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The **Value** of FDI Automation Protocol Flexibility

Abstract

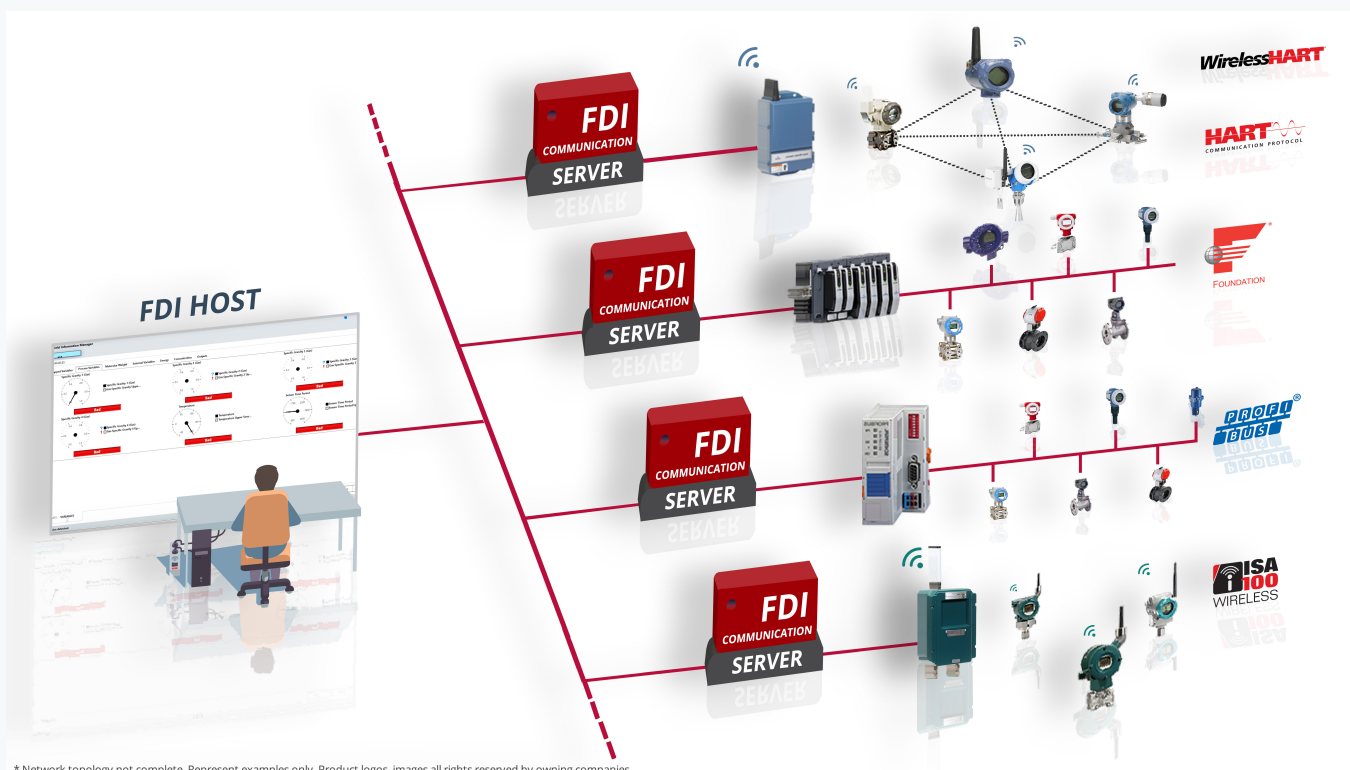
FDI is an evolutionary device integration technology designed to work with multiple field communication protocols. HART, WirelessHART, FOUNDATION Fieldbus, PROFIBUS, PROFINET, and ISA100 can be natively supported. Other common automation protocols, like Modbus/TCP, EtherNet/IP, Proprietary or any other protocols can be supported through an FDI Communication Server – an OPC-UA server used by an FDI server to access non-native networks.

This article focuses on FDI Communication Server in detail and the benefits it brings in managing the device and reducing the challenges to support the heterogeneous network topology in the process automation industry.



FDI Communication Server - The Big Picture

In a typical industrial environment, gathering valuable information from field devices from multiple vendors using different automation protocols not supported by the host system is difficult. FDI offers the solution to overcome this challenge. As shown in the below image, FDI Communication Server fetches the information from various industrial network protocols enabling seamless data communication between any field device and host system. The FDI Communication Server can be thought of as a dedicated OPC UA server providing access to one or more underlying field device networks. OPC UA is broadly adopted and supported in the IT industry and provides a robust and well adopted solution to get plant information into the hands of corporate officers and management at any time and allows them instant access to plant performance information.



* Network topology not complete. Represent examples only. Product logos, images all rights reserved by owning companies.

Automation Protocol Flexibility

End User Benefits

System maintenance made easy

No FDI Host upgrade to support new protocols

Upgrading the host involves high risk, which may result in malfunctioning of integrated components leading to unplanned shutdown. FDI eases the task of the maintenance engineer by supporting the communication with new protocols like Modbus, EtherNet/IP or any other protocol without upgrading the host.

