

ELEV8 2023

The logo features the word "ELEV8" in white, with a small silhouette of a person standing on the peak of the number "8". To the right of the "8" is a stylized yellow "8" composed of two overlapping circles with vertical lines through them. The year "2023" is written in yellow to the right of the stylized "8". A yellow horizontal line is positioned below the stylized "8".

Ignition

Diagnostics and Troubleshooting

8

Ignition!
by inductive automation



Laura Strydom

Customer Success Engineer



TROUBLESHOOTING

You are doing it wrong.

Support's Troubleshooting Structure

- + Discovery
- + Identification
- + Isolation
- + Resolution



Diagnostic Resources in Ignition

- + Logs
- + Thread Dumps
- + Metrics Dashboards
- + Running Scripts



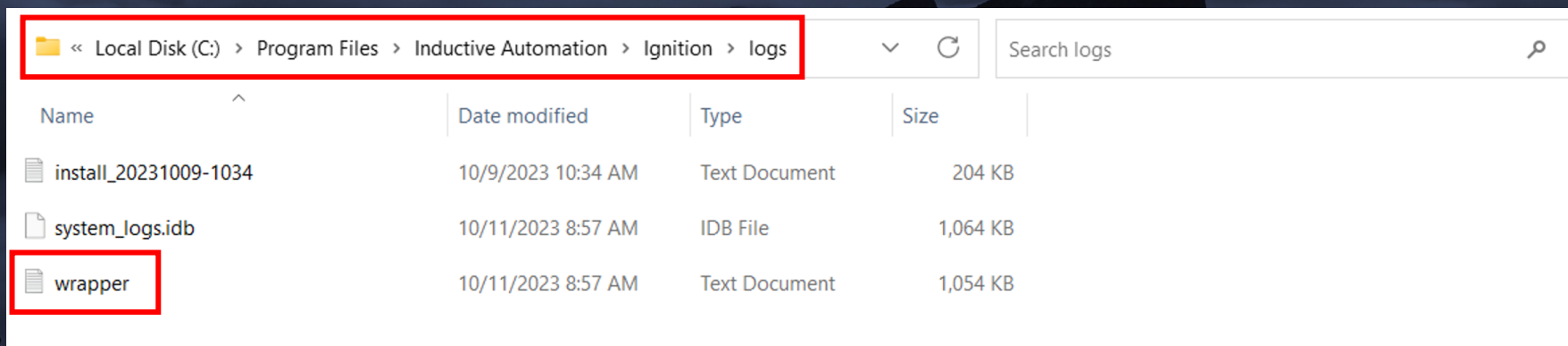
Ignition Diagnostics & Troubleshooting

Logs - Used for Identification and Isolation

+ Wrapper Logs

- + External to Java Virtual Machine (JVM)

- + Catches start-up and shutdown issues



File Explorer path: Local Disk (C:) > Program Files > Inductive Automation > Ignition > logs

Name	Date modified	Type	Size
install_20231009-1034	10/9/2023 10:34 AM	Text Document	204 KB
system_logs.idb	10/11/2023 8:57 AM	IDB File	1,064 KB
wrapper	10/11/2023 8:57 AM	Text Document	1,054 KB

Logs - Used for Identification and Isolation

+ IDB / System Logs

+ Managed by JVM

+ MDC keys and severity level

Severity

Level

Info

ERROR

WARN

INFO

DEBUG

TRACE


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Trial Mode 1:49:05 We're glad you're test driving our software. Have fun.

