Keeping Clarity Healthy: Housekeeping and Maintenance

Your Guides:
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Agenda

- Introduction
- Keeping Clarity Healthy
  - Why is housekeeping required?
  - When to perform housekeeping?
  - Housekeeping Recommendations
- Rego’s Approach
  - Rego’s Recommendations
  - Rego’s Health Check Assets

Introduction

Introductions

- How often do you look at failed processes?
- Do you know when your critical financial, data warehouse (DWH), and similar jobs run?
- Who gets notified when a job or process fails?
- How often do you purge any type of data? What data?

Understanding Clarity and Housekeeping

Clarity is flexible and customizable in both the latest Modern UX (MUX) and Clarity Studio.

Admins can:

- Implement modules such as Custom Investments, Roadmaps, Demand and Project Management, Resources, Financials, etc.
- Customize Objects, Attributes, Blueprints, and more, through:
  - Clarity Studio
  - Modern UX Administration
- Implement automations and background processing of data through Jobs, Processes, and Business Rules

This same flexibility requires maintenance and housekeeping to keep the application healthy and data manageable.

Like any other application, Clarity has finite system resources. Admins need to monitor user activity, automations, application programming interface (API) activity, configurations, and data.

Quick Roundtable

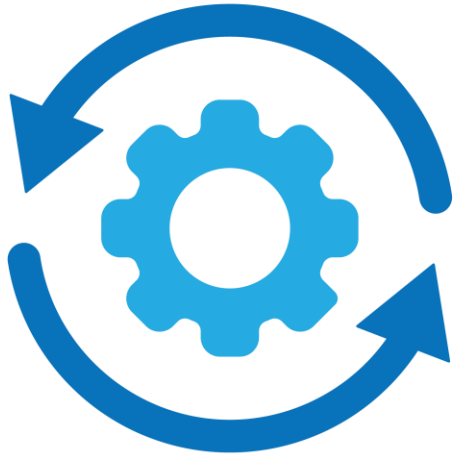
Does your organization perform any Clarity maintenance activities?

Describe the activities performed in your organization:

- Processes
- Jobs
- Configuration changes

How often are these activities performed?

- On a schedule?
- During deployments or implementations?
- When an issue occurs?



Keeping Clarity Healthy

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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 evolving usage and changes
- Maintain reliable service without faults or issues
- Retire unused functionality and customizations

Housekeeping is key during the multiple stages of maintenance by supporting administrators:

- Identify and mitigate latent risks and issues
- Monitor the impact of releases and implementations
- Maintain the best performance and service

When Should You Perform Housekeeping?

As a Preventive Process:

- On a regular schedule
- Monitoring key metrics and thresholds

As an Adaptive Process:

- When the software is upgraded, or new functionality is released
- After implementing changes or customizations
- When decommissioning or cleaning up previous functionality

As a Corrective Process:

- When a fault is detected
- When performance issues occur

What Does Housekeeping Involve?

Processes

- Processing Capacity:
  - Number of processes running and throughput
  - Number of processes in error state
- Common failing processes
- Process runs

Jobs

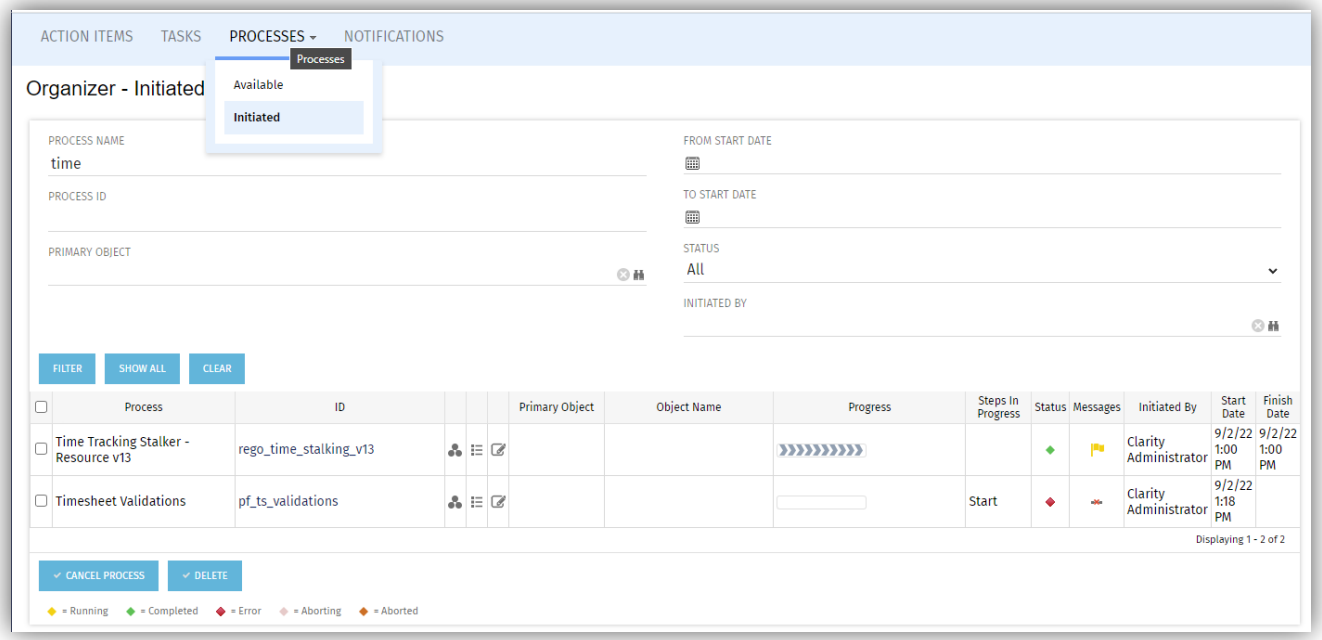
- Review Job schedules
- Monitor Job Failures
- New jobs and changes
  - (Especially with MUX, several jobs have been released)
- Financial Processing
  - Jobs
  - Invalid Transactions
  - Timesheets without transactions
- DWH Processing

