Hewlett Packard Enterprise

Family guide

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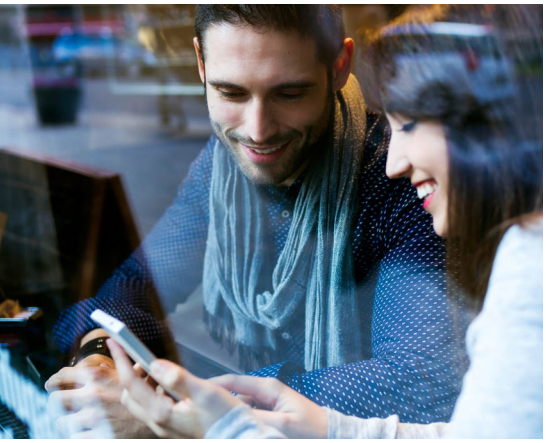
HPE EDGELINE CONVERGED EDGE SYSTEMS

Ruggedized data acquisition, analytics, and control systems purpose-built for the edge



EDGE COMPUTING

Nearly everyone, across practically every industry, has heard of edge computing. This hot technology topic is defined and perceived in many ways. HPE believes edge computing is the next major wave in IT infrastructure, extending beyond data center computing and cloud computing.

Edge computing is both on-premises and distributed. It makes decisions where data is generated—including smartphones, assets, beacons, and sensors—and does not rely upon decisions being made remotely.

Edge computing encapsulates all the IT and integrated operations technology (OT) infrastructure needed to make decisions from connected devices, including:

- Establishing connections to the devices, sensors, and equipment used throughout an organization
- Continually acquiring data from those connected devices
- Analyzing acquired data through techniques such as artificial intelligence (AI)
- Acting upon the data acquired to inform employees, systems of record, and key performance indicators (KPIs)
- Storing and managing data and results
- Ensuring security on data and devices

Different than both the cloud and the traditional data center, the edge is the next big wave of IT buildouts. The increased importance of edge computing is driven by data growth and digital transformation. Analysts predict that by 2022, 55 billion devices will be connected and 50% of all data will be created and processed at the edge. This major shift is accelerating the expansion of compute, storage, and networking demand.

The driving force behind data and device growth is digital transformation, which translates to using data to automate, improve, and customize experiences for customers, employees, and processes. Digital transformation uses data to optimize, automate, and enrich the world around us, which makes quick, data-driven insights increasingly important.

Digital transformation can also enable companies to redefine experiences, whether to create a digital workplace or to augment the customer/fan/visitor/student environment. In addition, digital transformation enables businesses to accelerate smart operations in factories, plants, and maintenance. Finally, digital transformation enables organizations to identify how 5G and Wi-Fi 6 can help them communicate with their customers, employees, and assets, as well as better understand how those two wireless technologies can coexist.

COMPUTE AT THE DISTRIBUTED EDGE

HPE Edgeline Converged Edge Systems put enterprise-class compute, storage, networking, security, and systems management at the edge. Built on the same technology as data center systems, HPE Edgeline delivers enterprise IT capabilities in a ruggedized compact form factor designed for the harsh operating environments found at the edge. Specifically, HPE Edgeline development was based on four fundamental tenets:

1. Unprecedented edge compute on open, standards-based architecture
2. Relentlessly ruggedized, purpose-built for the edge
3. World-class manageability and security
4. Integrated OT (control systems, data acquisition systems, industrial networks) with the enterprise IT capabilities within the same system

By moving to a distributed converged edge compute model, customers can expect:

- Real-time, local decision-making to support immediate action
- Autonomous operations, even with unreliable connectivity or lack of it
- World-class security and compliance at all times
- Easy scaling across sites and geographies with minimal management overhead

COMMON HPE EDGELINE EDGE USES

Data center workloads demanded at the edge—edge IT

Uncompromised data center compute and application stacks at the edge

Telco and media

- Virtual radio access network (vRAN) for 5G
- Content distribution
- Transcoding and packaging
- Virtual cable modem termination system
- Multi-access edge computing