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775 items << < 1 of 8 > >>

 Filter

View 100

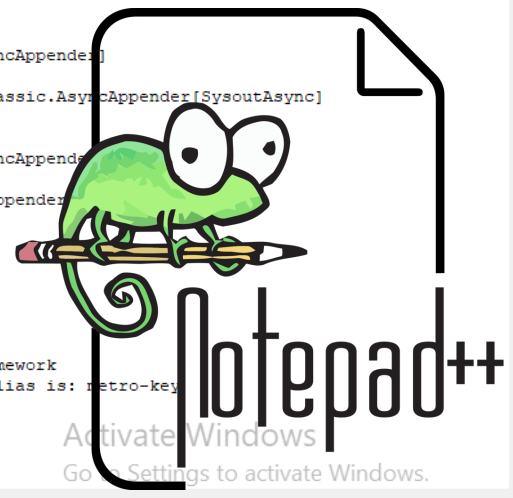
Min. Level ALL

 Live Values ON


Logger	Time	Message
I ProjectRunner	11Oct2023 09:33:42	Setting SQL Bridge project enabled state to 'ENABLED'
I LicenseManager	11Oct2023 09:33:42	Trial time reset. Time remaining = 7200.
E HistoryManager	11Oct2023 09:18:57	The tag historian module is not licensed for storage. Data will not be stored to 'MSSQL'
I ProjectRunner	11Oct2023 09:18:57	Setting SQL Bridge project enabled state to 'DISABLED'
I InternalDatabase	11Oct2023 09:17:52	Created auto-backup of internal database "config.idb" in 113 ms
I InternalDatabase	11Oct2023 09:17:52	Creating auto-backup of internal database "config.idb"...
I TagHistoryDatasourceSink	11Oct2023 08:59:41	Tag history tables verified successfully.
W TagHistoryDatasourceSink	11Oct2023 08:59:37	There is a problem checking the tag history database tables during initialization of the store and forward engine which could prevent tag history data from being forwarded properly. Trying again in 60 seconds.
W TagHistoryDatasourceSink	11Oct2023 08:59:22	There is a problem checking the tag history database tables during initialization of the store and forward engine which could prevent tag history data from being forwarded properly. Trying again in 60 seconds.
W TagHistoryDatasourceSink	11Oct2023 08:59:12	There is a problem checking the tag history database tables during initialization of the store and forward engine which could prevent tag history data from being forwarded properly. Trying again in 60 seconds.
W TagHistoryDatasourceSink	11Oct2023 08:58:57	There is a problem checking the tag history database tables during initialization of the store and forward engine which could prevent tag history data from being forwarded properly. Trying again in 60 seconds.


```
CA:\Program Files\Inductive Automation\Ignition\logs\wrapper.log - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
wrapper.log
232 INFO | jvm 1 | 2023/10/09 10:39:01 | I [g.ModuleManager ] [08:39:01]: Starting up module 'com.inductiveautomation.opcua.drivers.modbus' v7.1.32 (b2023091211)... module-name=Modbus Driver
233 INFO | jvm 1 | 2023/10/09 10:39:02 | I [g.ModuleManager ] [08:39:02]: Starting up module 'com.inductiveautomation.opcua.drivers.com-tunnel' v4.1.32 (b2023091211)... module-name=OpcCom Tunneller
234 INFO | jvm 1 | 2023/10/09 10:39:02 | I [g.ModuleManager ] [08:39:02]: Starting up module 'com.inductiveautomation.opcua.drivers.iec61850' v1.1.32 (b2023091211)... module-name=IEC 61850 Driver
235 INFO | jvm 1 | 2023/10/09 10:39:03 | I [g.ModuleManager ] [08:39:03]: Starting up module 'com.inducti
236 INFO | jvm 1 | 2023/10/09 10:39:03 | W [o.e.m.o.s.c.s.DefaultClientCertificateValidator] [08:39:03]: check suppress
237 INFO | jvm 1 | 2023/10/09 10:39:03 | I [g.ModuleManager ] [08:39:03]: Starting up module 'com.inducti
238 INFO | jvm 1 | 2023/10/09 10:39:03 | I [IgnitionGateway ] [08:39:03]: Ignition[state=STARTING] Contex
239 INFO | jvm 1 | 2023/10/09 10:39:03 | I [IgnitionGateway ] [08:39:03]: Gateway started in 64 seconds.
240 INFO | jvm 1 | 2023/10/09 10:39:03 | I [c.i.i.g.o.s.IgnitionOpcUaServer$OpcUaRedundancyListener] [08:39:03]: redund
241 INFO | jvm 1 | 2023/10/09 10:39:31 | I [g.InternalDatabaseManager ] [08:39:31]: Upgrading schema for module ""
242 INFO | jvm 1 | 2023/10/09 10:43:00 | I [P.InternalDatabase ] [08:43:00]: Creating auto-backup of interne
243 INFO | jvm 1 | 2023/10/09 10:43:00 | I [P.InternalDatabase ] [08:43:00]: Created auto-backup of internal
244 INFO | jvm 1 | 2023/10/09 10:44:55 | I [o.e.j.s.Server ] [08:44:55]: Stopped Server@5500d19a(STOPPI
245 INFO | jvm 1 | 2023/10/09 10:44:55 | I [o.e.j.s.Server ] [08:44:55]: Shutdown Server@5500d19a(STOPPI
246 INFO | jvm 1 | 2023/10/09 10:44:56 | I [o.e.j.s.AbstractConnector ] [08:44:56]: Stopped ServerConnector@4bb5fbd
247 INFO | jvm 1 | 2023/10/09 10:44:56 | I [o.e.j.s.AbstractConnector ] [08:44:56]: Stopped ServerConnector@57bd2c5
248 STATUS | wrapper | 2023/10/09 10:44:57 | <-- Wrapper Stopped
249 STATUS | wrapper | 2023/10/09 10:44:57 | --> Wrapper Started as Service
250 STATUS | wrapper | 2023/10/09 10:44:57 | Java Service Wrapper Standard Edition 64-bit 3.5.42
251 STATUS | wrapper | 2023/10/09 10:44:57 | Copyright (C) 1999-2020 Tanuki Software, Ltd. All Rights Reserved.
252 STATUS | wrapper | 2023/10/09 10:44:57 | http://wrapper.tanukisoftware.com
253 STATUS | wrapper | 2023/10/09 10:44:57 | Licensed to Inductive Automation for Inductive Automation
254 STATUS | wrapper | 2023/10/09 10:44:57 |
255 STATUS | wrapper | 2023/10/09 10:44:58 | Launching a JVM...
256 INFO | jvm 1 | 2023/10/09 10:44:58 | WrapperManager: Initializing...
257 INFO | jvm 1 | 2023/10/09 10:44:59 | 10:44:59,599 |-INFO in ch.qos.logback.classic.LoggerContext[default] - Found resource [data\logback.xml] at [file:/C:/Program Files/Inductive Automation/Ignition/data/logback.xml]
258 INFO | jvm 1 | 2023/10/09 10:44:59 | 10:44:59,792 |-INFO in ch.qos.logback.core.joran.action.AppenderAction - About to instantiate appender of type [ch.qos.logback.core.ConsoleAppender]
259 INFO | jvm 1 | 2023/10/09 10:44:59 | 10:44:59,799 |-INFO in ch.qos.logback.core.joran.action.AppenderAction - Naming appender as [SysoutAppender]
260 INFO | jvm 1 | 2023/10/09 10:44:59 | 10:44:59,807 |-INFO in ch.qos.logback.core.joran.action.NestedComplexPropertyIA - Assuming default type [ch.qos.logback.classic.encoder.PatternLayoutEncoder] for [encoder] property
261 INFO | jvm 1 | 2023/10/09 10:44:59 | 10:44:59,840 |-INFO in ch.qos.logback.core.joran.action.AppenderAction - About to instantiate appender of type [com.inductiveautomation.logging.SQLiteAppender]
262 INFO | jvm 1 | 2023/10/09 10:44:59 | 10:44:59,856 |-INFO in ch.qos.logback.core.joran.action.AppenderAction - Naming appender as [DB]
263 INFO | jvm 1 | 2023/10/09 10:45:00 | 10:45:00,200 |-INFO in ch.qos.logback.core.db.DataSourceConnectionSource@25f6612d - Driver name=SQLite JDBC
264 INFO | jvm 1 | 2023/10/09 10:45:00 | 10:45:00,201 |-INFO in ch.qos.logback.core.db.DataSourceConnectionSource@25f6612d - Driver version=3.41.2.2
265 INFO | jvm 1 | 2023/10/09 10:45:00 | 10:45:00,201 |-INFO in ch.qos.logback.core.db.DataSourceConnectionSource@25f6612d - supportsGetGeneratedKeys=true
266 INFO | jvm 1 | 2023/10/09 10:45:00 | 10:45:00,232 |-INFO in ch.qos.logback.core.joran.action.AppenderAction - About to instantiate appender of type [ch.qos.logback.classic.AsyncAppender]
267 INFO | jvm 1 | 2023/10/09 10:45:00 | 10:45:00,236 |-INFO in ch.qos.logback.core.joran.action.AppenderAction - Naming appender as [SysoutAsync]
268 INFO | jvm 1 | 2023/10/09 10:45:00 | 10:45:00,237 |-INFO in ch.qos.logback.core.joran.action.AppenderRefAction - Attaching appender named [SysoutAppender] to ch.qos.logback.classic.AsyncAppender[SysoutAsync]
269 INFO | jvm 1 | 2023/10/09 10:45:00 | 10:45:00,237 |-INFO in ch.qos.logback.classic.AsyncAppender[SysoutAsync] - Attaching appender named [SysoutAppender] to AsyncAppender.
270 INFO | jvm 1 | 2023/10/09 10:45:00 | 10:45:00,238 |-INFO in ch.qos.logback.classic.AsyncAppender[SysoutAsync] - Setting discardingThreshold to 51
271 INFO | jvm 1 | 2023/10/09 10:45:00 | 10:45:00,239 |-INFO in ch.qos.logback.core.joran.action.AppenderAction - About to instantiate appender of type [ch.qos.logback.classic.AsyncAppender]
272 INFO | jvm 1 | 2023/10/09 10:45:00 | 10:45:00,239 |-INFO in ch.qos.logback.core.joran.action.AppenderAction - Naming appender as [DBAsync]
273 INFO | jvm 1 | 2023/10/09 10:45:00 | 10:45:00,239 |-INFO in ch.qos.logback.core.joran.action.AppenderRefAction - Attaching appender named [DB] to ch.qos.logback.classic.AsyncAppender
274 INFO | jvm 1 | 2023/10/09 10:45:00 | 10:45:00,239 |-INFO in ch.qos.logback.classic.AsyncAppender[DBAsync] - Attaching appender named [DB] to AsyncAppender.
275 INFO | jvm 1 | 2023/10/09 10:45:00 | 10:45:00,239 |-INFO in ch.qos.logback.classic.AsyncAppender[DBAsync] - Setting discardingThreshold to 51
276 INFO | jvm 1 | 2023/10/09 10:45:00 | 10:45:00,240 |-INFO in ch.qos.logback.classic.joran.action.RootLoggerAction - Setting level of ROOT logger to INFO
277 INFO | jvm 1 | 2023/10/09 10:45:00 | 10:45:00,244 |-INFO in ch.qos.logback.core.joran.action.AppenderRefAction - Attaching appender named [SysoutAsync] to Logger[ROOT]
278 INFO | jvm 1 | 2023/10/09 10:45:00 | 10:45:00,245 |-INFO in ch.qos.logback.core.joran.action.AppenderRefAction - Attaching appender named [DBAsync] to Logger[ROOT]
279 INFO | jvm 1 | 2023/10/09 10:45:00 | 10:45:00,246 |-INFO in ch.qos.logback.classic.joran.action.ConfigurationAction - End of configuration.
280 INFO | jvm 1 | 2023/10/09 10:45:00 | 10:45:00,248 |-INFO in ch.qos.logback.classic.joran.JoranConfigurator@2ea14361 - Registering current configuration as safe fallback point
281 INFO | jvm 1 | 2023/10/09 10:45:00 | 10:45:00,323 |-INFO in ch.qos.logback.classic.jul.LevelChangePropagator@6504a785 - Propagating INFO level on Logger[ROOT] onto the JUL framework
282 INFO | jvm 1 | 2023/10/09 10:45:00 | W [WebResourceManagerImpl ] [08:45:00]: Unable to read "gateway.metroKeystoreAlias" gateway.xml property. Assuming metro keystore alias is: metro-key
283 INFO | jvm 1 | 2023/10/09 10:45:00 | I [g.WebServerManager ] [08:45:00]: Starting setup
284 INFO | jvm 1 | 2023/10/09 10:45:00 | I [g.WebServerManager ] [08:45:00]: Setup complete
285 INFO | jvm 1 | 2023/10/09 10:45:01 | I [Commissioning ] [08:45:01]: Resources needing commissioning: authSetup
286 INFO | jvm 1 | 2023/10/09 10:45:01 | I [Commissioning ] [08:45:01]: Commissioning State updated from commissioning to needs_commissioning
287 INFO | jvm 1 | 2023/10/09 10:45:01 | I [WebServerManager ] [08:45:01]: Starting up
```

