



HPE Nonstop Software Roadmap



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Agenda

01 Nonstop Software Platform

02 Mission critical database

03 Security

04 Languages, tools & middleware

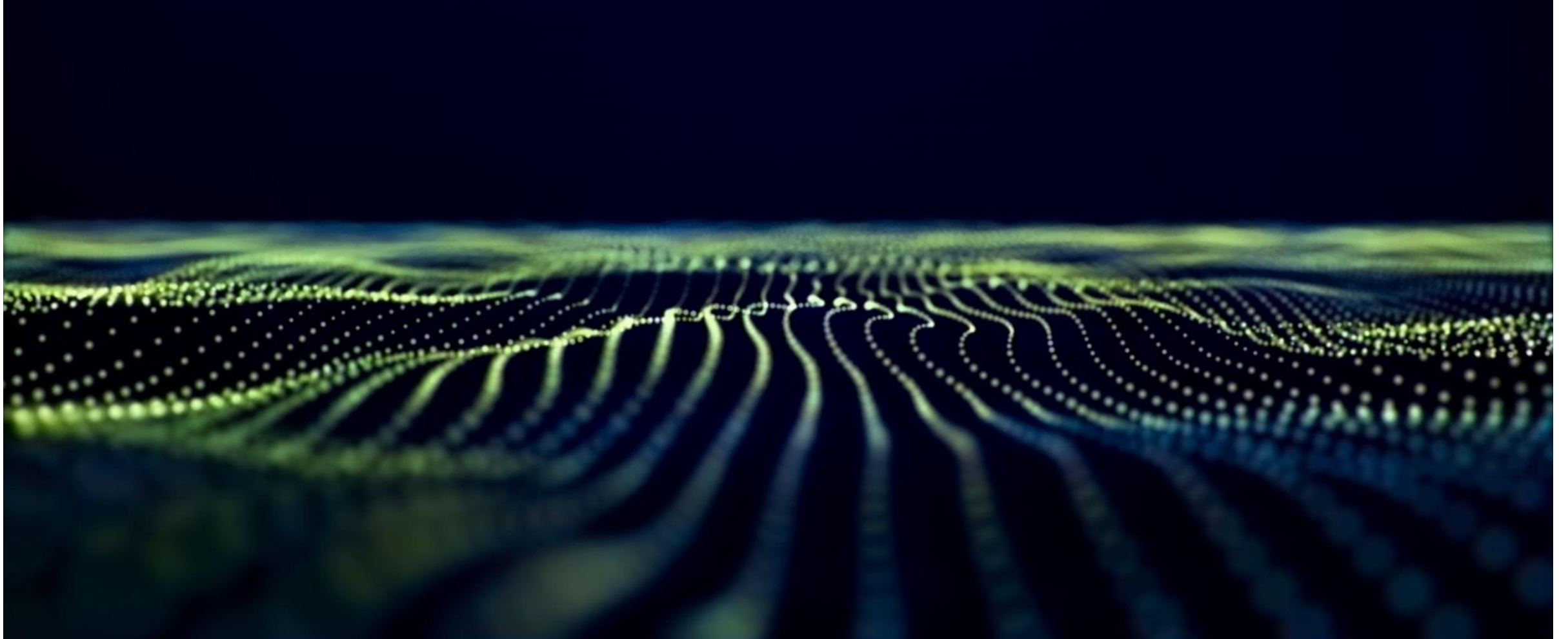
05 Manageability

06 Availability, Resilience and Recovery

07 HPE Services

08 Q&A

Nonstop Software Platform



Kernel Level Threads (KLT) in Nonstop OS

Nonstop OS provides native kernel support for threads (1x1)

Shared process-level information

Threads scheduled by Nonstop OS can execute in parallel across IPUs in a CPU

Just like processes, threads on the same IPU run preemptively, and threads on different IPUs run in parallel

Blocking call only affects calling thread

Synchronizers: mutexes, condition variables, and read-write locks (new)