Government and defense

- Video surveillance and safety
- Platform and mission management
- Command, control, and intelligence
- Industrial vision and quality inspection
- Communications

Campus, branch, and retail

- Video surveillance and security
- Buyer sentiment and retail analytics
- Remote office/branch office (ROBO)
- Trader workstation

Converged information and operations technology—edge OT

IT functions converging with OT functions into a system of systems

Industrial and manufacturing

- Condition monitoring
- Predictive maintenance
- Video QA and end-of-line testing
- Smart operations platform using HCI
- Connected worker with AR

Energy, oil, and gas

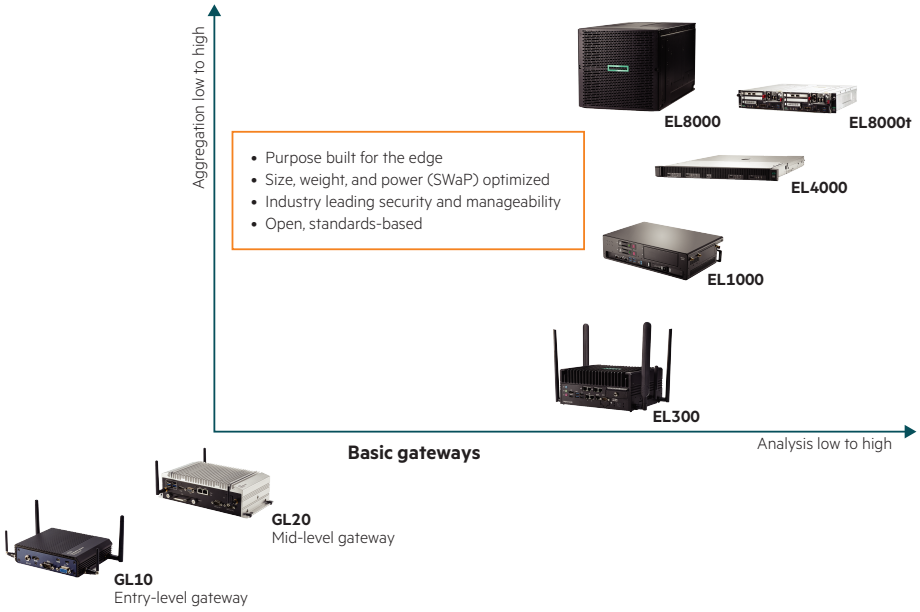
- Condition monitoring
- Predictive maintenance
- Smart drilling
- Drone surveillance video offload
- Connected worker with AR

Transportation and automotive

- Advanced driver assistance system (ADAS)
- UAV data offload
- Production QC
- Connected tools
- Connected worker with AR

HPE EDGELINE CONVERGED EDGE FAMILY

One platform supporting a variety of edge workloads



Enterprise-class IT at the edge

Cloud-centric solutions require data to be transferred from its source at the edge to the cloud, exposing it to potential issues of latency, bandwidth, security, compliance, and more. HPE Edgeline Converged Edge Systems eliminate those risks by collecting and processing data on Intel® Xeon® flagship processors or GPU/FPGA accelerators to provide high-performance analytics at the edge.

Edgeline then pairs the data with large amounts of memory and storage to host Big Data sets, interconnected with robust 100GbE and OT networks, to enable fast data pipelines. Furthermore, HPE Integrated Lights Out (iLO) and HPE Edgeline Integrated System Manager (iSM) provide IT-grade security and remote administration to simplify and automate deployment and operation of the Edgeline systems. These "no compromise" converged OT and IT edge systems enable HPE IT partners to redeploy their existing enterprise IT data center or cloud capabilities to solve OT problems at the edge.

The HPE Edgeline EL1000, EL4000, EL8000, and EL8000t can be configured with one or more HPE server blades to deliver various levels of Intel Xeon performance, large accelerators, high-capacity storage, and cluster-ready networking for a wide variety of application workloads. The Edgeline EL300 provides similar OT and IT capabilities in a highly ruggedized, passively cooled, small form-factor system.

