DeltaV OPC .NET Server

- Secure communications
- Robust connectivity
- Real-time and historical data transfer
- Access data from anywhere
- Unified interface
- Easy migration from legacy interfaces
- Based on open, industry standards

Introduction

Are you looking for a way to securely integrate data from your DeltaV™ system into the rest of your day-to-day operations? Do your information users on the corporate network need access to DeltaV data but cannot get it due to corporate IT firewalls? The DeltaV OPC .NET 3.0 server (OPC .NET) provides a secure means for real-time and historical data transfer between the DeltaV system and other systems, applications and enterprise users.

OPC .NET 3.0, formerly known as OPC Express Interface (OPC .Xi), is a client-server architecture based on the latest Microsoft communications technology that provides secure and robust real-time and historical data transfer between OPC .NET clients and servers regardless of where in your network architecture the clients and servers reside.

Benefits

Secure communications: The DeltaV OPC .NET server allows secure communications between your DeltaV system and your enterprise. Security is built into OPC .NET and not bolted on as an afterthought.

Robust connectivity: OPC .NET was designed to be more robust than existing interface technologies. OPC .NET uses a client-server architecture where clients connect to servers and read/write/subscribe to data from the servers.

Once an OPC .NET client connects to a DeltaV OPC .NET server, the server maintains the state of the connection, allowing the client to reconnect quickly and easily if communications with the server were lost.

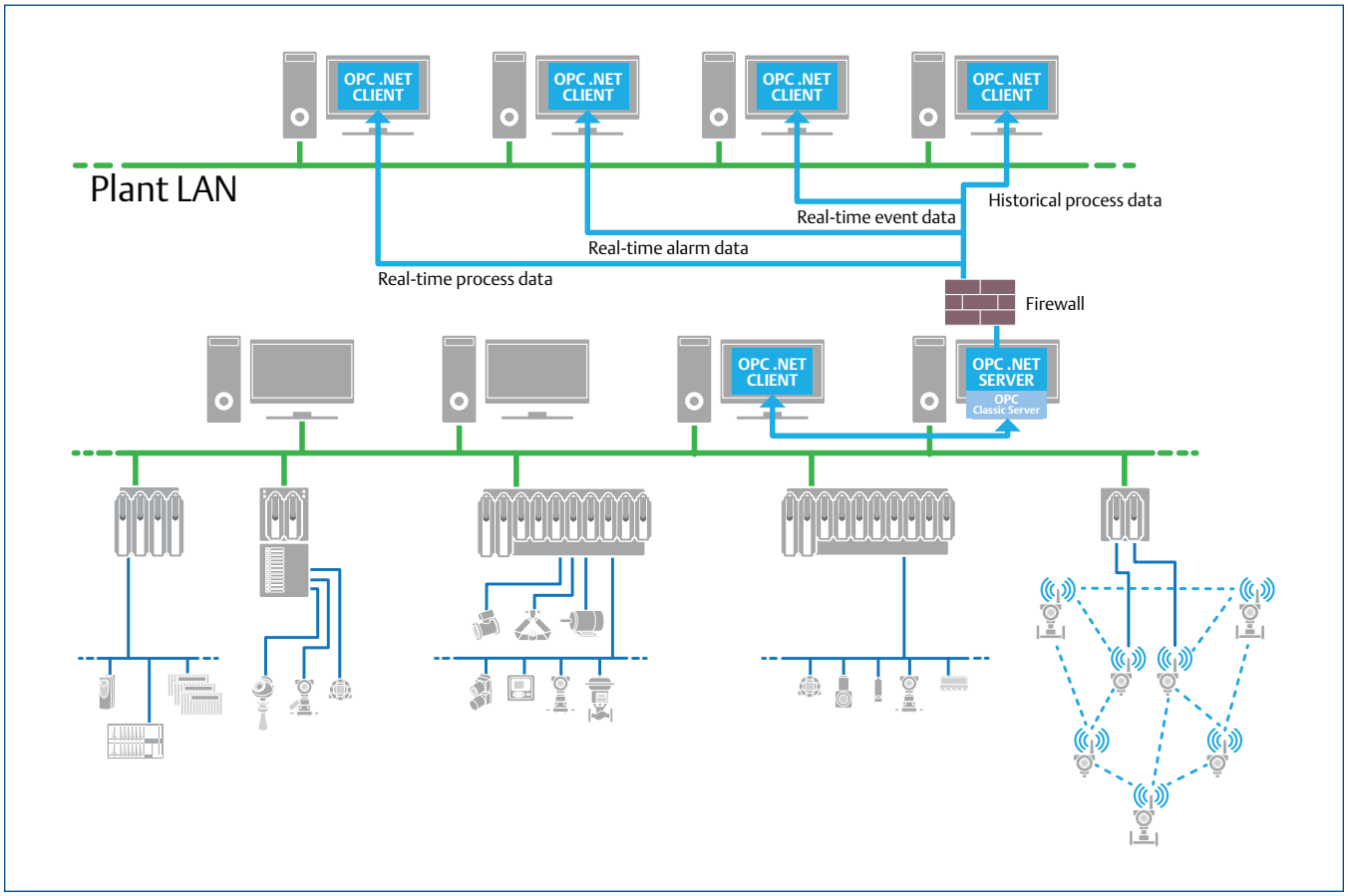
Real-time and historical data transfer: Real-time and historical data are available using OPC .NET. The DeltaV OPC .NET server provides an interface to read and write DeltaV real-time process data, subscribe to DeltaV real-time alarms and events and read DeltaV historical data collected in the DeltaV Continuous Historian.

