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Asset Analytics

Best practices, optimization, and troubleshooting

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AVEVA

Agenda

- Analysis performance monitoring
- Common performance issues (including examples)
- Optimization & best practices

What are Asset Framework & Analytics?



Asset Framework (AF)

Organizes and contextualizes assets and their data
Aggregates asset information into one central location



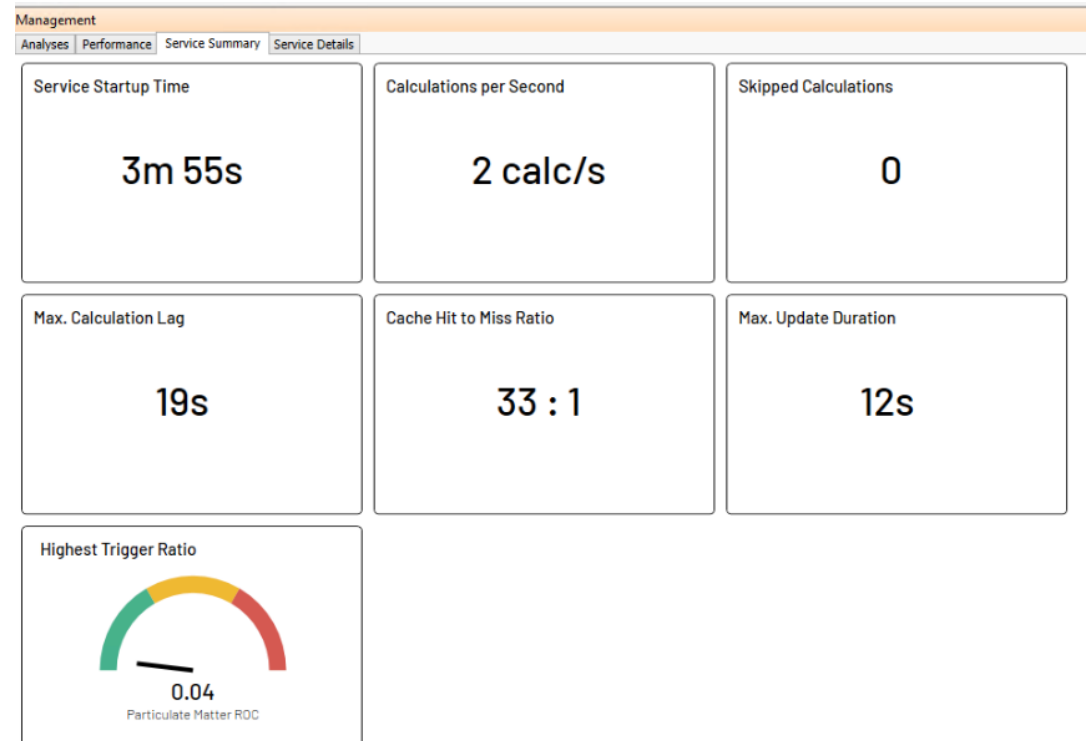
Asset Analytics

Leverages AF attributes to perform simple and complex calculations
Powers event tracking and notifications

Analysis performance monitoring

Features available in the latest versions of the AVEVA™ PI Server AF Client

- PI System Explorer Management page enhancements:
 - PI analysis service performance summary
 - Dedicated tabs for viewing statistics
 - Performance metrics for template groups and individual analyses

