CitectHistorian Technical Overview

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A powerful plant-wide reporting tool that delivers business critical data for real-time decision support



Schneider Electric

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1/1/2011 12:00:00 AM 1/2/2011 12:00:00 AM

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At a glance

- Integrates tightly with your CitectSCADA system. The data collected in CitectHistorian includes any tags within the control system, and alarms and events from SCADA systems.
- Can be automatically configured and synchronized with your CitectSCADA system for reduced setup costs and maintenance
- > Utilizes Microsoft[®] Office Excel[®] for simplified, ad hoc analysis and basic reporting
- Incorporates Microsoft SQL Server[®] 2008 R2 as the embedded data store
- > Powerful, easy-to-use reporting tools
- Intuitive visualization tool, Process Analyst, to easily view and analyze plant processes on a single, integrated display
- Out-of-the-box sample reports, such as alarm management reports based on EEMUA 191 guidelines, and energy reports
- Open technology bridges plant to business divide
- > Easy to install, configure, use and maintain
- > Improves plant efficiency with better access to information for effective decision-making
- Reduce costs through the use of open, standard technologies and desktop applications
- > Integrates with existing ERP/MES systems

Your data - how you like it

In the demanding world of continuous process control, accessing accurate and timely plant data is crucial. As your systems grow, so does the volume of process data and the demand to translate it into relevant and actionable information for operations and management staff. Yet too often, organizations struggle with connecting and retrieving the relevant information from their plant and IT systems. When they do succeed, often managers cannot make effective use of the core manufacturing data, essential for controlling operating costs, because the data is too complex.

CitectHistorian helps your plant and IT personnel to optimize operational efficiency by providing a powerful, plant-wide reporting tool that collects, and delivers meaningful reporting data from multiple, disparate systems. By using the information provided by CitectHistorian, you will be able to make more effective decisions toward optimizing operational performance.

Comprising of historian and client functionalities, CitectHistorian enables you to accurately store data for long-term reporting while also giving you the option of visualizing and accessing the information through the CitectHistorian client, Microsoft Excel or Reporting Services.

CitectHistorian improves production reporting and ad-hoc analysis by connecting, aggregating and presenting real-time information from multiple disparate systems throughout the plant, allowing corporate, IT, plant and production managers to make more informed and timely decisions.

Based on open, standard technologies, CitectHistorian integrates your plant and business information systems to facilitate improved decision-making, leading to increased production and profitability.

An inclusive, secure and open platform, CitectHistorian allows controlled access to both plant floor and business database information by any division within your organization, and in a context that is tailored to each individual

Using familiar, easy-to-use tools and processes, production, quality assurance, maintenance and sales can access the latest information using a wide selection of viewing clients.

Link every aspect of your business, from the plant floor right through to remote web clients, without disrupting the daily running of the plant.

Connect

CitectHistorian connects people to information throughout the plant from multiple sources, including production control and business systems.

Reporting and analysis

Production data is transitory, changing state in real time rather than the hourly resolution with which business users are familiar. CitectHistorian captures and stores transitory data for reporting and analysis.

Present

Whether you need to analyze your productivity information in a spreadsheet or distribute it across the Internet, CitectHistorian produces accurate historical reports visible through your web browser, exportable to Microsoft Excel, Word or in PDF format.

What is CitectHistorian?

Historian

CitectHistorian provides an integrated long-term data archiving mechanism designed to store information from multiple disparate SCADA systems. The data store is an embedded Microsoft SQL Server 2008 R2 and can persist thousands of changes per second to the database (depending on hardware and configuration).

A relational database is well understood by both IT and production staff. It can be easily secured to control access to the historian data based on user security and is likely to be similar to existing systems on site. It reduces the friction between groups and the amount of maintenance or in-house knowledge that needs to be retained.

The historian collects all changes in the process tag values, as well as alarm activity, from each control system. Each change is saved with a timestamp and quality stamp.

The historian supports redundant control system links. In the event that one link fails, the historian will request the data from the other link to the control system. In the event that the network link to the historian fails, the historian will backfill from the control system's trend and alarm systems to acquire data that it could not acquire in real time.

The historian compresses data by saving only changes in values. For each tag, a deadband is available that will enable small ripples or insignificant changes to be filtered from the data that is stored. To calculate the exact disk requirements, CitectHistorian provides performance counters that show the number of changes that occur per second and the number of samples logged per Auto Configure Rep second to the database.

The historian leverages the security of SQL Server to enable the user to secure each table, view and function within SQL Server.

The advantages of storing data directly in a SQL Server are evident when accessing the data from external applications. The large number of applications that have SQL connectors assists in making sure your data will be available in most of the applications that you require.

