



ENTRINSICON
LEVEL UP!

September 26th-29th, 2023
Raleigh, NC

Health Check and Common Troubleshooting

Health Check and Common Troubleshooting

How to maximize system performance
within Informer 5

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Data Governance Tenets

- Data Integrity
- Data Level Security
- Content Level Security
- Functional Level Security
- Transparency
- Traceability
- Data Quality
- Controlled Reuse
- Governed Blended Data

Transparency & Traceability

- System Setup
- Auditing
- Logging
- System Health Check

System Setup

Windows server specs *minimum*

- Windows Server 2016, 2019, 2022 (all updates)
 - No IIS or other applications on server
- Quad-core CPUs
- 16GB RAM (32GB recommended)
- 80GB+ disk space
- Client browser: Anything but Internet Explorer!
- <https://informer5.zendesk.com/hc/en-us/articles/115004498926-Hardware-and-Software-Requirements>

System Setup

Docker / Linux server specs

- Hardware specs same as Windows Server
- Supported Linux Distributions
 - Ubuntu, Debian, Fedora (must be able to support Docker)
- Docker
 - Docker Community Edition (free! use me!)
 - Docker Enterprise Edition (not free – but if you have it, use it)
- Docker Compose
- https://informer5.zendesk.com/hc/en-us/articles/115004498926-Hardware-and-Software-Requirements#Linux_Requirements

System Setup

Windows Tuning - Elasticsearch

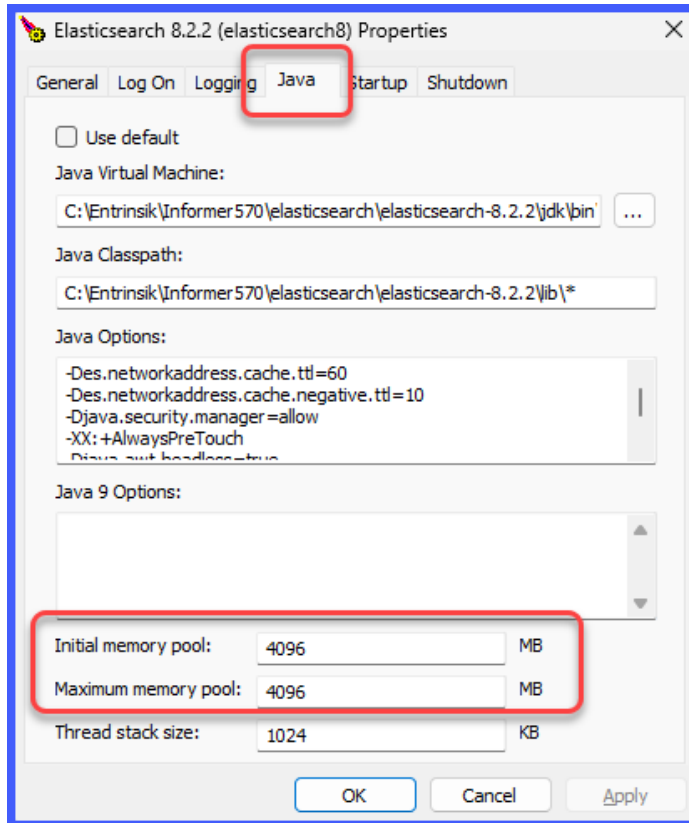
- Careful when tweaking with just minimum hardware specs
- **Elasticsearch**
 - Check Java memory usage in Task Manager
 - 4 GB of memory typical if server hardware meets minimum requirements
 - Can be increased – check with Entrinsic Support
 - Consider increasing ES memory if using a lot of large Datasets, Visuals, Dashboards and have a lot of users

Elasticsearch 8

Name	Status	CPU	Memory
Commons Daemon Service Runner		0%	1,191.9 MB
Elasticsearch 8.2.2 (elasticsearch8)		5%	47%

System Setup

Windows Tuning - Elasticsearch (cont.)



