

Description: Guide to understanding aggregate groups, aggregate tags, and how to configure them.

OS Requirement: Windows Server 2003 x64/Vista x64/ Server 2008 x64/Windows 7 x64/ Server 2008 R2 x64

General Requirement: Installation of Hyper Historian; a good understanding of Hyper Historian Tags and the required steps to configure one to log data.

Introduction

Hyper Historian trends your data at a very fast rate without compromising performance. On top of being able to log raw data, it can also perform calculations to the raw samples that it collects.

At the very basic level, it uses a Log to Disk “filter” that performs a calculation for the samples collected during a period of time (calculation period). This includes many industry standard calculations such as Maximum, Minimum, Average, Totalizer, etc., to log calculated data that is meaningful to the user.

You can perform further analysis on the logged data by using aggregates. Hyper Historian provides functionality to evaluate OPC HDA aggregates of managed Hyper Historian tag data; each such configured evaluation is called a **tag aggregate**. The samples used for the aggregates are the logged values (the values can be either raw or calculated) of Hyper Historian tags. Each Hyper Historian tag can perform aggregate calculations that are not included in a Hyper Historian tag. With this, you can easily look at summary information for a chosen timeframe.

Aggregate groups specify a calculation period for aggregating data. You can have multiple Aggregate groups in a Logging group. Each tag can have multiple tag aggregates configured for it, and each of tag aggregate points to a different Aggregate Group.

In the Hyper Historian Logger’s address space, tag aggregates are represented as nodes. When you define a new tag aggregate, you can optionally evaluate data log prior to its definition depending on the Aggregate Group property called “recalculate all”. Changing this property value has no effect on currently-defined aggregates.

A tag aggregate’s evaluation can be disabled and re-enabled again. Value changes related to the tag aggregate will be ignored as long as the aggregate is disabled. The Tag Aggregate evaluation runs in the background independently and its results are stored by the Hyper Historian logger based on the parameters defined by the aggregate group.

This document goes through the steps to create an Aggregate Group and describes each aggregate type that is available.

NOTE: This application note assumes you have some knowledge of Hyper Historian. If you find unfamiliar terms as you read this application note, please refer to help documents or read the application note titled *Hyper Historian – Quick Start* to gain a basic understanding.

Configuring an Aggregate

1. There is an Aggregation folder for every Logging Group that you create. Assuming that you have a Logging Group configured under the Groups folder right-click on the Aggregation folder and select + Aggregate Group to create a new aggregate group similar to Figure 2.

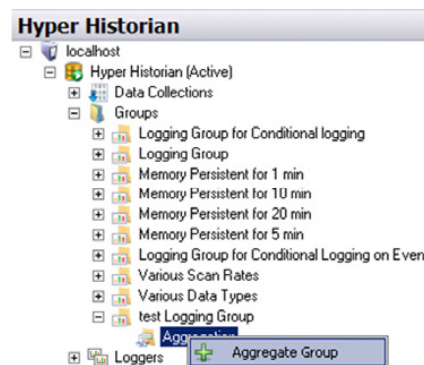


Figure 1 - Adding an Aggregate Group

2. The configurator for the new Aggregate Group opens in a new tab. Give this Aggregate Group a name.
3. Specify the group’s default Calculation Period in the Properties section. The calculation period is similar to that for a Hyper Historian Tag; it dictates how often a tag will make a calculation with the collected sample.
4. Check the **Treat Uncertain as Bad** option if you want the uncertain values to be treated as bad.
5. Once you have configured the Aggregate Group, click Apply to save the changes.

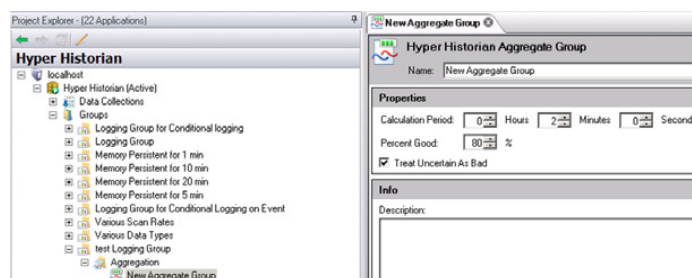


Figure 2 - Aggregate Group

6. Tag aggregates are defined for a Hyper Historian tag. In other words, you can configure a Hyper Historian tag to use aggregation.
7. On a new tab, edit or create a Hyper Historian tag that you want to apply aggregation to.
8. To create a new tag, right click on **Data Collections** and select “Tag”. In the new tab that appears, name the Tag, specify a signal name, enable it and click on the “Tag Aggregates” tab.

