





On-Premises Data Gateway monitoring strategy, why do I care?

PBI Gateway Watchdog - One tool to rule them all

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10 years in Microsoft “Data Realm”



Giving my little contribution to the community



DATA SATURDAYS

dataMinds



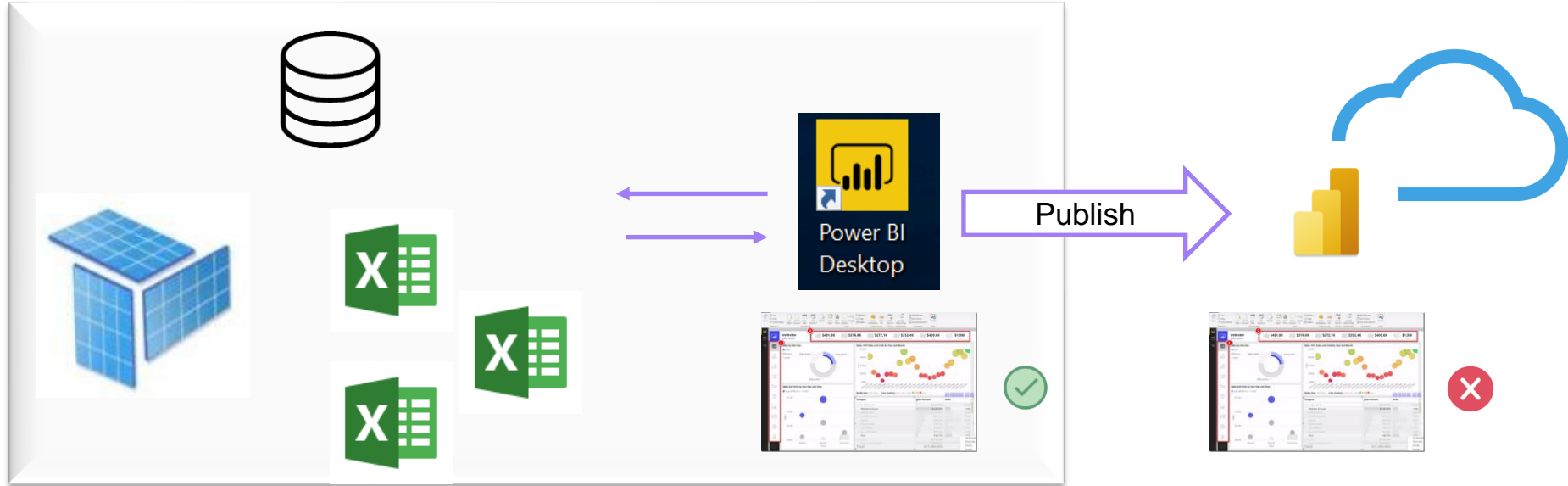
Agenda

- Introduction to Data Gateway
- Why & What To Monitor?
- Out Of The Box Logging System
- Standard Monitoring Solution
- Can We Leverage It?
- Q&A

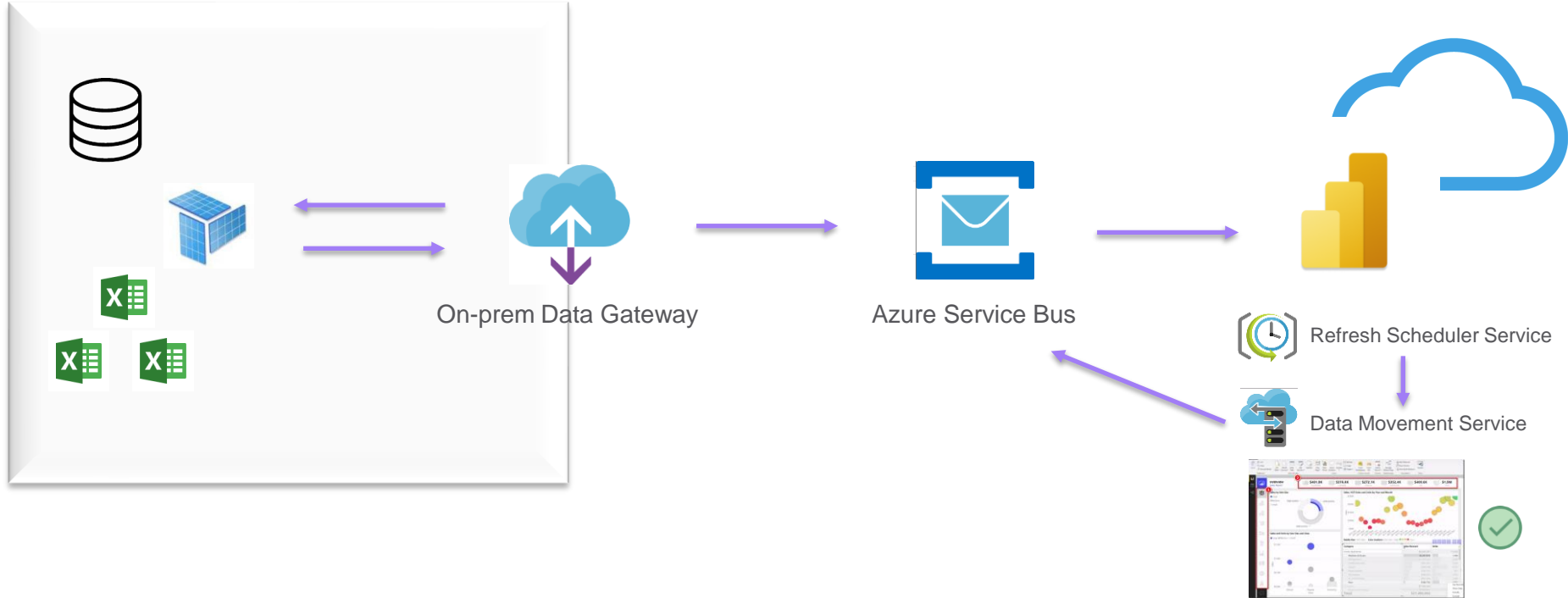


Introduction to Data Gateway

Let's draw a typical scenario



On-Prem Data Gateway is the way



2 Gateway types

On-premises data gateway
(Standard mode)