C:\Entrinsik\Informer5\elasticsearch\elasticsearch-8.2.2\bin\elasticsearch-service.bat manager elasticsearch8

Initial and Maximum Memory Pool **MUST** be the same

Leave Thread stack size at 1024 KB

Restart ES Service if changes made

System Setup

Windows Tuning - Load Balancer

- Careful when tweaking with just minimum hardware specs
- The Load Balancer sets up separate processes for the different core components of Informer 5
 - **Queries** - handles all database query executions
 - **API** - the main web server component, handling all UI requests
 - **Scheduler** - handles all Job executions
 - **Reverse Proxy** - acts as a proxy server and is the main entry point for all requests
- Spreading the load across different threads can improve performance of the Informer application when handling larger volumes of requests and/or data
- **C:\Entrinsik\Informer5\service.config.json**

System Setup

Windows Tuning - Load Balancer (cont.)

Default

```
{
  "apps": [
    {
      "name": "Informer5-query",
      "script": "node_module/@entrinsic/informer/index.js",
      "instances": 2,
      "args": "--http 3002 --schedule.enabled false"
    }
  ]
}
```

Two instances – each using 1GB memory

System Setup

Windows Tuning - Load Balancer (cont.)

Enhanced

```
1 {
2   "apps": [
3     {
4       "name": "Informer5-query",
5       "script": "node_modules/@entrinsic/informer/index.js",
6       "instances": 2,
7       "args": "--http 3002 --schedule.enabled false",
8       "node_args": "--max-old-space-size=2048",
9       "max_memory_restart" : "2500M"
10    },
11  ]
12 }
```

node_args - Query thread using 2GB instead of 1GB. Two instances each using 2GB gives 4GB to the Query thread

max_memory_restart - prevents a thread from locking up if memory exceeds 2GB, this setting will cause the thread to automatically restart if it hits 2.5 GB

System Setup

Windows Tuning - Load Balancer (cont.)

```
1  {
2  "apps": [
3  {
4    "name": "Informer5-query",
5    "script": "node_modules/@entrinsic/informer/index.js",
6    "instances": 2,
7    "args": "--http 3002 --schedule.enabled false",
8    "node_args": "--max-old-space-size=2048",
9    "max_memory_restart" : "2500M"
10 },
11 {
12   "name": "Informer5-api",
13   "script": "node_modules/@entrinsic/informer/index.js",
14   "instances": 2,
15   "args": "--http 3002 --schedule.enabled false",
16   "node_args": "--max-old-space-size=2048",
17   "max_memory_restart" : "2500M"
18 },
19 ],
20 }
```

System Setup

Windows Tuning - Load Balancer (cont.)

```
19     {
20         "name": "Informer5-reverse-proxy",
21         "script": "node_modules/@entrinsic/i5-load-balancer/index.js",
22         "instances": 1
23     },
24     {
25         "name": "Informer5-schedules",
26         "script": "node_modules/@entrinsic/informer/index.js",
27         "instances": 2,
28         "args": "--http 3002 --schedule.enabled false",
29         "node_args": "--max-old-space-size=2048",
30         "max_memory_restart": "2500M"
31     },
32 ]
33 }
```

System Setup

Windows Tuning - Load Balancer (cont.)

```
Administrator: Windows PowerShell
PS C:\>
PS C:\> pm2 ls
```

id	name	namespace	version	mode	pid	uptime	Ⓜ	status	cpu	mem	user	watching
1	Informer570-api	default	5.7.4	cluster	1884	4D	0	online	0%	57.3mb	SYSTEM	disabled
2	Informer570-api	default	5.7.4	cluster	9732	4D	0	online	0%	53.2mb	SYSTEM	disabled
0	Informer570-query	default	5.7.4	cluster	6096	4D	0	online	0%	62.3mb	SYSTEM	disabled
3	Informer570-query	default	5.7.4	cluster	9976	4D	0	online	0%	41.8mb	SYSTEM	disabled
4	Informer570-reverse-proxy	default	1.1.4	cluster	10292	4D	0	online	0%	29.3mb	SYSTEM	disabled
5	Informer570-schedules	default	5.7.4	cluster	10316	4D	0	online	0%	42.0mb	SYSTEM	disabled

```
PS C:\>
```

C:\> pm2 ls

- Use this command to see useful data about your worker threads
- Uptime and Status – has any thread crashed and/or restarted
- How much memory and CPU is currently being used?
- Snapshot in time

System Setup

Windows Tuning - Redis

Redis is a temporary data storage area for certain processes in Informer. Imports. Exports. Query Samples, Flow Steps, etc.

