

IndustrialSQL Server™

The Foundation of Industrial Intelligence

OVERVIEW

Product Position

IndustrialSQL Server (InSQL Server) is the world's most popular production data historian providing the highest performance with the lowest cost of ownership. As the historian of Wonderware's overall industrial software platform, InSQL Server provides decision makers throughout the business entity with access to the information they need, when they need it. This allows the business to develop Industrial Intelligence.

Industrial Intelligence empowers production personnel throughout the manufacturing environment to improve efficiency and product quality. Industrial Intelligence translates directly into higher ROI.

InSQL Server provides a common point of access for production information, a single platform for the development of production applications, and a single interface between production and business systems.

Any Data From Any Source At Any Time

As the historian for FactorySuite®, InSQL Server contains the most complete production information available. InSQL Server provides total flexibility in defining how data will be acquired and stored.

Real-time production data may be automatically acquired, at full resolution, directly from multiple sources. These sources include industry-standard OPC servers, any of the more than 600 control and acquisition devices supported by Wonderware's comprehensive range of I/O Servers, and from InTouch® and InControl™ nodes

InSQL Server provides incredible flexibility by integrating data imported from non-real-time sources, sources located off the production network, and CSV formatted files. In addition, InSQL Server supports data entry via standard SQL INSERT and UPDATE statements.

All data, regardless of its source or time of entry, is fully integrated into a unified storage location, allowing immediate client access to useful information. This integration provides for seamless, easy retrieval of historical data, with configuration, alarm, event, and summary information from any client.

Industrial Intelligence

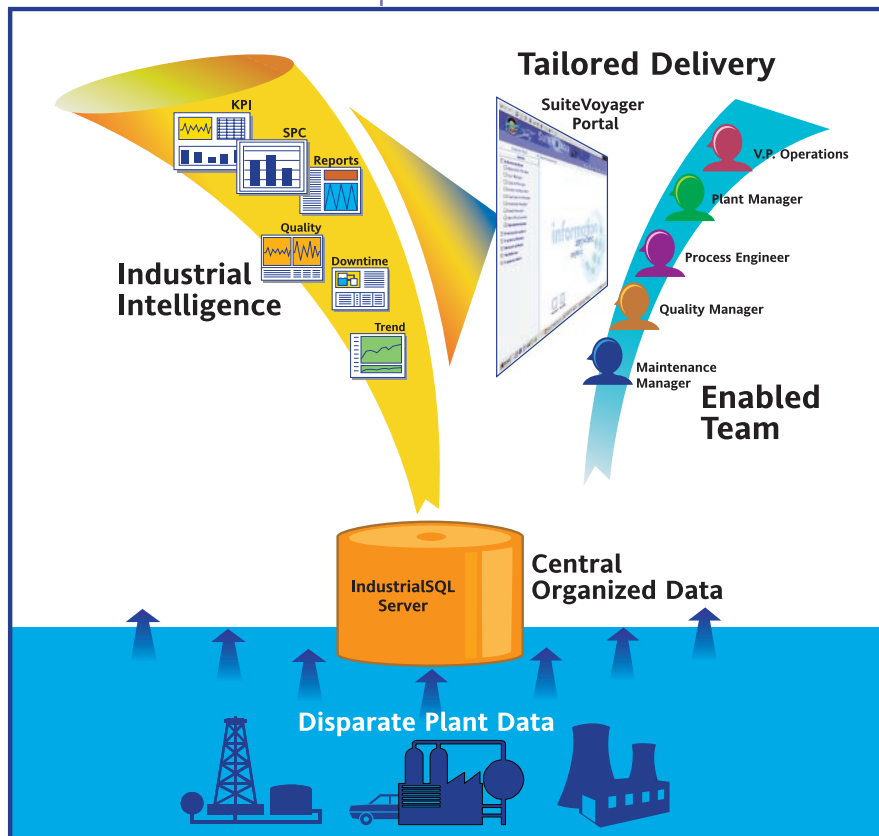
Data becomes useful information only when it can be accessed in the appropriate context. Thus, creating Industrial Intelligence requires a powerful query engine to filter and process the data. InSQL Server incorporates the full power of Microsoft SQL Server with its filtering, joining, and processing capabilities. It extends the power of the SQL language with time domain filtering capabilities. InSQL Server's event system detects and reacts to process events. This enables post-processing of the data, such as snapshots of key process variables and data aggregation.

InSQL Server's powerful query engine provides easy access to information from client applications. Playing the role of an information server, InSQL Server leverages the open and flexible Microsoft® platform to truly integrate the office with the production environment. Production personnel can use Wonderware analysis tools or hundreds of off-the-shelf software packages to view, analyze and report on their production processes.

