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FORWARD-LOOKING STATEMENTS

This is a rolling (up to three year) Roadmap and is subject to change without notice

This document contains forward looking statements regarding future operations, product development, product capabilities and availability dates. This information is subject to substantial uncertainties and is subject to change at any time without prior notification. Statements contained in this document concerning these matters only reflect Hewlett Packard Enterprise's predictions and / or expectations as of the date of this document and actual results and future plans of Hewlett Packard Enterprise may differ significantly as a result of, among other things, changes in product strategy resulting from technological, internal corporate, market and other changes. This is not a commitment to deliver any material, code or functionality and should not be relied upon in making purchasing decisions.

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AGENDA

- Market Trends & Customer Needs
- Creating New Services & Solutions for NonStop
- Get most out of your Existing Applications!
- New Use Cases
- Questions & Answers, Follow on Activities & Actions
  Discussion: How to apply this to address your challenges & opportunities.

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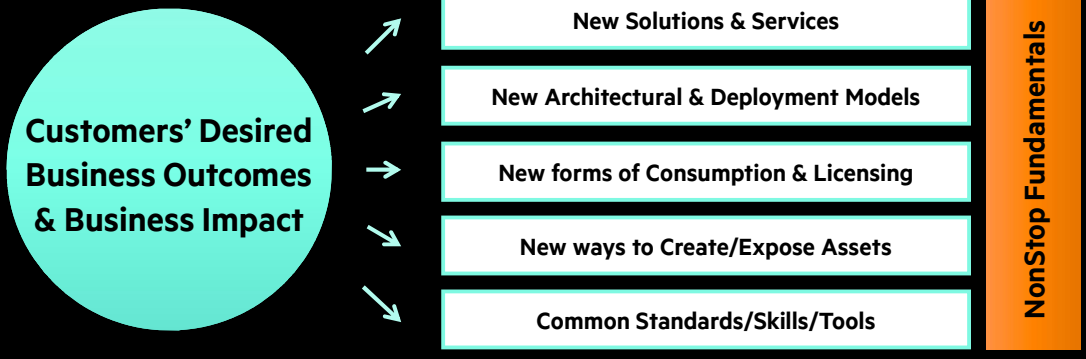
The art of the possible: Innovating for a Purpose



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MARKET TRENDS & CUSTOMER NEEDS

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What we hear from CIOs

- Quick Time-to-Market and Time-to-Value
- Cost effectiveness, low TCO & low Risk
- Leverage common technologies & standards
- High productivity of staff. No steep learning curve!
- No longer want to operate a datacenter
- User Experience. Ease of consumption & use!
- Quick and easy access, integration & composition of services and data
- Compliance, Regulation & legal Aspects
- Take advantage of Big Data Insights
- …with strong architectural qualities

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CREATE MODERN SOLUTIONS FOR NONSTOP

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Quo vadis CIO?

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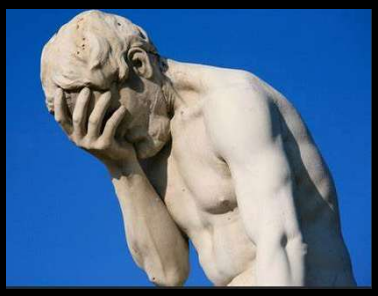
Speak to Engineers about Technology Choice for New Services

- Microservices
  - Database per Service
  - Compensating transactions
- APIs, API Gateway
- Polyglot Development
- DevOps
- Containers
- Kubernetes
- Deploy on Hyperscalers



All cool in Powerpoint. Not so much in real life....

One little example -- achieving scalability in Kubernetes:
Autoscaling requires an extra add-on to Kubernetes – the Metrics Server, and that is a quite complex task.
Kubernetes is not the same everywhere. Each cloud provider has different, unique config parameters to achieve autoscaling.
Developers need to manually configure the Kubernetes autoscaler for each public cloud. Compare this to NonStop

"Now you went from writing bad code to building bad infrastructure" *Source: Kelsey Hightower; changelog.com/posts*

Image Sources:
https://www.newgrounds.com/art/view/flufflyanimations/dancing-engineer
https://en.wikipedia.org/wiki/Facepalm

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Speak to IT Analyst Firms

IT Analysts popularize different architectural styles or modes of IT

1. Traditional, robust, slower, critical services, enterprise class, scalable, cost focused
2. Innovative, agile, TTM/TTV extremely important, opportunity focused

Examples:

- Gartner: Bimodal IT©
- McKinsey's two-speed architecture

Two modes of IT:

Robust, well engineered services

Innovative, agile services

The Challenge: It is easy to develop new services anywhere, but what is the effort to scale and make it HA?