C:\Program Files\Redis\redis.windows.conf

Disable Snapshots saving to disk. Saves a lot of disk I/O

```
193  
194 # save 900 1  
195 # save 300 10  
196 # save 60 10000  
197
```

System Setup

Windows Tuning - Redis

Disable Redis Snapshot Persistence:

```
211 stop-writes-on-bgsave-error no
```

C:\Program Files\Redis\redis-cli.exe

info memory

flushall

Transparency and Traceability - Auditing

System Audit

- Which queries are consuming the most time?
- Which users are creating them?
- Can the queries be made more efficient?
- What content isn't being used?
- Are there 10 Jobs queued to run at the same time?

Data Governance

- Clear where data is coming from
- Clear on who is doing what to relative content
- Verify only authorized people able to access what they're supposed to
- Eliminate lack of confidence in data backing important business decisions

Auditing





System Audit

- The new way to monitor system resources to keep Informer running efficiently.
- Who is using Informer? And how?
- How fast are queries running?
- What content isn't being used?
- See how Users are using Informer, optimize slow-running queries across the system and clean out unused content from Informer.

Auditing

System Audit (Administration > Settings > Audit)

Audit

-  **Audit Queries**
Record all Queries executed against Datasources. Tracked data includes the Datasource, User, Query, time, and status. 
-  **Audit Requests**
Record all API Requests against the system. Tracked data includes the API route, User, time, and response code. 

Auditing

Audit Queries

- Records all Queries executed against Datasources
- Tracked data includes the Datasource, User, Query time and status
- Allows Administrators to track what parts of Informer are being used the most often and when and who is using which parts

Auditing

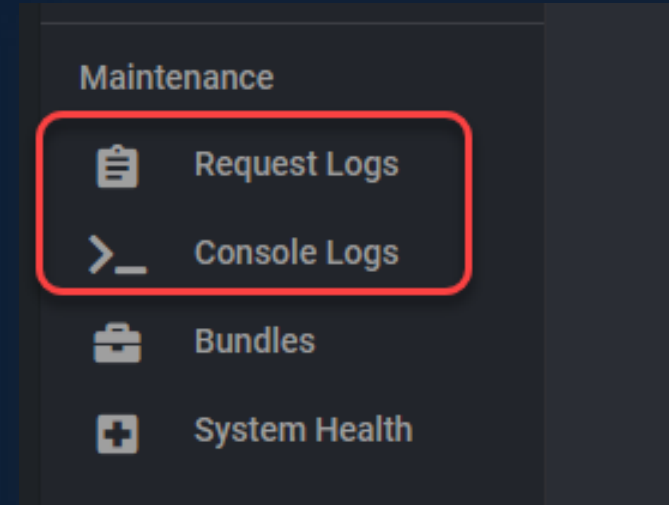
Audit Requests

- Records all API Requests made against Informer.
- Tracked data includes the API route, User, Time and Response Code.
- Useful to Admins who want to keep Informer running at peak performance

Transparency & Traceability - Logging

Request Logs: Contains information about requests made of Informer, such as the time it took for a request to be processed, the type of request and additional information about a specific log message.

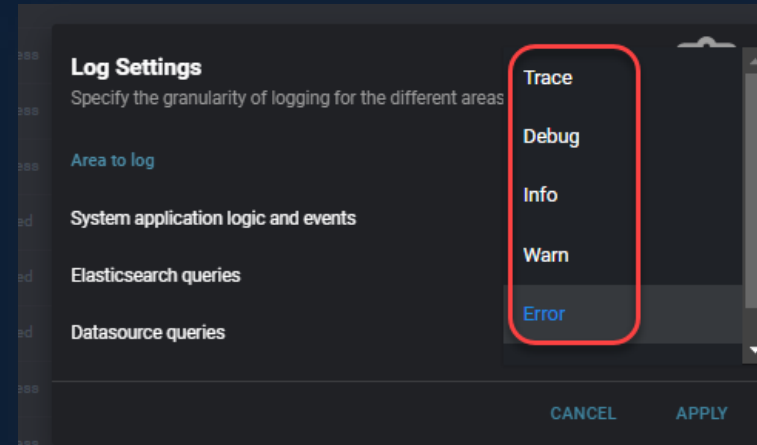
Console Logs: Contains a live feed to API calls that Informer is making as they are made.



