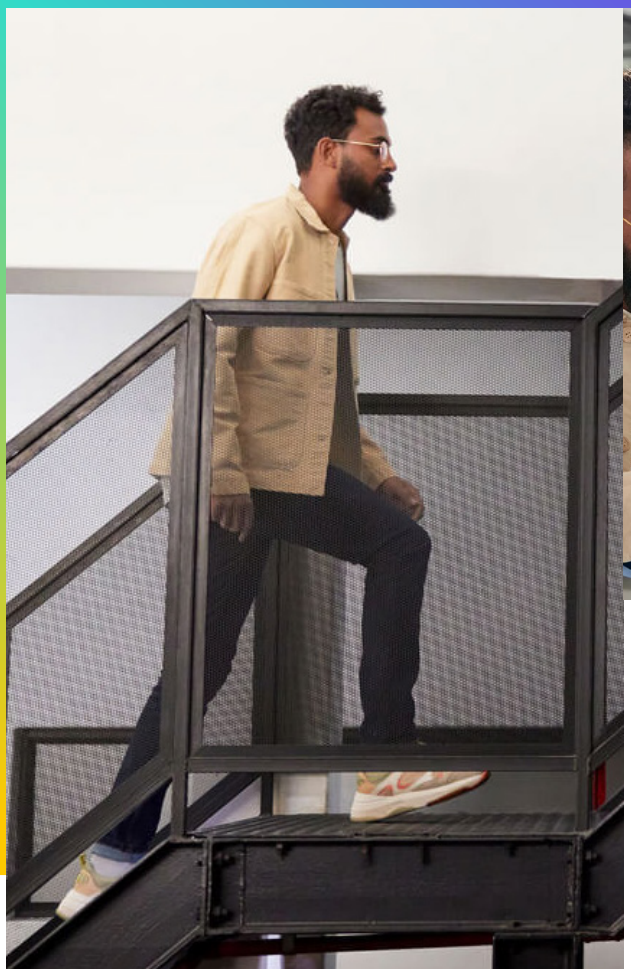
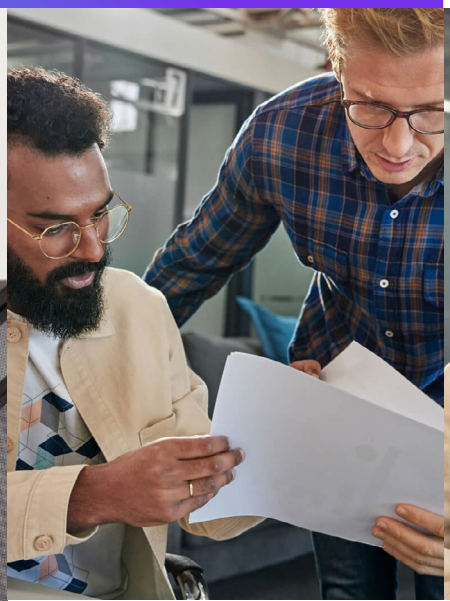
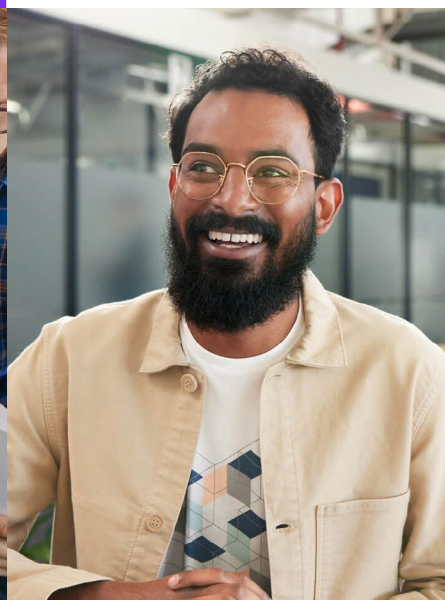
Hewlett Packard Enterprise | intel

# Optimizing performance for data management and analytics workloads

Data solutions leveraging HPE ProLiant Gen11 systems and 4th Gen Intel Xeon Scalable processors