Find dialog box with search criteria 'AppenderAction' and various options like 'Wrap around' and 'Transparency'.



Diagnostics

Generate Diagnostic Bundle 

DIAGNOSTICS

Execution

Logs

Metrics Dashboard

Running Scripts

Threads



gateway-info.json



jetty-server-dump.txt



metrics.idb



system_logs.idb



thread-dump.json



wrapper.log



wrapper.log.1



wrapper.log.2



wrapper.log.3



wrapper.log.4



wrapper.log.5

Thread Dumps - Used for Identification and Isolation

- + **What is a thread?**
 - + How to obtain them?
 - + What does a thread dump do?
 - + How to read them?

```
{
  "name": "alarm-notification-pipeline[Pipeline]",
  "id": 162,
  "state": "WAITING",
  "daemon": false,
  "system": "Alarms",
  "scope": "Gateway",
  "cpuUsage": 0.0,
  "waitingFor": {
    "lock": "java.util.concurrent.locks.AbstractQueuedSynchronizer$ConditionObject@608093bc"
  },
  "stacktrace": [
    "java.base@11.0.18/jdk.internal.misc.Unsafe.park(Native Method)",
    "java.base@11.0.18/java.util.concurrent.locks.LockSupport.park(Unknown Source)",
    "java.base@11.0.18/java.util.concurrent.locks.AbstractQueuedSynchronizer$ConditionObject.await(Unknown Source)",
    "java.base@11.0.18/java.util.concurrent.LinkedBlockingQueue.take(Unknown Source)",
    "com.inductiveautomation.ignition.alarming.pipelines.SingleThreadAlarmPipeline$QueueEvaluator.run(SingleThreadAlarmPipeline.java:164)",
    "java.base@11.0.18/java.lang.Thread.run(Unknown Source)"
  ]
},
```


Ignition Diagnostics & Troubleshooting

Kindling

+ Read Diagnostic Resources Like A Pro

- + Wrapper & IDB Log Viewer
- + Thread Dump Viewer
- + Store & Forward Cache Viewer
- + Gateway Backup Viewer
- + Generic IDB Viewer
- + Metric IDB Viewer

[inductiveautomation/
kindling](https://www.inductiveautomation.com/kindling)

A standalone collection of utilities to help Ignition users. Features various tools to help work with Ignition's custom data export...



Applying the Troubleshooting Stages

1. Discovery

+ **Types of questions:**

- + What version of Ignition are you running?
- + What OS are you using?
- + What is the gateway architecture?
- + What are the gateway server specifications?
- + What subsystems are being used?
- + Is it a development or production environment?



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Status



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- Perspective Sessions
- Vision Clients

DIAGNOSTICS

- Execution
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- Running Scripts
- Threads

Status > Systems > Overview

Trial Mode 1:52:04 We're glad you're test driving our software. Have fun.

[Activate Ignition](#)

Architecture

Gateway | Ignition-LAURA-GoldCert

Version: 8.1.30 (b2023071408)
License: trial
Uptime: 2 days

1% cpu

897 mb

No Redundancy

Add a redundant backup gateway to protect your system from downtime caused by failures.

No Gateway Network

Multiply the power of your Ignition Gateways by combining them into an enterprise network. Streamline the administration, monitoring, deployment, and commissioning process into one central location.