Configuration and Customizations

- Clarity Studio
- MUX Administration
  - Views
  - Blueprints
  - Field-Level Security (FLS)
  - Business Rules

Housekeeping - Processes

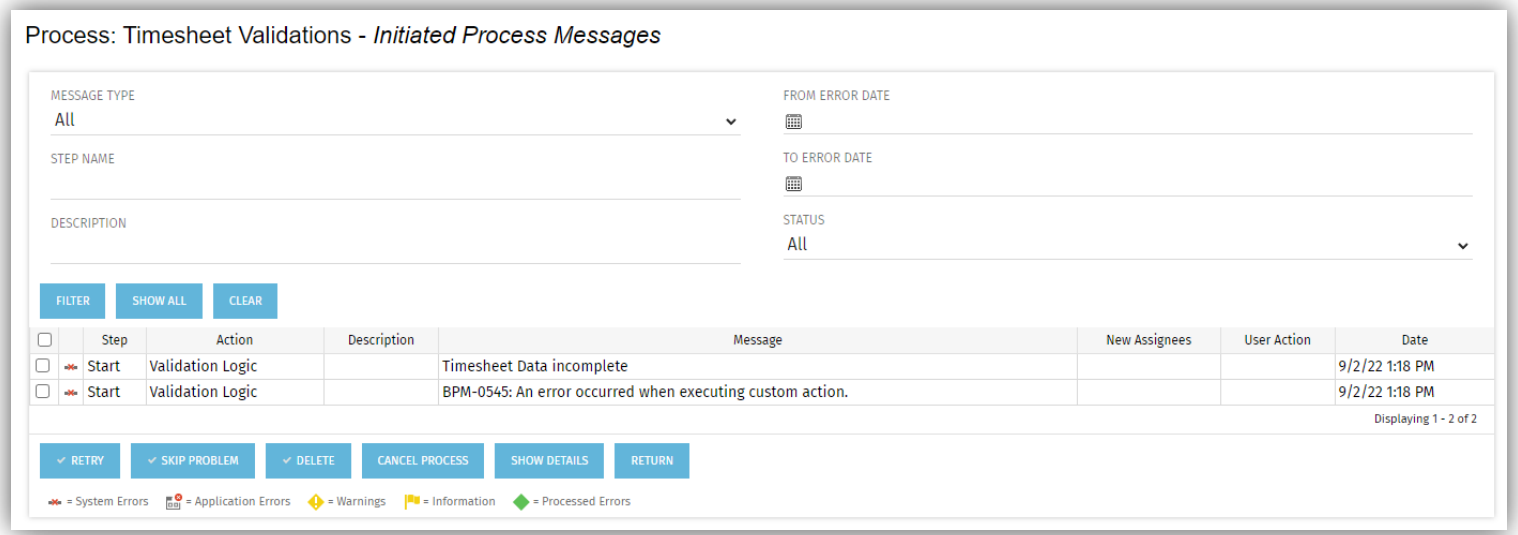
- Monitor process executions:
  - Volatile and historic data can accumulate between executions, messages, action items, and notifications
  - Executions consume application resources and can generate performance overhead when they:
    - Remain in error state
    - Run for long periods
    - Leave old initiated instances
    - Run at high throughput
- Monitor processes routinely and during implementations
- The Organizer helps identify and monitor process executions