POSIX (IEEE Std 1003.1, 2004) compliant thread library (pthreads API)

More efficient use of cores



HPE Virtualized Nonstop 4.0

Support deployments in industry standard compute running KVM

- Ubuntu L24.04 distro

Continue supporting the current HW design

- Intel Xeon 6th Gen Scalable processors
- RoCE on Mellanox ConnectX-6 NICs
- Block storage (only external iSCSI supported currently)
- Vendor neutral hardware selection

Continue with the current VM configurations

- Entry Class and High End systems
- Scale out characteristics (CPUs/CLIMs* per system)
- Resources (memory, cores)

Services and Support

- Deployment services encompasses the complete stack
- Complete portfolio of software support available



* Network CLIMs will support 16c and 8c option

HPE Nonstop in public cloud and aaS

Near Term

- vNS on general fleet IaaS
- Nonstop instances in cloud-1 offered in aaS model

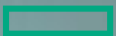
Medium Term

- Nonstop instances in other CSPs
- Service access through GLP

Longer Term

- Nonstop aaS in Hybrid cloud on GLP
- Support HPE standard toolchain (e.g. OpsRamp, Backup/Restore)
- Nonstop enabled aaS (e.g. DBaaS)

Mission Critical Database



Achieve PCI-DSS 4.0 compliance with SQL/MX



Pain Points

Cost of security breach and non-compliance

- Avg total cost of breach \$4.45M
- Non-compliance penalties & fines
- Brand damage
- Disk encryption not PCI DSS 4.0 compliant



Solution Strength

Introducing SQL/MX Transparent Data Encryption (TDE) and SQLXPRESS strong authentication

- No extra cost (built-in with SQL/MX)
- No application change required
- State of the art data protection



Value to customers

Preserve business value and achieve compliance at lower cost

- PCI-DSS 4.0, GDPR compliance
- Reduced data breach impact and cost
- Streamlined deployment for wider adoption



Nonstop SQL Roadmap

Futures

KLT

- Performance investigation for JDBC type 2 applications

TDE next phases

- HSM support
- TMF audit trail encryption

Post Quantum Cryptography

SQLXPress

- TDE administration, Additional WMS support,...

Auditing

- Expand and unify current auditing capabilities

Shadowbase

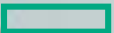
- Native blob/clob support, DDL Command replication, SBMAP data transformation, filtering and cleansing,...

Striim 5.2

- Complete UI/UX revamp with 50+ major new features
- Integration with AI foundational models (LLMs)
- AI agents:
- Striim CoPilot
- Vector Embeddings Generator
- mainframe integration and serverless platforms
- MCP Agent Link