Connections



Databases

0 / 1 connected
▲ 1 databases faulted

Designer Sessions

0 open



Devices

1 enabled



Gateway Network Connections

0 / 0 connections



OPC Connections

1 / 1 connected



Perspective Sessions

0 open



Store & Forward



Vision Clients

Environment

Process Id	1016
Operating System	Mac OS X x86_64
Java Version	11.0.18+10-LTS
Local Time	14:37:45
Available Disk Space	556gb / 926gb
Detected NICs	192.168.1.178

Systems

Alarm Pipelines	0 / 1 active
EAM Role	Unknown
Modules	24 installed
Performance	1% CPU 896mb
Redundancy	Not configured
Reports	0 scheduled
SFCs	0 running
Tags	263 tags

Diagnostics

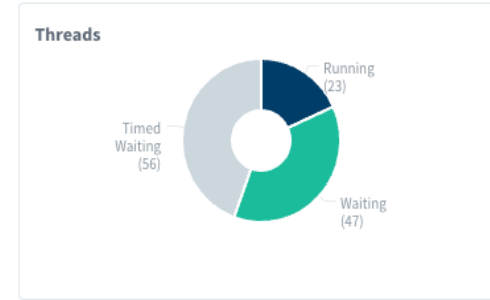
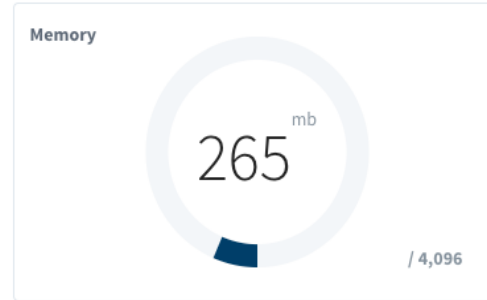
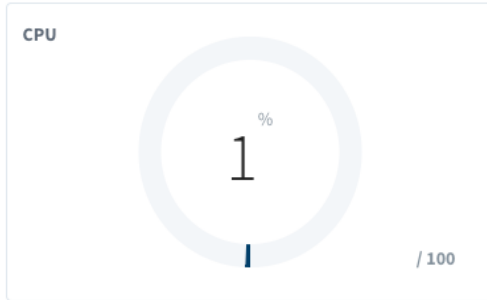
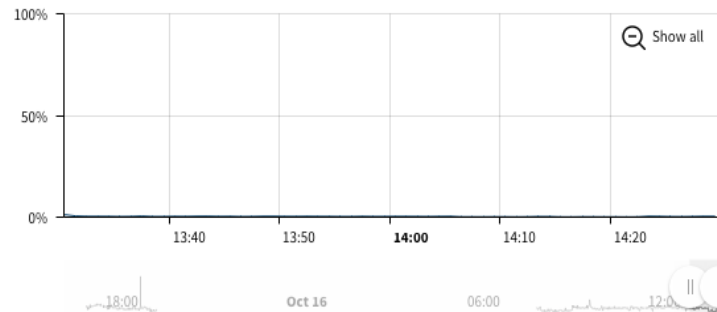
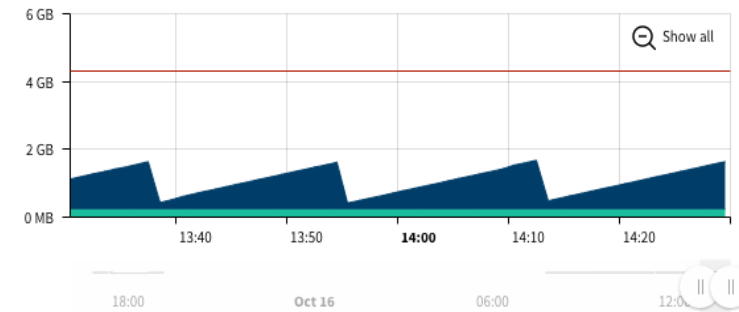
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Trial Mode 1:59:15 We're glad you're test driving our software. Have fun.

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CPU Trend

Memory Trend

Garbage Collectors: G1 Young Generation, G1 Old Generation

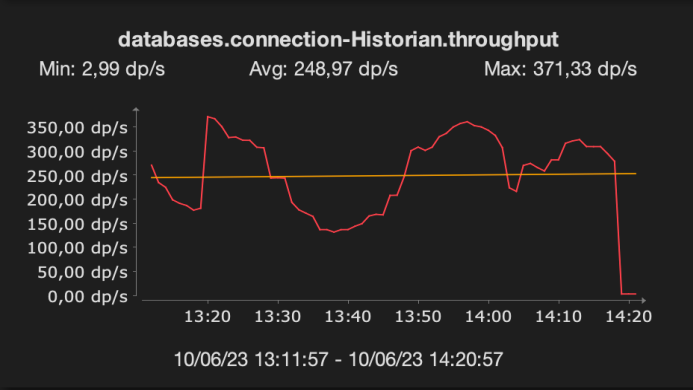
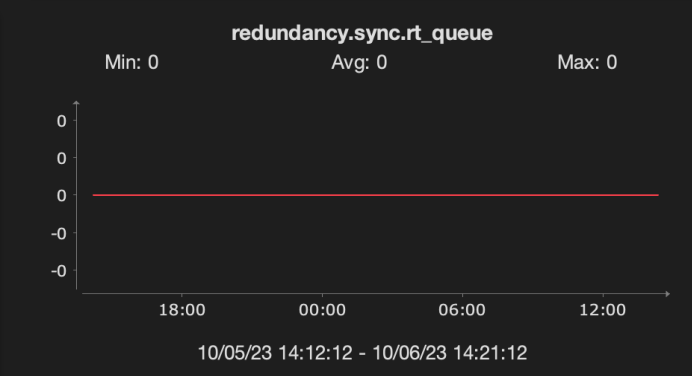
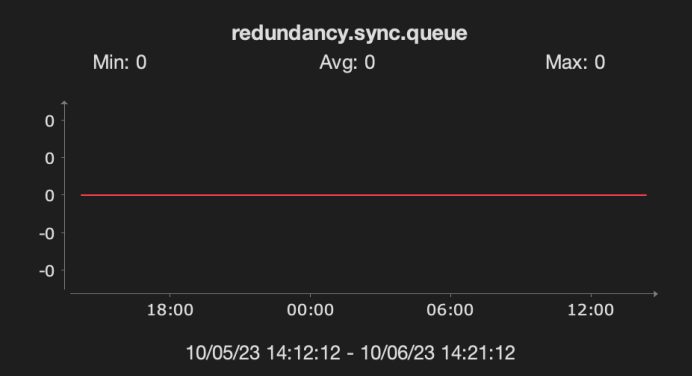
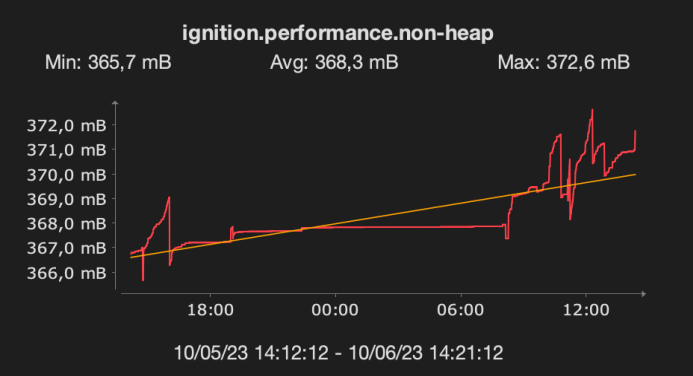
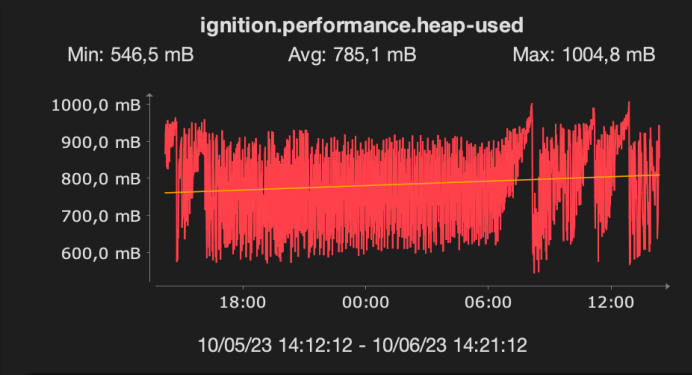
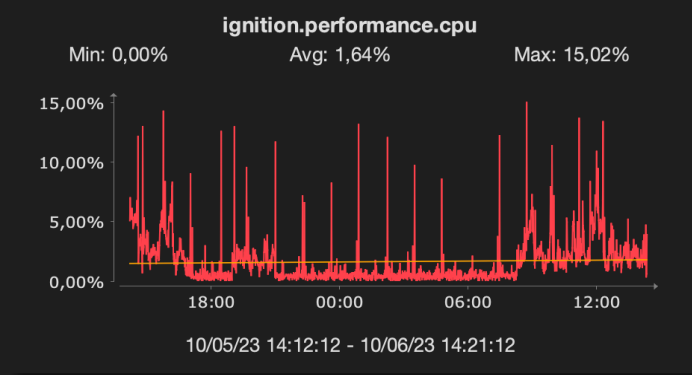
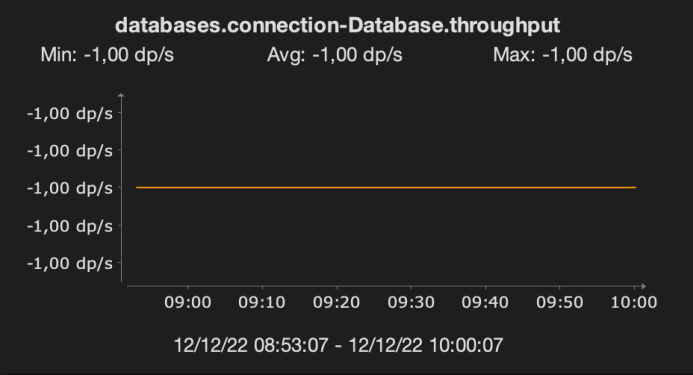
System Response
Current Response Time

