Frequently Asked Questions (FAQs):

Connected Services - A Guide to the Most Commonly Asked Questions

Frequently Asked Questions

- What is OSIsoft's Connected Services?
- What types of service providers would use Connected Services?
- How does Connected Services help original equipment manufacturers (OEMs)?
- What are the benefits to the Service Providers?
- What are the benefits of Connected Services for asset owners?
- How do you describe the Connected Services architecture?
- How is the architecture configured if the asset owner does or does not have a PI System®?
- What are the terms of a Connected Services agreement?
- What is the typical length of an agreement?
- What types of support does the Connection Services framework include?
- Does OSIsoft offer ongoing support for Connected Service subscribers?
- What is the PI System?
- What are the key PI System components used by Service Providers?

What is OSIsoft's Connected Services?

A Connected Services agreement enables service providers to remotely access real-time data from client assets to gain actionable insights into critical business operations.

The agreement defines a customizable architecture that uses OSIsoft's PI System via a secure network to clients' assets to store, analyze, and visualize real-time, sensor-based operational data. The PI System works in conjunction with a service provider's server, network and storage resources to form a remote monitoring and data center. These systems can be located on the service provider's premises, data center, or in a cloud computing environment.

OSIsoft offers Connected Services in a flexible, "pay-as-you-grow" subscription model that allows service providers to apply the benefits of real-time data analysis to transform their service offerings without incurring high up-front capital costs. Drawing from the service provider's business plan, a number of factors determine the ongoing fee levels, including the projected service growth rate and the size and number of assets that will be monitored under the agreement.

What types of service providers would use Connected Services?

Many different types of service providers use the Connected Service model including specialists in operations and maintenance services; asset management; system integration; plant engineering and plant design; and OEM aftermarket services.

Service providers can typically measure a number of different of assets such as pumps, turbines and pressure vessels located on asset owner sites. Additionally, Connected Services can add remote real-time data monitoring for mobile assets.

Service providers with Connected Service agreements serve clients in major industries including:

- Power and utilities
- Electrical transmission and distribution
- Water and sewage treatment utilities
- Oil and gas producers
- Chemicals and petrochemicals
- Metals and mining
- Equipment manufacturing
- Transportation
- Food and Beverage
- Discrete manufacturing

How does Connected Services help original equipment manufacturers?

OEMs can use Connected Services to optimize customer service. By having remote access to real-time operating data, OEM service teams can track the condition of installed systems to anticipate or troubleshoot problems without traveling to customer sites. This increases field service efficiency and reduces the cost of warranty work.

With a connected services agreement OEM product development teams can also identify inherent equipment design problems and apply insights from analyzing operating data to improve designs and drive new product development.

Describe two examples of how OEMS can benefit from a Connected Service Agreement?

Example #1: Supplier that Manufactures Pumps, Valves and Seals for Power, and Oil and Gas Industry

A supplier of pumps, valves, and seals to power, oil, gas, chemical and other industries provides products that helps customers proactively manage plant assets to improve plant uptime and minimize equipment lifecycle costs by addressing process and equipment issues.

To collect real-time data, engineers at the supplier use a wireless technology which uses unique transmitters to process sensor signals and acquire analog and digital data at a much lower cost than comparable wired solutions.

The wireless system sends data to the supplier's PI System. As part of a Connected Services Agreement with OSIsoft, the supplier uses the PI System to remotely collect and manage data on the asset owner's equipment. Once the real-time data is collected and correlated with historical and contextual data, experts at the supplier use their advanced skills to analyze the data and transform it into actionable intelligence.

Example #2: Equipment Manufacturer of Smart Charging Systems for Electric Vehicles

An equipment manufacturer of smart charging systems for electric vehicles (EV) uses the PI System to enable true "vehicle-to-grid" integration via its charging system. Through a Connected Services agreement with OSIsoft, the PI System combines data from the manufacturer's network of charging stations with electric grid information supplied by utilities and ISOs. This information is used to maximize EV charging speed and efficiency while reducing costs.