All Storage Mode Support
Scheduled Refresh Support

On-premises data gateway
(Personal mode)



Import Mode Support
Scheduled Refresh Support

Gateway: Architecture security

- **Credentials stored locally** and in Power BI Service
- **Data Source credentials encrypted** and stored in the cloud only gateway can decrypt
- **Gateway polling** → No inbound port to open
- **Outbound port** to open TCP: 443, 5671, 5672, 9530...9534

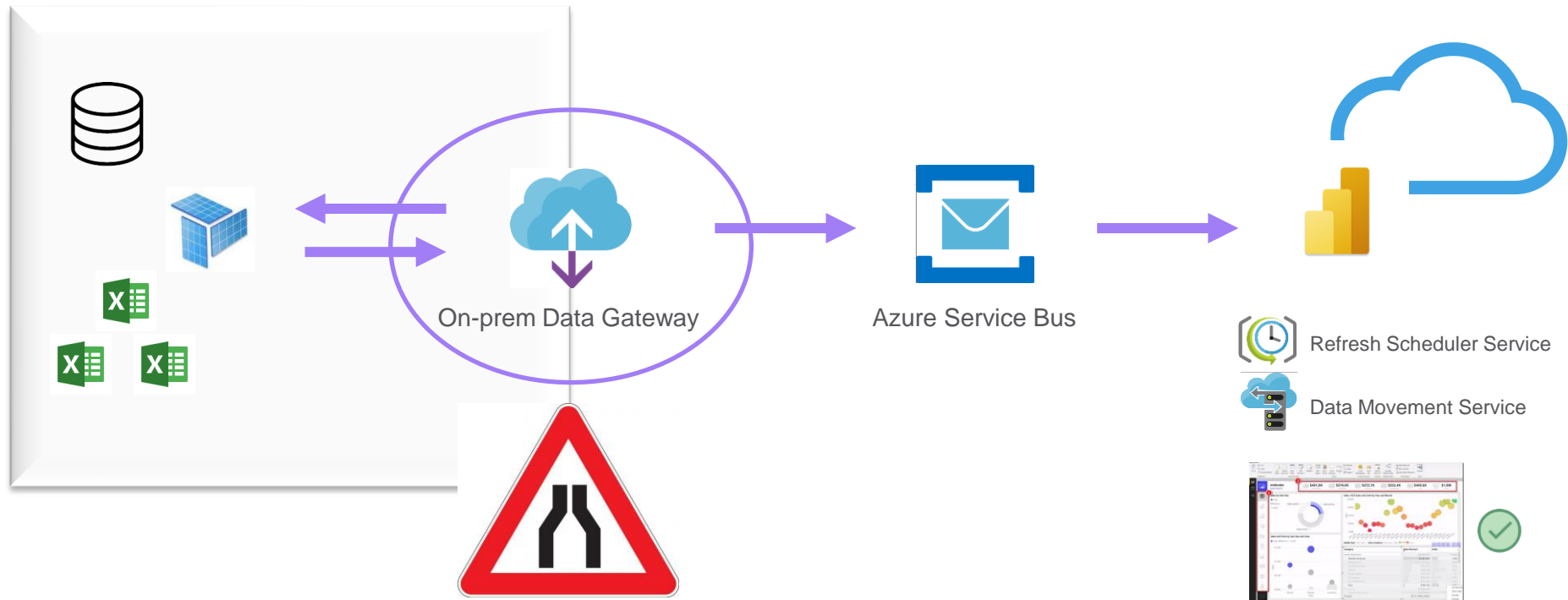
Gateway: Considerations

- Keep gateways' name/**recovery key** in a safe place (migration, take over and recovery)
- **Do not install Personal and then Enterprise**
- **Sometimes 2 gateways** are needed
- **Create a cluster for High-Availability:** round robin or balanced load
- **On-premises data gateway app** helps you
- **Powershell 6 cmdlets** to manage Gateway

The background is a solid black field. It is decorated with several white-outlined rectangles of various sizes. One rectangle is positioned at the top center. Another is at the top right. A large rectangle is centered on the left side, containing the title text. To the right of this large rectangle are two smaller rectangles, one above the other. At the bottom right, there is another small rectangle.