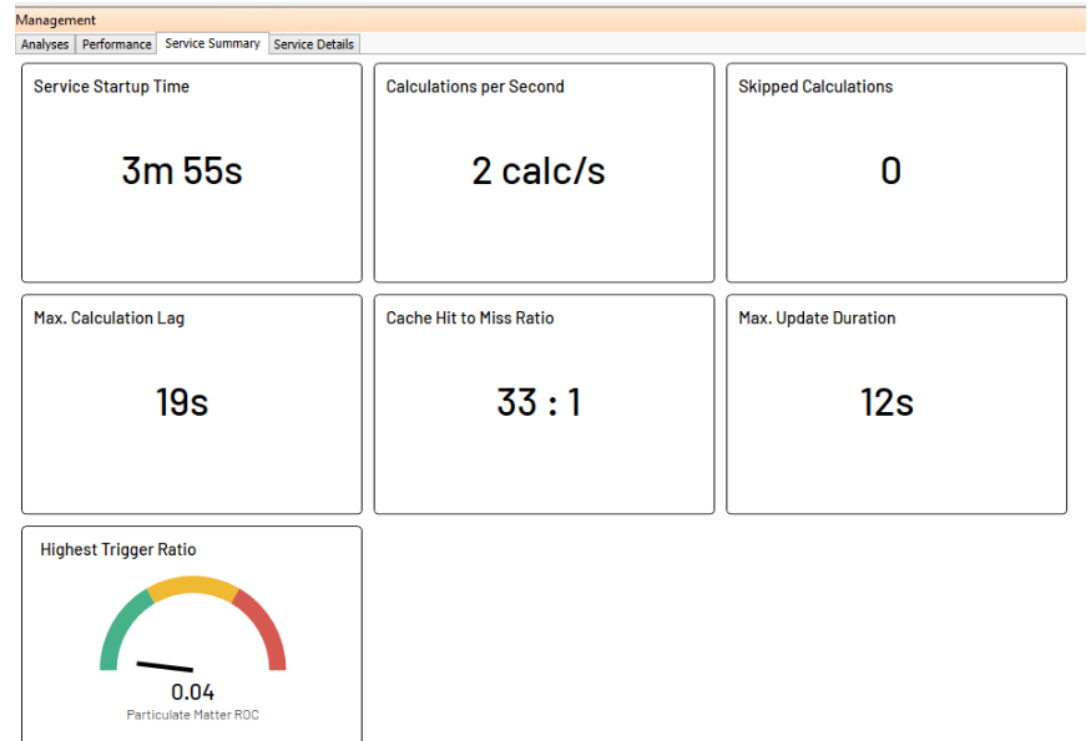


AVEVA™ PI Analysis Service summary statistics

Important metrics to monitor

- Skipped calculations
- Max calculation lag
- Max update duration
- Highest trigger ratio

$$\text{Trigger ratio} = \frac{\text{Average elapsed time}}{\text{Average trigger time}}$$