Configuration of Data source: lo

Equipment Hiera Attribute Name

Cluster 1.Bottler Cluster 1. Bottler Cluster 1. Bottler Cluster 1. Bottler Cluster 1.Bottler Cluster 1.Bottler Cluster 1, LOOP Cluster 1.LOOP_1 Cluster 1.LOOP Cluster 1.LOOP_4 Cluster 1.LOOP Cluster 1.LOOP_5 Cluster 1. Mixer Cluster 1. Mixer_C Cluster 1. Mixer L Cluster 1. Mixer L

CitectHistorian vs. Proprietary

	Proprietary Solution			
Total Cost of Ownership	~	Low	×	High
Complexity	~	Low	×	High
Openness	~	High - Microsoft SQL Server	×	Variable
Integration with other systems	~	Easy and minimal cost	×	Difficult and costly
Upgradability	~	With Gold level support contract	×	Not easily available
Scalability	~	Easy	×	Limited
Training required	~	Minimal	×	Time consuming and costly

Configuration

Setting up your historian has never been easier. CitectHistorian integrates with your CitectSCADA system to automatically configure itself with the tags, trends and alarms that were identified for historization when setting up your SCADA system. It organizes these tags by historizing and publishing them in the same equipment hierarchy already set up in SCADA, even further simplifying initial configuration.

As your SCADA system evolves, you can synchronize changes either manually or programmatically to ensure that your historian is always up to date.

For OPC[®] data sources, the same simple drag-and-drop interfaces are still available to help you arrange your data the way that you like it.

Data logging

Connections to CitectSCADA control systems are made through the CitectSCADA interface CtApi, polling at a rate that is defined at each data source. CitectHistorian acquires data from external SCADA systems via OPC V2 and OPC V3 Servers by subscribing to each tag and storing the changes. Data is stored in the database, along with meta-data describing the individual tag properties and quality for each sample.

anges				
alhost				
hy Historize				
	Attribute Type	Current	New	*
atch_ID	Tag		TRUE	
apConveyor_ON	Tag		TRUE	-
onveyor_ON	Tag		TRUE	
onveyor_Speed	Tag		TRUE	
roduction	Tag		TRUE	
ank1_Agitator_ON	Tag		TRUE	
ank2_Agitator_ON	Tag		TRUE	
PV	Tag		TRUE	
SP	Tag		TRUE	
PV	Tag		TRUE	
SP	Tag		TRUE	
PV	Tag		TRUE	
SP	Tag		TRUE	
itator_ON	Tag		TRUE	
ocFeed_ON	Tag		TRUE	
e1Flow	Tag		TRUE	
e1Pump ON	Tao		TRUE	*
				•

CitectHistorian can be set to automatically configure itself with the tags, trends and alarms that were identified for historization when setting up your CitectSCADA system. When Automatic Configuration is run, a report of the changes that will be reflected in the Historian will be displayed

High performance

CitectHistorian Server

clicks to install, set up and view your data.

Configuration Manager

> Plant control system connections

> Database connections

> Security access

> Viewable (published) data

> Logged data (historian)

and publishing them.

including:

> Tasks

> Events

Reliability

CitectHistorian supports redundant connections to SCADA servers, with typical failover times of less than one second. In addition, if the historian is stopped, or there is a network failure between the historian and the SCADA servers, data is automatically backfilled from the SCADA trend system, if configured, enabling data continuity and quality.

Information any time, anywhere

Making data available to the right people anywhere and at any time is not simply about placing data within the database. It's about exposing the data in the correct clients and format for the user to be able to easily access and understand.

The CitectHistorian client for Microsoft Excel provides engineers and operations managers with the calculation tools they need to model and analyze production.

With a simple and intuitive interface, the client is designed to take full advantage of the advanced features of Excel to quickly and easily filter, sort, and analyze your historian data.

With historian now organised with a rich equipment hierarchy, the user can browse and filter published tags and create multiple profiles of data in Excel to easily capture comparisons between shifts, days weeks, batches etc.

The Historian Web Client provides maintenance engineers with a fast way to analyze trend and event data. The Web Client is a flexible means for them to compare real-time and historical data within one interface.

Managers often prefer their data to be presented graphically, with the ability to drill down for more detail into any results that may appear to be out of the ordinary. By utilizing Microsoft Reporting Services, they get a high quality reporting system that allows them to also customize reports for any of their process application.

Fast return on investment

CitectHistorian is a low-risk, low capital investment, open system that is easy to configure and maintain. It is a key enabler of operations optimization, and by leveraging and supporting common Microsoft technologies, return on investment can be realized in a short amount of time.

Optimize operational performance

CitectHistorian offers powerful performance with high data integrity, fast active data transfer rates and changes per second and unrivalled functionality - helping you get the data you want, in the format you want, when you want it. When used effectively, it becomes a key tool in in the optimization of operational performance.



CitectHistorian architecture: Connect your production and business systems

CitectHistorian has allowed us to separate the reporting functionality from our SCADA system, and manage our reporting and control environments completely independently, thereby vastly reducing the level of manual intervention required for continuous customization of reports.