Logging

Request Logs and Console Logs

- Unless troubleshooting something specific, do not set Log Level to above `Info`
- Request Logs can be filtered by Time, Tags, Result and other parameters, while Console Logs cannot



Logging

Log Areas

- System application logic and events
- Elasticsearch queries
- Datasource queries

Log Settings

Specify the granularity of logging for the different areas of the system.

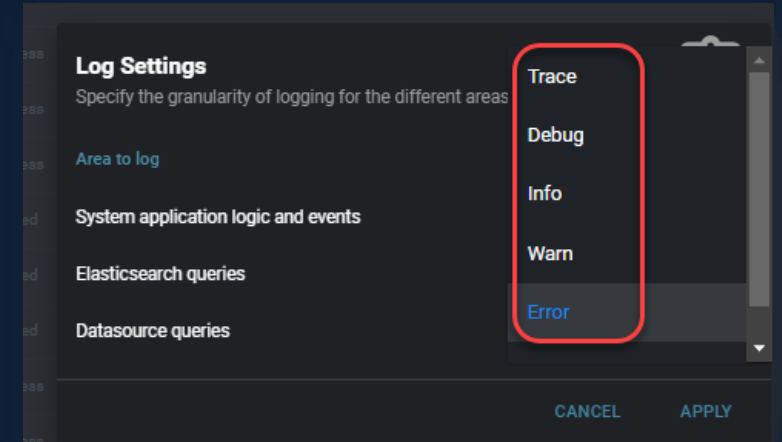
Area to log	Log Level
System application logic and events	Error
Elasticsearch queries	Error
Datasource queries	Error

CANCEL APPLY

Logging

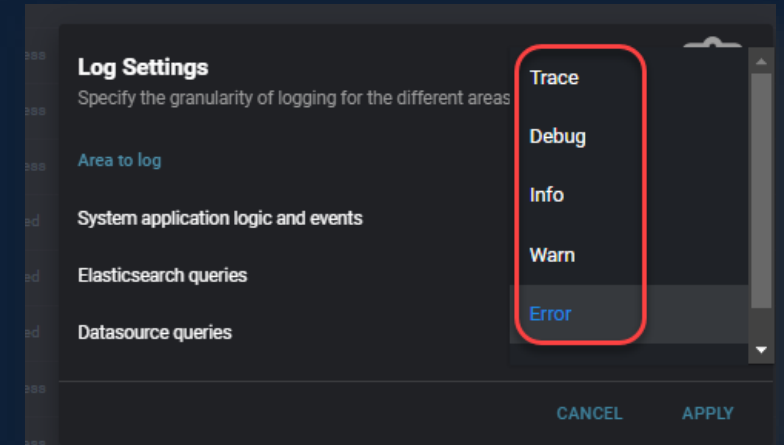
Log Levels

- None – No logs collected for area
- Error – Captures only events that prevents an action from completing
- Warn – Captures logs anytime something unexpected happens that Informer can handle



Logging


Log Levels



- Info – Lowest level of logs that also include *successful* requests and logs. *Also contains all warnings and errors.*
- Debug – 2nd highest volume of logging. Contains all debugging info.
- Trace – Highest level of logging. Captures all the logs included in Informer giving highest detail of what's happening all of the time.