## Data—creating opportunities and challenges

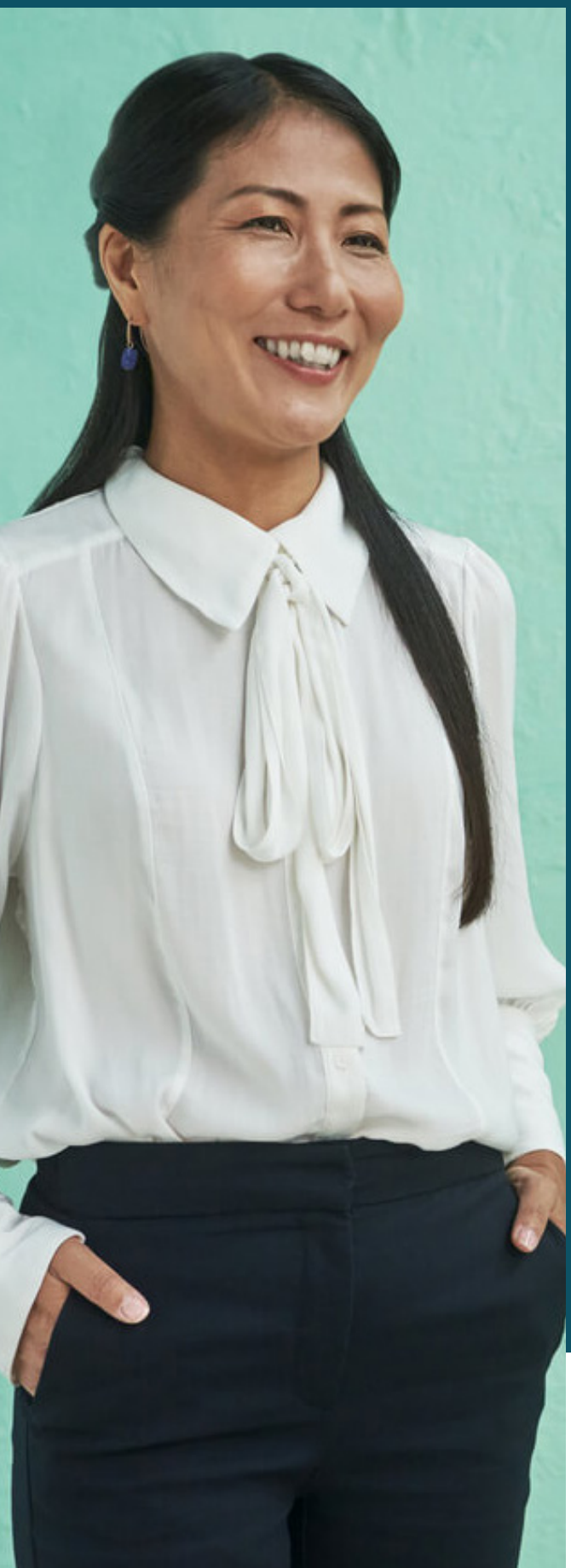
Second only to your human resources, your data is your greatest asset. Data gathered from edge to cloud holds the keys to organizational insights, innovation, and growth—but only if it can be cost-effectively managed, organized, and accessed.

To harness the full value of your data, you must overcome four top-of-mind challenges:

- **Managing exponential growth of data.** As data volumes continue to rise, you need to manage the growth in your existing systems while also taking advantage of any new data.
- **Securing and governing data.** Cybercrime is an ever-present threat. As the value of data continues to surge, your enterprise must heighten security and governance to guard against inevitable cyberattacks.
- **Managing the costs of collecting, storing, transforming, and analyzing data.** To maximize cost efficiencies, each type of data—hot, cold, new, and old—should be placed in the right-fit storage environment. Software licensing costs, the cost of bad data, and database software support costs must also be managed.
- **Turning data into knowledge, insights, and innovation.** In addition to ensuring your business applications run efficiently, you now can use the power of data to remain competitive in today's volatile marketplace. The faster you can turn all your data—both legacy and new—into insights, the faster you can respond to market changes.