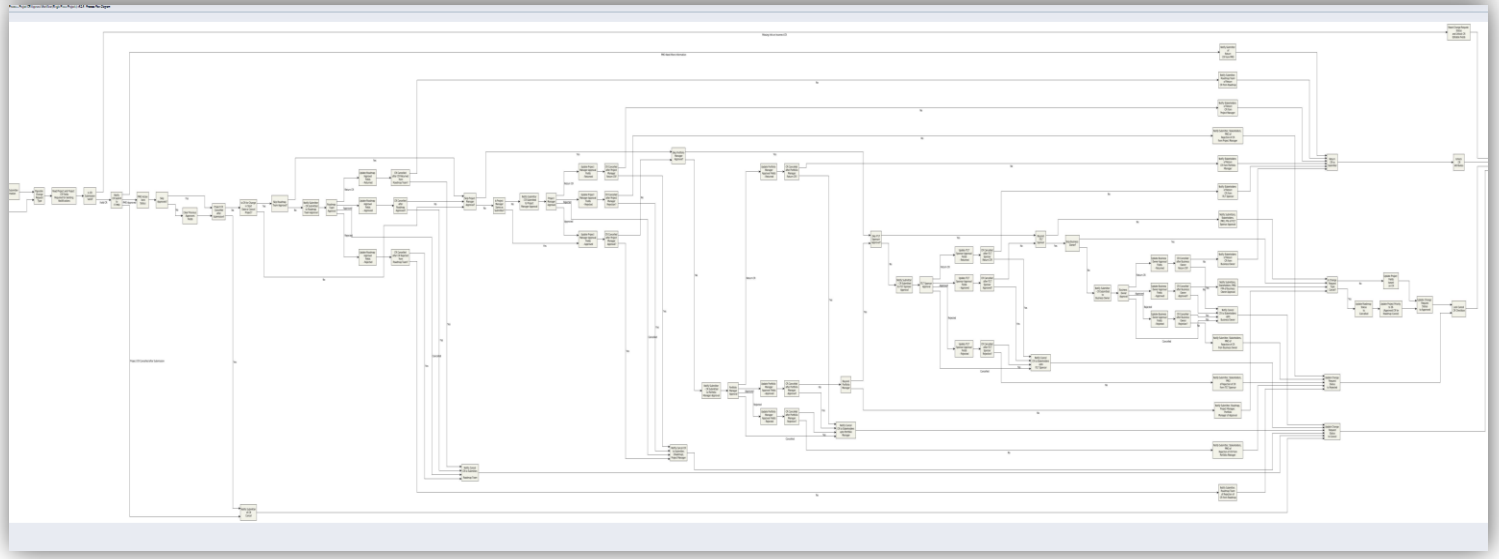


Housekeeping - Processes

Housekeeping and maintenance also come into play when developing processes. Follow these best practices:

- Estimate execution volume by considering trigger frequency, schedules, and run times
- When setting up conditions for automated processes, avoid unnecessary executions
- Account for subprocesses and calling jobs
- Keep processes simple and short-lived
- Avoid long-running processes
- Account for action items or using conditions that depend on additional user activity
- Configure error handing and logging to avoid excessive logs or lingering instances
- Minimize dependencies on user action, and monitor outstanding instances requiring user action





Housekeeping - Jobs

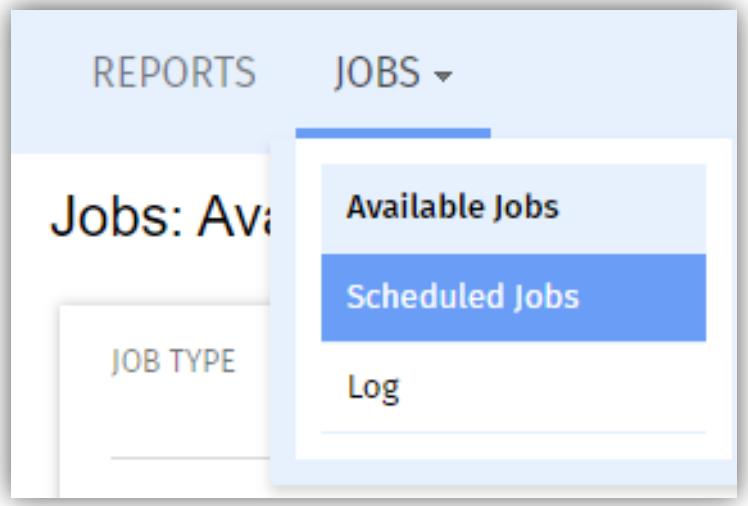
- Jobs in Clarity serve multiple purposes, providing background processing for any intensive / data updates. It's critical to ensure the calculations and rollup across the app are consistent, including:
  - Time Slicing
  - DWH Jobs
  - Financial Processing
  - Running Processes on a schedule

- Even though executions are logged, they generally do not create significant data volume, but cleanup jobs can remove older records.

- 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.

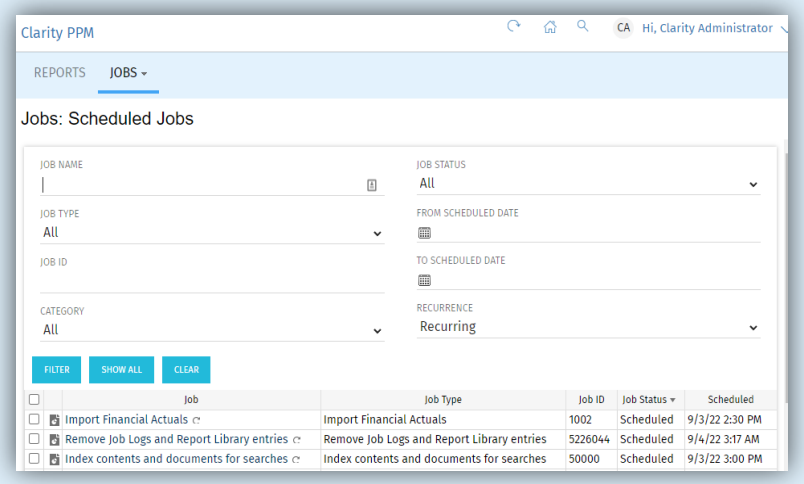
Housekeeping - Jobs

- View all available jobs 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
- View all scheduled jobs by filtering for “Recurring”