Access data from anywhere: OPC .NET clients may be located anywhere in your enterprise. OPC .NET clients may be installed locally with the DeltaV OPC .NET server, on the plant LAN or on the Internet. With the enhanced security features of OPC .NET, you can secure your data communications regardless of where the client is installed.

Unified interface: OPC .NET provides a single interface for accessing real-time, historical and alarm and event data. The DeltaV OPC .NET server provides access to the same data available in the DeltaV OPC Classic servers but with a single, common interface.

Easy migration from legacy interfaces: OPC .NET was designed to provide a migration path from existing OPC Classic Component Based Objects (COM-based) systems to OPC .NET. The OPC .NET specification was designed to allow OPC .NET to wrap existing OPC clients and servers to provide a quick and easy migration path from OPC Classic to OPC .NET.

Based on open, industry standards: OPC .NET is based on Windows Communication Foundation (WCF), the latest communications technology available from Microsoft. Using WCF, the DeltaV OPC .NET server is able to offer industry standard communication protocols, such as the Transmission Control Protocol (TCP), the Hypertext Transfer Protocol (HTTP) and Secure Hypertext Transfer Protocol (HTTPS), to communicate with OPC .NET clients.



The DeltaV OPC .NET server provides secure and reliable data transfer between the DeltaV system and the enterprise.

Product Description

OPC .NET is a supported standard by the OPC Foundation and a perfect complement for COM-based OPC Classic technologies. OPC .NET represents a collaboration of many product companies in the process industries who formed together to develop a more secure and robust solution for today's data communication needs while at the same time adopting the latest communication technologies. OPC .NET is based on the Microsoft .Net Framework and WCF which allow OPC .NET to follow a common programming model for many different kinds of plant communication.

Many legacy data communication interfaces are based on the Microsoft Component Object Model (COM), and while a good choice at the time, COM cannot address the security and robustness requirements needed in today's business environment where data must be quickly and easily available to the decision makers. In addition, Microsoft is migrating from COM to .Net, so a common, .Net-based replacement for these COM based interfaces is needed. OPC .NET was developed to meet these needs.

Secure Communications

The DeltaV OPC .NET server enables secure communications between your DeltaV system and your enterprise. Providing a more secure means of data communications in the plant environment was one of the primary goals of the OPC .NET development. OPC .NET provides a layered security model to allow you to add the right amount of security for your application. Security is built into OPC .NET and not bolted on as an afterthought as is true with other legacy data communication interfaces.

Secure communications with the DeltaV OPC .NET server can be deployed using a number of different data security mechanisms.

- The DeltaV OPC .NET server provides secure firewall access to OPC .NET clients by requiring only a small number of selected ports to be opened on the firewall to pass OPC .NET data.
- Data encryption may be enabled on the DeltaV OPC .NET server at the connection level or at the data level to protect even the most sensitive data.
- OPC .NET uses patented interface security layered on top of traditional security mechanisms to allow OPC .NET client access to be enabled or disabled based on location of the client and on the client itself. For example, if a client is connecting to a DeltaV OPC .NET server from an unsecured location or is an untrusted application, data "write" permissions may be disabled on the client connection to prevent unauthorized users from making changes to the DeltaV data.
- In addition, traditional user authentication may be used.

