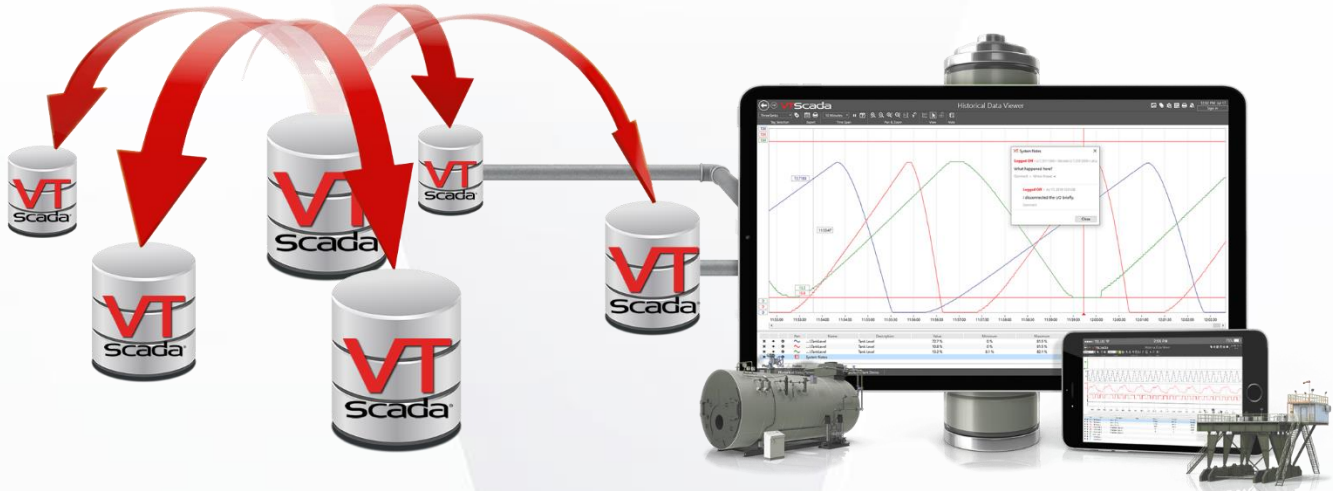POWERFUL

VTScada®
by Trihedral

Historical Data Management and Trending
Standard Components

A world-class historian that protects your data and puts it to use across your organization

Available at no extra cost, the VTScada® Historian is an integrated component requiring no configuration or database management.

Real-time synchronization ensures your history is safely distributed across all redundant servers.

Developers can fold logged data into a variety of user interfaces while operators can create their own ad-hoc trends and reports.

VTScada easily shares data with third-party business platforms. It can even import the history from your old legacy system.

The VTScada Historian
The only database specifically designed for SCADA

Most SCADA platforms require a third-party database to store logged data. These products were designed to be generic tools used in almost any field such as accounting, academia, or sales management.

Only VTScada includes an Enterprise historian designed specifically for SCADA applications. In addition to being fast and compact, this approach makes it possible to easily scale your application from a few hundred tags to a few million. There is no need to upgrade your simple "starter" database when your system starts to grow.

This pre-configured historian vastly reduces integration time and eliminates the need to separately license and support third-party products. Best of all, each configured redundant server automatically contains an up-to-the-second backup of the whole database.

3rd Party Databases via SQL → Manual Data → I/O Tags → **VTScada** ← Calculations Totalizers Counters ← Alarms ← Electronic Operator Logbooks

Log data from multiple sources based on triggers

Data is stored directly to the Historian at the time of trigger occurrence, eliminating any need for separate real-time and historical databases. VTScada can log on change, on related event (can be used for disable/enable), on time/sample period, or on operator actions (e.g., manual data entry, setpoint change, or control action).

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Summary, on-demand data

Upon request, the Historian analyzes raw tag data and provides time-series summary data, based on a user-definable duration divided into time slices.

