL Limit		
SQL GEL Rows		
CSV GEL Rows		
Timesheet Tasks		
Max XML Nodes		



Rego's Approach



Rego's Recommendations

- Be aware of Clarity's capabilities, Clarity is highly customizable, but it is not an app builder
- When possible, revert to OOTB functionalities. MUX is being heavily invested and catching up to some work arounds and customizations out there
- Clarity Studio:
 - Standardize naming and API configuration to easily identify customizations
 - Be conscious and remove unused:
 - Objects/Attributes
 - Lookups
 - Processes
 - Job schedules
 - Monitor for faulty or slow Queries, Lookups, Portlets or similar.
- Perform and review your housekeeping configuration on each release and periodically

RegoXchange – Clarity Health Portlet

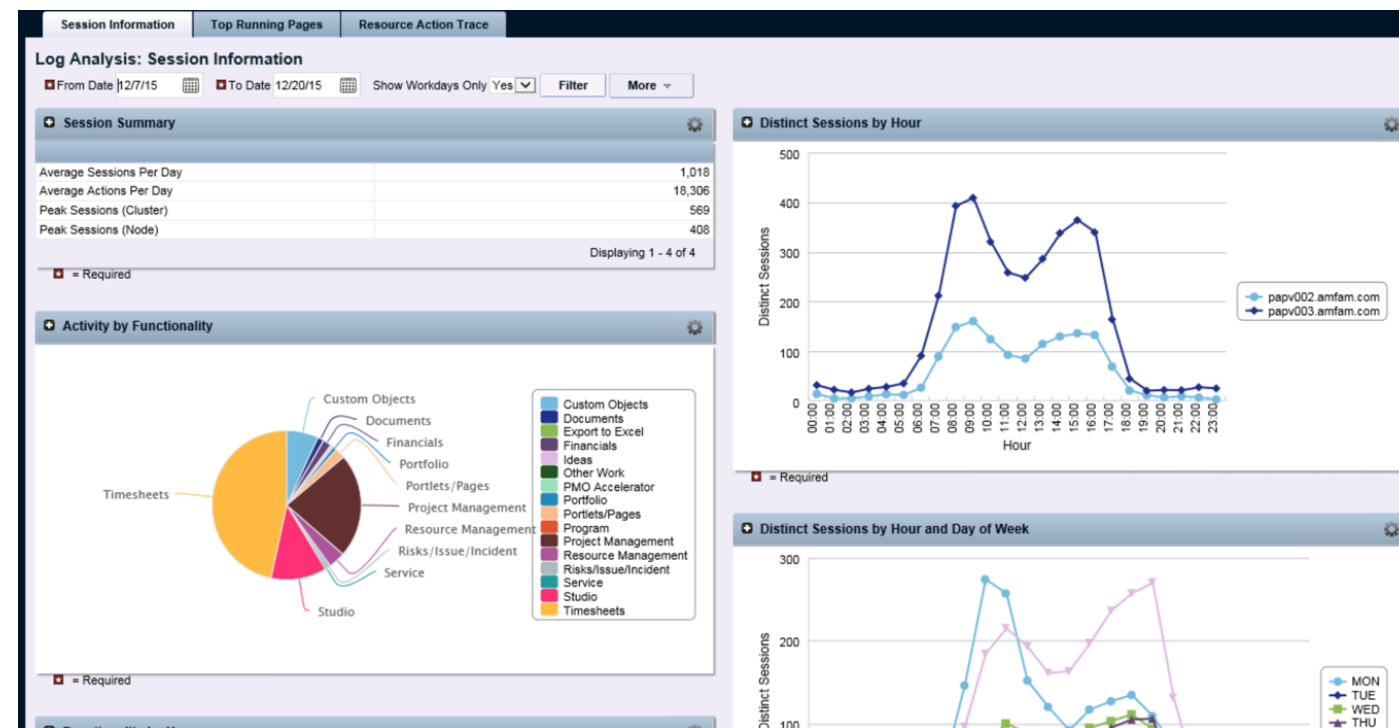
- RegoXchange asset, available to subscribed customers.
- Simple yet powerful portlet, which provides a quick glance at key components and critical jobs.
- Some of the metrics it monitors:
 - Process Engine health and heartbeat
 - Time slice schedule
 - Resource intensive jobs like:
 - Rate Matix Extraction
 - Datawarehouse

Clarity Health 		
Name▲	Metric	Last Completed
Datamart Extraction		1/20/19 1:37 AM
Datamart Rollup		1/20/19 3:00 AM
Load Data Warehouse - Full Load		1/20/19 5:51 AM
Load Data Warehouse - Incremental		1/18/19 8:31 PM
Load Data Warehouse Access Rights		1/20/19 6:05 AM
Process Engine		1/20/19 10:47 AM
Rate Matrix - Full Load		1/20/19 12:05 AM
Rate Matrix - Incremental		1/20/19 5:51 AM
Time Slices		1/20/19 10:54 AM

Displaying 1 - 9 of 9

Performance and RegoXchange Performance Portlets

- Clarity natively includes jobs and portlets to review slow components
- Rego's Performance Portlet are an enhanced package that provide performance metrics, making performance issues easy to identify.
- Breaks down access logging and session data:
 - Sessions by hour and day of week
 - Access and Component break down by hour



Rego's Technical HC Notification

- Created using Clarity processes and custom objects.
- Allows a scheduled notification to be sent, which includes data to monitor key metrics.
- Easily add additional metrics/components to the scheduled notification.
- Pre-loaded with a series of metrics to ensure key components are running optimally.



Rego Technical HC – Sample Metrics

Daily Health Check - 23-08-2022 05:30:00

Status Summary

category	status
Processes	PROBLEM
Jobs - Failed	PROBLEM
Jobs - Still Running	OK
Jobs - Long Running	OK
Time Slices	OK
Process Engine	OK

Application Checks

category	status	details
Application Access	Validated	Ok
Fiscal Periods	Total Open: 221	
Time Periods	Total Open: 11	
DWH – Full Job	OK	Last Completed: 08-22-2022 23:21:05
DWH – Incremental Job	PROBLEM	Last Completed: 08-23-2022 05:29:22

Failed Processes

Instance ID	Process Name	Initiated By
252488	Idea Approval	Administrator, Process

Failed Jobs

Job Run ID	Job Name	Initiated By
25248885	Load Data Warehouse - Incremental	Administrator, Process

Long Running Jobs

Job/Report Name	Creator	Execution Time (min)
Load Data Warehouse - Incremental	Administrator, Process	180

Time Slice Details

Slice ID	Slice Name	Last Completion
78558558	Resource Availability	01/01/1990

Application Locks

Lock Type	Since	Owner
Project	06/01/2022	Doe, John

Housekeeping

Category	total	Since
Running Processes	1	08-23-2022
Aborted Processes	0	
Error Processes	49	05-10-2022
Job run instances	71092	07-06-2022
Completed Processes	508754	03-31-2022
Audit Trail Records	1753317	05-01-2020

Process Engine Throughput

yesterday	average
4849	3509

Questions?



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- Class Provider = **Rego Consulting**
- Class Name = **regoUniversity**
- Course **Description**
- Date Started = **Today's Date**
- Date Completed = **Today's Date**
- Hours Completed = **1 PDU per hour of class time**
- Training classes = **Technical**
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