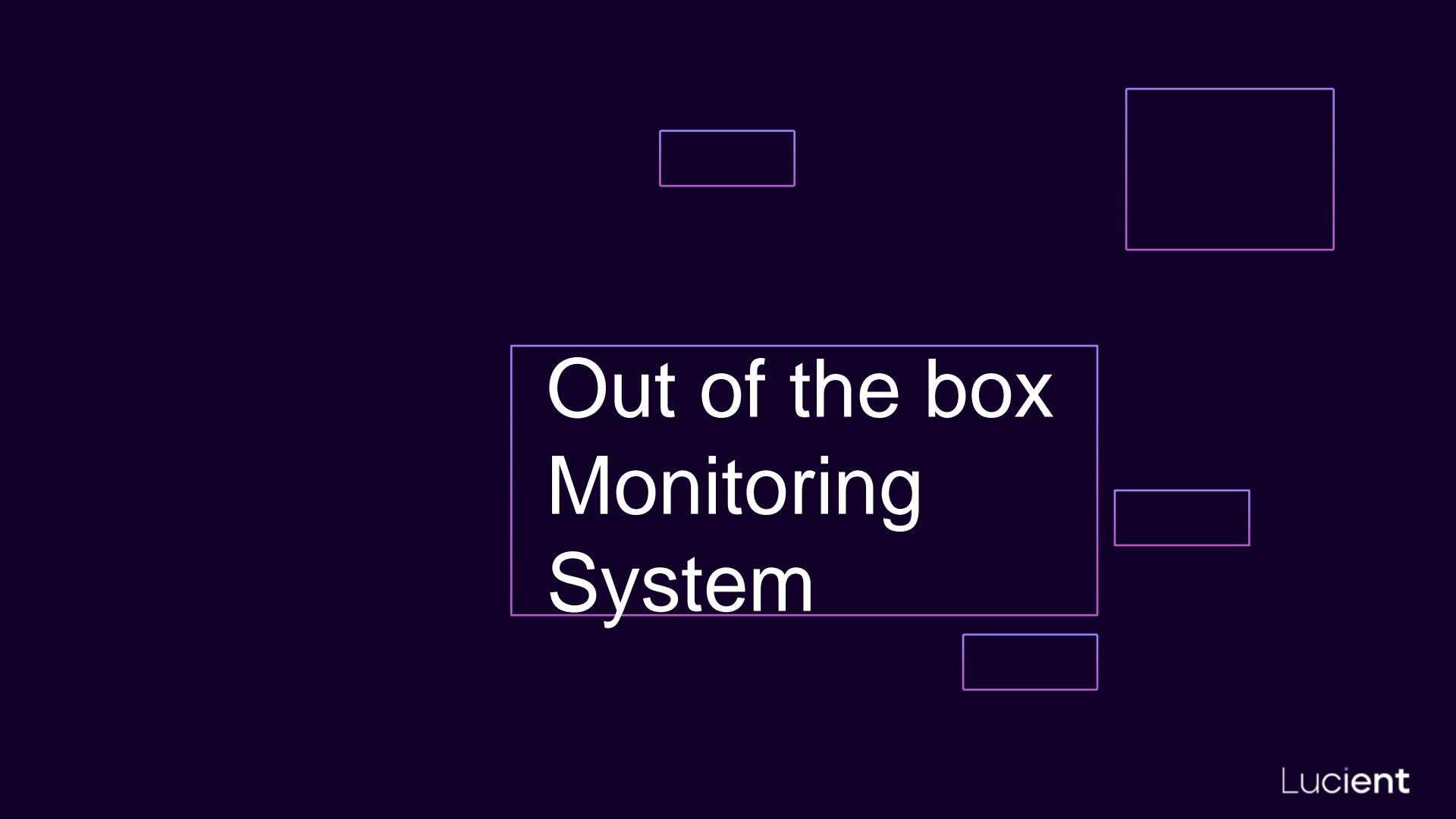
Why and What to Monitor?

Why?



What?

- Gateway's resources pressure and peaks
- Volume of queries
- Queries' length
- Queries distribution
- Errors

The background is a solid black rectangle. It features several white-outlined geometric shapes: a small horizontal rectangle at the top center, a larger square at the top right, a large central rectangle containing the title text, a horizontal rectangle to the right of the central rectangle, and another horizontal rectangle below the central rectangle.

Out of the box Monitoring System

On-premises data gateway

Status

Service Settings

Diagnostics

Network

Connectors

Recovery Keys

Additional logging

You can enable additional logging to output queries and their timings to help understand what is performing slow. It is not recommended to leave this setting enabled long term.

[Learn more](#)

☐

Gateway logs

Export all of the gateway's configuration and service logs to a single .zip file.

Export logs

Network ports test

Check to see if your gateway can access all of the correct network ports.

[Learn more](#)

[Start new test](#)

[Open last completed test results](#)

Last completed test:
November 24, 2020 04:01:15 PM

Close



This PC > Desktop > ODGLogs > ODGLogs 2021-01-27T15_35_57.zip

Name	Type	Compressed size	Password ...	Size	Ratio	Date modified
GatewayInfo20200702.0000000000.log	Text Document	2 KB	No	8 KB	83%	7/2/2020 7:45 AM
GatewayInfo20201124.0000000000.log	Text Document	26 KB	No	454 KB	95%	11/24/2020 7:06 PM
GatewayInfo20201125.0000000000.log	Text Document	168 KB	No	1,939 KB	92%	11/25/2020 5:34 PM
GatewayInfo20201126.0000000000.log	Text Document	264 KB	No	2,561 KB	90%	11/26/2020 3:06 PM
GatewayInfo20201126.0000000001.log	Text Document	268 KB	No	2,561 KB	90%	11/26/2020 3:34 PM
GatewayInfo20201126.0000000002.log	Text Document	161 KB	No	1,796 KB	92%	11/26/2020 7:57 PM
GatewayInfo20201201.0000000000.log	Text Document	6 KB	No	172 KB	97%	12/1/2020 1:09 PM
GatewayInfo20201207.0000000000.log	Text Document	2 KB	No	13 KB	86%	12/7/2020 10:51 AM
GatewayInfo20201216.0000000000.log	Text Document	24 KB	No	740 KB	97%	12/16/2020 7:07 PM

