



Hyper Historian Advanced Settings



APPLICATION NOTE

August 2014

Description: Guide to fine tune Hyper Historian with advanced settings.

General Requirement: General understanding of logging data and databases.

Introduction

Hyper Historian is a powerful, 64-bit, high performance plant historian. It includes a high compression, advanced Swinging Door algorithm for decreasing database size. Although it takes advantage of 64-bit hardware and software architectures, which allows it to access more CPU power and memory than traditional 32-bit-based historians do, it still leaves a very small memory footprint compared to its counterpart TrendWorX64 Logger, but provides higher performance.

Its key features include:

- OPC-UA, OPC-DA and OPC-HDA Compliance
- Optimistic Concurrent Multi-user Configuration
- Web-based Configuration and Administration
- Integrated Redundancy
- Performance calculations

For an introduction to the Hyper Historian, review the application note called *Hyper Historian - Introduction to Hyper Historian*. In this document, we detail some of the more advanced settings related to Hyper Historian.

Configuring Hyper Historian Advanced Settings

Hyper Historian is configured through Workbench-SL, a centralized project management application for GENESIS64.

1. To open the Workbench, go to **Start → All Programs → ICONICS → Workbench-SL**.
2. Once you are in Workbench-SL, select Hyper Historian in the Project Explorer.
3. After selecting Hyper Historian, you will be able to see the "localhost" as a node, and can expand it.
4. Select System Administration → System Settings to open the Hyper Historian Advanced Configuration Settings.
5. This open window shows basic license settings and disk space manager settings.

NOTE: The advanced settings are quite advanced. If you are not an expert, we recommend that you do not change these settings.

The Hyper Historian is available in two major editions; if you have the Enterprise edition, you can choose a license mode.

- **Auto Select License.** Leave this setting enabled so that when you change the license you do not have to worry about this anymore.
- **Standard License.** The Standard Edition is optimized for a single PC/workstation system where the entire Hyper Historian is running on one machine.
- **Enterprise License.** The Enterprise Edition is optimized for performance in a distributed data collection environment where the data collection is performed on separate machines, not on the PC/workstation running the Logger.

Both editions support connectivity, data collection and logging, archiving, and data playback capabilities of the Hyper Historian. In addition to supporting these core capabilities, the Enterprise edition supports remote distributed data collection, redundancy (both at the collector level and the data logger/database level), store and forward capability, optimization for multi-core and multi-processor systems and Hyper to Hyper feature for synchronizing data from one Hyper Historian logger to another one.

Users of the Hyper Historian **Enterprise Edition** can run the Hyper Historian Logger in **Enterprise** or **Standard** mode if the Hyper Historian is running on a single PC/workstation (a non-redundant single workstation). Running the system in Standard mode provides better logging performance and the possibility of achieving high throughput rates on a single-PC solution.

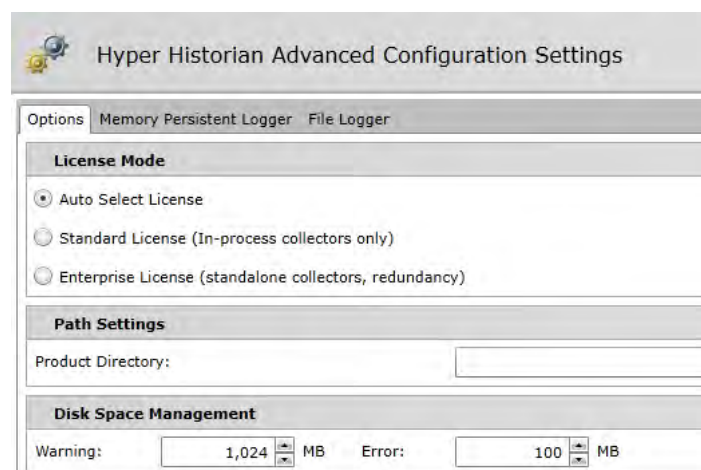


Figure 1 - Hyper Historian Advanced Settings

In the **Disk Space Management** section, you can configure when the system will send a Warning or Error message depending on the configurable disk space limit.

In the following sections we are going to discuss also options for caching within the Hyper Historian system. Caching is used in collectors to house data received from lower processing levels and in preparation for forwarding to the core. When data is



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received from processing levels, it is stored to a cache (as much as possible due to space requirements), or forwarded to storage. When a client (UA layer, core local communication layer) requests data, the cache is used as a data source. When the client confirms it has received the data, cached counterparts are removed and the cache gets backfilled.

Memory Persistent Logger

In the system settings please select the Memory Persistent Logger tab.

Tuning Settings

- *Shadow Flush Time (s)* – specifies how often the modified content of memory / files is written to disk
- *Index Cache Size (MB)* – Specifies the cache size in MB dedicated to index blocks.
- *Data Cache Size (MB)* – Specifies the cache size in MB dedicated to data blocks.
- *Memory Only Index Cache Size (MB)* – specifies the cache size for index blocks
- *Memory Only Data Cache Size (MB)* – specifies the cache size for data blocks