Any combination of the OPC .NET security features may be enabled on the DeltaV OPC .NET server to provide the level of security you need.

Robust Connectivity

OPC .NET was designed to be more robust than existing interface technologies. OPC .NET improves the connectivity between the client and server by decreasing the amount of time a client is disconnected from the server. When a OPC .NET client connects to the DeltaV OPC .NET server, the server maintains the state of the connection, allowing the client to reconnect quickly and easily if communications with the server are lost.

The increased connection robustness of OPC .NET addresses two issues with legacy interfaces - the time required to detect the communication loss and the time required to restart the client and reconfigure the server once communication is restored. On loss of client connectivity using other legacy interfaces, the client's connection information is automatically deleted in the server at the time the connection is lost. When the client tries to reconnect to the server, the client must rebuild its configuration, consuming valuable time and delaying data transfer. Often, loss of client connectivity cannot be avoided, due to poor network design, unstable networks, inclement weather etc., but OPC .NET is able to maximize data transfer by minimizing the time the client is disconnected.

Real-time and Historical Data Transfer

The DeltaV OPC .NET server provides an interface for accessing DeltaV real-time process data, real-time alarm and event data and historical data. For example, a OPC .NET client can request the current value of a process variable, its current alarms and its trend data for the previous hour, from the DeltaV OPC .NET server.

The DeltaV OPC .NET server provides read/write access to real-time process data available in the DeltaV run-time environment. OPC .NET clients are able to access the DeltaV real-time data using a read method or a subscribe method. The subscribe method allows for either data polling or requesting data callbacks.

The preferred method for an OPC .NET client to access the DeltaV OPC .NET server for real-time data depends on how the data is required at the client and how the client accesses the data or where the client resides. The read method is typically used if the client only needs to read or write data infrequently. The read method is applicable for clients located anywhere. Data subscriptions are used by clients that want data automatically. Data polling is typically used by clients located outside the system firewall and data callbacks are typically used by clients located on local networks (inside the firewall). Data callbacks are more efficient as they reduce overhead and increase performance.

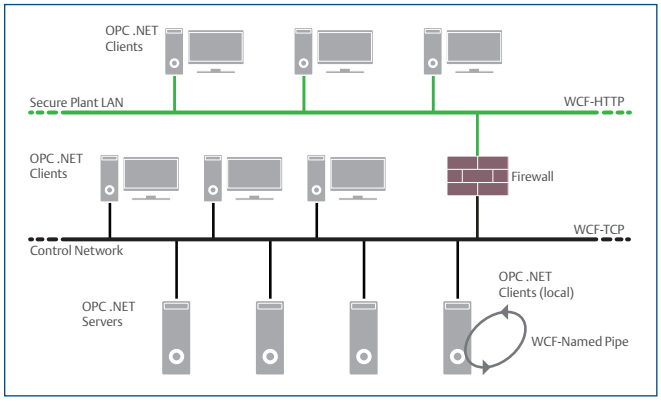
The DeltaV OPC .NET server also allows you to subscribe to real-time alarms and events so you can be notified when alarms occur or when the operator makes manual process changes. The DeltaV OPC .NET server also provides read access to all historical data collected in the DeltaV Continuous Historian.