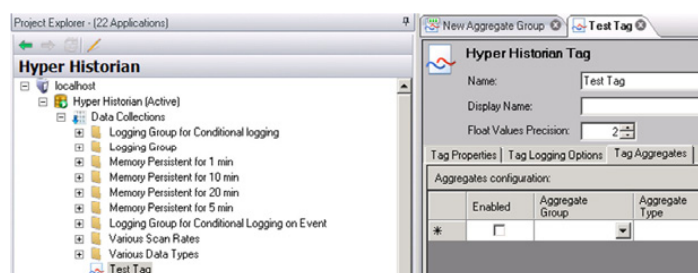


Figure 3 - Tag Aggregates Tab

9. In the Aggregate Group column, choose the group you just created.



Figure 4 - Choosing an Aggregate Group

10. Check the checkbox in the Enabled column to activate the tag aggregation.
11. In the Aggregate Type column, select the Aggregate Type, which is the calculation method for the tag. Notice that once you select the Aggregate type, information in the other columns will get populated. Your choices are listed in Table 1 along with the description of each type.

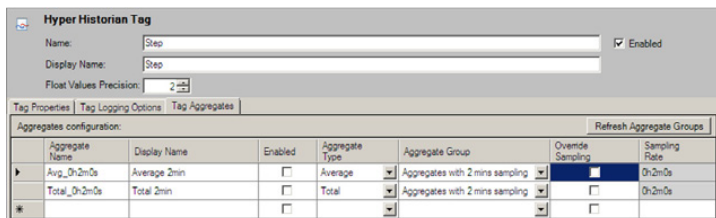
Table 1 - Aggregate Types

Aggregate Type	Description
Interpolative	Do not retrieve an aggregate. This is used for retrieving interpolated Values.
Average	Retrieve the time weighted average data over the aggregate group sample interval.
Time Average	Retrieve the time weighted average data over the aggregate group sample interval.
Total	Retrieve the sum of the data over the aggregate group sample interval.

Aggregate Type	Description
Totalize Average	Retrieve the totalized Value (time integral) of the data over the aggregate group sample interval.
Minimum Actual Time	Retrieve the minimum value in the aggregate group sample interval and the Timestamp of the minimum value.
Maximum Actual Time	Retrieve the maximum value in the aggregate group sample interval and the Timestamp of the maximum value.
Minimum	Retrieve the minimum Value in the aggregate group sample interval.
Maximum	Retrieve the maximum Value in the aggregate group sample interval.
Range	Retrieve the difference between the minimum and maximum Value over the sample interval.
Annotation Count	Retrieve the number of Annotations in the interval.
Count	Retrieve the number of raw Values over the aggregate group sample interval.
Start	Retrieve the Value at the beginning of the resample interval. The time stamp is the time stamp of the beginning of the interval.
End	Retrieve the Value at the end of the resample interval. The time stamp is the time stamp of the end of the interval.
Delta	Retrieve the difference between the first and last Value in the aggregate group sample interval.
Duration Good	Retrieve the duration of time in the interval during which the data is good.
Duration Bad	Retrieve the duration of time in the interval during which the data is bad.
Percent Good	Retrieve the percent of data (0 to 100) in the interval with a good StatusCode.
Percent Bad	Retrieve the percent of data (0 to 100) in the interval with a bad StatusCode.
Worst Quality	Retrieve the worst StatusCode of data in the interval.
Standard Deviation (N-1)	Retrieves the variation that exists from the mean (expected value). This should be used if one wishes to make a general conclusion or

Aggregate Type	Description
	generalize the SD not only for your specific data but for the overall data.
Standard Deviation (N)	Retrieves the variation that exists from the mean (expected value) only for a particular set of data and cannot be used to make wider conclusions for the overall data.
Variance (N-1)	Retrieves the average of the squared difference from the mean of your sample interval. This should be used if you wish to generalize the conclusion for a wider set of data.
Variance (N)	Retrieves the average of the squared difference from the mean of your sample interval only for the aggregate group sample interval.

12. Once you select the aggregate type, you can leave it as the default to use the Aggregate Group's calculation period or you can change it to a different period by checking the checkbox in the Override Sampling column and specifying the frequency in the Sampling Rate column.
13. Remember to click Apply to save your changes.



Hyper Historian Tag

Name: ☒ Enabled

Display Name:

Float Values Precision:

Tag Properties | Tag Logging Options | Tag Aggregates

Aggregates configuration: Refresh Aggregate Groups

Aggregate Name	Display Name	Enabled	Aggregate Type	Aggregate Group	Override Sampling	Sampling Rate
Avg_0h2m0s	Average 2min	☐	Average	Aggregates with 2 mins sampling	☒	0h2m0s
Total_0h2m0s	Total 2min	☐	Total	Aggregates with 2 mins sampling	☐	0h2m0s

Figure 5 - Aggregate Configuration

14. You can repeat steps 6-133 to add different calculations for the current tag or other tags. Once you have finished your aggregate tags configuration, refresh your configuration if it has started, or start the Hyper Historian service.
15. You can view data logged for each tag the same way you would for any Hyper Historian tags.

NOTE: Once you add a historical tag in the viewer, you can also choose aggregates mentioned in this document. In cases where you did not configure an aggregate in Hyper Historian, you can still use the viewer to request aggregate values from the HDA server. For more information on the Trend Viewer, please refer to the help files.