Quick Tips:

- ✓ It’s always best to schedule using CRON expressions; other options are sensitive to the logged-in user’s time zone
- ✓ Schedule related jobs in the required order, and define job incompatibilities as needed
- ✓ Share job schedules through an admin group
- ✓ Configure failure notifications to identify potential issues
- ✓ Align job frequency with business activity; for example, avoid posting transactions every five minutes if timesheets and financial transactions are entered weekly



Additional Housekeeping – Volatile Data

- Certain components and activities in Clarity will retain data for auditing or monitoring purposes
- This should be considered **volatile data** and only kept for day-to-day activities without dependency for governance or auditing purposes
- It is key to configure retention periods and cleanup jobs, and perform regular maintenance to prevent slower load times on affected Clarity pages and queries:

Audit Trail

Record when object instances are created, updated, or deleted. Audit logging on a per-attribute basis.

- Configure retention and schedule "Purge Audit Trail" job
- Audit only the fields required by governance or monitoring
- Avoid the "Select All" approach.

Time Slices

Time Slices are flat structures within Clarity derived from time-scaled values. The Time Slicing job populates these structures, allowing queries, portlets, and reports to be built against them. Because of this flat structure, data volume can grow quickly.

For example, an environment with **500** resources, daily slices covering 5 years automatically becomes:
500 * 5 * 365 = **912,500 records**

Configure time slices based on the organization's data requirements.

Time Slices became less relevant in MUX and New Reporting due to the use of curve data.

Other volatile components:

- Notifications
- Job Instances
- Process Instances
- Action Items

Housekeeping – Access Rights

- Instance rights play a key role in Clarity. Rights can be assigned at the instance, Organizational Breakdown Structure (OBS), or global level, but not all rights are equal.
- Security is vital for data governance; this must be reviewed both for compliance and housekeeping purposes.
- Rights are validated on every action, as you load a screen, a record, through web services, etc. Therefore, a high volume of rights can impact application performance.
- Certain rights can also increase the required license level.
- Recommendations:
  - Assign rights through Groups or OBS, instead of assigning directly to a user
  - Avoid duplicating rights; for example, Edit Rights supersede View Rights
  - Minimize the use of instance rights
  - For integrations or processes that use XML Open Gateway (XOG), each insert automatically assigns instance rights; use dedicated accounts and clean up those rights regularly, or avoid this paper trail by using the REST API
  - Review your permission model at least once a year
- Potential Symptoms:
  - Slowness throughout the application
  - Portlets with SECURITY clauses run more slowly
  - Performance degrades over time without significant changes to the environment

Housekeeping – Volatile Data

Job	Description
Clean User Session	Removes expired session-based user data stored in the product for the logged-in resource.
Purge Picklist Data	Removes purged picklist data that may have accumulated over time for deleted pick lists and values.
Delete Process Instance	Deletes process instances with a status of *Done* or *Aborted.*
Purge Audit Trail	Removes all audit trail records according to their retention period.
Purge Notifications	Deletes system notifications. Notifications are logged under certain conditions such as Process or Job executions, action items, or when an event triggers a system notification.
Purge Temporary Aggregated Data	Cleans up the data that is created while computing aggregated costs for generating chargeback invoices. The job is scheduled to run automatically once per day but can also be run on demand.
Remove Job Logs and Report Library Entries	Removes old job log entries and report library entries after they have exceeded a specified number of days.
Purge Action Items	Introduced in 16.1.1 to allow organizations to keep Action Items when purging processes.

Modern UX and Studio Recommendations

Objects vs. CITs → When to Use Each?

Objects are preferred:

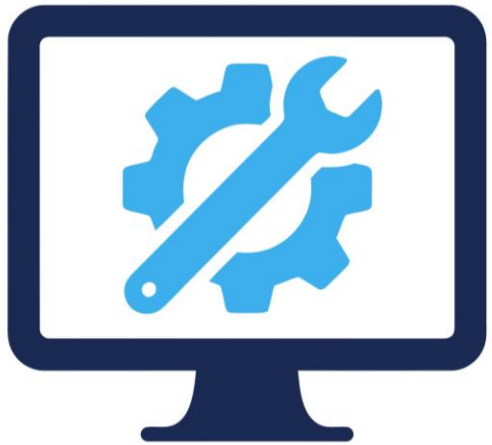
- As supporting components that extend core project portfolio management (PPM) functionality
- As lightweight staging tables
- When roadmaps and hierarchies are not required
- When the data does not have a financial component