Standard Log Files

Log	Description	File Pattern
Query Execution	The Query Execution Report contains detailed query execution information.	QueryExecutionReport_<gw_node>_<yyyymmdd>T<hhmmss>.log
Query Start	The Query Start Report contains the query and the query start time.	QueryStartReport_<gw_node>_<yyyymmdd>T<hhmmss>.log
Query Execution Aggregation	The Query Execution Aggregation Report contains query information aggregated to a time interval by GatewayObjectId, DataSource, Success, and QueryType.	QueryExecutionAggregationReport_<gw_node>_<yyyymmdd>T<hhmmss>.log
System Counter Aggregation	The System Counter Aggregation Report contains system counter values aggregated to a time interval.	SystemCounterAggregationReport_<gw_node>_<yyyymmdd>T<hhmmss>.log
Gateway Errors	Gateway Errors contains callstacks for Gateway service event type error.	GatewayErrors<yyyymmdd>.<nnnnnnnnnn>.log
Gateway Info	Gateway Info contains details for Gateway service event type information.	GatewayInfo<yyyymmdd>.<nnnnnnnnnn>.log
Gateway Network	Gateway Network contains ServiceEndpoint Connection status logs.	GatewayNetwork<yyyymmdd>.<nnnnnnnnnn>.log
Gateway Configurator	Contains history of Gateway's configuration	GatewayConfigurator<yyyymmdd>.<nnnnnnnnnn>.log
Port Tests	Contains ports tests.	GatewayPortsTestResults2020-11-24T16_01_15.log
Mashup Container Profile		MashupContainerProfiles.log
SAP Adapter		SapAdapter20201124.000000000.log
On Premises Data Gateway*		On-premises_data_gateway_20200414130028
Gateway Properties		GatewayProperties.txt

Where to find them?

Log	Location
Query Execution	<InstallationFolder>\Microsoft.PowerBI.DataMovement.Pipeline.GatewayCore.dll.config
Query Start	<InstallationFolder>\Microsoft.PowerBI.DataMovement.Pipeline.GatewayCore.dll.config
Query Execution Aggregation	<InstallationFolder>\Microsoft.PowerBI.DataMovement.Pipeline.GatewayCore.dll.config
System Counter Aggregation	<InstallationFolder>\Microsoft.PowerBI.DataMovement.Pipeline.GatewayCore.dll.config
Gateway Errors	<InstallationFolder>\Microsoft.PowerBI.DataMovement.Pipeline.GatewayCore.dll.config or \Microsoft.PowerBI.EnterpriseGateway.exe.config
Gateway Info	<InstallationFolder>\Microsoft.PowerBI.DataMovement.Pipeline.GatewayCore.dll.config or \Microsoft.PowerBI.EnterpriseGateway.exe.config
Gateway Network	<InstallationFolder>\Microsoft.PowerBI.DataMovement.Pipeline.GatewayCore.dll.config or \Microsoft.PowerBI.EnterpriseGateway.exe.config
Gateway Configurator	<InstallationFolder>\EnterpriseGatewayConfigurator.exe.config
Port Tests	Manual Log Export
Mashup Container Profile	Manual Log Export
SAP Adapter	Manual Log Export
On Premises Data Gateway*	Manual Log Export
Gateway Properties	Manual Log Export

Parameters to keep in mind from ...DataMovement.Pipeline.GatewayCore.dll

- DisableQueryExecutionReport
- MashupLogMaximumNumberOfFiles
- **ReportFilePath**
- ReportFileCount
- ReportFileSizeInBytes
- QueryExecutionAggregationTimeInMinutes
- SystemCounterAggregationTimeInMinutes

A long-exposure photograph of the Aurora Borealis (Northern Lights) over a calm sea at night. The sky is dark blue with numerous stars visible. The aurora displays vibrant green and yellow-green bands and curtains of light, some of which are reflected on the water's surface. A small, dark rock is visible in the lower-left foreground.

And now?

Should I read all logs in notepad?

The background is a solid black field. Scattered across it are several white-outlined rectangles of various sizes and orientations. A large rectangle is centered horizontally and contains the text 'Standard Monitoring Solution'. Other rectangles are positioned in the upper left, upper right, middle right, and lower right areas, creating a minimalist, architectural feel.

Standard Monitoring Solution

Microsoft did something for us

Filter by title

On-premises data gateways docs

What is an on-premises data gateway?

> Concepts

✓ How to

Install gateways

> Configure gateways

> Manage gateways

Troubleshoot the on-premises data gateway

Monitor and optimize gateway performance

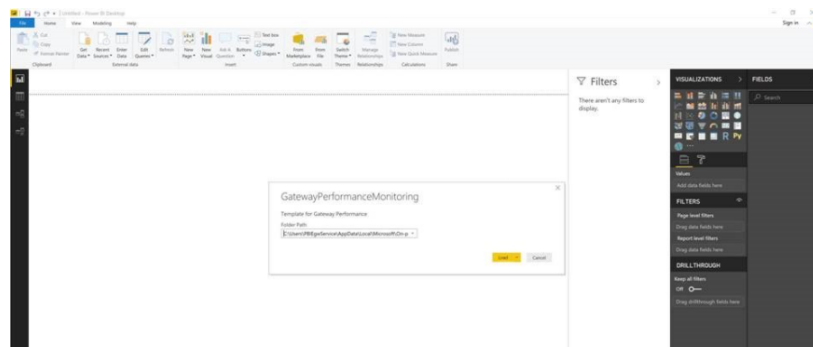
> Reference

> Resources

Visualize gateway performance

Now, you can visualize the data that's in the log files.

1. Download the [Gateway Performance PBI template](#), and open it by using Power BI Desktop.
2. In the dialog box that opens, check that the folder path matches the value in **ReportFilePath**.



3. Select **Load**, and the template file starts loading the data from your log files. All visuals are populated by using the data in the reports.
4. Optionally, save this file as a PBIX, and publish it to your service for automatic refreshes. To learn more, see [Publish datasets and reports from Power BI Desktop](#).

You also can customize this template file to suit your needs. For more information on Power BI templates, see this [Microsoft Power BI blog post](#).

Is this page helpful?