OT-IT integration

Conventional enterprise IT systems at the edge have historically been designed to support back office workloads and infrastructure. Because each domain runs different applications and technologies, the IT environment has been isolated from business operations. On the OT side is an abundance of industry-specific physical connections and logical protocols, including Modbus, BACnet, and PROFINET. These protocols enable communication with control systems using data buses such as MQTT.

Emerging standards such as OCP-UA, coupled with Digital Twin technologies, provide business operations with greater capabilities to more holistically monitor and manage their business operations. However, the OT equipment is typically siloed and proprietary, which makes it difficult to share information across these systems—and information sharing is necessary to digitize OT operations effectively.

The challenge has been "the last foot," which means creating a bridge between IT data center capabilities and the isolated OT world. The answer to the "last foot challenge" is an edge computing system that can natively interoperate with OT protocols and equipment. Such a system would gain access to data from OT devices and would also control systems in near real time and convert analog data into digital. Doing so would enable businesses to interact with and understand the data, leading to more effective monitoring and management of business operations.

Due to the volume, variety, and velocity of data, advanced techniques are often needed to analyze the data gathered from edge systems. Insights derived from analytics are valuable only if the business can act on them to improve expected outcomes, such as preventing a pump failure before production is impacted. Just as with data acquisition, the edge system must "talk OT" using the appropriate physical connections and logical protocols before the system can command such actions.

HPE Edgeline systems integrate key open standards-based OT data acquisition and control technologies directly into the enterprise IT system responsible for running the analytics. Through HPE partnerships with top OT equipment and software providers, HPE Edgeline delivers fast, simple, and secure convergence between the necessary OT hardware and software components. This convergence of OT and IT capabilities into a single HPE Edgeline system greatly reduces the latency between acquiring data, analyzing it, and acting on it, while at the same time saving space, weight, and power (SWaP).

Implementing a converged OT and IT solution from scratch can be difficult—often impacted by false starts, unexpected barriers, and failed efforts that result in projects never successfully reaching production. To streamline OT and IT implementation, HPE created HPE Edgeline OT Link—an innovative hardware-software combination.

- HPE OT hardware modules or partner technologies based on the PXI standard facilitate data acquisition from a variety of different industrial devices found in many operations environments (factories, refineries, oil rigs, and others).
- HPE Edgeline OT Link Platform software provides a software layer that simplifies data movement from the physical world into the digital domain via industrial drivers, an easy-to-use drag-and-drop workload flow designer, locally hosted containerized applications, and connectors into major clouds and databases.
- All activities are centrally managed and orchestrated using the HPE Edgeline Workload Orchestrator software.

System operation and automation

The management engine built into each HPE Edgeline EL1000, EL4000, EL8000, and EL8000t System begins with the core capabilities of HPE iLO. Management is extended with edge-specific capabilities enabled by the HPE Edgeline iSM—embedded in HPE Edgeline EL300. Both HPE iLO and iSM provide local management of HPE Edgeline systems, supporting simple deployment and reliable operations. These management tools enable users to directly manage individual systems, as well as consolidate management of multiple systems.

To successfully manage individual Edgeline systems, HPE iLO and iSM 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 (EL300 only)

HPE iLO Amplifier Pack is a new inventory and firmware and software update management tool. Able to discover and inventory up to 10,000 servers, iLO Amplifier Pack provides detailed server inventory and downloadable reports. The massive scale of the iLO Amplifier Pack enables users to view their complete inventory and keep servers up to date from a single dashboard. iLO Amplifier Pack is the HPE deployment engine for updating firmware, drivers, agents, and configuration tools for HPE servers, including newer members of the Edgeline family.

Rugged form factors

Compact and ruggedized HPE Edgeline Converged Edge Systems are designed to reside in environmentally harsh, space-constrained, and/or dusty environments, and to withstand increased shock and vibration. These systems can also tolerate operating temperatures ranging from 0°C to 70°C, depending on the model and options selected.