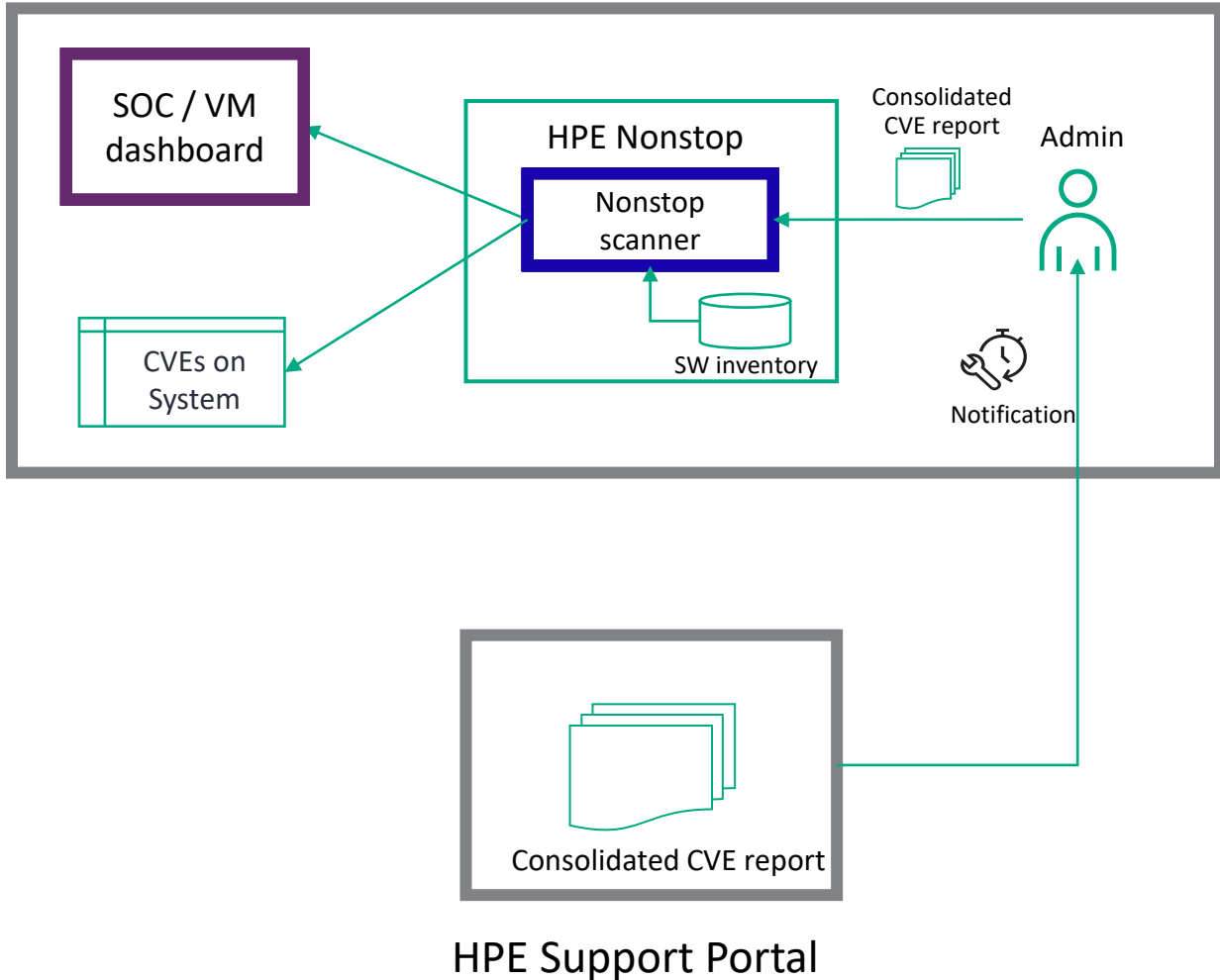


Security



XYGATE Aegis Scan for HPE Nonstop

A vulnerability management solution for HPE Nonstop



Builds the inventory of HPE software running on the system

Ingests the CVE report published by HPE

Reports CVEs applicable to the system

Integrate CVE results with

- Qualys Enterprise TruRisk™ Management (ETM)
- Security Operations Center (SOC)