👍 Yes 👎 No

In this article

[Gateway performance monitoring \(public preview\)](#)

[Slow-perf](#)

[Next step](#)



Pros of this solution

- Free
- Quick to install because it's a Power BI template
- Compatible with all Power BI Gateway
- Allows to get insights from logging
- Data have already been prepared
- Power BI Teams can get insights without IT

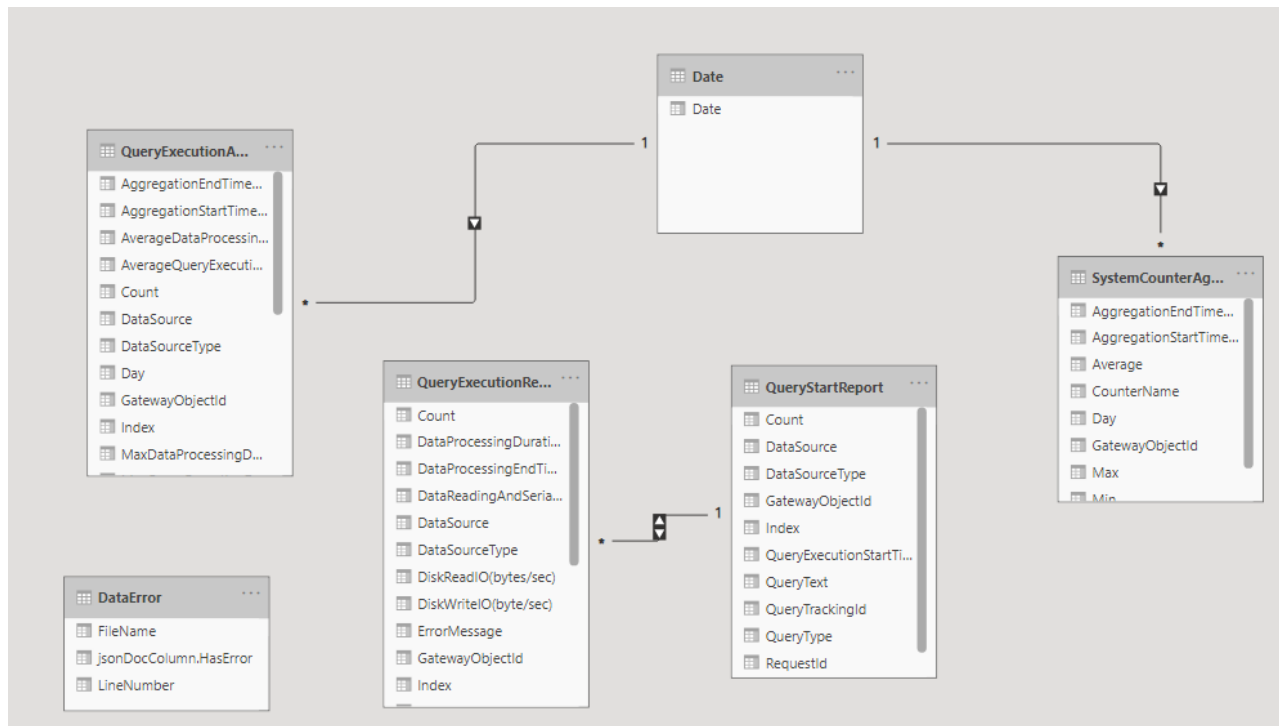
The background of the slide is a dramatic, dark sky with swirling clouds and a bright, glowing lightning bolt striking down on the right side. The lightning bolt is a brilliant white-yellow color, contrasting sharply with the dark, purplish-blue sky. The overall mood is intense and somewhat ominous.

Cons?

Uhm... Where do I start?

Modeling it's not its strength

- No Dimensions
- Facts unrelated
- Calendar “in draft”
- No Measures
- No Time Table



Bad modeling = Bad reports

Maximum Of Query Execution Duration(ms)

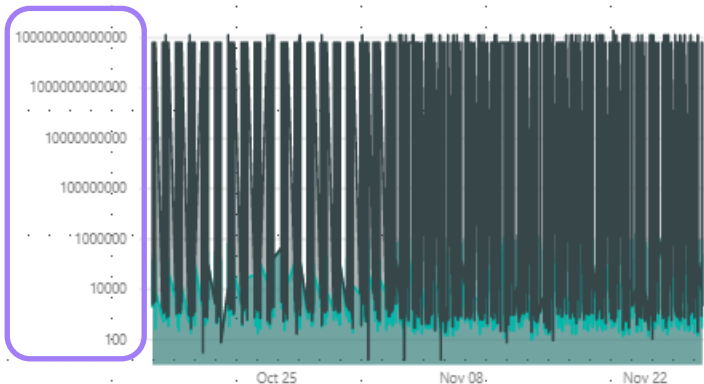
652014

Maximum of Data Processing Duration(ms)

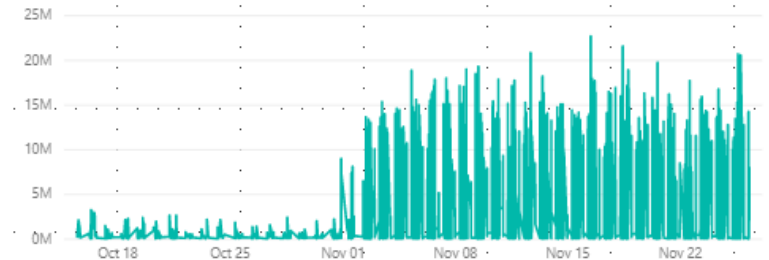
63741973579143

QueryExecutionDuration(ms) and DataProcessingDuration(ms) by QueryExecutionEndTimeUTC

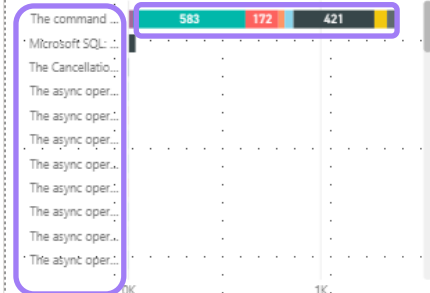
● QueryExecutionDuration(ms) ● DataProcessingDuration(ms)



AverageQueryExecutionDuration(ms) by AggregationEndTimeUTC



Failures By Error Types



It stills in draft...