Demo: AVEVA™ PI System™ Explorer



Management

Choose a type
● Analyses
○ Notification Rules

Analysis Searches

All Enabled Disabled

- All
- Enabled
- Disabled

- Elements
- Event Frames
- Library
- Unit of Measure
- Contacts
- Management

Management

Analyses Performance Service Summary Service Details

Filter

0 total analyses selected (0 on this page) 1 - 187 of 187

<input type="checkbox"/>	Status	Element	Name	Template	Backfilling
<input type="checkbox"/>	✓	Scirocco\Talavera\RB003	EF Downtime	EF Downtime	
<input type="checkbox"/>	✓	Scirocco\Talavera\RB004	EF Downtime	EF Downtime	
<input type="checkbox"/>	✓	Scirocco\Talavera\RB005	EF Downtime	EF Downtime	
<input type="checkbox"/>	✓	Scirocco\Santaella\GE005	EF Downtime	EF Downtime	
<input type="checkbox"/>	✓	Scirocco\Talavera\RB002	EF Downtime	EF Downtime	
<input type="checkbox"/>	✓	Scirocco\Talavera\RB001	EF Downtime	EF Downtime	
<input type="checkbox"/>	✓	Scirocco\Santaella\GE004	EF Downtime	EF Downtime	
<input type="checkbox"/>	✓	Scirocco\Santaella\GE003	EF Downtime	EF Downtime	
<input type="checkbox"/>	✓	Scirocco\Santaella\GE002	EF Downtime	EF Downtime	
<input type="checkbox"/>	✓	Scirocco\Santaella\GE001	EF Downtime	EF Downtime	
<input type="checkbox"/>	✓	Scirocco\Mieres\GE010	EF Downtime	EF Downtime	
<input type="checkbox"/>	✓	Scirocco\Mieres\GE009	EF Downtime	EF Downtime	
<input type="checkbox"/>	✓	Scirocco\Mieres\GE008	EF Downtime	EF Downtime	
<input type="checkbox"/>	✓	Scirocco\Mieres\GE007	EF Downtime	EF Downtime	
<input type="checkbox"/>	✓	Scirocco\Mieres\GE006	EF Downtime	EF Downtime	
<input type="checkbox"/>	✓	Scirocco\Finisterre\RB010	EF Downtime	EF Downtime	
<input type="checkbox"/>	✓	Scirocco\Finisterre\RB009	EF Downtime	EF Downtime	
<input type="checkbox"/>	✓	Scirocco\Finisterre\RB006	EF Downtime	EF Downtime	
<input type="checkbox"/>	✓	Scirocco\Finisterre\RB007	EF Downtime	EF Downtime	
<input type="checkbox"/>	✓	Scirocco\Finisterre\RB008	EF Downtime	EF Downtime	
<input type="checkbox"/>	✓	Scirocco\Talavera\RB003	Lifetime Production	Lifetime Production	
<input type="checkbox"/>	✓	Scirocco\Talavera\RB004	Lifetime Production	Lifetime Production	
<input type="checkbox"/>	✓	Scirocco\Talavera\RB005	Lifetime Production	Lifetime Production	
<input type="checkbox"/>	✓	Scirocco\Santaella\GE005	Lifetime Production	Lifetime Production	
<input type="checkbox"/>	✓	Scirocco\Talavera\RB002	Lifetime Production	Lifetime Production	
<input type="checkbox"/>	✓	Scirocco\Talavera\RB001	Lifetime Production	Lifetime Production	
<input type="checkbox"/>	✓	Scirocco\Santaella\GE004	Lifetime Production	Lifetime Production	
<input type="checkbox"/>	✓	Scirocco\Santaella\GE003	Lifetime Production	Lifetime Production	
<input type="checkbox"/>	✓	Scirocco\Santaella\GE002	Lifetime Production	Lifetime Production	
<input type="checkbox"/>	✓	Scirocco\Santaella\GE001	Lifetime Production	Lifetime Production	
<input type="checkbox"/>	✓	Scirocco\Mieres\GE010	Lifetime Production	Lifetime Production	
<input type="checkbox"/>	✓	Scirocco\Mieres\GE009	Lifetime Production	Lifetime Production	
<input type="checkbox"/>	✓	Scirocco\Mieres\GE008	Lifetime Production	Lifetime Production	
<input type="checkbox"/>	✓	Scirocco\Mieres\GE007	Lifetime Production	Lifetime Production	
<input type="checkbox"/>	✓	Scirocco\Mieres\GE006	Lifetime Production	Lifetime Production	
<input type="checkbox"/>	✓	Scirocco\Finisterre\RB010	Lifetime Production	Lifetime Production	
<input type="checkbox"/>	✓	Scirocco\Finisterre\RB009	Lifetime Production	Lifetime Production	
<input type="checkbox"/>	✓	Scirocco\Finisterre\RB008	Lifetime Production	Lifetime Production	
<input type="checkbox"/>	✓	Scirocco\Finisterre\RB006	Lifetime Production	Lifetime Production	

Operations
[Enable](#) | [Disable](#) selected analyses
[Enable](#) | [Disable](#) automatic recalculation for selected analyses
[Queue](#) | [Cancel](#) backfilling or recalculation for selected analyses

Pending Operations
 No pending operations

Common analysis performance issues

- General high latency/lag
- Skipped evaluations
- Specific expensive calculations
 - Expensive inputs
 - High trigger ratio

Example: expensive calculated inputs

PI System Explorer is extremely slow...
I have to wait for a long time for element
attributes to load.

Management

- Choose a type
- Analyses
- Notification Rules

Analysis Searches

- + x
- All
- Enabled
- Disabled

- Elements
- Event Frames
- Library
- Unit of Measure
- Contacts
- Management**

Management

- Analyses
- Performance
- Service Summary
- Service Details

Service Startup Time

3m 43s

Calculations per Second

12 calc/s

Skipped Calculations

130,411

Max. Calculation Lag

1h 18m 55s


Cache Hit to Miss Ratio

4 : 1

Max. Update Duration

2m 43s

Highest Trigger Ratio



0.61

OSIDemoTruckDataFast_L1

Management

Choose a type
 Analyses
 Notification Rules

Analysis Searches

+ -

All

Enabled

Disabled

Elements

Event Frames

Library

Unit of Measure

Contacts

Management

Service details

Management

Analyses Performance Service Summary Service Details

Filter

- Plug-ins
- Service summary
- Service details

Name	Value
ServiceHostName	AVEVAWorld-AF1.tsplaf.int
CalculationGroupName	default
RunningCalculationCount	416
ErrorCalculationCount	0
SuspendedCalculationCount	0

Save

Elements

- Elements
- PI Data Archive
- Scirocco
- Element Searches

Elements

Group by: Category Template

Search

Name	Description	Category	Type	Template
PI Data Archive			None	PI Data Archive
Scirocco			None	Region

- Elements
- Event Frames
- Library
- Unit of Measure
- Contacts
- Management

Elements

Event Frames

Library

Unit of Measure

Contacts

Management

AVEVAWorld 1022976 Rows.