Process Systems Team Leader, Tomago Aluminium Australia



At a glance

- CitectHistorian Server
- > Publishing data > Plant floor
- connections
- Business system connections
- Simple integration
- with other Schneider Electric products
- through EcoStruxure
- Web Services (EWS)
- > Logging data
- > Security control
- > Data transfers > ActiveX[®] scripts
- > High speed data acquisition and
- logging OPC quality status
- and sub-status flags
- Deadband compression

The CitectHistorian Server supports connections to both Microsoft SQL Server and Oracle® databases. Once the database data source is created, it will automatically load the table structure. You can then start using this database.

Database connections

Plant floor connections

Two typical requirements include:

- > Data archiving
- > Plant control system connections integrating plant floor data with existing third-party applications or ERP systems

The CitectHistorian Server lets you decide what data you need without interfering with the running of the plant, and you don't need to be an expert in Microsoft SQL Server. CitectHistorian requires only a few mouse

The CitectHistorian Server Manager is used to configure various aspects of CitectHistorian,

The CitectHistorian Server connects to one or more plant control systems. When connecting to CitectSCADA 7.30, the Historian will automatically configure the tags, trends and alarms, by historizing

Microsoft SQL Server historian

CitectHistorian utilizes Microsoft SQL Server 2008 R2 as its embedded historical data store. This industry standard bridges the gap between plant and business systems through a common server which is well-known and trusted among IT professionals. Additionally, its open, industry-standard technology and trusted security integrate effortlessly into your business and, with Microsoft Office, lowers your total cost of ownership. The simple roll-out of familiar Microsoft SQL technology results in reduced installation costs and little or no training time and expense.

Enterprise Edition of SQL Server 2008 R2 is also supported. Users wishing to use the Enterprise Edition can also benefit from data compression. This not only helps to reduce the size of the database, but because compressed data is stored in fewer pages, queries read fewer pages from the disk. Tests have indicated approximately a 43% compression ratio on process data. Enterprise Edition is not shipped with CitectHistorian and needs to be purchased from a third party.

Using the power of Microsoft SQL Server, information from plant systems and business applications is interconnected to provide you with a single view of the enterprise using industry-standard reporting tools. You can share files, email PDFs or use the web portal. This enables personnel at all levels to see where changes could be made to improve operations

Universal connectivity

OPC HDA Server

OPC HDA Server is offered as standard protocol for CitectHistorian, closing the gap between systems by freely connecting to Manufacturing Execution Systems (MES), such as Schneider Electric's Ampla[™] product. This connectivity can help deliver a fully integrated solution, allowing you to benefit from the latest product and services innovations from a single provider.

OPC DA Client

CitectHistorian supports data acquisition from OPC DA Clients. OPC DA is an industry standard protocol that allows you to connect to any third-party SCADA system, so that your Historian can provide complete storage and analysis requirements.

OPC DA Client is configured as a data source in CitectHistorian, which enables you to specify a redundant OPC Server per data source. The OPC DA data source connects to OPC DA V2 & V3 compliant devices, allowing you to obtain data from any SCADA system.

Device

Seamlessly Connect Production and Business Systems

CitectHistorian is one of the industry's most open historians, designed to help you improve plant operation and management.

By using industry-standard protocols, this integrated decision analysis solution will help bridge the gap between production and business systems. Consequently, companies are better able to analyze performance and more effectively manage ever-changing market demands.

This open architecture allows you to extract maximum value from the huge volumes of process data and realize benefits such as:

- Reduction in project engineering costs and implementation times, with an improved interface that enhances visibility
- Reduction in maintenance costs, with one standardized connectivity platform replacing multiple project solutions
- Reduction in the load on systems, enhancing asset optimization
- Assists in achievement of compliance with industry standards via defined best practice implementation processes
- Fully integrated systems, with plant and corporate data more readily combined and available, enabling timely business decisions
- Freedom to access manufacturing system data through a single point to business applications
- Secure, long-term storage of data in a standardized format



CitectHistorian's open connectivity extends to any third-party SCADA system and even to the device level, providing you with a complete picture of plant data sources.



Historian architecture

Configuration data

Configuration data is stored in a Microsoft SQL 2008 R2 database. The configuration manager creates a registration to this database, and reads and writes the configuration data to and from this database. The Backup and Restore utility can be used to manage the storage of all configuration data to a file for use at a later time. This is useful when upgrading, or to take a snapshot of the project for use later on.

Historical data

Historical data is collected from the SCADA and OPC production data and stored in the Microsoft SQL historian database when the historian data service is running. This database is separate from the configuration database and can therefore be run on a separate machine and maintained separately. There are two modes of data acquisition. The default is real-time acquisition, whereby the data source is polled every poll period (default setting: one second). If the variable's value has changed by more than the deadband, then a new sample with the data service's timestamp will be logged to the historian database.