When floor space is limited, a wide range of wall-, rack-, or shelf-mounting options opens up a variety of placement possibilities. In addition, you can easily connect HPE Edgeline systems to your electrical infrastructure by selecting AC, -48 VDC hot-pluggable power supplies. The EL300 also supports a 9–36 VDC power input option for industrial or automotive environments.

HPE Edgeline EL300, EL1000, EL4000, EL8000, and EL8000t are also certified for a variety of industry standards, including NEBS Level 3, MIL-STD-810G, or IP50, depending on the model and options selected.

HPE EDGELINE FOCUS AREAS

Telecommunications and media

Some of the largest sources and consumers of edge data are the growing number of mobile devices, IP TVs, connected objects, mobile assets, and machinery. This high volume of traffic places enormous pressure on communication service providers (CSPs) and telecom operators to prepare their infrastructure for the emerging 5G network. CSPs must also be ready to deliver reliable connectivity, low latency, and high bandwidth, while differentiating service levels and costs depending on the expected subscriber use cases.

In addition, CSPs will soon begin marketing their services to enterprises—expanding the mobile ecosystem to support Industry 4.0, decentralized workforces, and remote military installations, as well as enabling private networks for industrial users. HPE Edgeline is designed to help at every step of the CSP and telecom operator journey toward supporting 5G vRAN and multi-access edge computing (MEC) networks and services.

Telecom operators

Simplify and accelerate your edge transformation with HPE Edge Orchestrator, enabling the deployment and configuration of applications that run on geographically distributed edge devices such as HPE Edgeline, connected with network as a service (NaaS) provided by telecom operators.

HPE Edge Orchestrator makes it easy to launch a wide range of new revenue-generating edge computing-based services. With multi-tenant, intent-based edge orchestration, you can deliver new targeted vertical solutions and enterprise applications (such as the ones listed below), each being centrally manageable across hundreds of distributed locations through simple self-service tools. With HPE Edge Orchestrator, you can:

- **Deliver and consume edge computing as a service**—HPE Edge Orchestrator bridges ETSI MEC capabilities with large-scale application management—the core requirements for enabling edge computing as a service. These MEC capabilities can enable a wide range of enterprise use cases and support edge applications for your own subscribers and services, such as CDN.
- **Streamline and automate edge services**—New consumer and enterprise use cases require telecom operators to deploy hundreds (often thousands) of workloads at the edge—for both customers and their own edge services. HPE Edge Orchestrator enables large-scale automation to consistently deploy and manage workloads across many different edge locations.

- **Simplify operations with self-service portals and APIs**—For large-scale edge computing offerings to be viable—and profitable—they must be easy to deploy and manage across multiple sites, both for enterprise customers and CSPs. HPE Edge Orchestrator enables comprehensive management and orchestration of edge services, with the ability to complete management functions with a single click. HPE Edge Orchestrator also supports unified management and operations, using either the solution's portal or through existing systems via an open northbound API.
- **Support private 4G/5G networks**—You can maintain an important advantage over OTT competitors with the ability to integrate cellular services with edge computing use cases, including private 4G/5G networks.
- **Bridge the gap between traditional CSP and cloud-native enterprise technologies**—HPE Edge Orchestrator is built on the world-class, intent-based orchestration engine of HPE Service Director. As a result, you can take advantage of advanced HPE automation features, including a wide range of ready-to-use southbound APIs. This framework can help you bridge the gap between the IT tools you use to orchestrate your cloud-native applications (such as Kubernetes and Helm charts) and virtualized or containerized CSP workloads—all in the same platform.

Public sector

Government agencies have a specific need for data center–level compute at the extreme edge of their operations, whether for military operations in austere/remote environments, disaster recovery, or supporting diplomatic sites around the world with varying levels of connectivity. The HPE Edgeline EL8000 is purpose-built to meet these needs. This small, rugged, GPU-enabled, four-node server system has the power to handle data center workloads at the network edge like never before. HPE partners with NVIDIA®, DeepSig, AnyVision, and OmniSci to enable robust AI and machine learning (ML) platforms, enabling immediate insights from data generated at the extreme edge of the network—including signals intelligence (SIGINT), video analytics (facial recognition), and data analytics (data reduction and visualization).