GE022	1/27/2009 4:00:00 PM	44.31%
GE023	1/4/2009 4:00:00 PM	50.46%
GE024	1/9/2009 4:00:00 PM	40.54%
GE025	1/9/2009 4:00:00 PM	46.76%
GE026	1/2/2009 4:00:00 PM	43.78%
GE027	1/14/2009 4:00:00 PM	44.58%
GE028	2/5/2009 4:00:00 PM	45.46%
GE029	2/7/2009 4:00:00 PM	41.06%
GE030	1/4/2009 4:00:00 PM	43.47%
GE031	1/20/2009 4:00:00 PM	44.68%
GE032	1/16/2009 4:00:00 PM	42.39%
GE033	2/3/2009 4:00:00 PM	46.53%
GE034	2/3/2009 4:00:00 PM	41.00%

Library

- AW2023Demo
 - Templates
 - Element Templates
 - Event Frame Templates
 - Model Templates
 - Transfer Templates
 - Enumeration Sets
 - Reference Types
 - Tables
 - AVEVAWorld
 - Location
 - PowerCurve
 - TheLocation
 - Table Connections
 - Categories
 - Analysis Categories
 - Attribute Categories
 - Element Categories
 - Notification Rule Categories
 - Reference Type Categories
 - Table Categories

- Elements
- Event Frames
- Library
- Unit of Measure
- Contacts
- Management

AVEVAWorld

General Table Define Table Version

AVEVAWorld

Filter

	Turbine	Installation_Date	Elevation	Latitude	Longitude	Manufacturer	Model
▶	GE001	2/8/2009 4:00:00 PM	42.2728958	0.5341153	-1.65213907	GE	2.75-100
	GE002	1/22/2009 4:00:00 PM	49.0653648	0.533761	-1.65201426	GE	2.75-100
	GE003	1/18/2009 4:00:00 PM	46.4058647	0.5339787	-1.65160275	GE	2.75-100
	GE004	1/5/2009 4:00:00 PM	44.0944328	0.534098744	-1.652122	GE	2.75-100
	GE005	1/22/2009 4:00:00 PM	44.25739	0.5343532	-1.65205538	GE	2.75-100
	GE006	1/18/2009 4:00:00 PM	47.291317	0.534198463	-1.65198374	GE	2.75-100
	GE007	2/7/2009 4:00:00 PM	48.4288	0.5343943	-1.651652	GE	2.75-100
	GE008	1/17/2009 4:00:00 PM	42.8279572	0.5344205	-1.65241539	GE	2.75-100
	GE009	1/24/2009 4:00:00 PM	44.8452072	0.534612954	-1.65174043	GE	2.75-100
	GE010	1/18/2009 4:00:00 PM	49.4394569	0.53442	-1.65246737	GE	2.75-100
	GE011	1/21/2009 4:00:00 PM	42.2002563	0.5342216	-1.65215993	GE	2.75-100
	GE012	1/25/2009 4:00:00 PM	45.96984	0.5344432	-1.6525476	GE	2.75-100
	GE013	1/17/2009 4:00:00 PM	40.614727	0.5339556	-1.6525352	GE	2.75-100
	GE014	1/30/2009 4:00:00 PM	42.8042145	0.534689367	-1.6522212	GE	2.75-100
	GE015	1/16/2009 4:00:00 PM	50.1134949	0.5339463	-1.65169144	GE	2.75-100
	GE016	1/22/2009 4:00:00 PM	40.643692	0.5345657	-1.65248418	GE	2.75-100
	GE017	2/9/2009 4:00:00 PM	42.0178223	0.5339124	-1.65239978	GE	2.75-100
	GE018	1/5/2009 4:00:00 PM	50.1505051	0.534538	-1.65240729	GE	2.75-100
	NF019	1/20/2009 4:00:00 PM	42.23017	0.5342031	-1.65202737	GE	2.75-100
	GE020	1/22/2009 4:00:00 PM	47.9761	0.533864737	-1.65196776	GE	2.75-100
	GE021	1/10/2009 4:00:00 PM	50.03643	0.5337438	-1.65203345	GE	2.75-100
	GE022	1/27/2009 4:00:00 PM	44.3151054	0.5340741	-1.65242672	GE	2.75-100
	GE023	1/4/2009 4:00:00 PM	50.4652	0.534153938	-1.65170145	GE	2.75-100
	GE024	1/9/2009 4:00:00 PM	40.5497475	0.5343501	-1.6519742	GE	2.75-100
	GE025	1/9/2009 4:00:00 PM	46.7659035	0.534682751	-1.65200138	GE	2.75-100
	GE026	1/2/2009 4:00:00 PM	43.7899742	0.534568548	-1.65167427	GE	2.75-100
	GE027	1/14/2009 4:00:00 PM	44.58209	0.5338519	-1.651672	GE	2.75-100
	GE028	2/5/2009 4:00:00 PM	45.4651756	0.534562945	-1.65208542	GE	2.75-100
	GE029	2/7/2009 4:00:00 PM	41.06494	0.5341656	-1.65184522	GE	2.75-100
	GE030	1/4/2009 4:00:00 PM	43.479435	0.534442246	-1.65177286	GE	2.75-100
	GE031	1/20/2009 4:00:00 PM	44.6801224	0.534350932	-1.65247822	GE	2.75-100
	GE032	1/16/2009 4:00:00 PM	42.3982124	0.5341483	-1.65233028	GE	2.75-100
	GE033	2/3/2009 4:00:00 PM	46.5360146	0.5346946	-1.65251923	GE	2.75-100
	GE034	2/5/2009 4:00:00 PM	41.00736	0.5340575	-1.6517064	GE	2.75-100