FDI supports Proprietary Protocols

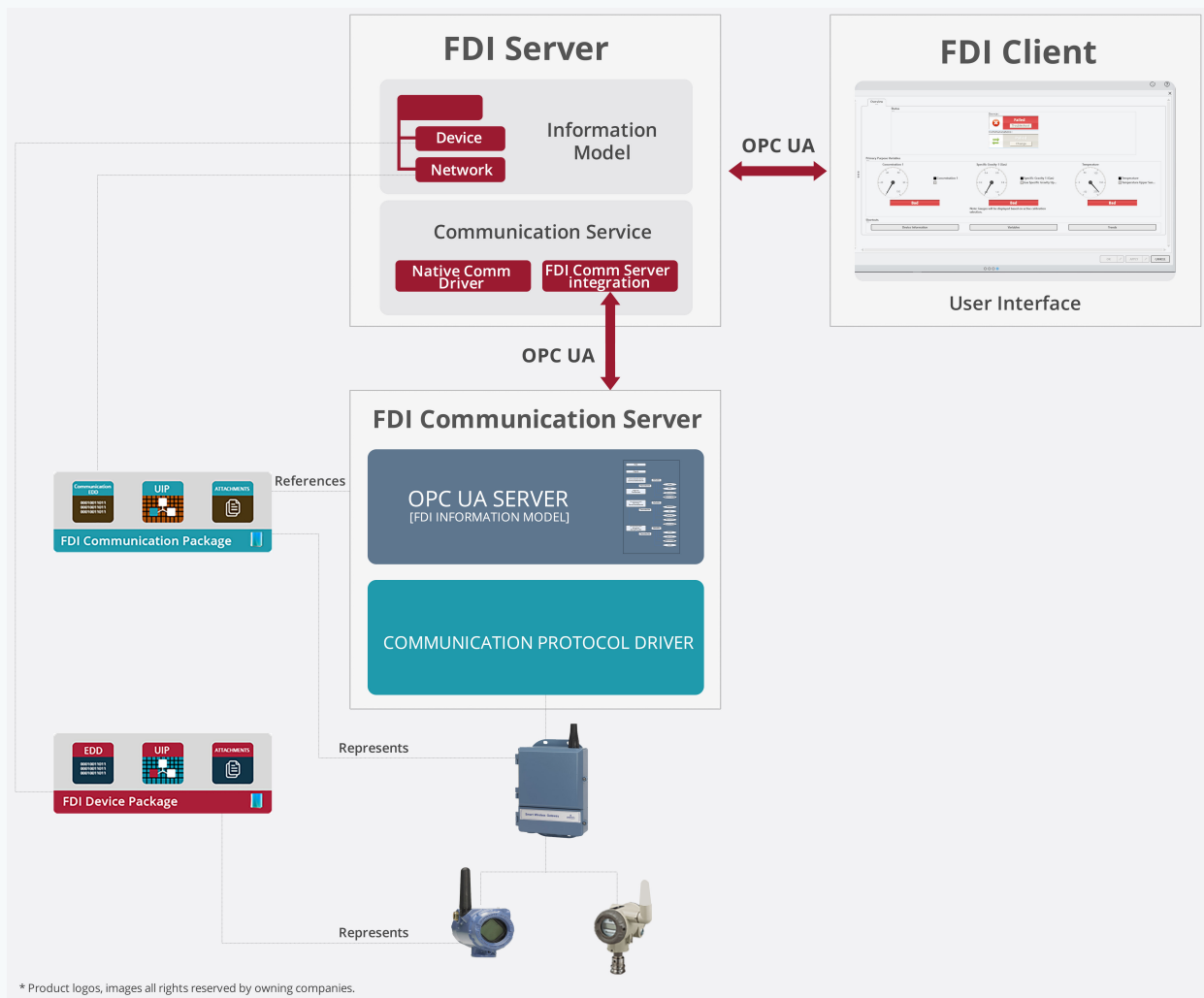
FDI has support for all the standard protocols such as HART, WirelessHART, PROFIBUS, PROFINET, Foundation Fieldbus, and ISA100 etc. For devices in plants that use a proprietary protocol, FDI technology allows such devices to integrate into the host system.

System maintenance becomes easy by having FDI as a single device integration standard to support all field devices over various communication channels.

FDI provides remote connectivity

FDI technology allows the FDI Communication Server to be embedded into the remote controller/gateway. This enables the FDI Host to provide OPC based remote connectivity to the underlying field devices over heterogeneous networks.

FDI Communication Server - Deep Dive



Automation Protocol Flexibility

FDI Communication Server is a dedicated OPC UA Server that provides access to a field device network. The communication between the FDI Server and the FDI Communication Server happens via standard OPC UA communication services.