Devising a plan for capitalizing on the opportunities data creates—and resolving the associated challenges—is a complex undertaking that affects all aspects of your organization. Rather than attempt to develop a data plan on your own, HPE and Intel® can help.

HPE and Intel offer a portfolio of data solutions designed to optimize the performance of data management and analytics workloads in your data center. And because all these solutions run on HPE ProLiant Gen11 servers powered by 4th Gen Intel® Xeon® Scalable processors, you can trust them to deliver the flexibility, speed, simplified management, and security you need to drive your business forward.



## Compute platforms of choice for data analytics and data management

HPE ProLiant Gen11 servers with 4th Gen Intel Xeon Scalable processors are engineered to unlock more value from your data, power insights, and drive innovation across edge to cloud. Designed for today's hybrid computing environments, these future-ready servers deliver:

- **Optimized performance for your workloads.** Get the performance you demand to accelerate any workload—from data center to the edge. Achieve cost efficiencies and performance economics to power your apps and accelerate innovation everywhere your data lives.
- **Intuitive cloud operating experience.** Simplify the way you control compute from edge to cloud with a cloud operating experience. Transform business operations to pivot your team from reactive to proactive with global visibility and insight through a unified console.
- **Trusted security by design.** HPE's goal is to protect infrastructure from threats to hardware and reduce risks from third-party software and other devices through an uncompromising focus on constant security advancements that are built into our DNA—from silicon to software, from the factory to the cloud. Silicon root of trust from HPE is HPE's fundamental approach to security and provides a zero trust architecture at the silicon level. 4th Gen Intel Xeon Scalable processors add hardware- and software-assisted security features, including Intel Software Guard Extensions (Intel SGX) and Intel Boot Guard to help secure the server hardware foundation on which critical applications run and better protect data in memory. Combining HPE and Intel security features provides peace of mind for organizations using HPE servers.
- **Extended protection across the HPE partner ecosystem.** Added protection leverages Security Protocols and Data Models (SPDM) for component authentication, with trust established through HPE iLO 6 verification.

# Transformative data analytics solutions

Data analytics help your organization optimize its performance, deliver better products and services, and create new revenue streams. With a data analytics solution from HPE and Intel, you receive a fast, flexible foundation designed to:

- Boost data and analytics capabilities.
- Generate real-time data insights.
- Increase operational efficiency.
- Enhance user experiences.

**Table 1.** Data analytics solutions leveraging HPE Gen11 products and 4th Gen Intel Xeon Scalable processors

| Workloads | Graph analytics | SAP | SAS |
|---|---|---|---|
| **Solution description** | • Connects data assets to deliver enterprise-level knowledge, insights, relationships, and context<br>• Enables leaders to ask real-time questions to support rapid responses<br>• Quickly identifies hidden issues to proactively mitigate potential risks<br>• Answers complex questions that typical Big Data systems can't answer, such as supply and demand inquiries<br>• Improves efficiency through performance optimization and automation | • Helps facilitate effective data processing and information flow across organizations<br>• Centralizes data management, providing multiple business functions with a single view to data | • Helps turn huge amounts of complex data into knowledge, enabling you to make intelligent decisions<br>• Integrates with open-source technologies and programming languages such as Python and R and data frameworks such as Hadoop<br>• Integrates with changing physical and virtual hardware environments<br>• Supports deployment in all major public clouds |
| **Platforms** | • HPE ProLiant DL380 Gen11<br>• HPE ProLiant DL560 Gen11<br>• HPE Synergy 480 Gen11 | | |
| **Use cases** | • Antitrust/anti-money laundering (financial services)<br>• Patient360 (healthcare)<br>• Customer360 (retail) | • Business warehousing<br>• Real-time analytics<br>• Application tier | • Big Data<br>• Real-time marketing<br>• Data quality<br>• Risk management<br>• Retail analytics<br>• Machine learning<br>• Data science<br>• Data integration<br>• Fraud detection<br>• Streaming analytics<br>• Text analytics |

## Did you know?

- More than 40,000 customers run SAP® applications on HPE infrastructure on a worldwide basis.[1]
- HPE is an SAP HANA® Enterprise Cloud Data Center supplier at scale.
- HPE is regarded by end users as a "safe" choice for on-premises and hosted SAP HANA installations.
- HPE has an established SAP Center of Expertise and has a direct sales force servicing clients worldwide.