The other mode is trend data acquisition. This mode allows data collection from scheduled I/O devices such as Remote Terminal Units (RTU). However, it can also be used where it is preferable to request data from the trend server rather than from the SCADA system's I/O server. RTU devices periodically update the SCADA system with their data. In this mode, the historian data service requests the trend data from the SCADA system every 10 minutes by default. If there are changes since the last known good sample, data from the trend system is logged to the historian database. This mode only applies to SCADA data sources and not to OPC data sources.

Alarm data is requested by default every five minutes and changes will be logged to the historian database.

OPC data sources have an update rate which can be set per data source or per tag. This is similar to the poll period for SCADA data sources. However, since OPC uses a "publish and subscribe" model, it sets the minimum period in which the historian data service is notified of changes.

Report data

Reports in historian use Microsoft Reporting Services, a standard component of Microsoft SQL Server. The Reports Deployment Manager is an application in the historian used to select the historian database, the data source for the reports. It also deploys the reports to the reporting database. Reporting services will manage the data retrieval, rendering, scheduling and delivery of the reports. The report templates available in this pack can be used to generate alarm and energy reports, as well as some standard and developer reports for more generic applications. All of these templates can be customized in Visual Studio[®] as required. Deployed reports can be viewed in the Reports Deployment Manager or via the Reporting Services Report Viewer.



Data analysis

Powerful reporting

Creating professional reports and delivering them to the correct people is simplified with CitectHistorian. It uses the graphical query builder and report generation capabilities of Microsoft Reporting Services to deliver drag-drop-and-click reporting of any historical data from the historian.

With CitectHistorian, you can produce a range of reports using a convenient built-in historian in the familiar, open Microsoft user interface which only an embedded Microsoft SQL server makes possible. The combination of the powerful reporting tool and Process Analyst makes it easier for you to make sense of the vast volumes of generated data. The reports can be built using stored procedures and (table value functions) that are defined within the historian database, or can be directly driven by the data in the historized tables.

The stored procedure interfaces enable the data, which is stored

only when the data changes, to be returned as a set of time-series data (e.g. 30 second averages). The data can be based on raw values or by interpolating between recorded values.

The table value functions also process the raw data with a focus on enabling the data to be grouped. Reporting often requires the maximum of a variable during the production of a product or the total for a set of production runs, or even just the runtime for a device (or all devices) within the system.

These views allow the user to query statistical data, including maximum, minimum, average, total, count or on-time of any variables or conditions. These values can be grouped by time, the value of a tag (such as a batch ID), an event (such as a pump running) or by an alarm (allowing reports for the data preceding each occurrence of an alarm). Views can also provide an alarm summary and alarm event lists.

Reports are generated using Microsoft Reporting Services. By using an industry standard report generation tool. CitectHistorian reduces the cost of report development training. Reporting Services provides templates for report design, a drag-and-drop environment to extend the base reports and a full-featured reporting system compatible with every other major business.

Once generated, reports are deployed to the CitectHistorian server and scheduled to run based on an advanced scheduler. Scheduled reports can be sent to managers by email or recorded in a file share. In either case, the user is able to select to receive the report as HTML, PDF or an Excel spreadsheet. In this way, reporting data can act as a secure record or as a starting point for more detailed plant analysis.

Reports are also accessible via web browser. This enables them to be integrated into the CitectHistorian Web Client, CitectSCADA or any corporate reporting system.

Reports are enhanced with advanced charting controls and gauges facilitated by Microsoft SQL Server 2008 R2.

Alarm rationalization and alarm management reports (EEMUA 191 quidelines)

Alarm systems have long been an intrinsic part of plant safety management. They play a critical role in alerting operators to a change in operations at a process plant; inform operators about the nature of the change; and guide operators to implement corrective action

Poor alarm management can result in:

- > Increased downtime
- > Reduced plant productivity
- > Reduced quality
- > Reduced operator effectiveness
- > In the worst-case scenario, serious industrial accidents
- > Increased insurance premiums on plant equipment or fines

CitectHistorian, the plant-wide reporting tool, is capable of accurately recording all alarm data and tag values at high speed. Such a tool can help engineers and operators gather and organize alarm data from across their entire site.

Alarm management is a set of procedures, practices, tools and systems that jointly assist in making sure a plant's alarm system is effective throughout the life of the plant. CitectHistorian provides pre-configured alarm rationalization reports based on the EEMUA (Engineering Equipment & Materials Users Association) 191 alarm management guidelines.

With alarm management reports, operators are provided with more meaningful and actionable information. The reports are designed to improve the average and maximum number of alarms per hour, operator response times, usability and relevance.



CitectHistorian centralizes the data for energy usage and provides analysis tools to easily identify the causes of excess energy consumption or peak demand in real time.