Data Access from Anywhere

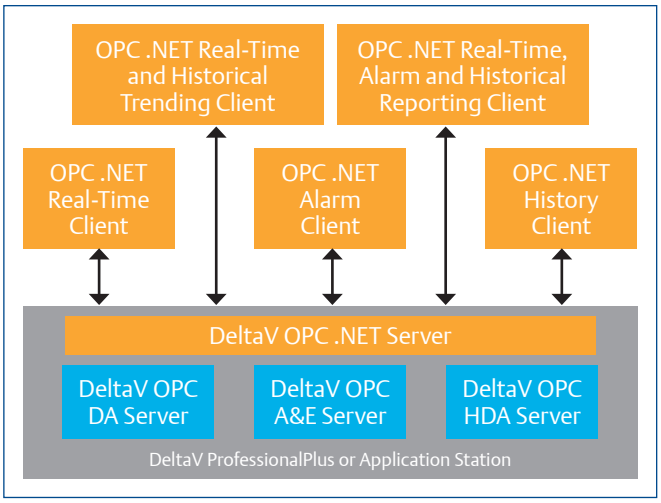
OPC .NET clients may be located anywhere in your enterprise. OPC .NET provides a variety of data communication protocols to suit your data access needs. For OPC .NET clients installed on the same workstation as the DeltaV OPC .NET server, the client uses interprocess communications (IPC) which provide the fastest and most efficient local data transfer. For clients installed remotely to the DeltaV OPC .NET server, but on the same side of the DeltaV system firewall, the client will typically use the TCP communications which provide the fastest and most efficient intra-network data transfer. For clients installed outside the DeltaV system firewall or on non-Windows platforms, the client will typically use Web Services (communications using SOAP/HTTP) which provide the easiest and most secure means of communicating through firewalls. For more secure communications, the DeltaV OPC .NET server can use Web services with HTTPS. Note HTTP/HTTPS are the primary transport protocols of the Internet and thus are firewall friendly and not dependent on any one operating system.

Regardless of where the OPC .NET client is located and what transport protocol is used, the enhanced security features of OPC .NET will ensure that your DeltaV data communications are protected.

Unified interface. OPC .NET provides a single interface for accessing real-time, historical and alarm and event data. An OPC .NET client can connect to the DeltaV OPC .NET server an read the current value of a process variable, subscribe to its alarms and events and read its hourly average values with a single, common connection. The unified interface simplifies client-server connectivity. With the DeltaV OPC Classic servers, OPC Classic client applications need to make separate connections to the individual OPC Classic servers.



OPC .NET clients may use a variety of communication protocols based on their location.



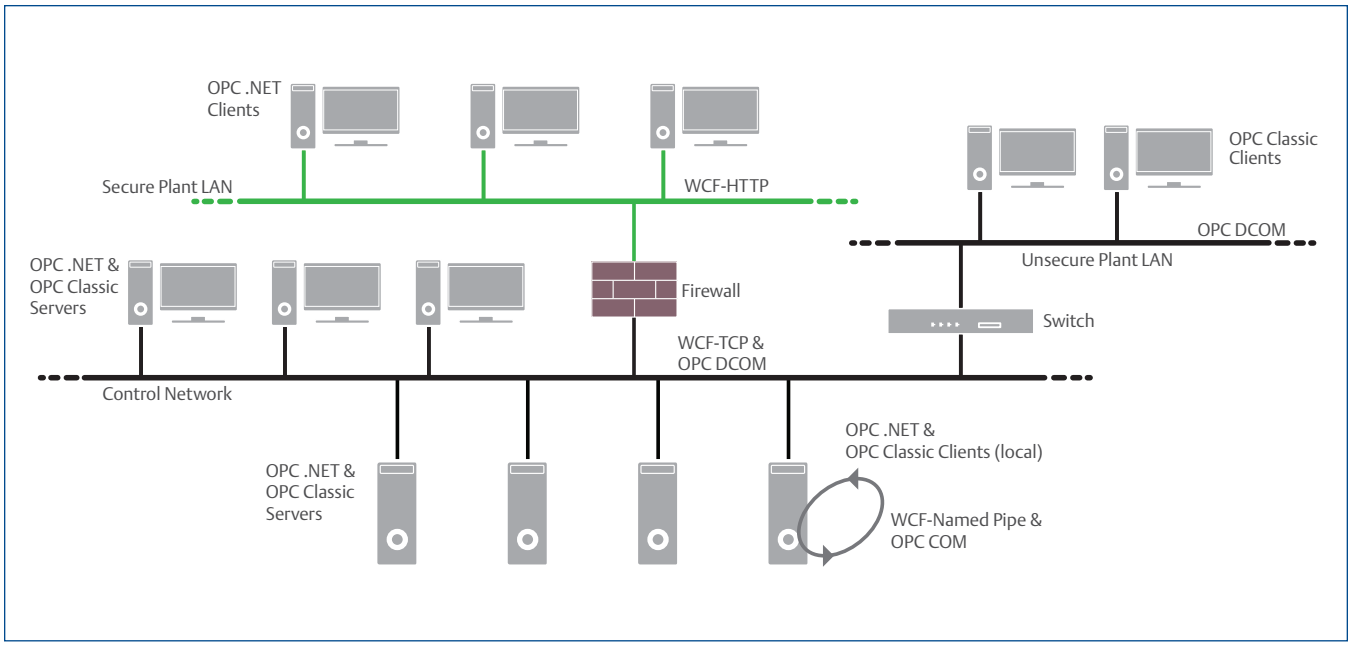
OPC .NET clients connect to the DeltaV OPC .NET server using a unified interface.