Transparent File Encryption

Futures

Transparent encryption of files

No change to the application code required

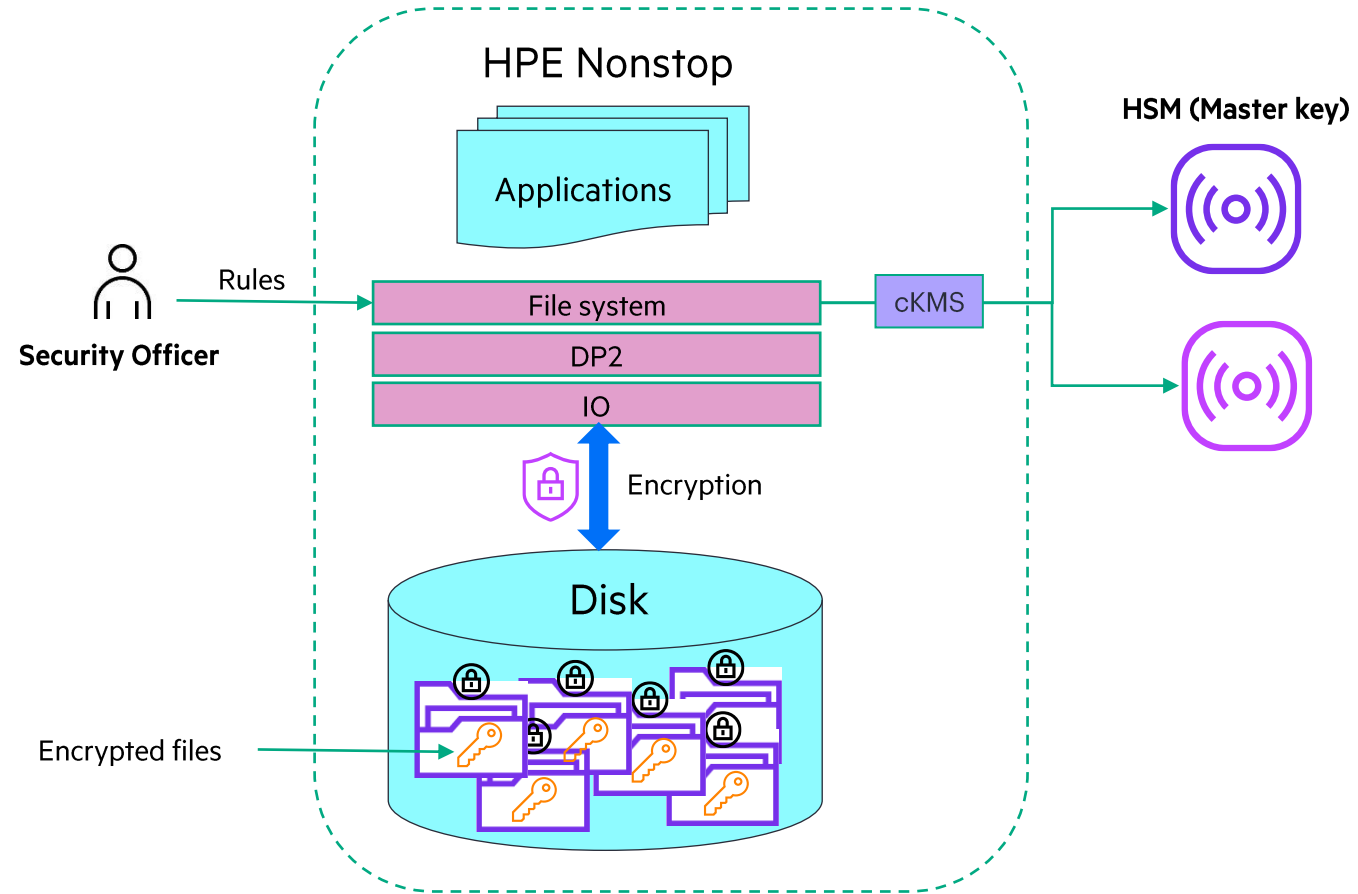
Encrypts TMF audit logs

A choice of HSMs for key management

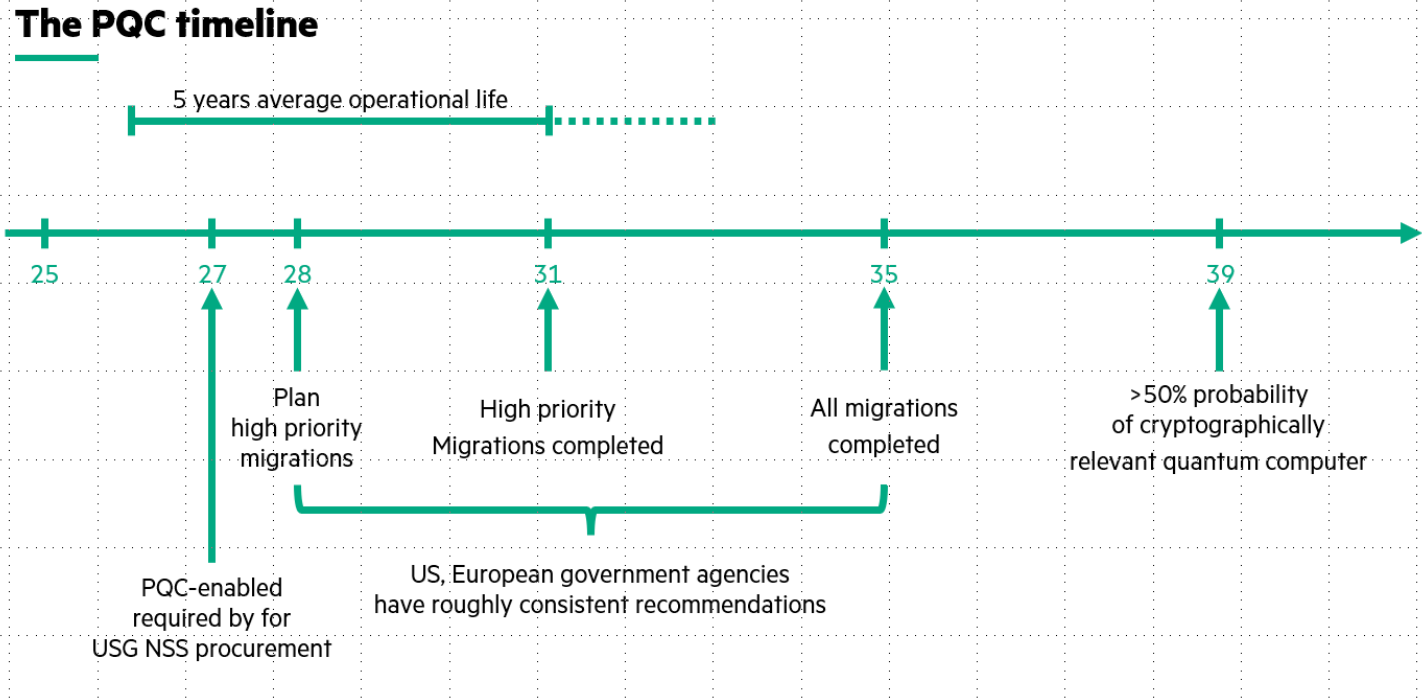
Encryption happens in Nonstop CLIMs

Rules to define the files to be encrypted

Helps comply with PCI 4.0.1 requirement for data at rest protection



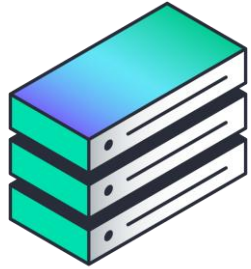
HPE position on PQC



Operation	Current Implementation Options	HPE Approved Algorithms
Public-key Encryption and Key-establishment Algorithms	DH, ECDH, RSA	ML-KEM-1024
Digital Signature	RSA, ECDSA, DSA	ML-DSA-87
Software/Firmware Signing	RSA, ECDSA	ML-DSA-87
Computing condensed representation of information (SHA)	SHA-1, SHA-256, SHA-384, SHA-512	SHA-384, SHA-512
Symmetric block cypher for encryption (AES)	AES-128, AES-192, AES-256	AES-256

Post Quantum Computing (PQC) and HPE Nonstop

Futures



Nonstop HW

Scope

Supply chain security

Firmware signing

Status

Leveraged from HPE HW

HPE ProLiant has full PQC compliance in the roadmap



Nonstop SW

Scope

Secure Boot (OS)

Passwords

Status

Secure Boot in the roadmap

Password TBD

PQC readiness targeted for Gen13



Data at rest

Scope

File systems (FS)

Database (SQL/MP & MX)