Comprehensive energy reports to manage energy

Schneider Electric's Energy Management offer delivers a unique and effective approach to energy efficiency, connecting automation and control with energy monitoring to optimize energy consumption. By delivering reliable, accurate energy consumption data in context with production variables, customers gain insight into the efficiency of the operating environment while effectively removing energy waste in the process.

Today's plant historians can play a key role in energy management initiatives. By capturing energy-related information, users can better understand energy usage over time and have a way to gauge whether agreed energy management procedures are being followed.

Plant historians can be used to identify inefficient plant equipment or processes, diagnose unexpected anomalies in power usage and make real-time adjustments to optimize energy efficiency and save costs.

CitectHistorian comes with ready-to-use energy reports that can facilitate energy consumption assessment and potential savings across the equipment level, production lines, an entire plant or multiple sites.

The historian centralizes the data for energy usage and provides analysis tools to easily identify the cause of excess energy consumption or peak demand in real time. A simple analysis of consumption over the past five days, the past five Mondays or the equivalent day in the previous year could provide valuable clues to the causes of changes in energy consumption. Also, by overlaying different time periods, changes in consumption become easily apparent.



Data analysis cont.



At a glance

CitectHistorian is designed for high performance, longterm data archiving:

- > Engineering value precision
- > OPC quality flags

> Sub-second acquisition rate

- > Sub-second failover rates
- > Backfilling capabilities
- > Client access through CitectHistorian Server

Reporting data sources

- > CitectHistorian
- > SQL Server
- > OLE-DB
- > ODBC
- > Oracle
- > Web Services

Reporting output formats

- > HTML
- > PDF
- > Excel

Reporting delivery

- > Email
- > File Share
- > Web portal

With Microsoft Reporting Services and Office integration providing additional tools

Meeting regul	latory re	quire	men	ts
For data analysis to be v	alid, you need	to first be	able to	trus

ust it. The historian data collection is critical to your ability to have confidence in the results. The data collected in CitectHistorian includes any tags within the control system, alarms and events from SCADA systems and event or tag comments on any recorded data, resulting in a rich source of information for data analysis.

By using data from your control system or connecting directly to external data sources, CitectHistorian can store the complete picture and manage it for quality and regulatory requirements.

Reports Deployment Manager and Standard Sample Reports Pack

The Reports Deployment Manager delivers a standard set of pre-configured reports. Its out-of-the-box sample reports contain a collection of reports designed to meet the needs of specific industries or skill levels, simplifying alarm and tag reporting.

- > Standard reports
- > Developer reports
- > System reports
- > Energy reports
- > Alarm rationalization and alarm management reports (based on EEMUA191 guidelines)

Alternatively, you can opt to customize these reports to suit your individual requirements. We have introduced the concept of hierarchical tag grouping. Enables you to organize the data according to your business reporting requirements.

The Reports Deployment Manager is the application used to manage and implement report packages. It will:

- > Connect to CitectHistorian database
- > Install a standard sample report pack, including the new energy reports, on CitectHistorian
- > Deploy reports in Microsoft Reporting Services
- > Manage client access to deployed reports



Energy Comparison report available through Reports Deployment Manager

Process Analyst

Turning data into meaningful information

Process Analyst is an intuitive visualization tool that allows operators and process engineers to analyze the cause of process disturbances by bringing together trend and alarm data which are traditionally stored separately. With Process Analyst, a standard feature in CitectHistorian, users can simply view this data on a single integrated display.

The user is given complete flexibility with regards to the ways in which the pens can be displayed. For example, they can be overlaid or stacked or even moved to different panes to reduce clutter and make the display simpler and easier to read.

Process Analyst includes many unique features including true Daylight Savings Time support, accuracy to millisecond resolution, individual time axis per pen, customizable toolbars, rich printing and saving of display settings for easy recall.

Process Analyst helps to:

- > Identify any 'process drift' towards an abnormality which could eventually lead to breakdown or process failure
- > Link alarm spikes to specific process conditions, changes in instrumentation or new or changed control system configurations
- > Analyze operator responses to alarms as a means of detecting poor alarm system design
- > Isolate consequential/source alarms, as well as nuisance alarms





Examples of use

Root cause analysis

When a process upset or disturbance occurs, finding the root cause is always time consuming. In the past, the process engineer had to compare trend data from the screen with alarm logs. With Process Analyst, the engineer simply needs to add to the display any pen (analog, digital, alarm) that could have contributed to the process upset. Each process change can then be easily compared as alarms occur, enabling sophisticated analysis of the process upset.

Compare different batches

With Process Analyst, it is easy to compare different batches in a single integrated view. Simply place the variable tags, alarms and state changes for a batch unit on one pane, and the same set on a separate pane. Then, the operator simply has to scroll one of the panes through time. Any differences in the batch execution will immediately become apparent.

Sequence of events

With large systems, the data can be distributed around a wide area and typically the RTUs collect the data at millisecond resolution. Process Analyst displays historical alarms and trends to millisecond accuracy, making it easy to determine the sequence of events.