# Get to know HPE ProLiant Gen11 servers for data analytics and data management

**Table 2.** HPE Gen11 compute solutions

| |  **HPE ProLiant DL380 Gen11 Server** |  **HPE ProLiant DL560 Gen11 Server** |  **HPE Synergy 480 Gen11 Compute Module** |
|---|---|---|---|
| **Description** | • Scalable 2U dual-socket server that delivers exceptional compute performance, expandability, and scalability for diverse workloads and environments<br>• Up to 60 cores, with faster DDR5 memory and high-speed PCIe Gen5 I/O<br>• Excellent choice for data-intensive workloads like data analytics, data management, software-defined storage, video transcoding, and virtualized apps | • Flexible, secure, high-density scale-up server for business-critical workloads such as data management and analytics<br>• Designed to deliver business-critical computing performance, the HPE ProLiant DL560 Gen11 offers impressive density to get more storage and I/Os in a quad-socket 2U form factor | • Delivering exceptional performance, efficiency, and flexibility in a two-socket, half-height form factor<br>• Supporting up to 56 cores, faster DDR5 memory, flexible storage controller options, and multiple I/O connectors<br>• Designed to create a pool of flexible compute capacity within a composable infrastructure<br>• Ideal platform for enterprise workloads now and in the future |
| **Processor** | 4th Gen Intel Xeon Scalable processors | | |
| **Memory** | Up to 8 TB of DDR5, up to 4800 MT/s | Up to 16 TB DDR5, up to 4800 MT/s | Up to 8 TB of DDR5, up to 4800 MT/s |
| **Drive count** | • Up to 38 SFF HDD/SSD, SAS/SATA<br>• Up to 32 SFF SSD, NVMe<br>• Up to 18 LFF HDD/SSD, SAS/SATA<br>• Up to 20 EDSFF E3.S 1T NVMe SSD | • Up to 24 SFF HDD/SSD, SAS/SATA/NVMe<br>• Up to 24 EDSFF E3.S 1T NVMe SSD | Drive cage options:[2]<br>• Up to 4 SFF HDD/SSD, SAS/SATA/NVMe<br>• Up to 8 EDSFF E3.S 1T NVMe SSD |
| **Management** | HPE iLO 6 | | |

[1] hpe.com/psnow/doc/a50000545enw?from=app&section=search&isFutureVersion=true

[2] The HPE Synergy 480 Gen11 Compute Module starts with a base chassis, and then drive cage(s) can be added to the chassis. Up to 200 drives are supported in a single chassis.

## Did you know?

- As of 2025, people will generate 463 exabytes of data each day.*
- The cost of data breaches (cybercrime) is projected to reach $10.5 trillion annually by 2025.[3]
- Poor data quality is responsible for an average of $15M per year in lost revenue.[4]

## High-performance data management and analytics solutions

Data management plays a key role in every successful data analytics program. With a modern data management solution, your organization can meet the rapidly escalating demands for greater:

- **Data governance.** Disaggregated systems and distributed data make it challenging to manage metadata, control data quality, and monitor data access to know who accesses what.
- **Data operations.** With a variety of data sources and formats, it can be difficult to integrate the data for insight, as well as control constant data copies and dependency management.
- **Data innovation.** Data islands make it difficult to share data for cross-domain analysis and reporting.
- **Business process automation.** Because day-to-day business processes can be complex, disconnected, and siloed, automation is needed for seamless workflow orchestration and to help reduce human error.
- **Data security.** As a top priority for any organization's operation and reputation, security can include tenant isolation, data grading and classification, and data lifecycle management.