Report Data Error	
FileName	LineNumber
QueryExecutionReport_TSOLIDQ01_20201015T125430.log	13642
QueryExecutionReport_TSOLIDQ01_20201015T125430.log	13643
QueryExecutionReport_TSOLIDQ01_20201015T125430.log	13659
QueryExecutionReport_TSOLIDQ01_20201015T125430.log	68233
QueryExecutionReport_TSOLIDQ01_20201015T125430.log	80676
QueryExecutionReport_TSOLIDQ01_20201015T125430.log	95697

◀ ▶

Details

Average Execution And Errors

System Counters Over Time

Query Execution By Data Source

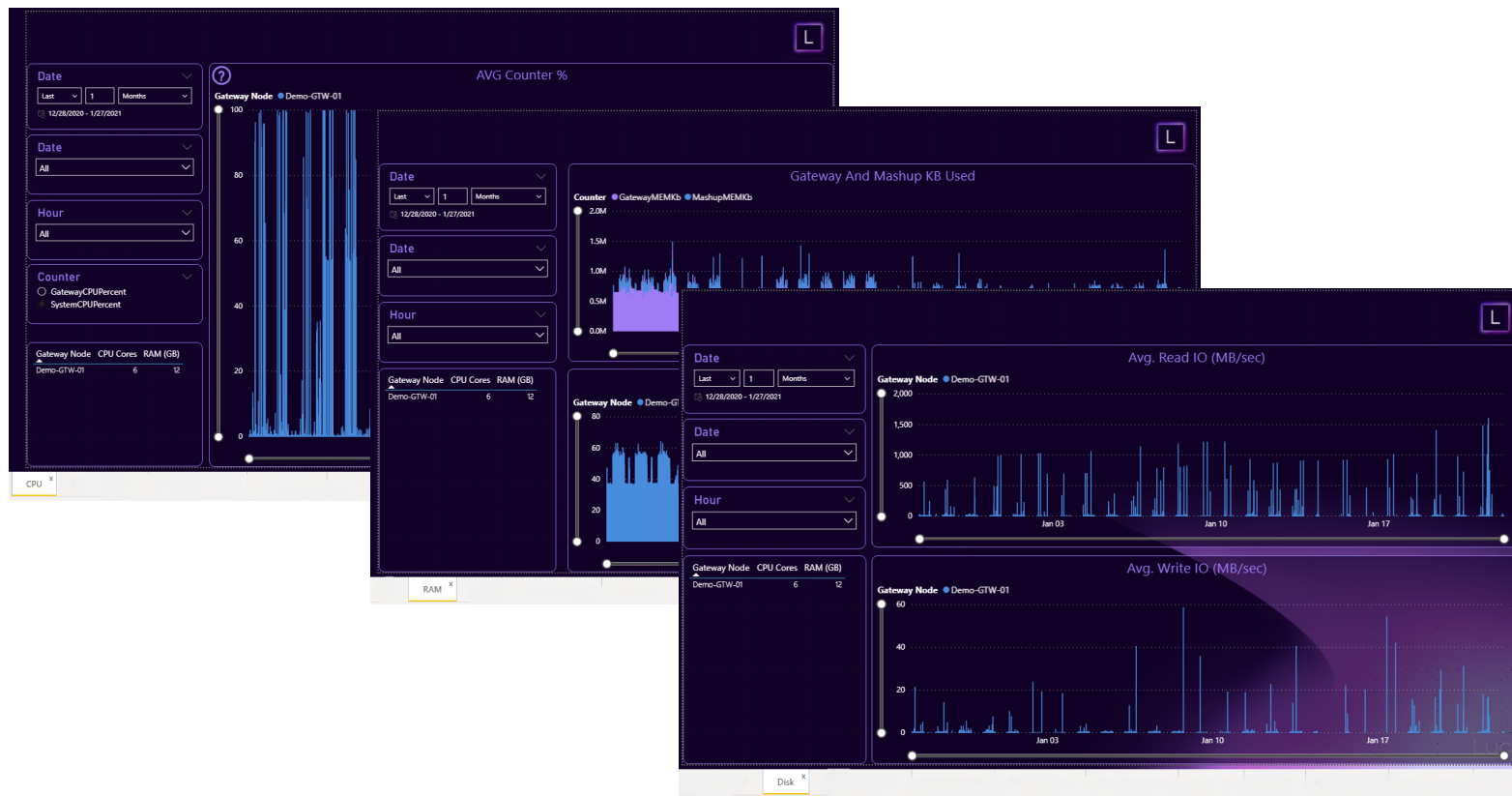
Query Execution By Query Type

Data Error



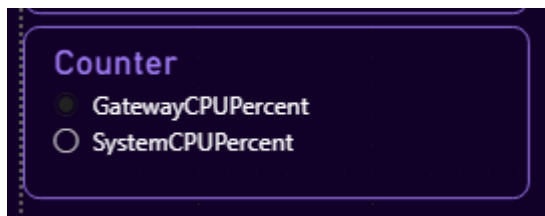
Can we
leverage it?