Summary: expensive calculated inputs

- Observed a high max update duration (along with skipped calculations and high lag)
- Identified problematic analysis input attribute using service details statistics
- Traced issue to expensive table lookup attribute
- Constrained table query using parameterization

Example: high trigger ratio & skipping

My analysis output tags are not updating...
they've been stale for a while

Management

Choose a type
 Analyses
 Notification Rules

Analysis Searches

- All
- Enabled
- Disabled

- Elements
- Event Frames
- Library
- Unit of Measure
- Contacts
- Management**

Management

Analyses Performance Service Summary Service Details

Service Startup Time

1m 1s

Calculations per Second

4 calc/s

Skipped Calculations

0

Max. Calculation Lag

1h 36m 21s

Cache Hit to Miss Ratio

2 : 1

Max. Update Duration

2m 7s

Highest Trigger Ratio

4.26

Air Inlet Pressure 90th Percentile

Management

Choose a type
 Analyses
 Notification Rules

Analysis Searches

+ -

- All
- Enabled
- Disabled

- Elements
- Event Frames
- Library
- Unit of Measure
- Contacts
- Management

Analyses

Management

Analyses Performance Service Summary Service Details

Filter

0 total analyses selected (0 on this page)

1 - 147 of 147

Status	Element	Name	Template	Backfilling
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-101	Air Inlet Pressur		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-105	Air Inlet Pressur		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-104	Air Inlet Pressur		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-103	Air Inlet Pressur		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-102	Air Inlet Pressur		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-101	Air Inlet Pressur		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-105	Air Inlet Pressur		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-104	Air Inlet Pressur		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-103	Air Inlet Pressur		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-102	Air Inlet Pressur		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-105	Alarm Count Cri		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-104	Alarm Count Cri		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-103	Alarm Count Cri		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-102	Alarm Count Cri		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-101	Alarm Count Cri		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-105	Alarm Count Cri		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-104	Alarm Count Cri		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-103	Alarm Count Cri		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-102	Alarm Count Cri		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-101	Alarm Count Cri		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-105	Alarm Count Ma		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-104	Alarm Count Ma		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-103	Alarm Count Ma		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-102	Alarm Count Ma		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-101	Alarm Count Ma		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-105	Alarm Count Ma		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-104	Alarm Count Ma		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-103	Alarm Count Ma		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-102	Alarm Count Ma		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-101	Alarm Count Ma		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-105	Alarm Count Mi		
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-104	Alarm Count Minor	Alarm Count Minor	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-103	Alarm Count Minor	Alarm Count Minor	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-102	Alarm Count Minor	Alarm Count Minor	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-101	Alarm Count Minor	Alarm Count Minor	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-105	Alarm Count Minor Last 24h	Alarm Count Minor Last 24h	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-104	Alarm Count Minor Last 24h	Alarm Count Minor Last 24h	0%
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-103	Alarm Count Minor Last 24h	Alarm Count Minor Last 24h	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Sudbury Mine\Haul Trucks\HT-102	Alarm Count Minor Last 24h	Alarm Count Minor Last 24h	<input checked="" type="checkbox"/>