Retail and branch

Employee trends, such as bring your own device (BYOD) and the expectation of being able to work from any place with network connectivity, are driving organizations to replace standalone PCs and laptops with virtual desktop infrastructure (VDI) and hosted desktop infrastructure (HDI). Businesses must deliver this level of mobility in a performant, reliable, and secure fashion to ensure productivity and worker satisfaction.

A primary issue with many VDI deployments is delivering predictable performance and an excellent user experience, due to the hypervisor's time-sharing of underlying hardware resources among active users. Furthermore, branch and remote office workers often have difficulty connecting to the core network, making data center VDI impractical for those users.

HPE Edgeline aims to solve these issues by delivering performant and cost-effective application and desktop publishing—without virtualization—at the edge, close to the actual user. For example, engineers and graphics designers who need very high performance to run computer-aided design (CAD) applications can use HPE Edgeline Engineering Workstations. By offering dedicated desktop resources, this proven solution provides the performance these users require to do their jobs.

Industrial, manufacturing, and energy

Organizations are constantly looking for new ways to improve operational efficiency (while also reducing costs) by innovating and developing products faster. A critical enabler for achieving these objectives is sensor data collected at the edge—be it a factory floor, a warehouse, or an engineering testbed.

This data can be used to create "smart operations" in a factory, make predictions on product quality, and improve overall production efficiencies and uptime. The data can also be used for "smart product engineering," where rapid test, modification, and review are completed during development to help reach the desired product maturity as quickly as possible.

HPE Edgeline integrates with industrial networks, data acquisition, and control systems directly within the system—providing enterprise IT analytics that enable manufacturers to reach their goals simply and cost-efficiently. In addition to providing access to all data spread across proprietary siloed OT systems, HPE Edgeline also enables customers to apply analytics to the data they receive, such as turning off a switch, identifying visual defects, closing a valve, or triggering an alarm. HPE Edgeline wraps all of these capabilities in enterprise-grade security and reliability to reduce the risk of disruption to operations.

Transportation and mobility
The edge is an emerging source of Big Data, and the oldest, fastest, and biggest Big Data—including air pressure, temperature, vibration, light, and sound—comes from the physical world. Today's heavily sensorized vehicles can act as rich sources of such data from RADAR, LIDAR, video, audio, and engine and battery parameters. Vehicle operators would like to access and analyze this data to improve utilization and reliability. Automotive manufacturers want to develop better advanced driver-assistance systems (ADAS) using data collected from the development fleet.

While simple in-vehicle data logging and post-processing has worked in the past, they constrain the real-time visibility and evolution agility of the fleet. These customers want to use artificial intelligence based on deep neural networks (DNNs) to analyze and act on this big analog data in a timely manner. HPE Edgeline systems help customers deploy high-capacity, high-performance storage inside vehicles for data logging, and couple this data with CPU- and GPU/FPGA-based accelerated compute to extract real-time insights close to the data sources.

Connected worker and augmented reality
Augmented reality (AR) technology enhances the user experience by placing data or digital objects into the user's field of vision via a tablet or a wearable. Enabled by mobile devices and wearables with access to pervasive, industrial, and wireless infrastructure, early adopters in manufacturing are recognizing the business value of AR, and they are integrating this technology into their digital transformation strategies.

Companies can pursue multiple parallel paths to move toward a digitally transformed edge workforce:

- Connected plant engineers
- Connected assembly-line workers
- Connected field workers
- Connected maintenance workers

For example, providing line workers with real-time assembly instructions and production specifications can improve worker productivity, factory throughput, and product quality. Using wearables to connect field and maintenance workers with remote expertise and guided work instructions can improve first-time fix rates and mean time to repair (MTTR), leading to an increase in asset uptime and utilization. While these different types of workers have very divergent responsibilities, ensuring they have access to the right information at the right time—within the context of their physical work environment—allows them to be more productive and work more safely.