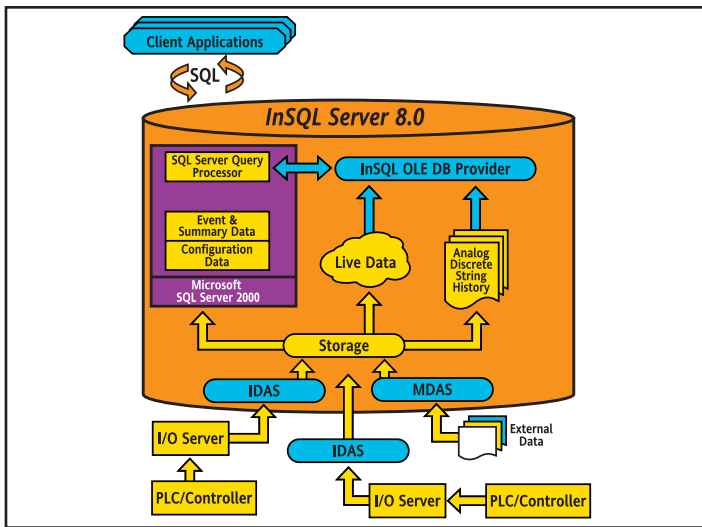
IndustrialSQL Server™ 8.0

PRODUCT DATASHEET

*The world's most popular
production data historian.*



Any Data from Any Source at Any Time.



Storage System Architecture

HIGHLIGHTS

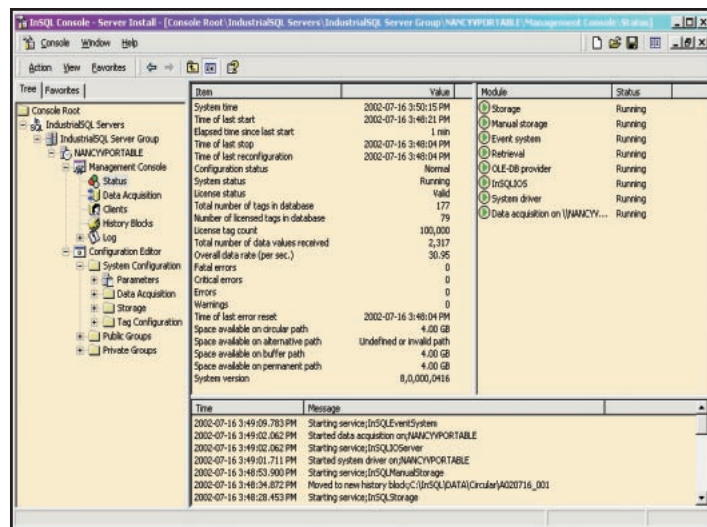
High Performance Server

InSQL Server acquires production data in real time at full resolution while providing seamless incorporation of non-real-time, manual, or off-network data. Conventional relational database technology is not suited to high-speed acquisition and storage of plant data. InSQL Server acquires plant data hundreds of times faster than relational databases and stores the data in a fraction of the space, bringing the power of the relational database to the industrial environment. All production data is then fully integrated with event, summary, production, and configuration information.

Easy To Use

No knowledge of SQL is needed to install, configure and use InSQL Server. The system can be configured in minutes by simply pointing the configuration tool at existing InTouch configuration files, the engineering investment in InTouch. This tight integration with InTouch ensures database integrity and allows one-time tag definition.

InSQL Server has been designed as a zero administration database environment. Standard Microsoft SQL Server tools can be used to schedule backups. Users can select from the hundreds of client tools to match their application requirements.



Management and Configuration Console

Fault Tolerant/High Availability System

Fault tolerant/high availability functionality is built into InSQL Server. Configuration is simplified by the point-and-click nature of the configuration and management console.

These features provide for robust system architectures with no single point of failure, virtually eliminating the need for expensive redundant hardware. The InSQL Data Acquisition Services (IDAS), Manual Data Acquisition Services (MDAS), and Remote InSQL Data Acquisition Services (Remote IDAS), all support store and forward capabilities, meaning that the Server PC may be taken off-line for planned maintenance with absolutely no loss of data.

Easy Administration

Fully embracing Wonderware's long-standing commitment to ease of use, InSQL Server provides an integrated management and configuration environment tailored to the busy professional. InSQL Server's administration and configuration tools leverage Microsoft management console technology providing ease of administration through a standardized point and click interface. This technology further enhances the administrator's convenience by providing a single console from which multiple InSQL Servers, Windows Operating systems, Microsoft SQL Servers, and other applications can be managed.