Easy Migration from Legacy Interfaces

OPC .NET was designed to provide a .Net-based migration path from COM-based OPC Classic systems. The DeltaV OPC .NET server is implemented as an additional interface for the DeltaV OPC Data Access, OPC Alarms and Events and OPC Historical Data Access Servers. Providing a DeltaV OPC .NET server in addition to the existing DeltaV OPC Classic servers means the DeltaV system can support OPC Classic clients as well as OPC .NET clients that have been developed to take advantage of Microsoft's new display technologies.

The OPC .NET specification defines a very powerful, yet very lightweight and easy to implement interface. Since the specification provides a means to layer OPC .NET on top of existing OPC Classic clients and servers, you will have a quick and easy migration path from OPC Classic to OPC .NET. Many 3rd party suppliers have implemented OPC .NET with their clients and servers because of the enhanced security and other features available with OPC .NET but also because OPC .NET is so easy to implement and facilitates the use new display technologies to allow development of clients with a modern look and feel.

The DeltaV OPC Classic servers will be maintained in the DeltaV system to allow you to upgrade your DeltaV systems and preserve your existing OPC communications. You can then migrate to the DeltaV OPC .NET server as needed. There are many advantages of using OPC .NET as an alternative to OPC Classic as described in this document, but if for example your favorite 3rd party OPC Classic client does not yet have an OPC .NET alternative, you can continue using your OPC Classic clients with the DeltaV OPC Classic servers.



OPC .NET and OPC clients and servers may reside in the same system.

Based On Open, Industry Standards

OPC .NET uses WCF as its communication technology. WCF in turn offers several industry standard communication protocols that applications can use, such as TCP, HTTP and HTTPS. The DeltaV OPC .NET server provides fast and secure data transfer for OPC .NET clients and servers running on Microsoft operating system platforms using TCP communications. OPC .NET enables secure data transfer between the DeltaV OPC .NET server and OPC .NET clients located outside the DeltaV system firewall using Web Services (communications using SOAP/HTTP/HTTPS). Web services also allow the DeltaV OPC .NET server to communicate with OPC .NET clients running on non-Microsoft platforms.

Since OPC .NET is based on WCF and the .Net Framework, OPC .NET provides a common foundation for process control applications to communicate. Process control applications and users have diverse communication needs and OPC .NET provides the foundation to meet these needs. OPC .NET uses IPC, TCP, HTTP and HTTPs for client-server communications today, but as other applicable communication technologies become available, OPC .NET will be able to implement these technologies.

Ordering Information

Description	Model Number
Application Station Software Suite	VE2201Sxxxxx[1]
DeltaV OPC History Server	VE2227[2]
DeltaV OPC Events Server	VE2228

[1] *xxxxx represents the number of OPC items transmitted through the DeltaV OPC Data Access server, from 00250 to 30000. The DeltaV OPC Data Access Server sizes vary from 250 to 2,000 OPC items in 250 item increments and from 2,001 to 30,000 OPC items in 1,000 item increments.*

[2] *The DeltaV OPC History Server license provides up to 25 concurrent OPC Historical Data Access client connections. The first OPC Historical Data Access client connection is provided free of charge. The DeltaV OPC History Server license is required if more than one OPC Historical Data Access client is connected to the server at the same time.*

Related Products

- **DeltaV Continuous Historian.** Captures up to 250 analog, discrete and text parameters along with their status and stores them for future analysis. Optionally scalable up to 30,250 parameters.
- **OPC Data Link for Application Stations.** Enables creation of synchronous non-browsable OPC Direct Access clients built as a 64-bit Windows application. Consult factory for details.
- **OPC UA.** The different OPC UA servers and clients in the DeltaV system allows data reads and writes to and from 3rd party application in an easy, reliable and secure way.

Prerequisites

- DeltaV v11.3 or later.
- A DeltaV OPC Data Access Server is required for access to real-time process data.
- A DeltaV OPC History Server and DeltaV Continuous Historian are required for access to historical process data.
- A DeltaV OPC Events Server is required for access to real-time event data.

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