Video analytics
Edge computing has changed everything about providing access, analytics, and storage to allow vision systems to move from local task-oriented tools to video analytics systems that merge video data with other process data. With HPE Edgeline Converged Edge Systems providing near real-time video analytics, organizations receive numerous benefits including:

- Near real-time object detection using AI from high-resolution images
- Local analysis for speed and network optimization
- Correlation of images and data streams
- Maximized data storage agility, whether at the edge, in the data center, or in the cloud

CHOOSING THE RIGHT SYSTEM

Finding the balance between data aggregation and analysis, size, and form factor

HPE EDGELINE CHASSIS PORTFOLIO

	 **EL8000**	 **EL8000t**	 **EL4000**	 **EL1000**	 **EL300**
Compatible Blades	e910 1U e910 2U	e910t	HPE ProLiant m510 HPE ProLiant m710x HPE ProLiant m710x-L	HPE ProLiant m510 HPE ProLiant m710x	Integrated System with Intel® Core™ i5-7300U (2.6 GHz, 2C) Intel® Core™ i7-8650U (1.9 GHz/4C)
Blade Server Capacity	4	2	4	1	N/A
Rack Height/Width/Depth	5U Half width 17" D	2U Full width 17" D	1U Full width	3.44" x 13.8" x 9.16"	3.9" x 7.9" x 9.14"
I/O Expansion	2 FHFL PCIe 4 HHHL PCIe	2 FHFL PCIe 2 HHHL PCIe	Up to 4 FHHL PCIe or PXIe Slots	Up to 2 FHHL PCIe or PXIe Slots	4 USB, 1 Serial, 1 Mini PCIe, 2 M.2, HDMI, DP Daughtercard I/O modules
Networking	Pass-Thru 10G	Pass-Thru 10G	Pass-Thru or Switched 10G 2 ports	Pass-Thru 1G or 10G 2 ports	2 x 1GbE 1 RJ45 Mgmt Port
Power Supply	(2) 1500W Flex Slot N+1 or N+N	(2) 1500W Flex Slot N+1 or N+N	(2) 800W Flex Slot N+1 or N+N	(1) 800W Flex Slot	DC power input or 80W AC power supply
Compliance/Rating	ASHRAE EU Lot 9	NEBS Level 3 EU Lot 9 ASHRAE	NEBS Level 3 MIL-STD-810G ASHRAE Class A3, A4	NEBS Level 3	IP50MIL-STD-810G
Management	HPE iLO 5, iLO Amplifier Pack	HPE iLO 5, iLO Amplifier Pack	iLO 4, EIM	iLO 4, EIM	iSM, EIM
Connectivity	N/A	N/A	N/A	Wi-Fi, BT, LTE	Wi-Fi, BT, LTE
HPE Part Number(s)	P12379-B21	P27062-B21	879799-B21 879808-B21 847536-B21	847555-B21 880271-B21 880273-B21	P06211-B21

EDGELINE FAMILY DESCRIPTIONS

Edgeline EL300—Compact, rugged, and customizable platform that can grow as your needs evolve over time. The modular design allows the EL300 to incorporate expansion modules for a multitude of connectivity options. The EL300 supports remote management over both wireless and wired networks. HPE Edgeline EL300 is the ideal choice for industrial and automotive customer use cases, is IP50 rated, and complies to several MIL-STD-810G specifications.

Edgeline EL1000—Single-blade platform delivered in a shoebox-size form factor that is suitable for industrial, retail, automotive, or telco customer-premises equipment use cases. The EL1000 supports Intel Xeon class compute with GPU accelerators for visualization and AI. In addition, the EL1000 also offers Wi-Fi and LTE support for sites without wired connectivity.

Edgeline EL4000—Four-blade platform in a 1U short-depth form factor that is suitable for telco, industrial, and retail use cases. The EL4000 uses the same blades and accelerator options as the EL1000, but can cluster up to four compute nodes together using built-in chassis 10GbE networking to form highly available data and compute platforms at the edge. In addition, the EL4000 is NEBS Level 3 certified for carrier-grade telco operation.