InSQL Server can import tag definitions directly from InTouch, leveraging existing engineering investment. Tag definitions may also be imported from CSV formatted files, eliminating redundant configuration tasks when InSQL Server is used with products from other vendors. InSQL Server can be fully installed and storing valuable production data in minutes. Configuration and administration never interrupt data storage.

Secure Administration

Totally secure system administration and monitoring may be performed from the Server node itself or from a location convenient to the engineer / administrator. Further convenience is obtained through the ability to securely monitor total system performance and health from any client. System configuration and administration never interrupts the data collection and storage operations.

Open, Flexible Access

InSQL Server leverages the embedded Microsoft SQL Server 2000 capabilities. These include: support for XML, the ability to interface to Microsoft Exchange for e-mail, the use of Internet Information Server for publishing data on the Internet, and replication and distribution services for distributing information to other Microsoft SQL Server or Oracle database applications.

The software's multi-tiered client-server architecture allows segmentation of the business and manufacturing networks. This prevents requests originating from the business networks from flooding mission critical manufacturing networks, while providing full visibility to factory floor data in real time. Although access to information is standard and flexible, security is never compromised.

The multi-tiered architecture based on Windows® 2000™ Server provides a scalable solution to meet application specific requirements. The software is suitable for applications ranging from hundreds of tags to hundreds of thousands of tags. Careful selection of hardware ensures high system performance and data integrity.

Extensibility

Since InSQL Server is based on industry standard database technology custom client applications can be quickly developed and deployed, using any standard application development tool. The published data model and standard SQL or OLE DB application-programming interface provide a standard and well-known method for accessing InSQL information.

InSQL Server's database is easily extended with additional tables, stored procedures and views to accommodate specific information requirements. Unique event detectors and actions can be created using external programs or standard SQL, extending and customizing the power of the event system. Additional I/O servers can be created with the Data Acquisition Server Toolkit.

Event/Summary Subsystem

The event subsystem schedules actions and responds to occurrences in the production environment. This sophisticated subsystem can detect specified process or system conditions and execute user defined actions in response.

For example, an excessive product temperature could trigger: a snapshot of related tag values; an e-mail alert to Production Management with critical process information; modification of acquisition time or value deadbands on any number of tags; execution of a SQL query; or summary calculations on a group of tags.

The companion summary subsystem provides the ability to schedule simple aggregations based on time.

FDA 21 CFR Part 11

InSQL Server integrates with Microsoft SQL Server and Windows® NT™ security to restrict unauthorized access and assure the security of the data. Although access methods are both standard and flexible, security is never compromised.

FDA 21 CFR Part 11 application development features includes added capabilities for audit trails, configuration change logs, securing manual data, and record updates.

Integration With FactorySuite 2000 Components

As the historian for FactorySuite, InSQL Server is tightly integrated with FactorySuite in the following ways:

- InTouch configuration data is stored with InSQL Server configuration data in the database.
- InSQL Server acquires and stores data from OPC Servers, DDE I/O Servers, FastDDE I/O Servers, SuiteLink I/O servers, and Data Access Servers.
- InSQL Server stores process and production history for InTouch, InControl, InBatch™, InTrack™, SPCPro™ and QI Analyst™.
- The InSQL I/O Server allows InTouch and other clients to monitor system health and view live data from multiple servers.
- InControl and InTouch can be used to trigger InSQL Server events.

APPLICATIONS

Create Powerful Industrial Intelligence From InSQL Server Data

As the historian of Wonderware's industrial software platform, InSQL Server can provide decision-makers throughout the industrial enterprise with the information they need to develop Industrial Intelligence. In the continual quest for higher quality and greater efficiency, many questions must be answered. The following examples demonstrate how InSQL Server delivers results:

InSQL Server presents control engineers configuration information like control set-points, trip settings and alarm limits, and records control system behavior like control deviations, trips and alarms, providing the answer to questions like:

- Are the set-points for this control loop optimized?
- Did the protection interlock cause a spurious plant trip?
- Did the alarm provide sufficient warning to the operator?

InSQL Server stores high-resolution process information and process events. Process engineers can analyze process steady states, transients and abnormalities, answering questions like:

- Is this vessel subjected to metal stress?
- Is this machine a bottleneck?
- What caused this pump to fail?

Maintenance staffs need to analyze plant operating history and the condition of the plant. InSQL Server contains both long-term operating history and current plant conditions, providing maintenance staff information key to analyzing questions like:

- How many times has this motor started?
- Have the bearing temperatures increased since the last overhaul?
- Is this heat exchanger fouled?

InSQL Server provides production managers summary and aggregate data that can be easily integrated with production events to answer questions such as:

- What are the daily production totals?
- What were the major outages this month?
- Are the plant's emissions within the regulatory limits?