44 ms

Recent Slow Response Events

Severity	Time	Event
▲	16Oct2023 08:25:11	Clock drift, degraded performance, or pause-the-world detected. Max allowed deviation=1000ms, actual deviation=845773ms
▲	16Oct2023 08:10:52	Clock drift, degraded performance, or pause-the-world detected. Max allowed deviation=1000ms, actual deviation=210368ms
▲	16Oct2023 08:07:04	Clock drift, degraded performance, or pause-the-world detected. Max allowed deviation=1000ms, actual deviation=3040ms
▲	16Oct2023 08:06:40	Clock drift, degraded performance, or pause-the-world detected. Max allowed deviation=1000ms, actual deviation=1469845ms

- ✓ databases
 - ✓ connection-Database
 - ✓ throughput
 - ✓ connection-Historian
 - ✓ throughput
- ✓ ignition
 - ✓ performance
 - ✓ cpu
 - ✓ heap-used
 - ✓ non-heap
- ✓ redundancy
 - ✓ sync
 - ✓ queue
 - ✓ rt_queue



Applying the Troubleshooting Stages

2. Identification

+ **Types of questions:**

- + **What exactly is the problem?**
- + **Is this affecting anything else in the system?**
- + **Are there errors in the gateway logs?**
- + **What loggers can we set to TRACE?**
- + **What information can we derive from the diagnostic resources?**



- (All)
- DatabaseJournal - [4]
- Manager - [2]
- Pipeline - [2]
- CereEngine - [2]
- Notification - [2]
- NotificationManager - [2]
- StorageManager - [2]
- AuditManager - [2]
- AutomaticThreadDumpManager - [2]
- ClockDriftDetector - [2]
- DefaultConnectionListener - [48]
- SelectorPool - [25]
- PacketHandler - [100]
- PacketHandler\$KeepAliveMonitor - [24]
- PacketHandler\$MessageRedeliveryMonitor - [25]
- WebSocketConnectionListener - [25]
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- DistributorGwHook - [75]
- HistoricalTagEventService - [2]
- EdgeNodeManager - [52]
- EngineCallback - [121]
- EngineGwHook - [102]
- EngineServersSettings - [173]
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- ClientsManager - [51]
- SparkplugTransmissionClient - [50]
- TransmissionClient - [158]
- TransmissionClientManager - [49]
- TransmissionGwHook - [53]
- TransmissionMqttCallback - [73]
- NativeLoader - [20]
- MulticastScheduler - [2]
- OpcUaConnection - [9]
- OpcUaSubscriptionModel - [7]
- OpcUaSubscriptionSynchronizer - [64]