Custom Investment Types (CITs) are preferred:

- When a data set needs extended investment-management capabilities, such as tracking administrative activities or other work
- When there is a financial component to the data (i.e., cost and budget plans)
- When roadmaps and hierarchies are required
- **<u>*NOTE: CITs cannot be deleted once created</u>**

Object / Investment Attributes

- Recommended limit of 100 attributes per object
- Excessive attributes = degraded performance and potential upgrade failures
- Properly structuring master and subobjects helps prevent these limits from being exceeded



Modern UX and Studio Recommendations

Blueprints and Business Rules

Blueprints:

- Use multiple blueprints to tailor data presentation and avoid excessive data entry
- Review Blueprint rules and actions regularly to confirm they remain valid
  - Changes such as disabling attributes or removing groups can invalidate blueprint rules, process conditions, and display conditions (Classic UI)
- Reuse Page Blueprints for Classic UI dashboards by using parameters

Business Rules:

- The number of rules per blueprint is limited
- More rules = increased page-rendering time
- Consider multiple blueprints rather than an extensive set of rules

Modern UX and Studio Recommendations

Views and Field Level Security

Views:

- Define recommended or default views for commonly used attributes
- Limit the number of displayed columns
- Sparingly include dynamic lookup-based attributes to reduce grid load times
- ***NEW*** Consider enabling the system options to delete draft views

FLS:

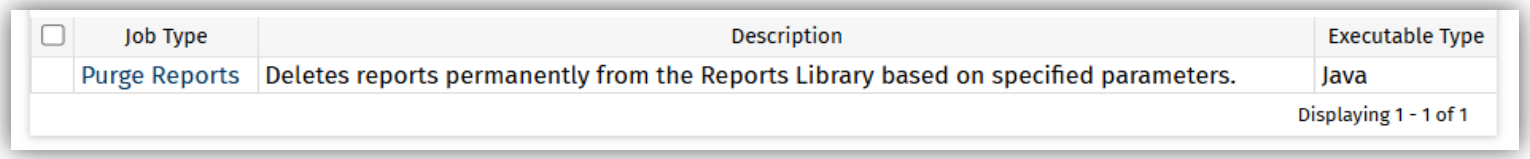
- Field-level security can only be implemented at the Group level; adding more granularity to the restrictions that can be imposed upon a view
- **Con:** Adds additional load to page rendering since secured fields need to be individually evaluated for access restrictions

Modern UX and Studio Recommendations

Reporting, API, and AI

New Reporting Module:

- Be mindful of who is granted access to create reports
- Copying or cloning providers and reports can lead to sprawl
- Consider limiting Data Provider access to super users
- Review report schedules regularly
- Establish a report-retention policy and use the Purge Reports job



Job Type	Description	Executable Type
Purge Reports	Deletes reports permanently from the Reports Library based on specified parameters.	Java

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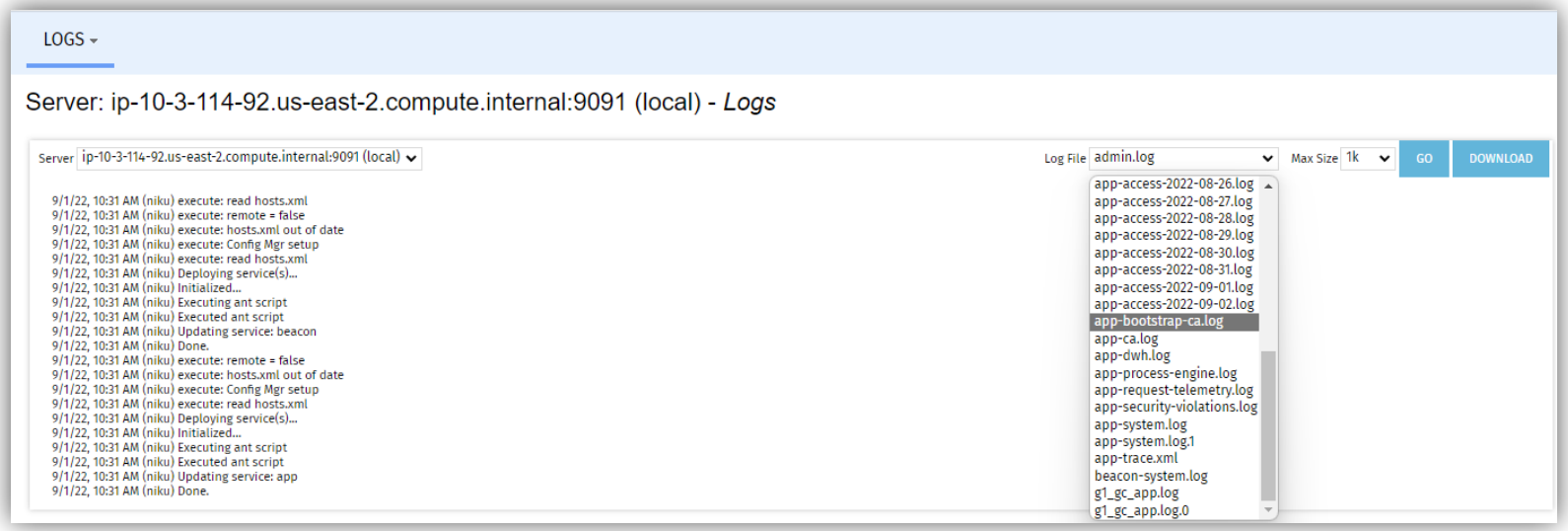
API, AI, and API Keys:

- Governance and compliance are increasingly important, we recommend the use of API Keys to help control access
- Review the list of API keys regularly
- With artificial intelligence (AI) and Model Context Protocol (MCP) servers, monitor access, access rights, and external request volume

Housekeeping – Additional Tips

- Review Clarity logs regularly for recurring errors. Most portlets, jobs, and processes log error messages. Administrators can access the logs at:
  /niku/nu#action:security.logs
- Utilize the out-of-the-box (OOTB) Health Report to identify configuration issues (key for on-premises environments)
- Identify slow-running components with Performance Portlets and the Log Analysis job
- Use Admin Pages to monitor:
  - Running jobs and time slices
  - DWH volume and errors
- Set up notifications for:
  - Failed Jobs
  - The status on key components or processes



Rego's Approach

Rego's Recommendations

- Be aware of Clarity's capabilities. Clarity is highly customizable, but it is not an app builder.
- Use out-of-the-box functionality when possible. Review each release for new functionality. (View our webinars for relevant recaps!)
- When customizing:
  - Consider the overhead of each customization and how frequently or concurrently it will run i.e., dynamic lookups, portlets, processes
  - Standardize naming and API configurations so customizations are easy to identify
  - Identify and remove unused components (i.e., Objects, Attributes, Lookups, Processes, Job Schedules, and DWH configuration)
  - Review MUX configurations, including Administration settings, Blueprints, FLS, Views, Rules, etc.
  - Monitor Queries, Lookups, Portlets, or Reports for errors or slow performance
  - Document and backup customizations. Clarity does not provide backup capabilities, and lower environments are not a backup mechanism
  - Refresh lower environments frequently
  - Properly identify, describe, and name your customizations
- Review and update your housekeeping configuration with each release and at regular intervals.

Rego's Assets

Rego's Data Dictionary

- Identifies and provides details on every attributes in your instance

MUX Migrator

- Easily moves MUX configurations easily between environments

Technical Health Check

- Provides scheduled notifications with key environment metrics
- Can be customized to include additional validations and metrics to monitor key processes

Rego Health Check Dashboard

- Provides real-time statistics on key health metrics

RegoXchange https://xchange.regoconsulting.com/

- A library of assets and resources to manage Clarity
- Avoid re-inventing the wheel by using customizations developed and reviewed by Rego consultants
- 100s of new assets every year

Rego's Technical HC Notification

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

Rego's Health Check Dashboard

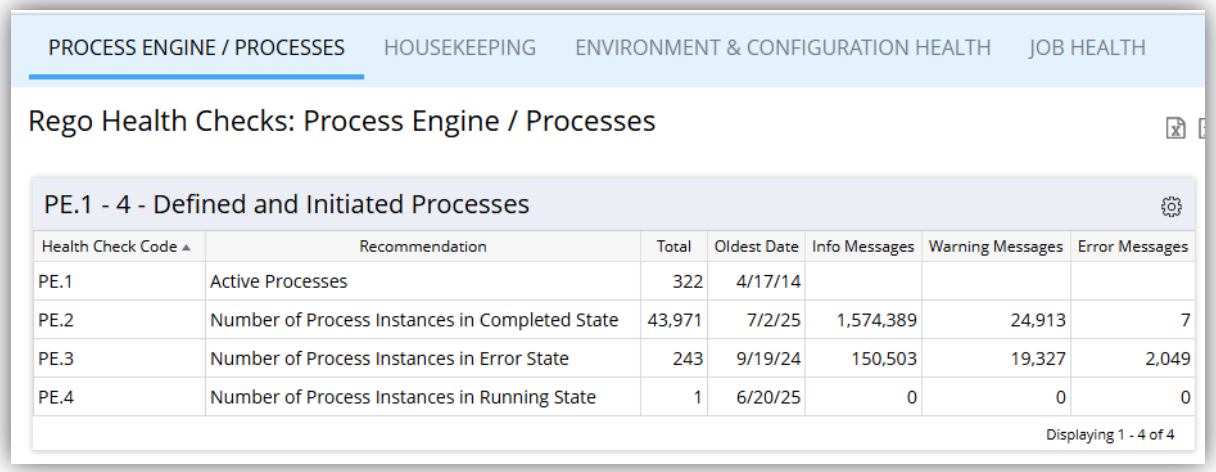
The Rego Health Check dashboard provides real-time metrics in four key areas.
It can be used by admins to continually monitor the health of an environment.