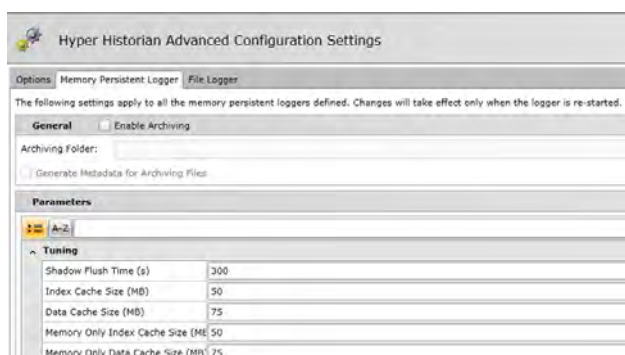


Figure 2 - Memory Persistent Logger: Tuning

Advanced Settings

- *Maximum Pending Requests* – specifies the maximum number of pending insert requests
- *Sealed File Keep Time (s)* – specifies how long a file is kept in logger
- *Close Check Frequency (s)* – specifies how often the files are scanned if they could not be closed (start time/end time)
- *Seal Check Frequency (s)* – specifies how often the files are scanned which should be closed
- *Detach Check Frequency (s)* – specifies how often the files are scanned and if they might NOT be detached from the system
- *Block Snapshot Enabled* – specifies if the requests should be backup or confirmed

Advanced	
Maximum Pending Requests	1,000,000
Sealed File Keep Time (s)	600
Close Check Frequency (s)	30
Seal Check Frequency (s)	120
Detach Check Frequency (s)	120
Block Snapshot Enabled	☐

Figure 3 - Memory Persistent Logger: Advanced

File Logger

In the system settings please select the File Logger tab.

Cache Settings

- *Flush Time* – specifies the time interval after which the cache is cleared
- *Full Garbage Collection Period* – clear Garbage Collector and changes written into disc
- *Maximum Cache Size (MB)* – specifies the maximum cache size
- *Maximum Unused Data Blocks Lifetime* – specifies the maximum lifetime on unused data blocks, recycled faster
- *Maximum Unused Index Blocks Lifetime* – specifies the maximum lifetime on unused index blocks, kept longer

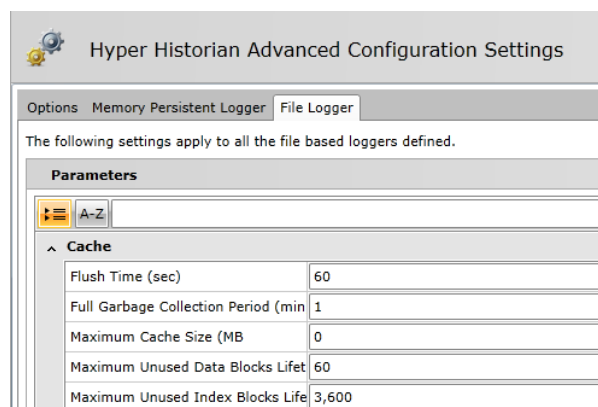


Figure 4 - File Logger: Cache

Logger Configuration Settings

- *Operation Retry Interval* – specifies a time interval before the logger re-tries a failed operation again
- *Maximum Operation Queue Length* – specifies maximum operation queue length
- *Priority Increment Period* – specifies how often to increase the priority
- *Operation Queue Priority Count* – impact the priority settings in the operation queue



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Logger	
Operation Retry Interval (sec)	10
Maximum Operation Queue Length	1,000
Priority Increment Period (ms)	250
Operation Queue Priority Count	20

Figure 5 - File Logger: Logger

Master Logger Configuration Settings

- *Alternative Data Index Directory* – specifies an alternative directory path used to store data indices
- *Archive Data Store Directory* – specifies the directory path used to store archive data
- *Data File Extension* – specifies the extension for logged data files; the default is "hhi"
- *Data Store Directory* – specifies the directory path used to store logged data
- *Index File Extension* – specifies the extension for index files; the default is "hhd"
- *Master Logger Directory* – specifies the directory path for master logger
- *Master Logger File* – specifies the path name of the master logger binary file
- *Maximum Online Loggers Count* – specifies the maximum count of online loggers allowed
- *Maximum Inactivity Period (min)* – Specifies the maximum inactivity period allowed for master logger
- *Operation Retry Time* – specifies the time interval to re-execute a failed operation by master logger
- *Enable Auto Attach/Detach* – Specifies if automatic attach/detach feature is on.

Master Logger	
Alternative Data Index Directory	
Archive Data Store Directory	
Data File Extension	hhd
Data Store Directory	
Index File Extension	hhi
Master Logger Directory	
Master Logger File	Datastores.bin
Maximum Online Loggers Count	10,000
Maximum Inactivity Period (min)	10
Operation Retry Interval (sec)	10
Enable Auto Attach/Detach	☒

Figure 6 - File Logger: Master Logger

Logger Data Store Configuration Settings

- *Data File Buffer Size* – specifies the size of the data file buffer
- *Data Slot Size* – specifies the size of the data slot
- *Index File Buffer Size* – specifies the size of the index file buffer
- *Index Slot Size* – specifies the size of the index slot
- *Value Reservation* – specifies values reservation as a percentage
- *Value Split Size* – specifies values split size as a percentage

Logger Data Store	
Data File Buffer Size (KB)	5,120
Data Slot Size (KB)	4
Index File Buffer Size (KB)	512
Index Slot Size (KB)	8
Value Reservation (%)	5
Value Split Size (%)	60

Figure 7 - File Logger: Logger Data Store

Master Logger Data Store Configuration Settings

- *Data File Buffer Size (KB)* – specifies the size of data file buffer
- *Data Slot Size (KB)* – specifies the size of allocation unit
- *Index File Buffer Size (KB)* – specifies the size of the index file buffer
- *Index Slot Size (KB)* – specifies the size of the index slot
- *Value Reservation (%)* – Specifies values reservation as a percentage.
- *Value Split Size (%)* – Specifies values split size as a percentage.

Master Logger Data Store	
Data File Buffer Size (KB)	5,120
Data Slot Size (KB)	4
Index File Buffer Size (KB)	512
Index Slot Size (KB)	4
Value Reservation (%)	5
Value Split Size (%)	60

Figure 8 - File Logger: Master Logger Data Store