As part of this process, the charging systems energy market engine reads all data from ISOs and utilities through PI-to-PI interfaces including information on wholesale pricing and demand response events, and processes it to determine the best way to control distributed resources. Their charging system's intelligent charging capability uses this information to manage power demand on the grid. As the number of EVs grows and users demand more power, the manufacturer can optimize charging performance while improving grid stability.

What are the benefits to the Service Providers?

Develop Scalable Solutions
The agreement allows service providers to add more capacity to cover the introduction of additional services or growth in customer demand.

Maintain Intellectual Property
Service providers can apply their intellectual property to solving customer problems. In addition, they can use the Connected Services agreement to develop additional expertise as that can be applied to new or existing services.

Increase Data Visibility
Continuous visibility into the assets owner's operating data enables service providers to deliver timely information to collaborate, analyze and make smart decisions.

Maximize Service Personnel
It optimizes the use of personnel by allowing them to spend more time and energy providing core services instead of traveling on site to collect data.

Leverage New Technology
Service providers can use the latest technology state-of-art advances in wireless communications, storage technologies to increase the value of their service offerings.

Pay-as-you-grow
Service providers pay over time from operating expenses, without reaching into capital budgets, using a subscription model.

Learn about Field Performance
OEMs can use a Connected Service agreement to monitor equipment in the field and improve aftermarket service for their customers as well as gather valuable information on how their product performs in the field.

What are the benefits of Connected Services for asset owners?

Operating data enables service providers to provide timely services that help asset owners:

- **Optimize operating efficiency**
- **Reduce operating costs**
- **Employ condition-based monitoring and maintenance techniques**
- **Extend asset life**

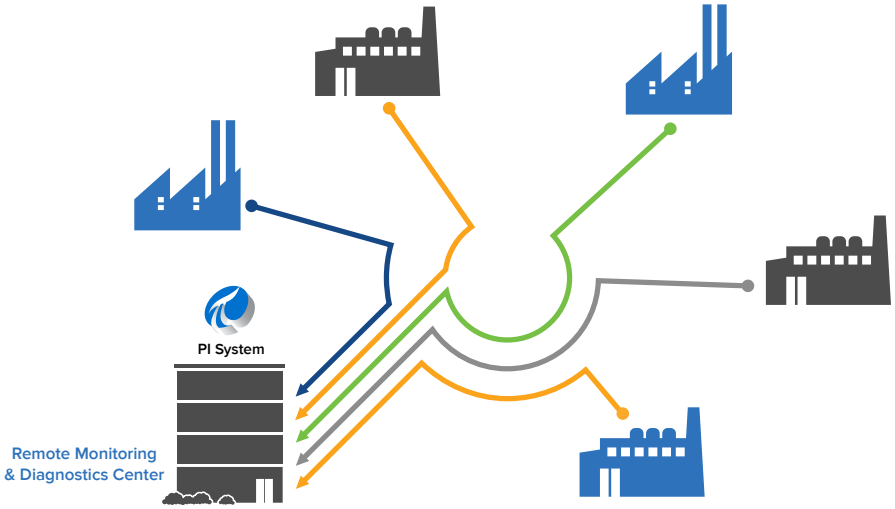
Service providers with predictive analytic expertise can apply real-time sensor and historical data against statistical models to forecast future asset performance, asset life, and asset failure.

These advantages help asset owners replace the knowledge, expertise, and skills that might be lost when experienced staff members retire and leave the company.

How do you describe the Connected Services Architecture?

The Connected Services architecture can be tailored to a service provider's requirements. The PI System is located in the service provider's remote management and diagnostic center (RM&D) which can be located on the service providers' data center or in the cloud. A service provider's RM&D typically includes the PI System: service provider's IT infrastructure including servers, storage devices, and networking equipment; and other resource the service provider uses for after-market services or customer service.

Typically service providers use secure virtual private networks (VPNs) to link with the PI System (see question "What are key PI System components used by Connected Services) and link to an asset owner's data sources.



How is the architecture configured if the asset owner does or does not have a PI System?