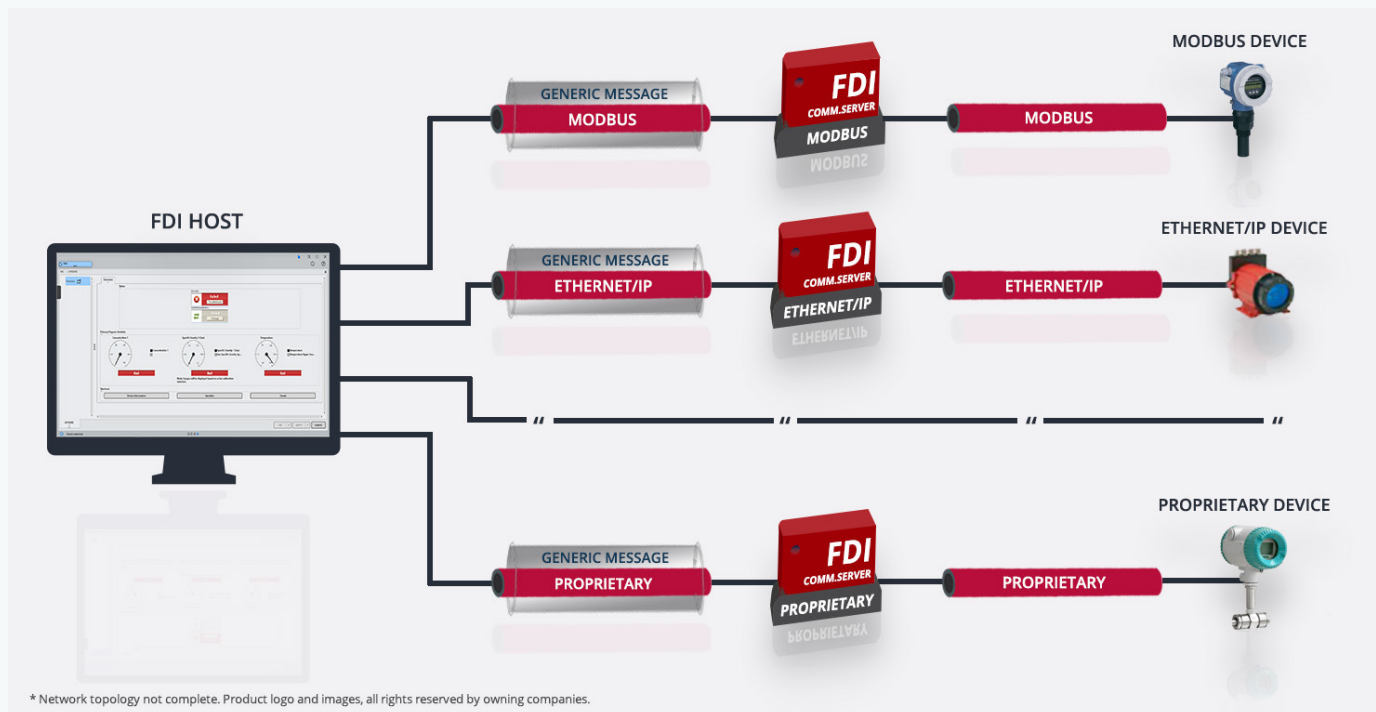
The FDI standard defines both point-to-point and multi-channel FDI Communication servers. The latter enables gateway devices and operation over heterogeneous networks.

An **FDI Communication Package** is similar to an FDI Device Package (see ONE Package – ONE Device – ALL Tools article). It is used to configure the bus parameters and validate the underlying automation network. The FDI Server imports the FDI Communication Package like any FDI Device Package.

The **FDI Server** communicates with underlying networks through a native communication driver (HART, FOUNDATION Fieldbus, etc.) or through an integrated protocol-specific FDI Communication Server.

Generic Protocol Extension support in FDI

EDDL technology has support for HART, WirelessHART, FOUNDATION Fieldbus, PROFIBUS, PROFINET and ISA100 communication channels. Along with these communication channels supported by EDDL Standard, FDI extends its support for any type of communication channels via generic protocol extension support.



The image above shows an FDI Host communicating with MODBUS, EtherNet/IP and proprietary protocol devices. In this example, in order to communicate with the Modbus device, an FDI Host, that supports the generic protocol extension, sends the Modbus request, embedded in a generic message format, to a Modbus FDI Communication Server, which communicates with the underlying Modbus device and sends the response back to the FDI Host.

Automation Protocol Flexibility

Embedded Communication Server

From the perspective of the FDI Server, an FDI Communication Server is another type of device that provides the information to communicate with the underlying network. FDI Communication Server may run locally on the same machine (loop back adapter) or can also be embedded into a controller as an Embedded FDI Communication Server.

Conclusion

FDI Communication Server allows seamless communication with devices over standard as well as proprietary communication networks. FDI supports remote communication devices over a secure channel.

FDI Communication Server supports FDI to achieve its vision to be a single device integration standard, independent of the communication, manufacturer or host systems.



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