1. Process Engine and Processes

- Defined and Initiated Processes
- Long-Running Processes
- Common Failing Processes
- Process Engine Throughput
- Top Logging Processes

2. Housekeeping

- Confirm scheduled jobs
- Confirm Audit Retention
- Instance Rights
- Common Instance Pages
- Time Reporting Periods
- Fiscal Type Periods
- Active Users and Resources
- Active Investments


PROCESS ENGINE / PROCESSES | HOUSEKEEPING | ENVIRONMENT & CONFIGURATION HEALTH | JOB HEALTH

Rego Health Checks: Process Engine / Processes

PE.1 - 4 - Defined and Initiated Processes

Health Check Code	Recommendation	Total	Oldest Date	Info Messages	Warning Messages	Error Messages
PE.1	Active Processes	322	4/17/14			
PE.2	Number of Process Instances in Completed State	43,971	7/2/25	1,574,389	24,913	7
PE.3	Number of Process Instances in Error State	243	9/19/24	150,503	19,327	2,049
PE.4	Number of Process Instances in Running State	1	6/20/25	0	0	0

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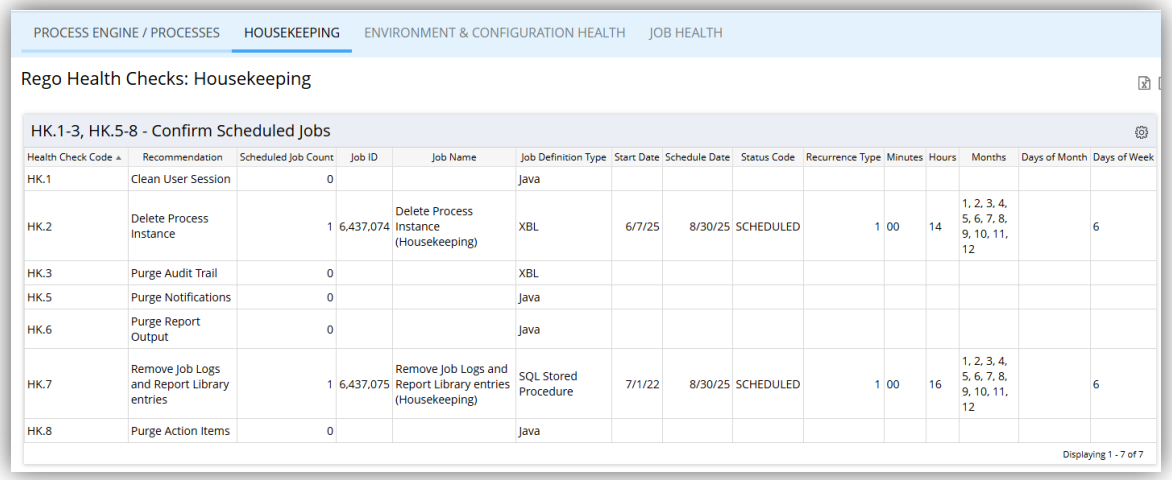
PROCESS ENGINE / PROCESSES | HOUSEKEEPING | ENVIRONMENT & CONFIGURATION HEALTH | JOB HEALTH

Rego Health Checks: Housekeeping

HK.1-3, HK.5-8 - Confirm Scheduled Jobs

Health Check Code	Recommendation	Scheduled Job Count	Job ID	Job Name	Job Definition Type	Start Date	Schedule Date	Status Code	Recurrence Type	Minutes	Hours	Months	Days of Month	Days of Week
HK.1	Clean User Session	0			Java									
HK.2	Delete Process Instance	1	6,437,074	Delete Process Instance (Housekeeping)	XBL	6/7/25	8/30/25	SCHEDULED	1	00	14	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12		6
HK.3	Purge Audit Trail	0			XBL									
HK.5	Purge Notifications	0			Java									
HK.6	Purge Report Output	0			Java									
HK.7	Remove Job Logs and Report Library entries	1	6,437,075	Remove Job Logs and Report Library entries (Housekeeping)	SQL Stored Procedure	7/1/22	8/30/25	SCHEDULED	1	00	16	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12		6
HK.8	Purge Action Items	0			Java									

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Rego's Health Check Dashboard