Level	Timestamp ^	Thread	Logger	Message
INFO	2023-10-03 12:43:21:825	platform-executor-3807	EngineServersSettings	Creating CirusClient without primaryHostId
INFO	2023-10-03 12:43:21:825	platform-executor-3807	EngineServersSettings	Adding MQTT Client 'ME-06dd93bc-9151-42d9' for server name: Chariot SCADA
INFO	2023-10-03 12:43:21:825	Thread-62080	TahuClient	ME-06dd93bc-9151-42d9: Creating the MQTT Client to tcp://localhost:1883 on thread Thread-62080
INFO	2023-10-03 12:43:21:840	platform-executor-3807	EngineCallback	Setting isInitiallySubscribed to true
INFO	2023-10-03 12:43:21:840	platform-executor-3807	EngineServersSettings	MQTT Client ME-06dd93bc-9151-42d9 successfully started
INFO	2023-10-03 12:43:21:875	platform-executor-3804	LicenseStateUtils	Trial license is active
INFO	2023-10-03 12:43:21:875	platform-executor-3804	TransmissionGwHook	Starting Transmitters
INFO	2023-10-03 12:43:21:875	platform-executor-3804	ClientsManager	Starting Transmission clients
INFO	2023-10-03 12:43:21:877	Thread-62084	Agent	All Tag Providers '[default]' found
INFO	2023-10-03 12:43:22:136	HandlerThread-0	PacketHandler	CONNECT - [78853995-1e8f-4834-90f7-6bd4c4ef2484, ME-06dd93bc-9151-42d9, /127.0.0.1] [307] NEW Client Session
INFO	2023-10-03 12:43:22:138	MQTT Call: ME-06dd93bc-91...	TahuClient	ME-06dd93bc-9151-42d9: connect with retry succeeded
INFO	2023-10-03 12:43:22:138	MQTT Call: ME-06dd93bc-91...	TahuClient	ME-06dd93bc-9151-42d9: Connected to tcp://localhost:1883
INFO	2023-10-03 12:43:22:142	HandlerThread-0	PacketHandler	SUBSCRIBE - [78853995-1e8f-4834-90f7-6bd4c4ef2484, ME-06dd93bc-9151-42d9, /127.0.0.1] on topic(s) [[spBv1.0/#][0]]
ERROR	2023-10-03 12:43:22:151	gateway-shared-exec-engine-4	Energy Consumption_Power_Pl...	Unable to start group.
ERROR	2023-10-03 12:43:22:467	gateway-shared-exec-engine-4	Efficiency_EfficiencyPowerFlow	Unable to start group.
ERROR	2023-10-03 12:43:22:605	gateway-shared-exec-engine-4	Energy Consumption_Generato...	Unable to start group.
INFO	2023-10-03 12:43:22:656	MES General-4	ProductionGatewayHook	Registered MES perspective components with the Ignition perspective module.
INFO	2023-10-03 12:43:22:827	Thread-62080	TahuClient	ME-06dd93bc-9151-42d9: MQTT Client connected to tcp://localhost:1883 on thread Thread-62080
ERROR	2023-10-03 12:43:22:955	gateway-shared-exec-engine-4	Efficiency_TotalKW	Unable to start group.
INFO	2023-10-03 12:43:23:347	Thread-62084	DefaultBdSeqManager	bdSeqNumFileName: C:\Windows\TEMP\Tahu_Temp_Dir\Example Transmitter_My MQTT Group_Edge Node ac3d42
INFO	2023-10-03 12:43:23:349	Thread-62084	DefaultBdSeqManager	Next Death bdSeq number: 8
ERROR	2023-10-03 12:43:23:366	gateway-shared-exec-engine-4	Energy Consumption_Power_Pl...	Unable to start group.
INFO	2023-10-03 12:43:23:372	PNB-My MQTT Group/Edge ...	TransmissionClientManager	java.lang.Object@5a851906: Starting new TransmissionClient for Example Transmitter, edgeNodeId=My MQTT Group/Edge Node...
INFO	2023-10-03 12:43:23:373	Thread-62090	TransmissionClient	[My MQTT Group/Edge Node ac3d42][] Not connected - attempting connect with isStayRunning=true
INFO	2023-10-03 12:43:23:387	Thread-62090	TransmissionClient	[My MQTT Group/Edge Node ac3d42][MT-4eab6e17-5470-4be6] Attempting to connect
INFO	2023-10-03 12:43:23:389	Thread-62091	TahuClient	MT-4eab6e17-5470-4be6: Creating the MQTT Client to tcp://localhost:1883 on thread Thread-62091
ERROR	2023-10-03 12:43:23:512	gateway-shared-exec-engine-4	Water Quality_TURB Readings...	Unable to start group.
ERROR	2023-10-03 12:43:23:552	gateway-shared-exec-engine-4	Water Quality_TURB Readings...	Unable to start group.
ERROR	2023-10-03 12:43:23:600	gateway-shared-exec-engine-4	Flows_Effluent_Effluent_Total	Unable to start group.
INFO	2023-10-03 12:43:23:651	MES General-4	QualityGatewayHook	Registered SPC MES perspective components with the Ignition perspective module.
INFO	2023-10-03 12:43:23:684	MES General-3	ProductionGatewayHook	Registered MES perspective components with the Ignition perspective module.
INFO	2023-10-03 12:43:23:696	HandlerThread-0	PacketHandler	CONNECT - [c84ae891-d3df-4061-8646-3b21a89a7739, MT-4eab6e17-5470-4be6, /127.0.0.1] [305] NEW Client Session
INFO	2023-10-03 12:43:23:703	MQTT Call: MT-4eab6e17-54...	TahuClient	MT-4eab6e17-5470-4be6: connect succeeded
INFO	2023-10-03 12:43:23:703	MQTT Call: MT-4eab6e17-54...	TahuClient	MT-4eab6e17-5470-4be6: Connected to tcp://localhost:1883

2023-10-03 12:43:22:151 gateway-shared-exec-engine-4

Unable to start group.

```

java.lang.IllegalArgumentException: There is already a scheduled task for sql bridge.seshegodb.energy consumption_power_plant total monthly.mainexec
    at com.inductiveautomation.ignition.common.execution.impl.BasicExecutionEngine.register(BasicExecutionEngine.java:407)
    at com.inductiveautomation.factorysql.groups.AbstractGroup.startExecution(AbstractGroup.java:360)
    at com.inductiveautomation.factorysql.ProjectRunner.startGroupExecution(ProjectRunner.java:346)
    at com.inductiveautomation.ignition.common.execution.impl.BasicExecutionEngine$ThrowableCatchingRunnable.run(BasicExecutionEngine.java:544)
    at java.base/java.util.concurrent.Executors$RunnableAdapter.call(Unknown Source)
    at java.base/java.util.concurrent.FutureTask.run(Unknown Source)
    at java.base/java.util.concurrent.ScheduledThreadPoolExecutor$ScheduledFutureTask.run(Unknown Source)
    at java.base/java.util.concurrent.ThreadPoolExecutor.runWorker(Unknown Source)
    at java.base/java.util.concurrent.ThreadPoolExecutor$Worker.run(Unknown Source)
    at java.base/java.lang.Thread.run(Unknown Source)

```

Applying the Troubleshooting Stages

3. Isolation

+ **Types of questions:**

- + **What is triggering the behaviour?**
- + **Is the issue originating from inside or outside of Ignition?**
 - + **SQL database? Tag Historian? 3rd party application?**
- + **Does the network play a part?**
- + **Do connections reach devices or not?**



- (All)
- WAITING - 95 (41%)
- TIMED_WAITING - 84 (36%)
- RUNNABLE - 53 (23%)

- (All)
- Unassigned - 185 (80%)
- Tags - 12 (5%)
- OPC - 9 (4%)
- Scripts - 7 (3%)
- Web API - 7 (3%)
- perspective - 3 (1%)
- gateway-network - 2 (1%)

- (All)
- (No Pool) - 82 (35%)
- webserver - 14 (6%)
- gateway-shared-exec-engine -
- milo-netty-event-loop - 12 (5%)
- DEFAULT-PooledSelectorThrea
- opc-ua-scheduled-executor -
- platform-scheduled-executor -
- WebSocketWorker - 6 (3%)
- com.inductiveautomation.sqlb
- Thread - 5 (2%)
- Equipment Manager - 4 (2%)