Process Analyst: Get the complete picture with one viewer and improve productivity.

Improve operations with Process Analyst



Trend example showing different quality attributes.

Easy to use

Process Analyst's capability to display such rich information requires it to have an easy-to-use, yet powerful navigation system. Every pen added to Process Analyst has a number of properties including:

- > Pen colour and name
- > Tag properties such as Engineering Units, Scales etc
- > Cursor values (multiple cursors are available)
- > Data average / minimum / maximum

The information available is customizable, allowing you to add or remove any of the standard column types (e.g. Engineering Units), as well as add custom columns.

Customizable

Users can select which buttons to appear on each instance of Process Analyst. The security access required can also be defined and users can add custom buttons for additional functionality.

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Data exchange and integrity check



At a glance

- > Visualize data from multiple SCADA systems in the web browser
- > Ad hoc data analysis and simplified reporting with Excel
- > Analyze and understand the cause of process upsets and compare alarm and trend data to improve efficiency via intuitive visualization tool
- > Make sense of large volumes of tag-based data with easy-to-use reporting tools
- > Transfer data between your control systems and Microsoft SQL or Oracle databases
 > Historize control
- System data into Microsoft SQL Server 2008 R2
- Report using industry standard reporting tools

Support for timestamped tag data

Typically, timestamped data is cached and pushed into a SCADA system after it has been acquired. This results in the loss of the original timestamping as the time polling takes precedence. CitectHistorian now includes a "historical" data acquisition method, that allows tag value changes to be timestamped in your historian database. Using this historical mode, data is acquired based on the last read sample time for each timestamped tag.

Support for clustered SCADA systems

Clustering refers to the grouping of server components within a single SCADA project, allowing multiple systems to be monitored and controlled. CitectHistorian will automatically detect a clustered system and indicate the number of clusters identified. Once CitectHistorian's Configuration Manager is populated with the data from a clustered system, the detected clusters appear as an additional level in the data hierarchy.

Integrity Checker

The Integrity Checker is an embedded tool that helps you verify there are no unbound SCADA attributes (variable tags, alarms and trends) located in the Published Information and Historian folders. It can be activated at any time and can also be used to check all configured tasks, events and trends under a data source node. If unbound attributes are found, the tool allows you to restore bindings on an individual or grouped basis.

Security

To allow only authorized access to the published information on the CitectHistorian Server, it is important to define who can access plant and business data and what permissions they have. It is also important that CitectHistorian sits in a secure environment in order to provide a high level of security. User access to individual data items, published folders and user Favorites can be restricted to individuals or groups.



Requirements for CitectHistorian 4.40 Server

- > 5GB disk space for full installation or 211MB without SQLServer
- > 2.4 GHz, Dual-Core Processor
- > 4GB (DDR 2) RAM
- > TCP/IP network connection (must be active)
- > SATA 1 disk speed (1.5Gb/s) 7200 RPM Drive

Recommended (15000pt Historian)

- > 2.4 GHz, Quad-Core Processor
- x64 Operating System for faster RAM transfers and expansion of memory later
- > 8GB (DDR 2) RAM
- > TCP/IP network connection (must be active)
- > SATA 1 disk speed (1.5Gb/s) 7200 RPM Drive

Supported Connectors

> CitectSCADA V7.0 or later, CitectHMI V7.0 or later, Microsoft SQL 2008 R2

Pre-load software requirements for CitectHistorian 4.40 Server

- Microsoft Windows Server[®] 2003 (SP1),
 Windows XP (SP3), Microsoft Windows Server
 2008 R2, or Window 7
- > Microsoft Internet Information Services (IIS)
- > Microsoft Message Queue (MSMQ without active directory
- > Microsoft networking or loopback adapter
- > Internet Explorer® 6 SP1 or later
- > Updates need to be installed for the above components and operating systems

Flexible configuration



Window for displaying time series data. Example shown is a histogram.

Window for displaying events and alarms. Example shown is a Pareto chart.

> Window for displaying snapshot data. Example shown is a data list.

The CitectHistorian Configuration Manager is the tool used to turn plant floor data into useful information.

Five simple steps to configure historical data in CitectHistorian:

- 1. Create Historian Data folders
- 2. Drag tags required to be stored in CitectHistorian from SCADA and OPC data sources into the Historian Data folders and start the historian service
- 3. Create Published Information Data folders
- Drag the historical data required to be viewed by clients from the Historian Data folders into the Published Information Data folders
- 5. Define the security on the published data

Data access via Web and **Excel Clients**

Applications

- > Information anywhere any time – visualize and analyze plant floor information from anywhere within the entire plant or over the Internet
- Plant-wide reporting - generate consolidated reports that include both plant floor and business information

CitectHistorian interfaces:

- > SQL Native Client
- > OLE-DB
- > ODBC
- > OPC HDA Server
- > OPC DA Client
- V2.05, V3.0
- > EWS

Historian performance Historian Poll

- > 100ns (or greater)
- > Deadbands (per tag)

Historian Data Accuracy

- > 1ns (for external timestamped data)
- > OPC Quality Flags

Historian Security

- > Windows Integrated or SQL user-based
- Secure each table, item, procedure





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Historian Client for Microsoft Excel, Historian Enquire





CitectHistorian Web Client includes a powerful built-in alarm analyze



Using configuration datasets that are now stored in a configuration table in Excel, users can create datasets for specific periods

Favorites

In CitectHistorian Web Client, user Favorites can be created simply by double-clicking on any published data item or dragging and dropping it into the Summary window. Favorites can then be saved on the CitectHistorian Server.