- Time-weighted average (analog)
- Minimum (analog)
- Maximum (analog)
- Change in value (analog)

- Value at start (analog)
- Time of Minimum (analog)
- Time of Maximum (analog)
- Totalizer (analog)

- Interpolated (analog)
- Diff between start and end (analog)
- Zero to non-zero transitions (digital)
- Non-zero time (digital)

Multiple Historian configuration

Historical Data Synchronization

VTScada supports any number of historians for a single application. Each one can be configured to store data for a different geographical and functional area. Each tag may store data to one Historian. VTScada also allows you to configure redundant third-party relational databases such as Microsoft SQL, Oracle, and MySQL. These must each be separately purchased, installed, supported, and backed up as per their respective manufacturers' instructions.

Redundant Historian configuration

Thanks to VTScada's integrated design, every application server can host its own Historian. Each data point is stored identically on each one. Redundant Historians can also include third-party formats. For example, the primary and secondary could be the native VTScada Historian while the secondary backup could be Oracle.

Redundant Historians may be co-located with the Primary or geographically separated provided an IP connection exists between them.

Bi-directional synchronization

Redundant Historians use the same schema. VTScada uses timestamps to ensure that each data-point is identical down to the millisecond. Should the primary database server fail, associated workstations and Thin Clients seamlessly switch to the next designated database.

When restored, historical data automatically synchronizes across a local or wide area network at up to 160,000 values per second. This speed is automatically throttled to avoid interfering with real-time communications. If servers become isolated from one another, they will continue to log their own local I/O and automatically sync once their connections are restored.

Long-term data storage. No more archiving.

Data archiving was traditionally used in long-term historical data storage to mitigate limited drive space, and to provide a form of backup. VTScada makes this unnecessary. Its efficient storage format packs more data into every megabyte of hard drive space compared with other standard database formats.

Using redundant Historians, as described above, is a far more robust backup methodology. Logged calculated values do not count against the licensed tag count.

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Secure historical data

VTScada's Historian cannot be edited within VTScada or by third-party software. The proprietary log files are not human readable. VTScada uses a checksum to detect tampering or corruption. Note: If you are also logging to a redundant third-party database you will need to secure it as per the manufacturer's instructions.

Historical data editing

While the Historian cannot be altered, it is possible for authorized users to override individual or ranges of logged values. This is a helpful way to fix incorrect or missing values. Edited values are marked in the Historical Data Viewer along with a required explanatory note. Overwritten values are not lost.

History data import from CSV files

When replacing a SCADA application of a different software brand, VTScada helps you maintain a complete view of your process history, allowing you to import the historical data from your legacy system. Consult VTScada Help for information on formatting files for import.

Simple Historian status monitoring

The Historian Status Monitoring Widget provides instant status of write and storage rates. When write rates exceed storage rates, data is automatically buffered and written in burst mode when the Historian connection is available. VTScada write rates have been tested to 4,000 values per second for a single tag, thus buffering is usually the result of a slow network, underpowered CPU, or slow storage media.

Historian Status

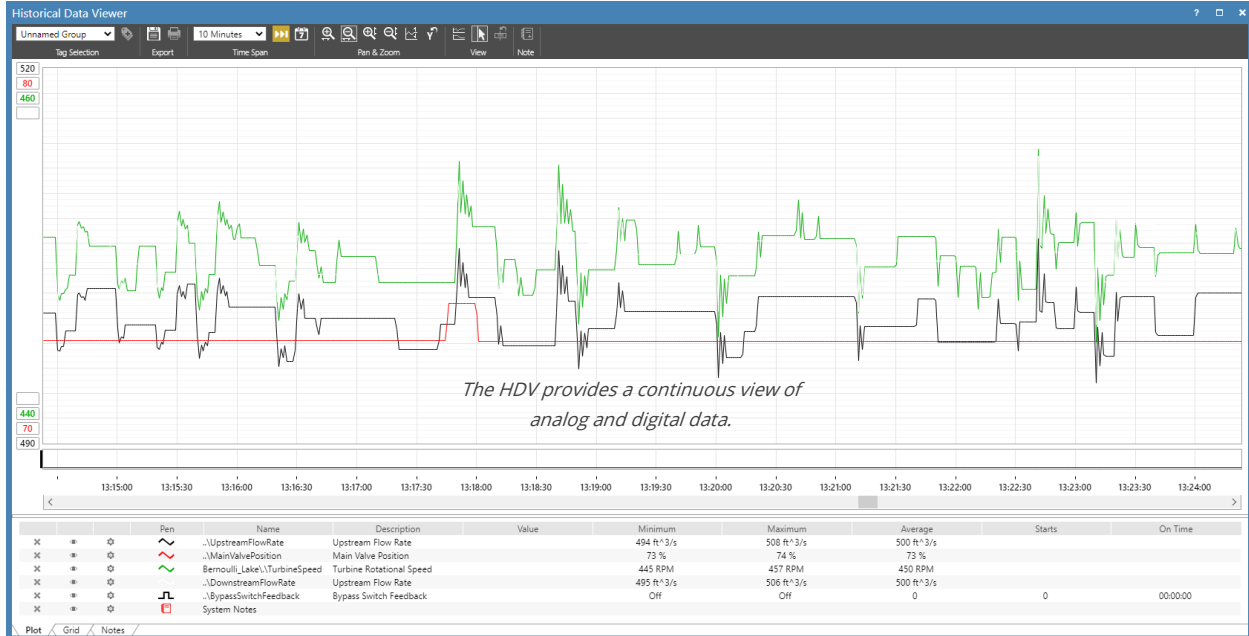| Name	Current Server	Connection Status	Queue Length	Write Rate	DB Store Rate	Service Status ▲
SystemAlarmHistorian	LAPTOP 1	Connected	0	0	0	Ready
SystemHistorian	LAPTOP 6	Connected	0	16	16	Ready