Logging

Log Filters

Areas ▼ User Address ▼ Routes ▼ Methods ▼ Status ▼ Result ▼ Tags ▼ 

Logging

Browser Logging Settings

The screenshot shows the Informer web application interface. At the top, there is a navigation bar with the Informer logo, a search bar, and the user's name 'Administrator'. Below this is a breadcrumb trail: 'Home / Administrator / Logging'. A left sidebar contains navigation links for 'Profile', 'Sessions', 'API Tokens', and 'Logging' (which is highlighted). The main content area is titled 'Reported Log Levels' and contains five entries, each with a description and a toggle switch:

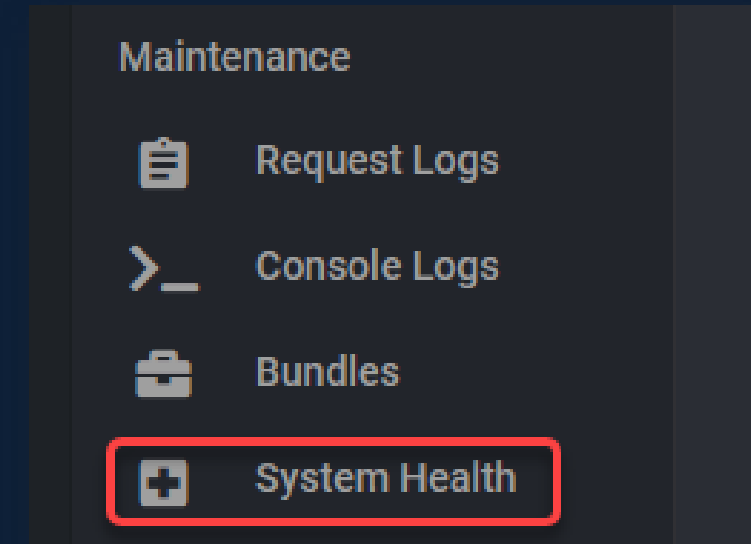
- Error**: Log when an error occurs in Informer, which usually prevents an action from completing. (Toggle: ON)
- Warning**: Log when something unexpected happens, but Informer can handle it. (Toggle: ON)
- Information**: Log notes that explain what is happening, such as a successful transaction or event notification. (Toggle: OFF)
- Debug**: Log technical details that help diagnose where something went wrong. (Toggle: OFF)
- Other**: Log other general messages that do not fit into one of the other levels, such as 'trace' level. (Toggle: OFF)

Below the 'Reported Log Levels' section is a 'Remote Options' section with one entry:

- Save browser log messages to the server**: Each recorded browser log message is sent to the Informer server and saved with the server logs. (Toggle: OFF)

Transparency & Traceability – System Health

- Allows users to see information on Datasets and Elasticsearch indices
- Can help Admins understand what is happening in Elasticsearch from within Informer



System Health

Unindexed Datasets

A Dataset that doesn't have any data because it's not been refreshed, or the data has been cleared. As well, the Dataset could be missing an index if it's deleted or corrupted at the Elasticsearch level.

Can drilldown to open a window that shows specifics

System Health

Unindexed Datasets

Unindexed Datasets Running Elasticsearch Searches Running El

Datasets with no index or an unknown index Active Searches Active Scrolls

Name	Owner	Status	Last Modified ↓	
U2 Applicants to Applications	admin	MISSING INDEX	August 23, 2022 at 4:25 PM	↗
sa.acyr SQL	admin	MISSING INDEX	August 19, 2022 at 4:39 PM	↗
Northwind Orders-NEW	admin	MISSING INDEX	August 19, 2022 at 9:18 AM	↗
Foresite Sales	admin	MISSING INDEX	August 19, 2022 at 7:38 AM	↗
Foresite Budget	admin	MISSING INDEX	August 19, 2022 at 7:38 AM	↗
suite	admin	MISSING INDEX	August 15, 2022 at 10:09 AM	↗
SUITE ENTRY	admin	MISSING INDEX	August 15, 2022 at 9:48 AM	↗
u2 STUDENTS	admin	MISSING INDEX	August 15, 2022 at 8:16 AM	↗
TOKEN from I5	admin	MISSING INDEX	August 9, 2022 at 11:22 AM	↗
15 Links	admin	MISSING INDEX	August 9, 2022 at 9:43 AM	↗