If the service provider and the asset owner both have the PI System, PI Cloud Connect enables them to share data in a publish and subscribe model. Based on Microsoft's Azure platform, PI Cloud Connect allows service provider's asset owners, and other members of the value chain to share data bi-directionally between the PI System, both inside and outside the enterprise to other members of the value chain.

If the asset owner does not have a PI System, the service provider can install an interface or a limited use PI System at the asset owner's location to enable the provider to deliver their service.

What are the terms of a Connected Services agreement?

The system parameters and costs are based on the service provider's business plan projections. This enables OSIsoft to match the ongoing Connected Services' price with the service provider's technology ramp, asset types, asset sizes, and target market requirements.

There is an ongoing monthly fee, which can be billed on a quarterly basis. The fees can be based on an output metric such as megawatts in a power plant or barrels of oil produced. Fees may also be paid on a revenue-sharing basis.

What is the typical length of an agreement?

Two to five years.

What types of support does the Connected Services Framework include?

A start-up fee covers several forms of resources that assist the provider to install the PI System, shape the architecture, and set up the Asset Framework (Key PI System Components). The startup fee can be paid upfront or amortized.

- **Startup advisor (6 months)**
- **Remote architecture sessions**
- **Remote install for RM&D**
- **Training vouchers for onsite and classroom training**
- **Onsite coaching sessions with emphasis on setting data contextualization in Asset Framework**

Does OSIsoft offer ongoing support for Connected Service subscribers?

OSIsoft's offers Managed PI®, a service that monitors the service provider's PI System that is located in the remote monitoring and diagnostic center. An agent located in OSIsoft's network operations center can monitor the service provider's PI System on a 24/7 basis.

What is a PI System?

The PI System is a highly scalable and secure real-time data infrastructure that connects people and systems with the right operational information at the right time — in order to analyze, collaborate, and make smart decisions. Drawing from multiple sources, the PI System collects, stores, manages, and delivers real-time data to enable actionable insights across the organization.

What are the Key PI System Components used by Service Providers?

Data Collection:

PI Interfaces for System Monitoring:
PI Interfaces for System Monitoring enables the PI System to collect data from disparate data sources such as DCS, SCADA, and sensors. OSIsoft supports 400 standard interfaces.

PI Connectors:
Recently introduced, PI Connectors enable service providers to link their PI System to an asset owner's data sources. Easily configurable, these connectors also simplify data collection and data structure creation in Asset Framework.

PI Cloud Connect:
Based on Microsoft's Azure platform, PI Cloud Connect allows service providers and asset owners to share data between PI Systems, using a publish and subscribe model.

PI Server™:
Serving as the foundation of the PI System, the PI server centralizes data storage, provides context to real time data, and performs data analysis. It key components includes:

Data Archive:
The data archive reads and writes time series data for immediate analysis and visualization.

Asset Framework (AF):
The asset framework uses an easy-to-navigate, hierarchal format and consistent naming convention to enable users to identify assets and access data. The AF also associates real time data with contextual information such as events, equipment specifications, performance calculations and other external databases. This helps service providers identify problems, and simplify decision making.

Notifications:
Service providers can configure the PI System to send alerts whenever specific equipment exceeds pre-set parameters.

What are the Key PI System Components used by Service Providers? (Contined)

Visualization and Delivery:

PI DataLink®

A Microsoft add-on, PI DataLink uses a web browser to retrieve data from the PI System for display in a Microsoft Excel spreadsheet format.

PI ProcessBook®

Allows service providers to gain insight into an asset owner's operations by creating interactive graphical displays for real-time or historical data.

PI Coresight™

Using graphical information and displays from PI ProcessBook, PI Coresight is a web-based tool that delivers secure access to PI System data and applications from desktops or mobile devices, allowing ad hoc analysis and data sharing.

PI Web Parts®

WebParts is a Microsoft SharePoint-based technology for web dashboards that enables enterprise-wide collaboration.

Please visit http://www.osisoft.com/corporate/connected-services/index.html or contact us at connected@osisoft.com to learn more about Connected Services or to schedule a 1:1 meeting.