InSQL Server records product measurements and associates them with product numbers or batches to assess product quality, non-conformances and deviations from specification. QA personnel can find the answers to questions like:

- Did the recipe change affect the product quality?
- What is the defect rate for this part number?
- Is there a correlation between this temperature profile and this type of non-conformance?

InSQL Server contains the current information and the historical perspective for operators to compare and diagnose abnormal process behavior, providing answers to questions like:

- Why won't this pump start?
- Is the furnace temperature slowly increasing?
- Is this start-up the same as the week before?

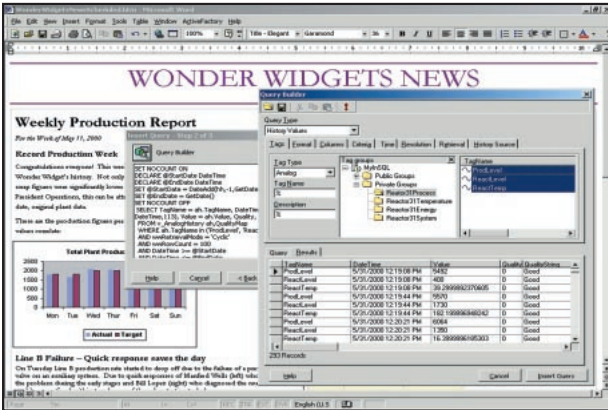
CLIENTS

Because every organization has vastly different information requirements, InSQL Server allows each client to view, analyze, and report on product, process, and production data in a multitude of ways.

InSQL Server supports these diverse requirements with the most comprehensive list of client applications in the industrial automation environment.

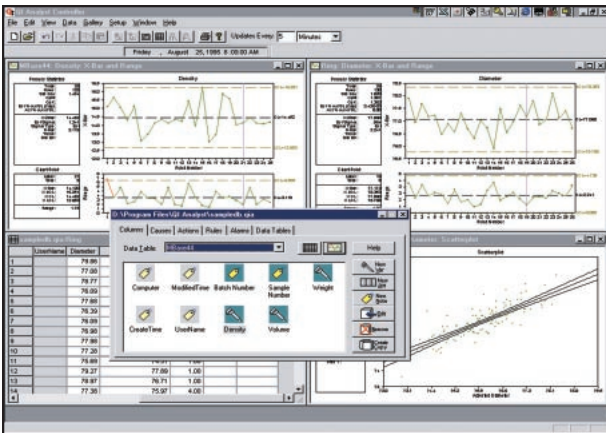
The software's hundreds of client applications include:

- **ActiveFactory™.** For flexible trending and reporting, reporting tools are built on familiar Microsoft Word and Excel packages, making them easy to use.



- **SuiteVoyager™** combines rich data access with personalized configuration, all within a web browser.

- **QI Analyst** provides powerful statistical process control (SPC) functionality for more extensive analysis and statistical alarming.



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- **InTouch.** Include real-time and historical trends, reports and status information within InTouch views for easy operator access.

- **FactorySuite Partner and WonderTools™.** These tools, developed by independent software vendors for use against InSQL Server, include statistical analysis, profiling, general reporting, mimic display, navigational, browser-based, replay and management reporting tools, in addition to trending, graphing and charting tools.

- **SQL-, ODBC- or OLE DB-Compliance.** These applications include SQL Access in the FactorySuite, as well as generic tools like Microsoft Access, Excel®, Word, Crystal Reports and Lotus, as well as more specialized statistical and mathematical analysis applications. Any application leveraging Microsoft's universal data access initiative with OLE DB scripting can easily retrieve data from InSQL Server.

- **Custom Applications.** These applications can be developed using any of the popular development environments, including Microsoft tools such as Visual Basic, Active Server Pages (using VBScript or JavaScript), C++ and Visual Studio.NET or other tools such as web application servers, Delphi and PowerBuilder.

SPECIFICATIONS

- Microsoft® Windows 2000 Server SP2
- CPU

Total Tag Count	InSQL Server Configuration
50% Analog, 45% Discrete, 5% String	
500 Tags	Pentium II 400 MHz 256 Mb RAM
5,000 Tags	Pentium III 866 MHz 256 Mb RAM
25,000 Tags	Pentium III 933 Dual 1 Gb RAM
100,000 Tags	Pentium III 733 Quad 1 Gb RAM

Note: Hardware selected to maintain average CPU loads less than 25% on average.

Platform: Windows 2000 Server SP2; MicrosoftSQL Server 2000 SP2 (memory clamped at 50% Physical RAM); Moderate Query and Event load applied.