OpenBSI Harvester

OpenBSI Harvester is a powerful add-on to the OpenBSI Utilities suite that enables you to collect historical data at scheduled intervals from ControlWave RTUs, PLCs, controllers, and flow computers. The collected data is then stored in a historical database in your PC.

It may be used in either hard-wire, telephone line, or radio applications. Data array, archive, audit trail, and real time values in signal lists may be collected from the controllers, RTUs, and flow computers, at a user-defined scan interval. User-configurable parameters allow the data collection schedule to be tailored for applications. In addition, any of the data may be collected on a demand basis.

Data Array Collection

Data array collection supports all four array storage methods available in ControlWave products, in addition to lists and archive data.

- Raw Data Storage Arrays – contain non-timestamped date in tabular form
- Storage Array without wrapping – Push down array with time stamp in column 1
- Storage Array with wrapping – Circular array with time stamp in column 1
- Multiple Array – Typically used for storage of multiple days of hourly data

Features

- Add-on to OpenBSI Utilities.
- Compatible with Windows XP and 7.
- Compatible with all ControlWave RTUs, PLCs, and flow computers.
- Collects historical data array / data archive, audit trail, and real time signal list data at scheduled intervals or on demand.
- Works with hard-wire, dial-line and radio networks.
- Export capability via OpenBSI Data Converter to CSV and ODBC compatible file format.
- Synchronizes collection schedule with radio turn-on time allowing reductions in radio power consumption.
- Monitor Tool shows detailed information on communications, status and errors.
- Can activate polling for individual nodes, and put nodes into maintenance mode.

Historical Archive Collection

Historical Archive, while still an array format, is the newest and preferred method for storing distributed historical data. The archive file can be either periodic or non-periodic. Each column is associated with a variable and can have a descriptive title for display e.g. Primary Flow, etc. Each row is a time-stamped sample of the data. Time stamps are reported with a resolution of 4 seconds.

The actual data values can be instantaneous data or automatically calculated data such as:

- Total
- Average
- Square Root
- Average of square root
- Mean
- Maximum or Minimum
- Integral

Historical Archive

Audit

The historical Audit storage and collection system provides a record of significant time-stamped alarms and events that are logged to one or more Audit files in the PLC, RTU, and Flow Computer. The alarms stored in the Audit file provide a historical record in addition to the real-time alarm reporting for the HMI system in the PC. The audit file contains the following parameters.

- Time stamp
- Reason for the event record
- New value
- Old value
- Variable name

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Process Management

The Harvester collects the Audit file and saves it to a text file in the specified directory on the host PC.

Audit Storage and Collection System

Data Collection Intervals

During system configuration, a time interval is defined which specifies how often data must be collected from all the controllers, RTUs, and flow computers in the network. For each array, list, audit file, and archive a start collection time and repeat interval is entered to establish the collection time for each file.

Harvester is particularly suitable for large wide-area networks in which the RTUs and flow computers contain the same data formats and configuration, are geographically separated from the OpenBSI workstation, and the only communication link available is via radios. A reduction in radio power consumption, a significant factor particularly in solar powered sites, may be achieved by synchronizing radio turn-ON times with configured Harvester collection times. User-defined ACCOL logic provides the synchronization at the RTU or Flow Computer.

Highest Historical Data Integrity

The Harvester can make intelligent decisions about data collection based on changing conditions in the network. Only new data since the last valid collection is collected eliminating the need to gather all data at each interval. If data is missed, due to a communication failure or if the host PC is down, it is collected when communication is re-established and the PC historical database is automatically populated with the missing data.

If communication conditions are poor, and not all data could be collected during a scheduled collection interval, the Harvester will alter its collection to allow any missed data to be retrieved when conditions improve. In this Stagger Mode, nodes will automatically be assigned an additional scan interval within the overall scan period for collection of the missed data. In the event communication conditions deteriorate (radio problems, network bottlenecks) the Harvester contains built-in intelligence to collect less data from certain active nodes, and then to pick up any missed data from them on a later collection pass, when conditions have improved.

This distributed historical database provides the highest degree of data integrity.
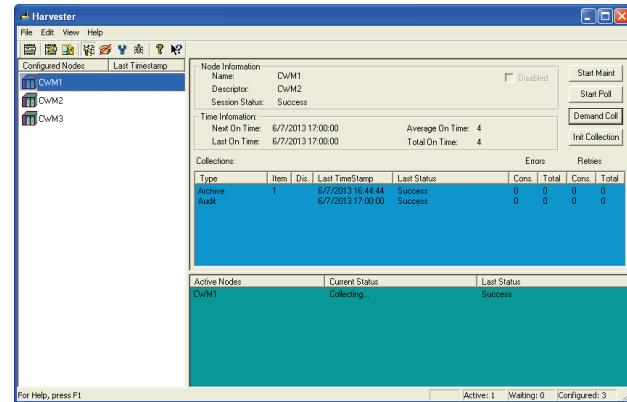
Harvester Collection Information Display

Node Information

- **Name** – This is the controller's node name.
- **Descriptor** – This is a textual description of the controller.
- **Session Status** – 'Success' indicates collections are occurring without errors.
- **Disabled** – This will appear checked, if collections have been disabled.

Time Information

- **Next On Time** – This is the *next* time that the Harvester will attempt to collect any data from this node.
- **Last On Time** – This is the *last* time that the Harvester attempted to collect any data from this node.
- **Average On Time** – This is the average time (in seconds) that the Harvester requires to collect all necessary data from this node.
- **Total On Time** – This is a running total of the amount of time (in seconds) that the Harvester has been in communication with this node.

Collections

- **Type** – This indicates the kind of data being collected. There are seven collection types: 'Archive', 'Audit', 'List', 'Raw', 'Wrap', 'Push', and 'MWrap'.
- **Item** – This is the number of the structure being collected, i.e. the array number, the archive number, or the signal list number.
- **Dis** – Indicates collection has been disabled.
- **Last Timestamp** – This is the timestamp collected.

- **LastStatus** – 'Success' indicates the collection occurred without errors. Any other message indicates an error.
- **Errors-Cons** – This is the total number of consecutive errors received.
- **Errors-Total** – This is the total number of errors received.
- **Retries-Cons** – This is the total number of consecutive communication retries.
- **Retries-Total** – This is the total number of communication retries.

Data Converter Utility

The Data Converter Utility periodically looks for new files collected by the Harvester. When new files are found the Converter combines the files and appends them to the end of the previously collected data. The new data is automatically added to the previous data. The Converter also exports the data to the following file formats:

- Comma-Separated Variable (CSV) – suitable for import by Microsoft Excel
- Access Data Base (ODBC) – compatible with ODBC compliant applications
- Flow-Cal – Costal Flow Measurement Inc. gas flow analysis and editing software

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