Security

To use the CitectHistorian Web Client, you need to first log on.

Once logged on, you can only access the published folders, data and Favorites that you have permission for.

Historian systems, like any other business system, need to be protected from unauthorized access. It is highly recommended that a secure Internet connection, such as a Virtual Private Network (VPN), firewalls and intrusion detection systems are used in order to prevent outside access to your network while you are connected over the Internet.

Web links

CitectHistorian can link directly to external websites, providing an organized structure for rapidly accessing relevant sites and information. For example, CitectHistorian information can be co-located with other pertinent intranet pages and accessed through the CitectHistorian web portal.

Additionally, you can leverage the built-in security and user validation provided in the CitectHistorian Web Client by incorporating custom .ASP pages into the tree hierarchy and security model.

Data access

The data made available by CitectHistorian is customizable to suit individual process needs. Each data item can be named appropriately for business users and located (independent of its data source) anywhere within a free-format tree structure to represent your plant or process. The available areas of this tree user can be filtered to provide users with the exact information they require.

This tree structure is used throughout CitectHistorian clients. In Excel and Web Clients, the tree enables users to easily find the data they need. The location of a device or tag within the structure can be used in a parameter to allow dynamic reporting.

Web and Excel Clients

Using CitectHistorian Web Client, you can visualize plant information from your control systems and historian over an intranet simply by using Internet Explorer. Built-in views include time-series line and XY graphs for analyzing analog values over time, Gantt charts for analyzing state changes over time, Pareto charts for analyzing frequency and duration of states, as well as data lists which allow raw plant data to be pasted directly from the web browser into other applications. The Web Client analytical tools can also be used on real-time tags to take snapshots of current values and display them as a real-time trend.

The CitectHistorian Web Client can also act as a portal to the reports generated by the reporting system. Web pages can also be integrated and viewed within the CitectHistorian hierarchy.



SCADA & MES Software **Global Support**

Optimize your investment in SCADA, MES and Historian technologies

Gold

Direct Access Support

Fast access via telephone, live chat, e-mail and Case Manager during normal business hours* to experienced Support Engineer professionals supported by a comprehensive lab where they can replicate a customer's configuration and reproduce issues experienced onsite

Online Support Tools

A dedicated area of the SCADA & MES Support website (www.citect.schneider-electric.com) gives you access to a range of support tools including: Case Manager, Live Chat, Toolbox, DriverWeb, Driver Discussion Forum, Authorization Code Generator

Product Upgrades

SCADA & MES Software Global Support will provide notification of new releases and product upgrades (available for download). Support can assist and advise on appropriate planning and risk mitigation.

Driver Upgrades

Automatic product updates keep you at the forefront of technological advancements in drivers (available for download).

Service Packs

Support customers are advised of new service packs and are provided with links to download.

Emergency Support

Emergency software patches are provided via an intensified escalation process in situations where critical issues are impacting upon customer business operations.

Customer Service Request (CSR) Resolution Workflow

A rigid framework of issue prioritization and severity ensures an appropriate management process is applied to all your issues until resolution. Prioritization is based on industry best practice.

Online Knowledge Base (KB)

Support customers can access the KB anytime for information that consistently delivers support services and resources to sustain customers' return on investment

Security Advisory Service

Users may subscribe to the Knowledge Base (KB) under Security to receive RSS feeds whenever the KB is updated SCADA & MES Software Global Support will provide proactive notification for any known Security issues that affect the Product, allowing customers to take immediate action to protect their systems.

The Insider Newsletter

Your source for the latest Support updates, new product information, technical tips and tools, The Insider is a quarterly newsletter distributed exclusively to customers in support

GoldPlus (all the above features plus)

Priority Telephone Support

24/7 priority access to the Support service via a dedicated telephone access point, minimizing the response process and optimizing resolution times. The service offers engineer call-outs at preferential rates.