System Health

Running Elasticsearch Searches & Scrolls

- **Searches:** Returns hits that match the Query definition in the query's request
- **Scrolls:** Retrieves a stream of search results matching the query
- *Note:* High numbers can result in performance issues

System Health

Running Elasticsearch Searches & Scrolls

Running Elasticsearch Searches

Active Searches

0

Running Elasticsearch Scrolls

Active Scrolls

0

System Health

Orphaned & Expired Indices



- Indices (results) that don't have an associated Dataset or Report. Their time on the system has expired but are still hanging around.
- System delivered Auto Cleanup job should be running every night

System Health

Orphaned & Expired Indices

Orphan & Expired Indices 

Next automatic clear: Never

Index	Type	Name	Owner	Records	Size ↓	Creation date	Delete
manager.3-million-sales-records.	orphan			0	98.5 MB	July 13, 2023 at 1:26 PM	
manager.audit-dataset-report-of-	orphan			600	3.0 MB	July 7, 2023 at 9:45 AM	
manager.northwind-orders.16891	orphan			2155	476.3 kB	July 12, 2023 at 7:16 AM	
manager.dataset-and-ad-hoc-que	orphan			16	25.2 kB	July 7, 2023 at 10:21 AM	
manager.715c5517-407c-4209-8	expired	Dataset: (Unnamed)	admin			Unknown	

System Health

Query Benchmarking

- Helps identify two possible bottlenecks in a query's performance
- Indexing: evaluating the connection speed between Informer and Elasticsearch
- Flow Steps: are there slowdowns because of a particular Flow Step?

System Health

Benchmark Query

Launch a test-run of this Query to identify a bottleneck in performance. The test run will not impact your Dataset results.

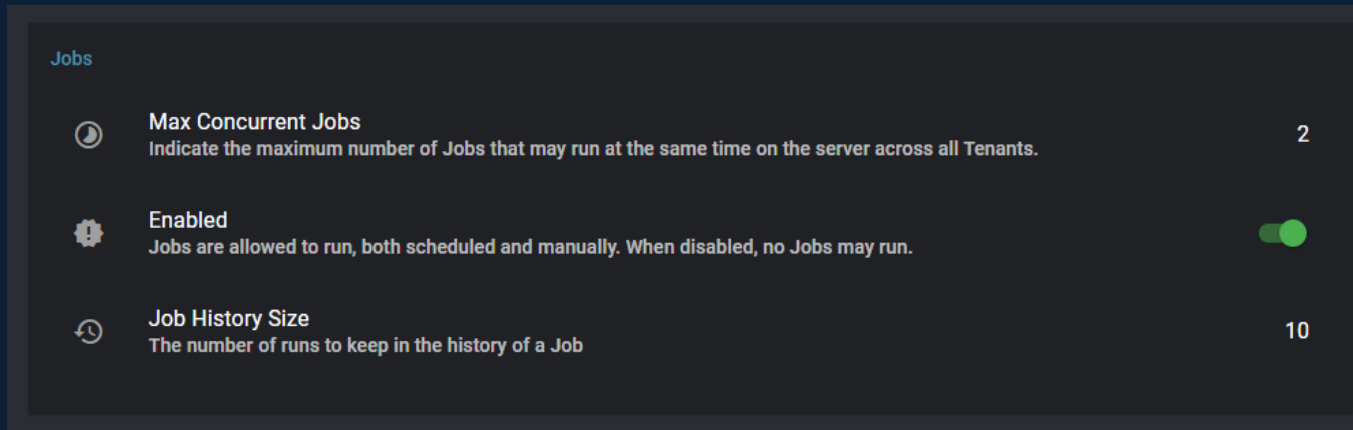
Run Options

Index results

Run Flow Steps

Status	Flow	Index	Rows	RPS
Stopped	✓	✓	455,400	2.7k
Stopped	✓	-	79,901	5.8k
Stopped	-	✓	77,783	5.8k
Stopped	-	-	102,500	8.5k

Windows Tuning – Job Setup



Spread out Jobs – give them room to run and complete

Lower Job History Size. The larger this is, the response time in the Job area will be reduced.



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Q & A