Performance counters by topic

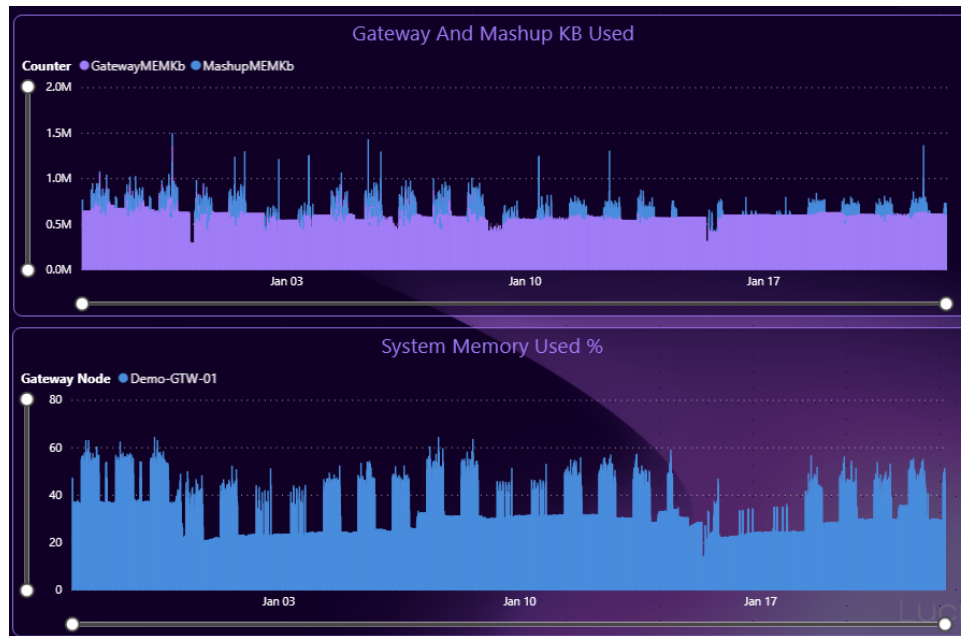


CPU Counters Improvements

- Gateway CPU Percent Normalized using CPU cores number
- Counters Selection

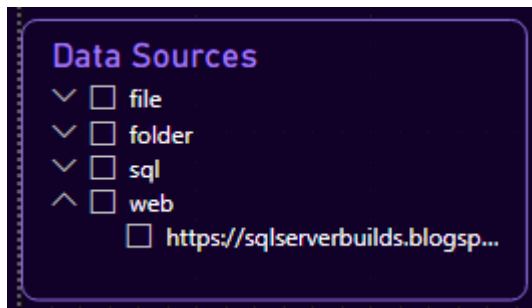


RAM Counters... All at a glance



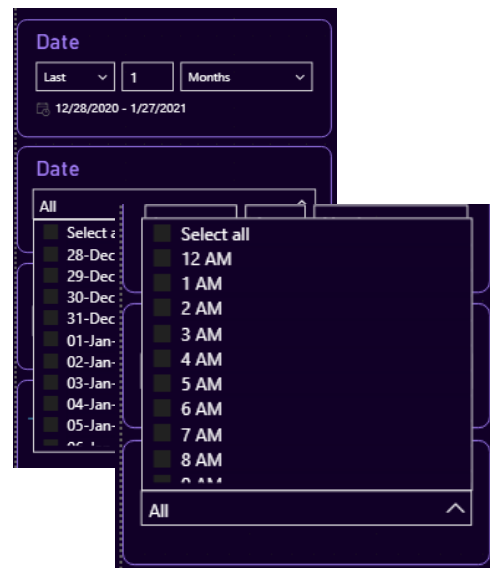
General Pros

- Better look and feel
- Better Data Sources management
- Multiple Gateway support
- Slicing and Dicing improved
- 99% based on standard logging file



A screenshot of a table with three columns: Gateway Node, CPU Cores, and RAM (GB). The table contains one row of data.

Gateway Node	CPU Cores	RAM (GB)
Demo-GTW-01	6	12



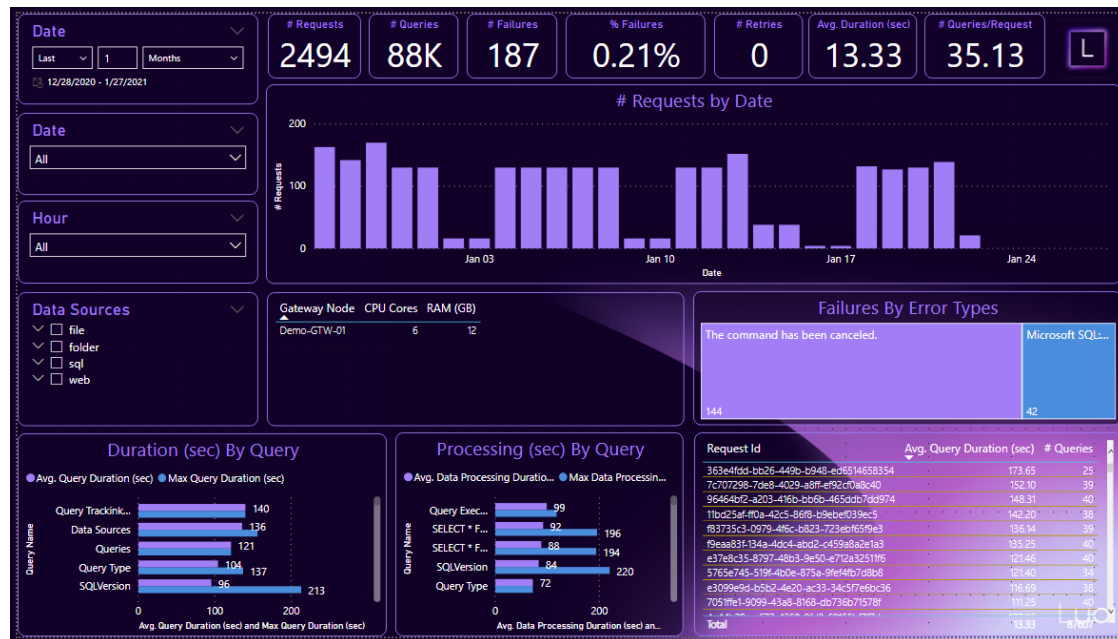
Query Distribution Analysis

- Queries per Type
- Queries per Day
- Queries per Hour
- Queries per Gateway



Query Details

- Queries per Request
- % Failures
- Which requests fail
- Query & Data Processing Durations