Status

VLE (FS, SQL/MP & MX) support AES 256

TDE (SQL/MX) support AES 256



Data in motion

Scope

SSL library

SSL Proxy

SSH Server

IPSec

Status

IETF RFCs are in progress

Opensource dependencies

- OpenSSL
- OpenDK



Languages, Tools & Middleware



Languages & DevOps: Modern Development Platform

- Python 3.13
 - Improved interactive interpreter
 - Removal of GIL
- VS Code Extension for C++ (Future)
 - IntelliSense
 - Automated Makefile generation
- C++ 20 support (Future)
 - Expands C++ language with advanced features
- GDB 12.x (Future)
 - Faster troubleshooting with support for Interpose DLLs

**VS Code
Extension
for C++**

**Python
3.13***

C++ 20

GDB 12.x



*Released on Apr 4, 2026

Middleware: Enterprise Integration Platform

Futures

- NSJ 21
 - Virtual Threads for high-performance concurrent applications
 - Native UTF-8 encoding for global-scale deployments.
- NSASJ 34
 - Modernize application servers with Wildfly 34.0.0 compliant to Jakarta EE 10 standards
 - Compatible with NSJ21/NSJ17 and latest NSMIC and NSMQ versions
- NSHTTP 2.4 U6
 - Apache HTTPD 2.4.62 with kernel-level thread awareness,
 - OpenSSL 3.5, and post-quantum cryptography support
- API Gateway 2.0
 - Transforms integration workflows with Apache Camel 4.4 foundation
 - Intuitive GUI-based management console
 - Generation of OpenAPI Specification for the REST routes

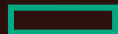
NSJ 21

NSASJ 34

**NSHTTP
2.4 U6**

**API
Gateway
2.0**

Manageability



Nonstop Observability Adapter

Futures

OpenTelemetry

One of the largest Cloud Native Computing Foundation's (CNCF) open-source projects

Provides a unified framework for instrumenting, collecting, and exporting telemetry data: metrics, logs, and traces

Offers standard APIs, SDKs, and tools for integration across diverse systems and environments

Vendor- and tool-agnostic, enabling interoperability with multiple observability platforms

Simplifies monitoring and troubleshooting of complex, distributed systems

Supports deep performance insights through standardized data collection

Nonstop Observability Adapter

Collects telemetry data directly from Nonstop systems

Extends Nonstop monitoring to modern observability ecosystems by exporting data to OpenTelemetry-compatible enterprise platforms



Extending OpsRamp Observability to HPE Nonstop Futures

Futures

Unified Operations Experience

- Monitor Nonstop alongside distributed, cloud, and hybrid infrastructure
- One platform for cross-environment awareness

Availability & Health Insights

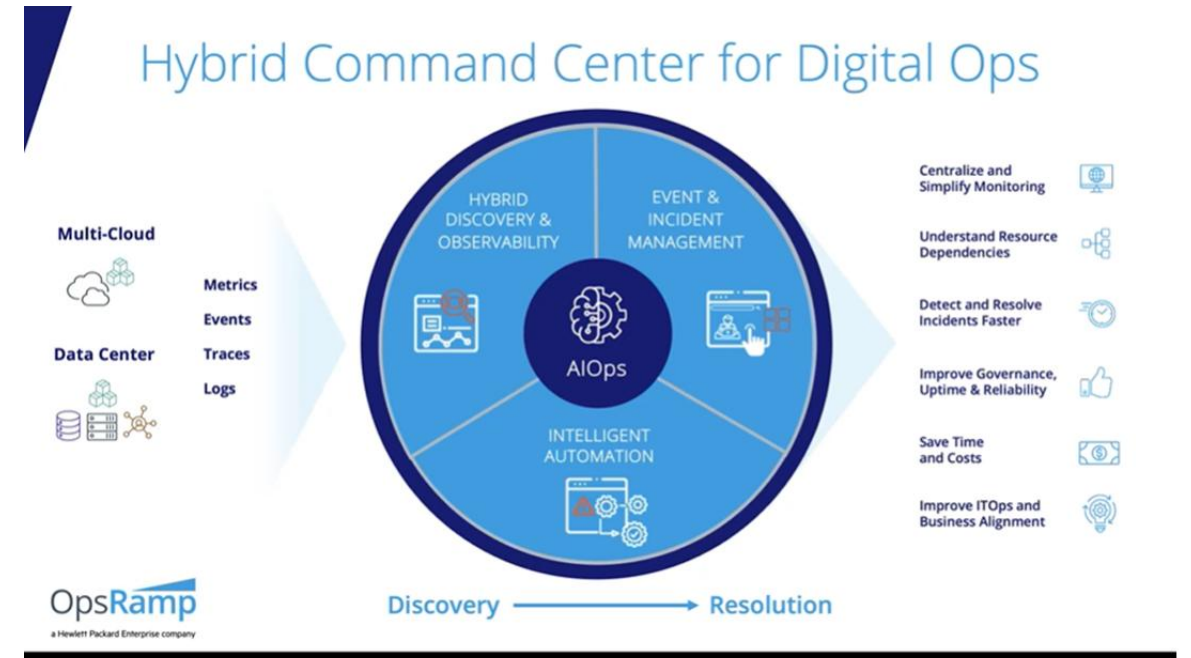
- Support for health, availability, and key operational indicators
- Faster awareness of potential service impact