Analysis Service Configuration

Global Service Configuration

Property	Configuration
AutoBackfillingEnabled	True
AutoRecalculationEnabled	True
AutoRecalculationIgnoreTimeInSeconds	30
AutoRecalculationMinWaitTimeInSeconds	60
CacheTimeSpanInMinutes	5
CalculationWaitTimeInSeconds	5
CreateFuturePIPointsForAmbiguousOutputTimes	True
EvaluationPartitionSize	10000
EvaluationsToQueueBeforeSkipping	50
IsLoadSheddingEnabled	False
IsTelemetryAllowed	False
MaxAllowedAutoRecalculationSpanInDays	180
MaxCacheEventsPerAttribute	1024
MaxConcurrentRecalculationRequests	1
MaximumAllowedAutoBackfillingSpanInHours	72
MinCacheEventsPerAttribute	1
NumberDataWriterThreads	1
NumberEvaluationThreads	2
NumberParallelDataPipes	1
RuntimeStorageFolderPath	C:\ProgramData\OS\soft\PIAnalysisNotifications

PI Point Creation User Settings

Default to Auto Create PI Points for Template

Suggested PI Point Name

%Element%.%Attribute%.%ID%

OK Close

Operations

Enable | Disable selected analyses

Enable | Disable automatic recalculation for selected analyses

Queue | Cancel backfilling or recalculation for selected analyses

Pending Operations

No pending operations

Management

- Choose a type
- Analyses
 - Notification Rules

Analysis Searches

- All
- Enabled
- Disabled

- Elements
- Event Frames
- Library
- Unit of Measure
- Contacts
- Management

Management

- Analyses Performance Service Summary Service Details

Group by: Template

Filter

Element Template	Group Name	AF Database	Impact Score	Schedule	Skip Count	Success Count	Error Count	Average Elapsed (ms)	Average Trigger (ms)	Group Trigger Ratio	Current Lag (ms)
Haul Truck	Air Inlet Pressure 90th Percentile	Demo	1.59	Periodic[Frequency=1]	0	361	0	4280	13500	0.32	1872484
Haul Truck	Air Inlet Pressure Percentile	Demo	1.41	Periodic[Frequency=1]	0	362	0	3810	13465	0.28	1874421
Mobile Asset	Alarm Count Minor	Demo	0.12	Periodic[Frequency=5]	0	362	0	412	17881	0.02	266135
Mobile Asset	Alarm Count Major	Demo	0.00	Periodic[Frequency=5]	0	364	0	11	17741	0.00	280098
Mobile Asset	Alarm Count Critical	Demo	0.00	Periodic[Frequency=5]	0	364	0	11	17741	0.00	280093
Haul Truck	OSIDemo_RouteSimulationTimeCounter	Demo	0.00	Periodic[Frequency=5]	0	366	0	0	17685	0.00	273423
Haul Truck	OSIDemo_TruckShiftGear	Demo	0.91	Periodic[Frequency=5;Offset=1]	0	342	0	3420	18871	0.18	284092
Haul Truck	OSIDemo_RouteSimulation	Demo	0.65	Periodic[Frequency=5]	0	343	0	2458	18874	0.13	266134
Truck	Fuel Analysis Truck Previous Load	Demo	0.48	Natural	0	355	0	445	4675	0.10	203624
Haul Truck	OSIDemo_TruckDataFast_2	Demo	0.97	Periodic[Frequency=10;Offset=4]	0	340	0	3535	18230	0.19	531100
Haul Truck	OSIDemo_TruckDataFast_1	Demo	1.50	Periodic[Frequency=10;Offset=2]	0	341	0	5423	18118	0.30	538535
Haul Truck	OSIDemo_TruckDataFast_4	Demo	0.00	Periodic[Frequency=10;Offset=8]	0	361	0	2	17222	0.00	518140
Haul Truck	OSIDemo_TruckDataFast_3	Demo	0.00	Periodic[Frequency=10;Offset=6]	0	361	0	1	17222	0.00	520136
Haul Trucks	Fleet Fuel Consumption Rate Prev. 24h	Demo	0.00	Natural	0	5	0	0	57500	0.00	16093
Truck	Fuel Analysis Truck Previous 24h	Demo	0.01	Natural	0	5	0	95	57500	0.00	24214
Mobile Asset	Fuel Consumption	Demo	3.01	Periodic[Frequency=60]	0	112	0	36104	60000	0.60	50799
Mobile Asset	Parts Utilization	Demo	0.42	Periodic[Frequency=60]	0	112	0	5062	60000	0.08	57003
Haul Truck	Alarm Statistics Haul Truck Tire Temperature	Demo	0.01	Periodic[Frequency=3600]	0	2	0	7904	3600000	0.00	35681
Haul Truck	Alarm Statistics Haul Truck Tire Pressure	Demo	0.01	Periodic[Frequency=3600]	0	2	0	7976	3600000	0.00	34562
Haul Truck	OSIDemo_TruckOilLevels	Demo	0.00	Periodic[Frequency=3600]	0	2	0	1	3600000	0.00	28415
Mobile Asset	Alarm Statistics 2	Demo	0.01	Periodic[Frequency=3600]	0	2	0	9306	3600000	0.00	27135
Mobile Asset	Alarm Statistics 1	Demo	0.02	Periodic[Frequency=3600]	0	2	0	12709	3600000	0.00	28413
Haul Truck	OSIDemo_TruckFiltersReplacementDates	Demo	0.04	Periodic[Frequency=60]	0	112	0	475	60000	0.01	25506
Haul Truck	OSIDemo_TruckTireData	Demo	0.00	Periodic[Frequency=60]	0	112	0	1	60000	0.00	25076
Haul Truck	OSIDemo_TruckLoad	Demo	0.00	Natural	0	341	0	0	18118	0.00	15428
Mobile Asset	Asset Utilization	Demo	0.28	Natural	0	341	0	1069	18853	0.06	30910
Mobile Asset	Alarm Count Major Last 24h	Demo	0.00	Natural	0	2	0	0	3600000	0.00	26077
Mobile Asset	Fuel Remaining Time	Demo	0.00	Natural	0	339	0	2	18225	0.00	17258
Mobile Asset	Alarm Count Minor Last 24h	Demo	0.00	Natural	0	2	0	0	3600000	0.00	25043
Mobile Asset	Alarm Count Critical Last 24h	Demo	0.00	Natural	0	2	0	0	3600000	0.00	26076
Haul Trucks	Fleet Specific Fuel Consumption Prev. 24h	Demo	0.00	Natural	0	112	0	0	60000	0.00	15108