Priority After Hours Telephone Response Commitment Assurance of a 15-minute response commitment on calls placed 24/7

Priority Customer Service Request (CSR) Resolution Workflow Support calls not progressed within 15 minutes for critical severity issues by the first line support engineer are automatically escalated to a Senior Support Engineer. Support calls not progressed within one day for major and medium severity issues by the first line support engineer are escalated automatically to a Senior Support Engineer

Optional Support Services (subject to additional fees

Enterprise Support

Global Enterprise Support Agreements can be set up to include any of SCADA & MES Software Global Support services. An Enterprise Support Agreement ensures a single point of management, common commercial terms and annual purchasing price reviews. Multiple global sites are covered and additional sites can be covered at any time during the Support Agreement, subject to a fee.

Specialty Driver Support

Specialty Driver Support is an add-on support service to Gold and GoldPlus Support agreements. Specialty Driver Support is required for the following licensed drivers: Bailey, IEC870-5-104, Moscad and SemAPI.

*Hours are 9am to 5pm, Monday to Friday, local time. Technical Support is provided in English only.

Service Capability & Performance (SCP)

The SCADA & MES Software Global Support organization is SCP certified so vou can be assured of quality service. SCP certification quantifies the effectiveness of customer support based upon a stringent set of performance standards and represents best practices in the industry

Support Services

A range of direct and self-help technical assistance options allows you to maintain optimum performance from your software, whilst automatic product updates keep you at the forefront of technological advancements.

Maintenance and Support Agreements cover all our software, as well as Standard Drivers. Specialty Driver Support is required for the following licensed Drivers: Bailey, IEC870-5-104, Moscad and SemAPI. Specialty Driver Support is an add-on support service to Gold and GoldPlus Support Agreements.

Customer Service Resolution

Optimize your technology investment with our SCADA & MES Software Global Support offering. Customers with maintenance and support agreements are entitled to receive product upgrades, service packs and hotfixes. In addition, you get access to our professional SCP-certified and trained support team who can help you overcome issues quickly and easily, either by phone, live chat or email. We also offer the option of 24/7 support with some of our support contracts.

Customer Service Requests (CSRs)

Virtual Engineer

Our centralized SCADA & MES Software Global Support enables logged Customer Service Requests (CSRs) to follow the CSR Technical Resolution Workflow. A fully documented procedure, this model allows calls to follow a clear path to resolution, giving you updates at every stage. CSRs can be logged by telephone, Case Manager, live chat or email. The recent introduction of our Case Manager tool allows you to manage, update and monitor the progress of your CSRs via the Internet.

Virtual Engineer allows one of our Support Engineers to securely connect to your system anywhere in the world and cost effectively locate the cause of your issue. Improved response and resolution times have been documented since the implementation of this industry standard authentication technology. This means your issues are dealt with quickly, minimizing any disruption to your business.

Additional Information

For Critical and Major severity cases, Account Managers and Support Management are informed of the case progression through the workflow. During case workflow, Support Developers and the Support Engineers may consult with the Product Development group and other resources.

Technical Resolution Workflow	Support Engineer	Senior Support Engineer	Support Developers
Critical severity* GoldPlus customers	15 Minutes	Not able to be progressed within 1 business day and product defect suspected	Cases scheduled based on severity model**
Major & Medium severity* GoldPlus customers	Not able to be progressed within 1 day	Not able to be progressed within 3 business days and product defect suspected	Cases scheduled based on severity model**
Critical severity* Gold customers	Not able to be progressed in 2 hours	Not able to be progressed within 2 business days and product defect suspected	Cases scheduled based on severity model
Major & Medium severity* Gold customers	Not able to be progressed within 3 business days	Not able to be progressed within 4 business days and product	Cases scheduled based on severity model

Educational Services

Educational Services offer a suite of programs and courses designed for end users, engineers, system integrators, technical colleges, universities and educational establishments.

Our courses provide you with hands-on experience, leaving you feeling confident to design and configure your own systems whilst our programs are designed to facilitate the latest education and application of our software.

Instructor-led, online, onsite and self-paced courses are offered. Courses include configuration and programming courses, update courses and introductory courses for CitectSCADA and CitectHistorian.

Programs include the Certified Education Centre Program which regulates the standard of our courses. The Academic Program provides tertiary institutions with access to world class courseware to use in conjunction with their degree and diploma courses in related fields. The Certified Engineer Program (CEP) recognises engineers skilled in the integration of automation projects using our software. The first of these qualifications is the CitectSCADA Certified Professional (CSCP). To gain this qualification, an engineer or operator needs to pass the SCADA Configuration exam. To become a CitectSCADA Certified Engineer (CSCE), there are five exam elements that must be achieved: Configuration, Cicode, Architecture & Redundancy, Customization & Design and Diagnostics & Troubleshooting.

Our educational methodology has proven to be effective through thousands of hours of instruction. Feedback received from customers confirms our success and drives continuous development in our services offerings. We have implemented a guided stream of learning that facilitates progression from basic through to advanced knowledge of all our products.

*Schneider Electric will determine the severity of an issue by analysis of the impact and urgency of a reported issue. **GoldPlus customers receive additional priority in scheduling



Schneider Electric Industries SAS

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