Proactive Operations

- Event intelligence and alerting to help reduce noise
- Support earlier detection and response

Enterprise-Ready Integration

- Align with existing OpsRamp workflows, dashboards, and reporting



CLIM Update Improvements: Problems & Actions

Problem	Available Now
CLIM updates taking too long	Use Down System CLIM Update for parallel updates on CLIMs and storage enclosures
Too many CLIMs to update in a service window	Consider using VLAN/VXLAN to minimize the number of CLIMs in the system
CLIM updates fail to complete, resulting in partial updates	Install the fix for 331i/331FLR NIC failures

Problem	Future Work
Updating a subset of CLIMs using Down System CLIM Update	Store multiple CLIM OS images on the CLIM to enable rapid rollback when needed
Updates for CLIMs and storage enclosure taking too long	Optimize the CLIM and storage firmware update processes
Lack of clarity in performing CLIM updates	Release a whitepaper on best practices for CLIM updates



Availability, Resilience and Recovery



Recently Released

Shadowbase Zero Data Loss (ZDL) R1

- Safe-stores data on the backup system before the source system is allowed to commit
- Enables RPO = 0
- Maximum Availability Mode (MAM)

High-performance Cloud Integration

- Array-based processing enables 10-100x performance increase for integrating HPE Nonstop with Cloud environments

Kafka and JSON Support

- Dramatically improved Extract, Transform, and Load (ETL) Toolkit ease-of-use for transformation, loading, and streaming data from Nonstop to:
 - Kafka, JSON, and flat-files (CSV, fixed position, tab-delimited)
 - Other cloud environments such as API's



Future

Malware Detection and Prevention

Shadowbase Zero Data Loss (ZDL) enhancements

Shadowbase AI

Shadowbase Digital Resilience R1



HPE Services



Evolving Nonstop Services

Support services aligned with HPE model

Proactive support

- HPE Complete Care for Nonstop available as:
- Ready-to-use support packs
- Customized support for complex environments

Reactive support:

- HPE Tech Care for Nonstop Compute
- Clear response choices aligned to business impact