To help you respond quickly to these demands—while managing massive volumes of data—HPE in collaboration with Intel designed a series of workload-optimized solutions for data management. All solutions in the HPE and Intel data-management portfolio are designed to scale from small to large deployments, supporting Oracle®, Microsoft SQL Server, and open-source workloads.

* One exabyte equals one billion gigabytes.

[3] "," Cybersecurity Ventures, 2022.

[4] "The impact of poor data quality: Risks, challenges, and solutions," Data Ladder, 2022.

**Table 3.** High-performance data management and analytics solutions

| Workloads | Oracle | SQL | Open source |
|---|---|---|---|
| **Solution description** | • Helps you manage data, prevent security breaches, and provide seamless access to applications<br>• Allows you to consolidate multiple databases into a single database, which shrinks operational and licensing costs<br>• Provides support for multiple databases, so you can move data from node to node from where it was stored and mirror the data within the same network; also allows you to update more than one database with a single request | • Accelerates transactions and insights with record-setting performance<br>• Eliminates network and scale-out latency<br>• Uses a standard language for handling relational databases<br>• Allows you to define the data in a database and manipulate that specific data | • Uses code that is open and free for download, modification, and reuse, which is the opposite of a proprietary or closed source database where the code is protected to prevent copying<br>• Eliminates vendor lock-in, lowers the cost of acquisition, increases agility, and speeds time to market<br>• Accelerates the innovation cycle with more sourcing options, which are generally simpler, compared to proprietary solutions |
| **Platforms** | • HPE ProLiant DL380 Gen11<br>• HPE ProLiant DL560 Gen11<br>• HPE Synergy 480 Gen11 | | |
| **Use cases** | • For medium to large enterprise customers<br>• Easing performance bottlenecks and lowering licensing costs of UNIX®-based Oracle environments<br>• Consolidating database environments to reduce costs and sprawl<br>• Providing alternatives to current database platforms such as Oracle DB to PostgreSQL migration | • Telco<br>• Banking<br>• Healthcare<br>• Manufacturing (ERP traditional)<br>• Public sector (payment processing, student registration)<br>• Online gaming, transactions | • E-commerce and inventory management<br>• Personalization, recommendations, and customer experience<br>• Internet of Things and edge computing<br>• Fraud detection and authentication<br>• Financial services and payments<br>• MongoDB: This general-purpose database is used in various ways to support applications in many industries (telco, gaming, finances, healthcare, and retail) |

## Your choice of compute matters

As the primary source of business value, data is constantly created across your enterprise—generating insights that fuel innovation and competitive advantage. Realizing the full value of your data requires compute—but not just any compute. You need compute that can power the analytics that reveal key perspectives and support the workloads that put them to service for the benefit of your business and your customers.

The right choice of compute—one that delivers a cloud operating experience built from the ground up with a fundamental approach to security—can set your business apart from the competition. HPE Gen11 servers with 4th Gen Intel Xeon Scalable processors is the right choice for today and tomorrow.

## Modernize your compute management experience

Included with every HPE Gen11 server is HPE GreenLake for Compute Ops Management—designed to simplify and automate operations across the server lifecycle, no matter where your compute infrastructure lives. Providing a consistent, secure cloud experience for your whole environment, the service scales elastically and unifies compute management.

# Transforming data with HPE GreenLake edge-to-cloud platform

As you look for new ways to increase speed and agility in today's digital-first world, HPE GreenLake can help by bringing the cloud to you, your apps, and your data wherever they reside. With HPE GreenLake platform, you can:

- Accelerate time to value.
- Boost operational excellence.
- Free up capital.
- Prepare your talent for what's next.

You can receive your fast, flexible HPE ProLiant-based compute infrastructure on a consumption pay-per-use* basis. Depending on your needs, you can choose from a range of workload- and cost-optimized configurations installed on your premises. Using HPE GreenLake for Compute Ops Management, you can manage your compute no matter where it is located—at the edge, in colocations, or in data centers—all from a single screen.

* May be subject to minimums or reserve capacity may apply



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