Export to File...

Summary: high trigger ratio & skipping

- Observed high trigger ratio in certain analysis groups
- Found that these groups triggered more frequently than necessary
- Reduced trigger frequency to something more reasonable

Optimization

- Check your system regularly for things to improve!
- Specific metrics to focus on
 - Update durations for input attributes
 - Analysis evaluation time
 - Trigger frequency

Best practices

Takeaways from our examples

- Avoid nesting calculations
 - Instead of using formula & string builder attributes as inputs, incorporate these into analysis logic
- Take care with how table data is used as an input into analyses
- Schedule analyses only as frequently as needed (especially summaries and rollups)

Best practices

More things to consider

- Leverage variables when reusing calculation results to improve evaluation time
- Keep unrelated calculations in separate analyses
- Set up [performance counters](#) to monitor the PI Analysis Service

Refer to our guidance in [KB01641](#) (Asset Analytics Best Practices)!

Conclusion



Analysis performance issues most often occur when best practices aren't followed



New tools in the latest AF Client can greatly help when monitoring performance and troubleshooting issues



Tech support and our knowledge base are here to help!

Questions?

Please wait for the microphone.
State your name and company.



Please remember to...

Navigate to this session in the
mobile app to complete the survey.



Thank you!

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ABOUT AVEVA

AVEVA is a world leader in industrial software, providing engineering and operational solutions across multiple industries, including oil and gas, chemical, pharmaceutical, power and utilities, marine, renewables, and food and beverage. Our agnostic and open architecture helps organizations design, build, operate, maintain and optimize the complete lifecycle of complex industrial assets, from production plants and offshore platforms to manufactured consumer goods.

Over 20,000 enterprises in over 100 countries rely on AVEVA to help them deliver life's essentials: safe and reliable energy, food, medicines, infrastructure and more. By connecting people with trusted information and AI-enriched insights, AVEVA enables teams to engineer efficiently and optimize operations, driving growth and sustainability.

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