HPE Support Center for Nonstop

Single digital entry point for Nonstop support

Easy access to

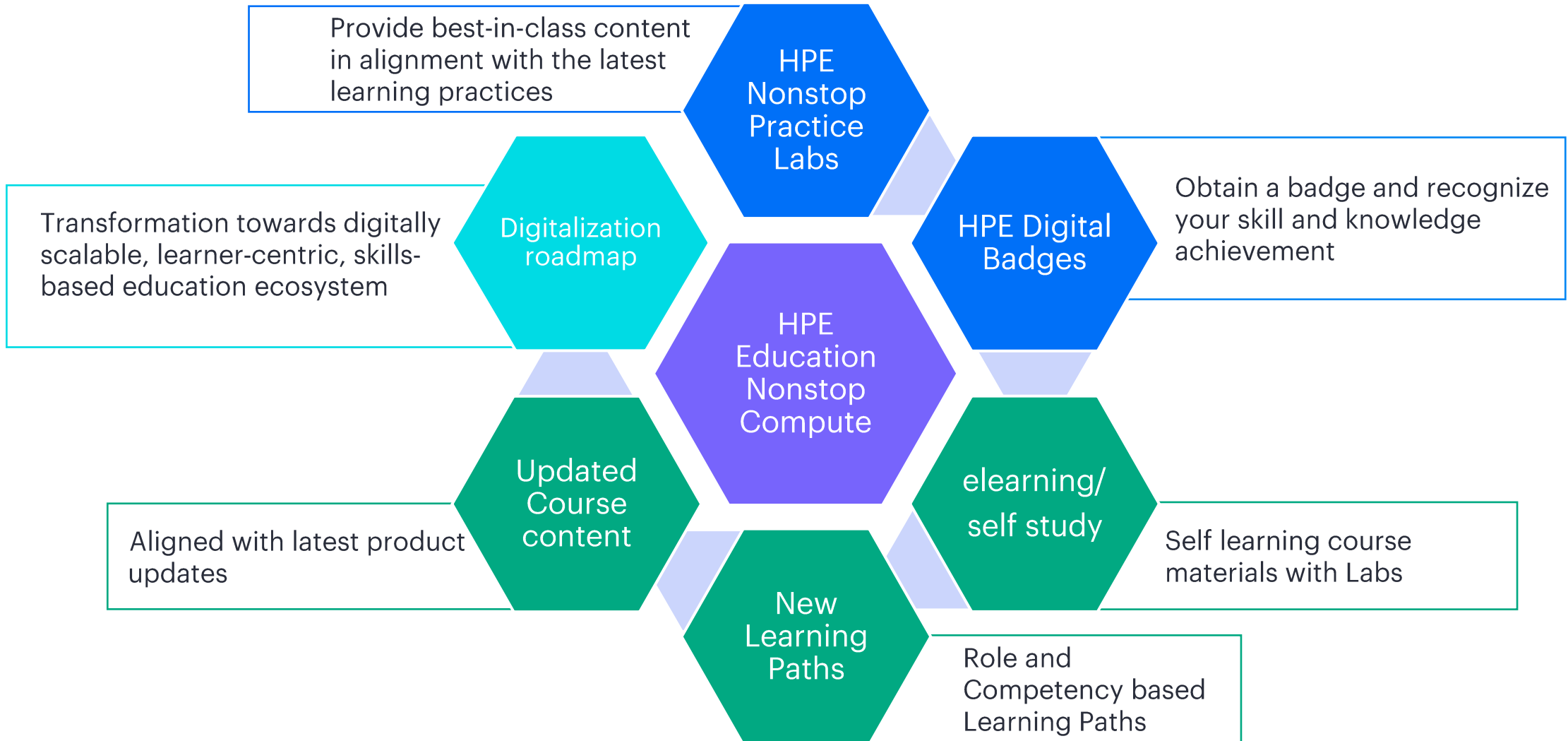
- Support cases and status
- Software and documentation
- Product and support information

Direct digital engagement with HPE support teams

Designed to support faster issue resolution and day-to-day efficiency



HPE Education-Nonstop Compute



Visit HPE Education NonStop webpage:
hpe.com/ww/learnnonstop

Thank You



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Upcoming

Shadowbase Compare Plus

- Extends existing Shadowbase like-to-like data validation R1: Nonstop SQL (MP and MX) vs. Windows/SQL Server or Linux/Oracle
- R2: Nonstop SQL (MP and MX) vs. Db2, Sybase, MySQL, PostgreSQL, SAP HANA, & others
- R3: Nonstop Enscribe vs. Oracle, SQL Server, Db2, Sybase, MySQL, PostgreSQL, SAP HANA, & others
- R4: Nonstop Enscribe vs. HPE NS SQL (MP & MX) databases
- Works with **any** data replication solution