Error Log Analysis

- Search by Request ID
- Search by Query Tracking ID
- Slice and Dice the log
- Dig into requests to get more insights for errors

Date

Last

1

Months

12/28/2020 - 1/27/2021

Date

All

Hour

All

Data Sources

☐ file
 ☐ folder
 ☐ sql
 ☐ web

Gateway Node

CPU Cores

RAM (GB)

Demo-GTW-01

6

12

Status

All

☐ Select all
 ☐ (Blank)
 ☐ Fail
 ☐ Success

1/22/2021 8:44:28 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	4d4f8cc-b315-43d4-bcd75cd9886d83	
1/22/2021 8:44:28 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	9ef0d998-4004-46bb-b732-daf0762d0f	
1/22/2021 8:44:28 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	366d417f99-49b4-8502-e4d02ed7778	
1/22/2021 8:44:28 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	070878be-5e12-4bfa-903c-d39e3bdc1c14	
1/22/2021 8:44:28 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	2000908d-239F-4234-833d-1fc0b62c847	
1/22/2021 8:44:28 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	ffaaaa53-8131-4b82-8e19-a5c0323a3b3b	
1/22/2021 8:44:28 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	78838bd6-6540-4d8c-bbe4-97d7f0c6cc41	
1/22/2021 8:44:28 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	328833ba-f792-4489-bc42-6df8bcb0b24	
1/22/2021 8:44:28 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	25179e67-320d-4c6a-f0a4-74ae3ad718	
1/22/2021 8:44:28 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	90d4f8-4814-423b-b9fa-e1185d0001	
1/22/2021 8:44:28 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	9f6ba689-4032-4152-a155-eca6815734e5	
1/22/2021 8:44:28 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	42ed059-3077-4363-abab-4fbed94d6ea2	
1/22/2021 8:44:28 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	4d4e2952-bc3d-4166-9a3a-2c5801813b1b	
1/22/2021 8:44:28 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	92e7273a-d6e5-d02c-b077-b2f5588fde5e	
1/22/2021 8:44:28 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	5ect3035a-7e5d-4455-b479-40cf04efc4db	
1/22/2021 8:44:28 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	1985251d-5147-4da8-9116-ba90f8ab5e9c	
1/22/2021 8:44:28 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	05c399-af90-4e63-626c-e684db0c4d41	
1/22/2021 8:44:19 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	97f4e89-af56-4632-977a-7f0c0891ebd3	
1/22/2021 8:44:18 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	f6e2732-7201-46e9-81d1-8a414cc0a1	
1/22/2021 8:44:17 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	d6af27c7-22af-4b23-4a61-d10c39e7774e	
1/22/2021 8:44:16 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	05bd032d-40d1-4b1f-83ce-1855d76f9f46	
1/22/2021 8:44:16 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	08bc6796-4743-41c1-9e3f-62b2f795968	
1/22/2021 8:44:15 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	d00f94dc-0f5c-433c-ba92-0ce58edca067	
1/22/2021 8:44:15 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	b99f79a-caa1-4f22-9e22-1933c533d716	
1/22/2021 8:44:14 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	71ed3b7-2d03-4608-07b1-8b4df0b33314	
1/22/2021 8:44:11 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	336c07d3-56e6-4c55-9a1a-4f97d7934034	
1/22/2021 8:44:11 AM	0ac88409-cfb-4d00-89bd-176612c998	db-176612c998	548ee495-33bc-4244-8751-91a35988a3a4	
1/22/2021 8:36:18 AM	1f8d5626-b428-47f4-a70c-d07f9193d444	db-176612c998	675ce78-3706-4f50-9985-4923202081e	
1/22/2021 8:35:03 AM	1f8d5626-b428-47f4-a70c-d07f9193d444	db-176612c998	83286447-e531-470a-b7f9-4f7b9b0d078	
1/22/2021 8:35:03 AM	1f8d5626-b428-47f4-a70c-d07f9193d444	db-176612c998	add0a7f4-d91c-476e-a979-2009f8281b06	
1/22/2021 8:35:01 AM	1f8d5626-b428-47f4-a70c-d07f9193d444	db-176612c998	3da65f73-6062-4981-a678-83ebbbe2d007	
1				

Query Name	Gateway Node	Data Source	Data Source Type	End Time UTC	Duration (sec)	Processing (sec)	Status	Error Message
Query Trackinkids	Demo-GTW-01			1/21/2021 8:28:52 PM	140.12		Fail	The command has been canceled.
Total					140.12			

A long-exposure photograph of the Aurora Borealis (Northern Lights) over a calm sea at night. The sky is dark blue with numerous stars. The aurora displays vibrant green and yellow-green bands and curtains of light, some of which are reflected on the water's surface. A dark, rocky shoreline is visible in the lower-left foreground. Two white rectangular boxes are overlaid on the image: a larger one on the left containing the text "Demo time..." and a smaller one below it.

Demo time...

A long-exposure photograph of the Aurora Borealis (Northern Lights) over a calm sea at night. The sky is dark blue with numerous stars. The aurora displays vibrant green and yellow-green bands and curtains of light, some of which are reflected on the water's surface. A dark, rocky shoreline is visible in the lower-left foreground. Two white rectangular boxes are overlaid on the image: a large one on the left containing the text 'Any Questions?' and a smaller one below it.

Any Questions?

Thank You!

PBI Gateway Watchdog

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