Q	Id ^	State	Name	Daemon	Depth	CPU	Blocker
<input type="checkbox"/>	2	RUNNABLE	Reference Handler	<input checked="" type="checkbox"/>		3 0,000%	
<input type="checkbox"/>	3	WAITING	Finalizer	<input checked="" type="checkbox"/>		4 0,000%	
<input type="checkbox"/>	4	RUNNABLE	Signal Dispatcher	<input checked="" type="checkbox"/>		0 0,000%	
<input type="checkbox"/>	5	RUNNABLE	Attach Listener	<input checked="" type="checkbox"/>		0 0,000%	
<input type="checkbox"/>	11	TIMED_WAITING	Common-Cleaner	<input checked="" type="checkbox"/>		5 0,000%	
<input type="checkbox"/>	14	TIMED_WAITING	Wrapper-Control-Event-Monitor	<input checked="" type="checkbox"/>		2 0,000%	
<input type="checkbox"/>	16	RUNNABLE	Wrapper-Connection	<input checked="" type="checkbox"/>		9 0,000%	
<input type="checkbox"/>	17	RUNNABLE	DestroyJavaVM	<input type="checkbox"/>		0 0,000%	
<input type="checkbox"/>	19	WAITING	WrapperSimpleAppMain	<input type="checkbox"/>		17 0,000%	
<input type="checkbox"/>	20	TIMED_WAITING	gateway-logging-sqlite-appender	<input type="checkbox"/>		9 0,000%	
<input type="checkbox"/>	21	WAITING	AsyncAppender-Worker-SysoutAsync	<input checked="" type="checkbox"/>		5 0,000%	
<input checked="" type="checkbox"/>	22	WAITING	AsyncAppender-Worker-DBAsync	<input checked="" type="checkbox"/>		5 0,000%	
<input type="checkbox"/>	24	TIMED_WAITING	gateway-log-monitoring-session-reaper	<input checked="" type="checkbox"/>		2 0,000%	
<input type="checkbox"/>	25	TIMED_WAITING	platform-scheduled-executor-1	<input type="checkbox"/>		9 0,000%	
<input type="checkbox"/>	26	TIMED_WAITING	catapult-filemonitor	<input checked="" type="checkbox"/>		9 0,000%	
<input type="checkbox"/>	31	RUNNABLE	webserver-31-acceptor-0@21299d22-ServerConnector@10ffd2...	<input type="checkbox"/>		9 0,000%	
<input type="checkbox"/>	33	RUNNABLE	webserver-33	<input type="checkbox"/>		17 0,000%	
<input type="checkbox"/>	34	RUNNABLE	webserver-34	<input type="checkbox"/>		17 0,000%	
<input type="checkbox"/>	35	RUNNABLE	webserver-35-acceptor-0@47e05873-ServerConnector@b91bff...	<input type="checkbox"/>		9 0,000%	
<input type="checkbox"/>	36	RUNNABLE	webserver-36	<input type="checkbox"/>		17 0,000%	
<input type="checkbox"/>	37	TIMED_WAITING	Session-HouseKeeper-2e8ab27d-1	<input type="checkbox"/>		9 0,000%	
<input type="checkbox"/>	38	WAITING	gateway-shared-exec-engine-1	<input type="checkbox"/>		9 0,000%	
<input type="checkbox"/>	40	WAITING	gateway-shared-exec-engine-2	<input type="checkbox"/>		9 0,000%	
<input type="checkbox"/>	41	WAITING	gateway-shared-exec-engine-3	<input type="checkbox"/>		9 0,000%	
<input type="checkbox"/>	42	WAITING	gateway-shared-exec-engine-4	<input type="checkbox"/>		9 0,000%	
<input type="checkbox"/>	43	RUNNABLE	HttpClient-1-SelectorManager	<input checked="" type="checkbox"/>		6 0,000%	
<input type="checkbox"/>	44	WAITING	gateway-shared-exec-engine-5	<input type="checkbox"/>		9 0,000%	
<input type="checkbox"/>	45	WAITING	gateway-shared-exec-engine-6	<input type="checkbox"/>		9 0,000%	
<input type="checkbox"/>	48	WAITING	ForkJoinPool.commonPool-worker-7	<input checked="" type="checkbox"/>		4 0,000%	

AsyncAppender-Worker-DBAsync

ID: 22 | Daemon: true | Scope: Gateway



WAITING - 0,000%

Stacktrace: 5

```

java.base@11.0.18/jdk.internal.misc.Unsafe.park(Native Method)
java.base@11.0.18/java.util.concurrent.locks.LockSupport.park(Unknown Source)
java.base@11.0.18/java.util.concurrent.locks.AbstractQueuedSynchronizer$ConditionObject.await(Unknown Source)
java.base@11.0.18/java.util.concurrent.ArrayBlockingQueue.take(Unknown Source)
app//ch.qos.logback.core.AsyncAppenderBase$Worker.run(AsyncAppenderBase.java:289)
    
```

8



Ignition Diagnostics & Troubleshooting

Wireshark

- + The world's most popular network protocol analyser
- + Network troubleshooting
- + Analysis
- + Software and communications protocol development





Apply a display filter ... <36/>

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	10.115.89.36	10.115.26.106	TCP	69	55085 → 8088 [PSH, ACK] Seq=1 Ack=1 Win=513 Len=15
2	0.007085	10.115.89.36	10.115.26.106	RDPUDP	106	
3	0.007318	10.115.26.106	10.115.89.36	RDPUDP	53	[Malformed Packet]
4	0.010486	10.115.26.106	10.115.89.36	TCP	65	8088 → 55085 [PSH, ACK] Seq=1 Ack=16 Win=49153 Len=11 [TCP segment of a reassembled PDU]
5	0.010538	10.115.26.106	10.115.89.36	TCP	75	8088 → 55085 [PSH, ACK] Seq=12 Ack=16 Win=49153 Len=21
6	0.049056	10.115.89.36	10.115.26.106	TCP	60	55085 → 8088 [ACK] Seq=16 Ack=33 Win=512 Len=0
7	0.127661	10.115.89.36	10.115.26.106	TLSv1...	97	Application Data
8	0.141271	10.115.89.36	10.115.26.106	TLSv1...	104	Application Data
9	0.141313	10.115.26.106	10.115.89.36	TCP	54	3389 → 49842 [ACK] Seq=1 Ack=94 Win=63056 Len=0
10	0.143895	10.115.89.36	10.115.26.106	TCP	68	55085 → 8088 [PSH, ACK] Seq=16 Ack=33 Win=512 Len=14
11	0.145561	10.115.26.106	10.115.16.194	TLSv1...	91	Application Data
12	0.145597	10.115.26.106	10.115.16.194	TLSv1...	1372	Application Data
13	0.146493	10.115.16.194	10.115.26.106	TCP	60	17778 → 49580 [ACK] Seq=1 Ack=1356 Win=8197 Len=0
14	0.147017	10.115.16.194	10.115.26.106	TLSv1...	321	Application Data
15	0.147130	10.115.16.194	10.115.26.106	TLSv1...	133	Application Data
16	0.147141	10.115.26.106	10.115.16.194	TCP	54	49580 → 17778 [ACK] Seq=1356 Ack=347 Win=49154 Len=0
17	0.147194	10.115.26.106	10.115.16.194	TLSv1...	91	Application Data
18	0.147218	10.115.26.106	10.115.16.194	TLSv1...	221	Application Data
19	0.148210	10.115.16.194	10.115.26.106	TCP	60	17778 → 49580 [ACK] Seq=347 Ack=1560 Win=8197 Len=0
20	0.148631	10.115.16.194	10.115.26.106	TLSv1...	544	Application Data
21	0.148804	10.115.26.106	10.115.16.194	TLSv1...	91	Application Data
22	0.148824	10.115.26.106	10.115.16.194	TLSv1...	314	Application Data
23	0.149721	10.115.16.194	10.115.26.106	TCP	60	17778 → 49580 [ACK] Seq=837 Ack=1857 Win=8195 Len=0
24	0.150545	10.115.16.194	10.115.26.106	TLSv1...	1082	Application Data
25	0.150703	10.115.26.106	10.115.16.194	TLSv1...	91	Application Data
26	0.150718	10.115.26.106	10.115.16.194	TLSv1...	316	Application Data
27	0.151521	10.115.26.106	10.115.16.194	TLSv1...	91	Application Data
28	0.151541	10.115.26.106	10.115.16.194	TLSv1...	622	Application Data
29	0.151742	10.115.16.194	10.115.26.106	TCP	60	17778 → 49580 [ACK] Seq=1865 Ack=2156 Win=8194 Len=0
30	0.152448	10.115.16.194	10.115.26.106	TCP	60	17778 → 49580 [ACK] Seq=1865 Ack=2761 Win=8192 Len=0
31	0.152816	10.115.16.194	10.115.26.106	TLSv1...	319	Application Data
32	0.152904	10.115.16.194	10.115.26.106	TLSv1...	133	Application Data
33	0.152914	10.115.26.106	10.115.16.194	TCP	54	49580 → 17778 [ACK] Seq=2761 Ack=2209 Win=49155 Len=0
34	0.152956	10.115.26.106	10.115.16.194	TLSv1...	91	Application Data