Sharing Historian Data with Third-Party Platforms

VTScada makes it easy to share real-time and/or historical data with third-party software platforms via these industry standard protocols and methods.
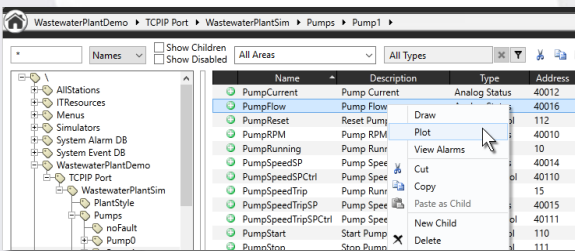
- **OPC Server** - Allows OPC-compliant programs (including other VTScada applications with OPC clients) to exchange live data with standard VTScada applications.

- **OPC Client (DA & UA)** - Allows VTScada applications to exchange live data with an OPC-compliant server (including VTScada applications with OPC servers).

- **ODBC Server** - Allows you to use popular software like XLReporter®, Dream Report®, Crystal Reports®, Access®, or Excel® to extract VTScada system data. VTScada acts as a database where each logged tag represents a table of timestamps and values that reporting software can query to retrieve logged values.

- **REST & WEB Services** - VTScada's REST and SOAP (XML) interfaces allow business systems to request real-time and historical data. They support time/date ranges, min, max, time of min, time of max, average, total, and SQL that include SELECT commands and WHERE clauses.

- **Third-Party Reporting** - Third-party reporting products, such as e.RIS®, XLReporter®, and Dream Report®, have integrated VTScada interfaces.

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The VTScada Historical Data Viewer (HDV)
A powerful trending tool that any operator can use.

The HDV provides a continuous view of analog and digital data.

The VTScada Historical Data Viewer (HDV) is just one of the ways operators can interact with their application's process history. This standard interface provides a continuous view of historical and real-time data on a single timeline. It can include both analog and digital I/O values. Move the Marker Line horizontally to see continuously updated values for each plotted analog tag at every selected timestamp. Icons in the Pen Legend below allow you to hide pens (tags) or edit their appearance.

Plot tags right from the VTScada Tag Browser.

See raw values in the Grid View tab of the HDV.

Instantly intuitive trending designed for operators

In addition to the standard page, you can also configure the HDV as a pop-up display or as an embedded trend group on custom pages. Best of all, operators can create and save their own ad-hoc trend groups with just a few clicks.
They can also trend values right from the tag browser, or alarm page (image above left).

HDV tabular view

HDV data may also be shown in time-series tabular view (image above right), as raw data to the nearest millisecond, or as ave, min, or max values. Additionally, to facilitate time-sliced viewing, a total period may be selected, and then further time-sliced to display summary data for each period. For example, 24 hours of data may be shown as 24 separate rows of one-hour averages for a selected set of tags.

Download the 90-day Trial
VTScada.com/trial

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