

# Extending the Enterprise to the Edge

## Your Guide to Converging Operational and Information Technology

Traditionally, agencies have approached information technology as a separate discipline from operational technology, which includes data acquisition systems, control systems, industrial-class networks, and a wide variety of internet-connected devices that operate far beyond the walls of the data center.

However, it is increasingly clear that the data gathered at the edge of operations can provide insights that agencies can use to improve the efficiency of their operations and deliver new services to support the mission. The key? **Converging OT capabilities with enterprise-class IT systems in single box and deploying them at the edge.**

GovLoop, Affigent and Hewlett Packard Enterprise (HPE) collaborated on this worksheet to help you take advantage of this new wave of edge computing.

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## Three Ways to Leverage OT-IT Convergence

*The benefits of converging OT and IT systems fall into three main categories:*

### Physical systems convergence

IT systems (compute, storage, management, and security) integrate in the same system chassis with OT systems (data acquisition systems, control systems, and industrial networks).

### Software and data convergence

Enterprise IT applications collaborating with OT applications are applied to both traditional enterprise data and data derived at the edge.

### Process convergence

IT and OT teams agree to collaborate on end-to-end workflows and dataflows.

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## Leveraging Data at the Edge: A Framework

*By integrating OT and IT systems, agencies can create a flow of data from the enterprise out to the edge. By integrating this data, agencies can see greater insights into their operations and services. Your OT-IT converged strategy must address the three C's:*

### Connect

The environment must connect to things at the edge to afford a pathway to data capture, control, and actuation. Connectivity is done in many ways, such as Wi-Fi, Ethernet, industrial networks and protocols, and direct-wired I/O and sensors.

### Compute

Analyzing data from the edge, using cutting-edge IT capabilities like accelerators, reveals new business, engineering, or scientific insights. Compute becomes pervasive right where it is most needed, not just in the data center or cloud.

### Control

Configuring, actuating, or orchestrating equipment at the edge is the ultimate reason for an edge deployment. The end goals and mission of the enterprise are accomplished via action and control.

## Buyer's Guide: Key Attributes of Converged OT-IT

In looking for a converged OT-IT platform, you need to ensure that you are getting the full benefits of convergence. Here are the fundamental specifications:

- **A consistent and standard platform**, based on open x86 and related commercial technology, so that technicians have only one system to learn and manage, and IT administrators can use the same automation practices as the data center to provision security and software updates
- **A rugged form-factor** that is designed for severe, space-constrained, and dusty environments to withstand shock, vibration, and extreme temperatures ranges
- **IT-grade security** across all OT-IT converged platforms
- **Enhanced serviceability**, as the modular design of the OT systems and cable-free compute blades supports fast field replaceable units while minimizing human error
- **Improved reliability**, with fewer independent systems and cables – which translates to fewer points of failure and enhanced remote debugging when errors are encountered
- **Increased energy savings**, with less equipment to power, fewer cable drops and energy conversions, leading to less energy lost to transmission
- **Reduced space requirements**, so that it fits in non-traditional IT environments, whether in military transport or an industrial facility

*To learn more about how Affigent and HPE can assist with meeting your mission IT needs, please visit [affigent.com](http://affigent.com).*



## Checklist: Enterprise-Grade Systems Operation & Automation

Robust systems management tools are essential to ensuring that converged OT-IT systems are working effectively and efficiently. Look for management tools that provide the following key capabilities:

- System configuration
- Health monitoring
- Event logging and alerting
- Graphical user interface (GUI) and command line interface (CLI) for user access
- Remote virtual presence
- Redfish (REST) interface for programmatic access
- Security
- Wireless manageability

### HPE: Delivering Enterprise-Grade Capabilities to the Edge

To help customers avoid the limitations of closed systems and the drawbacks of a cloud-only approach—bandwidth, vendor lock-in, inconsistent security, and lack of control—HPE's approach is to converge OT and IT systems at the edge within the HPE Edgeline Converged Edge Systems. Edgeline systems combine the best practices of the data center with advanced technologies for operations at the edge.

- Enterprise-grade analytics engines to rapidly gain insight from data and provide control for today's tough problem
- Enterprise-grade security and systems management that interoperate with existing security standards, automate any administrative task, maintain software updates, and have insight into system health
- Uniquely converged data acquisition and control that enable Edgeline systems to integrate data center-grade analytics and security (IT) with any industrial data acquisition and control system (OT)