Edgeline EL8000 and EL8000t—Rugged SWaP-optimized design for delivering unprecedented levels of compute, storage, and networking performance at the edge. The EL8000/EL8000t offers servers using the same Intel Xeon Scalable processors as mainstream data centers; support for large inference, training, and visualization accelerators; and fast local SSD storage. The EL8000 is a compact toolbox-size (17" deep, 5U, half-rack width) bladed system allowing up to four independent compute nodes to be clustered together using dual-redundant chassis integrated switches. The EL8000t is also compact (17" deep, 2U, full-rack width) and supports two independent compute nodes. Both versions are ruggedized to operate indefinitely at extended temperatures of 0–55 degrees Celsius ambient and meet NEBS Level 3 certification.

EL8000 Edgeline rugged case—6U MIL-Spec rugged enclosure

Taking the Edgeline EL8000 to the edge of extreme environmental and operational conditions is now possible, offering a viable solution for military, federal, and commercial sectors. This rugged enclosure provides the ultimate protection for the HPE Edgeline EL8000 Converged Edge System and related mission-critical components as they travel from the desert to the arctic. Structural rigidity of the case eliminates distortion resulting from high temperature exposure. Interchangeable lids and one-quarter turn latches replace mismatched rack-mount lids and knuckle-busting latches, while also maintaining a watertight fit. The enclosure comes standard with two 2-inch interchangeable lids. Wheels and towing handle are also included with the travel case.

HPE GL10/20 IoT Gateways

HPE IoT Gateways enable organizations to rapidly acquire, analyze and, act on real-time data as it is collected for additional analysis at a later time. HPE IoT Gateways are a perfect complement to HPE Edgeline Converged Edge Systems for expanding your Internet of Things (IoT) infrastructure beyond traditional data center confines and enabling true edge computing.

For more information on HPE IoT Gateways, please refer to the GL20 QuickSpecs and the GL10 QuickSpecs.

Edgeline OT Link Platform and Workload Orchestrator—Bridging the gap between data in the field or factory and business applications. HPE Edgeline OT Link enables simple, fast, and predictable industrial IoT (IIoT) implementations. The Edgeline industrial software and hardware components work together seamlessly to allow users to access and exploit data previously trapped inside industrial equipment—no matter where or when the equipment was deployed. OT Link also offers visual workflow and data and device management, so companies can easily tap new data and insights to improve efficiency or create new business outcomes.

HPE BLADE SERVER PORTFOLIO

Blades supported in HPE Edgeline chassis

	 **m710x**	 **m750***	 **m510**	 **e910**	 **e910t**
CPU	Intel Xeon E3-1585L v5	Intel Xeon E-2286M	Intel Xeon D D-1548/D-1587	Intel Xeon SP	Intel Xeon SP
Cores	4	8	8/16	8/28	8/28
Clock Speed	3.1 GHz	2.4 GHz	2.0/1.7 GHz	2.2/3.6 GHz	2.2/3.6 GHz
Memory	Up to 64 GB	Up to 128 GB	Up to 128 GB	Up to 1.5 TB	Up to 1.5 TB
Storage	Up to 16 TB NVMe (5) M.2	Up to 16 TB NVMe (5) M.2	Up to 8 TB NVMe (3) M.2	Up to 20 TB NVMe (6) M.2	Up to 20 TB NVMe (6) M.2
Connectivity	Dual 10GbE, RoCE	Dual 10GbE, RoCE	Dual 10GbE, RoCE	Quad 10GbE, Dual SFP+, Dual 10/100/1GbE	Quad 10GbE, Dual SFP+, Dual 10/100/1GbE
GPU	Intel® Iris Pro P580	Intel UHD P630	N/A	NVIDIA Tesla V100/T4, RTX 6000 Intel® Stratix® 10	NVIDIA Tesla T4 Intel N3000v
Management	iLO 4	iLO 5	iLO 4	iLO 5, iLO Amplifier Pack	iLO 5, iLO Amplifier Pack
Compatible Chassis	Moonshot 1500 1.0 EL4000 EL1000	Moonshot 1500 2.0 EL4000 EL1000	Moonshot 1500 1.0 EL4000 EL1000	EL8000	EL8000t

*m750 support available Spring 2021

HPE POINTNEXT SERVICES

Achieve maximum return from your IT investment
Get the expertise you need at every step of your IT journey with HPE Pointnext Services and support. HPE Pointnext Services helps you lower risks and costs using proven best practices, automation, and methodologies that have been tested and refined by Hewlett Packard Enterprise experts during thousands of deployments globally.