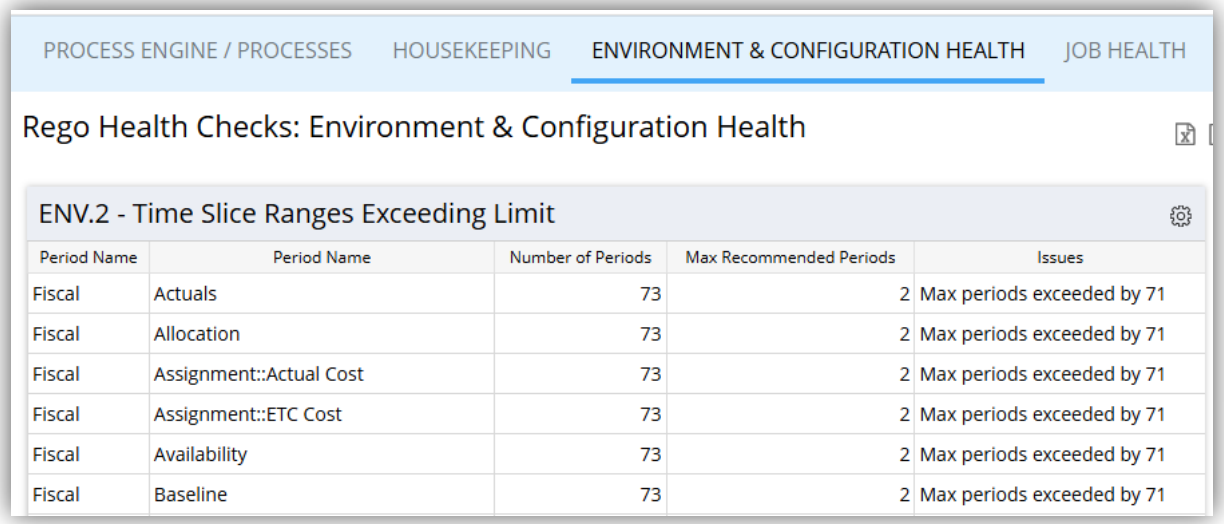
The Rego Health Check dashboard provides real-time metrics in four key areas.
It can be used by admins to continually monitor the health of an environment.

3. Environment and Configuration Health

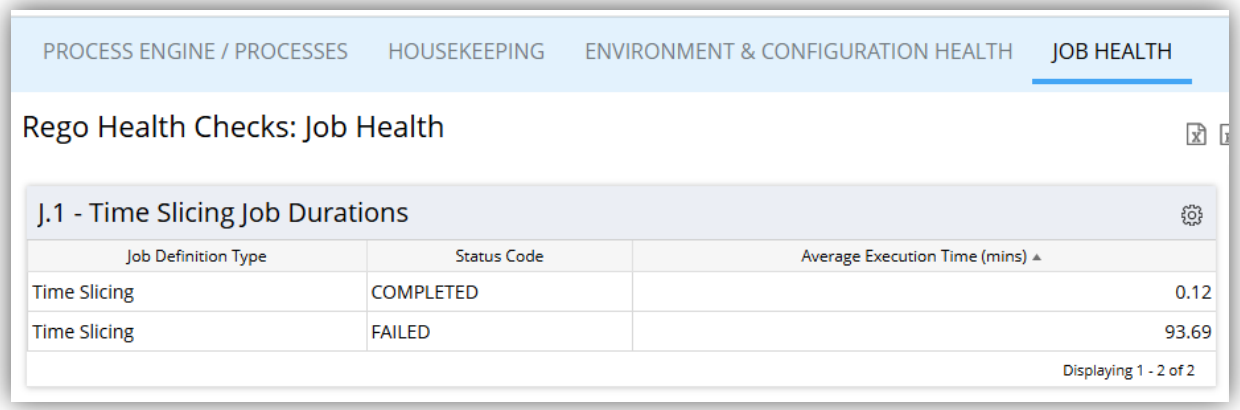
- Time Slice Ranges Exceeding Limits
- Invalid Transaction Count
- DWH Time Slice Ranges Exceeding Limit

4. Job Health

- Confirm scheduled jobs
- Job Monitoring and Sharing
- Time Slicing Job Durations
- Long-Running Jobs



Period Name	Period Name	Number of Periods	Max Recommended Periods	Issues
Fiscal	Actuals	73	2	Max periods exceeded by 71
Fiscal	Allocation	73	2	Max periods exceeded by 71
Fiscal	Assignment::Actual Cost	73	2	Max periods exceeded by 71
Fiscal	Assignment::ETC Cost	73	2	Max periods exceeded by 71
Fiscal	Availability	73	2	Max periods exceeded by 71
Fiscal	Baseline	73	2	Max periods exceeded by 71



Job Definition Type	Status Code	Average Execution Time (mins) ▲
Time Slicing	COMPLETED	0.12
Time Slicing	FAILED	93.69

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Questions?

Survey

Please take a few moments to fill out the class survey.
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Your participation in this class may count toward Rego University certification progress.

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Build recognized Clarity expertise.
Complete 10 eligible learning units within a certification track.

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Deepen your skills in focused topic areas.
Complete 4 eligible learning units within a selected specialization, with the option to earn multiple specializations.

Artificial Intelligence (AI)

Reporting & Analytics

Technical

Important: ***Complete the class survey in the app after each session so your credits can be tracked.***

More info: https://regouniversity.com/certificates

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- Click on **Certifications**
- Click on **Maintain My Certification**
- Click on **Visit CCR's** button under the **Report PDU's**
- Click on **Report PDU's**
- Click on **Course or Training**
- Class Provider = **Rego Consulting**
- Class Name = **Rego University**
- Course **Description**
- Date Started = **Today's Date**
- Date Completed = **Today's Date**
- Hours Completed = **1 PDU per hour of class time**
- Training classes = **Technical**
- Click on **I agree** and **Submit**

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