> Frame 3: 53 bytes on wire (424 bits), 53 bytes captured (424 bits) on interface \Device\NPF_{14F51CD4-6823-44CF-9D19-BCE7AE42E2A2}, id 0

> Ethernet II, Src: Microsoft_65:90:5b (00:22:48:65:90:5b), Dst: 12:34:56:78:9a:bc (12:34:56:78:9a:bc)

> Internet Protocol Version 4, Src: 10.115.26.106, Dst: 10.115.89.36

> User Datagram Protocol, Src Port: 3389, Dst Port: 51792

> UDP Remote Desktop Protocol

> [Malformed Packet: RDPUDP]

> [Expert Info (Error/Malformed): Malformed Packet (Exception occurred)]

[Malformed Packet (Exception occurred)]

[Severity level: Error]

[Group: Malformed]

```

0000 12 34 56 78 9a
0010 00 27 0e 67 00
0020 59 24 0d 3d ca
0030 c7 e0 00 00 07

```

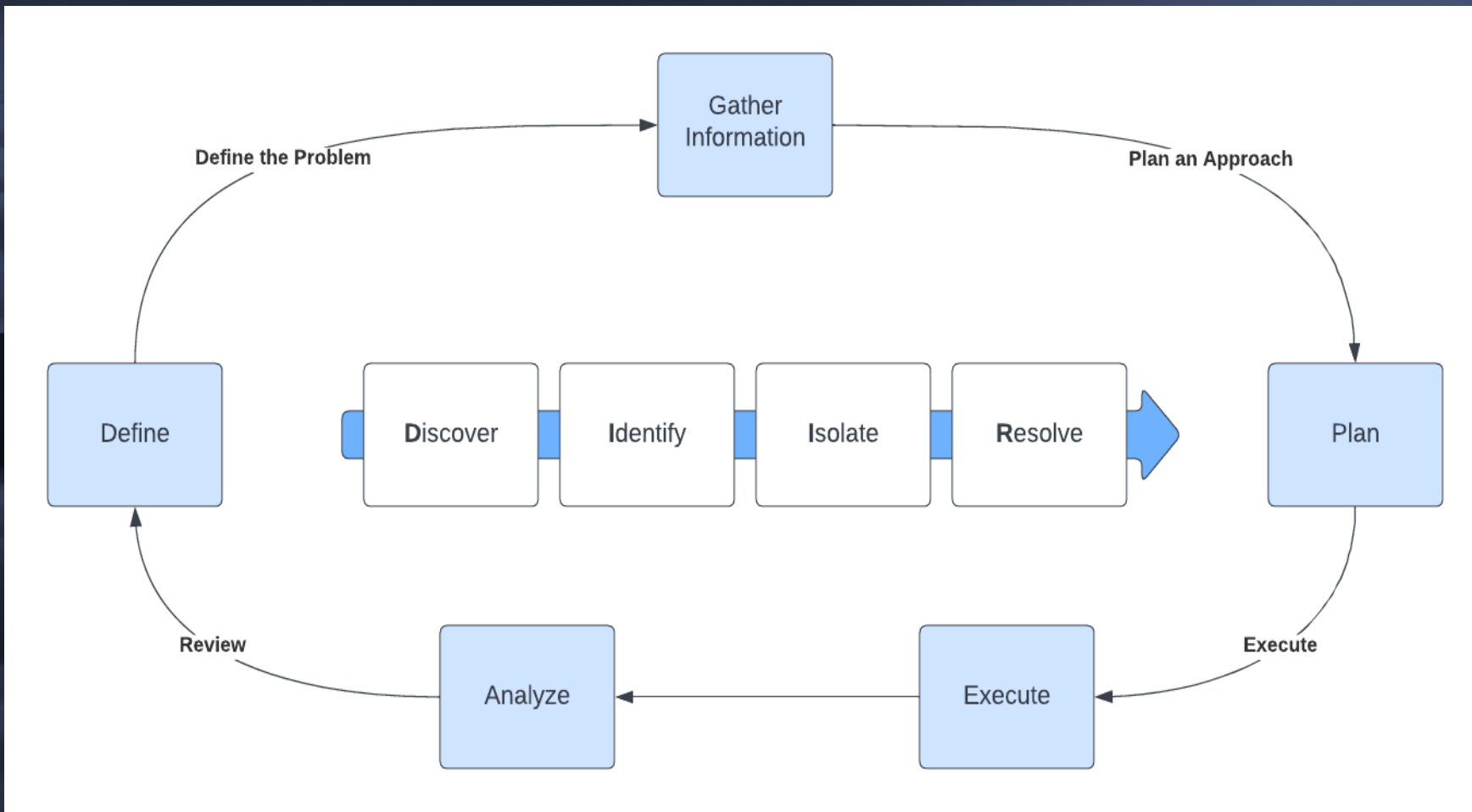
Applying the Troubleshooting Stages

4. Resolution

+ **Types of questions:**

- + Is the solution proposed temporary or permanent?
- + Is there a more efficient way to get the same results?
- + How do we determine if the problem has been resolved?

Ignition Diagnostics & Troubleshooting





ELEV8 2023

Thank You!