During Advisory Services, we focus on your business outcomes and goals, partnering with you to design your transformation and build a road map tuned to your unique challenges. Our Professional Services and Operational Services can be leveraged to speed up time to production, boost performance, and accelerate your business. HPE Pointnext Services specializes in flawless and on-time implementation, on-budget execution, and creative configurations that get the most out of software and hardware alike.

Take the next step on your IoT journey
The HPE IoT Transformation Workshop is an interactive, facilitated exploration of the path forward—delivering value before, during, and after the workshop. During the workshop, HPE IoT experts and consultants work with your key business and technology stakeholders to help you:

- Define strategic objectives to exploit the potential of IoT
- Unify your IoT vision
- Align key stakeholders
- Expand collaboration
- Identify quick wins
- Identify and engage the appropriate stakeholders before the workshop
- Build your unique strategy, which includes business and technical alignment during the workshop
- Share outcomes and next steps to execute an aligned strategy after the Workshop

Fast Start edge solutions
Fast Start solutions allow HPE to start quickly with a pre-integrated solution, enabling us to reduce configuration efforts and speed access to insights. Together, we can scale Fast Start solutions at any time or expand to new use cases. These pre-integrated solutions, used in tandem with our expansion scale-up or scale-out architectures, enable our customers to succeed in their transformation journeys. These solutions are time-bound production pilots wrapped with an end-to-end suite of consulting services containing workshops and implementations of technologies from HPE and selected partners to ensure fast added value.

- **Fast Start Conditioning Monitoring**—Increasing manufacturing productivity, lowering maintenance costs, and reducing parts inventory
- **Fast Start Video Surveillance**—Supporting crowd control, traffic surveillance, fever detection, touchless secure access, social distancing, tracking, and location tracking
- **Fast Start Quality Assurance**—Lowering maintenance costs, reducing manual tasks, increasing manufacturing productivity, improving end-customer satisfaction, and enabling closed-loop manufacturing
- **Fast Start Intelligent Facilities**—Supporting building management system integration and business logic automation; integrating with Intelligent Workplace to set environmental preferences

HPE GLOBAL IoT INNOVATION LABS

Partner with HPE edge experts
Designed to accelerate collaboration among customers and partners and across HPE, HPE Global IoT Innovation Labs provide proof-of-concept design and testing of custom IoT and edge-to-cloud technologies and solutions. HPE Global IoT Innovation Lab personnel have the expertise and technology to assist you with testing on-site or remotely via secure network connections.

HPE Global IoT Innovation Labs are configured to explore and build a wide range of IoT solutions such as smart cities, IIoT manufacturing, smart healthcare, and smart retail, as well as media processing and distribution, telecom, remote virtual desktops, and military applications.

For more information, please visit hpe.com/info/IoTlab

Consume outcomes, not infrastructure
HPE GreenLake delivers as-a-service cloud economics on-premises as a pay-per-use model with no capital needed upfront and no overprovisioning of infrastructure. With HPE GreenLake, you benefit from:

- **Greater business agility**—Move faster, get capacity when you need it, and accelerate application and services deployment.
- **Simpler IT**—Get expertise and support to help with routine tasks to free up your staff for more important business initiatives.
- **Reduced IT costs**—Eliminate the need for up-front capital and stop overprovisioning.
- **Proper control**—Easily monitor and manage performance, security, compliance, and data, as well as latency, risk, and cost.

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Get updates

a00050138ENW, March 2021, Rev. 4

Hewlett Packard Enterprise