Question: Wouldn't it be nice to have an architecture and platform that could handle both modes equally well?

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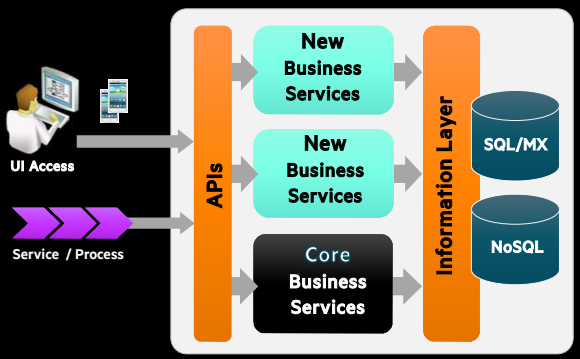
The Answer to the CIOs Challenges is...

HPE NonStop...

- uniquely combines the two IT styles
- future protects your existing services
  - Wrap, expose, reuse from new services
- allows building new services like on other platforms leveraging cool stuff, such as microservices, APIs, DevOps, In-memory DB, ...
- inherits automatic scalability and fault-tolerance to your services. Just deploy your services on NonStop!
- takes care of the hard parts – so your developers and admins don't have to!
- We get distributed computing right since 40+ years



You can focus on your business outcomes. We facilitate your innovations without technical debt!

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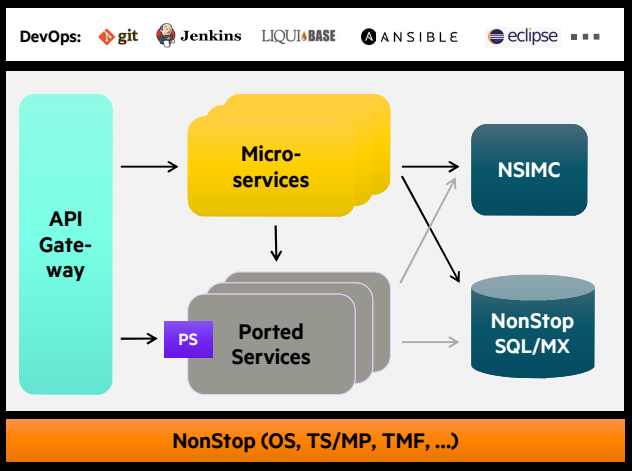
How to build new, modern Applications & Services on HPE NonStop

- State-of-the art technologies, tools & practices
- No platform specific skills needed - leverage ubiquitous skills
- Strong leverage of open source
- Transparently fault-tolerant and scale out
- Capable to scale-out over 1000s of processors
- Virtualized or Converged
- API enabled
- DevOps driven
- Following cloud native principles
- Features to accelerate ports to NonStop



PS ...NonStop PathSockets

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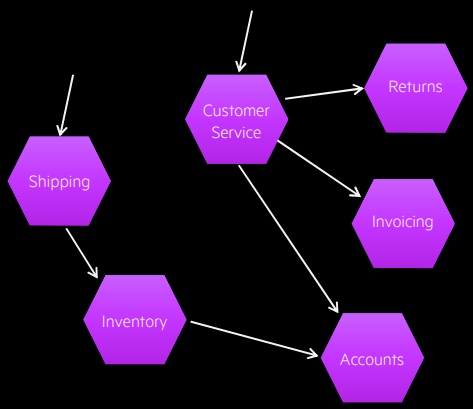
Microservices

- Microservices are the dominant architectural style for implementing modern enterprise software services
- Some characteristics of microservices
  - Independently deployable and manageable
  - Services are loosely-coupled and stateless
  - Single responsibility
  - Domain driven design (DDD)
  - Polyglot
  - Great testability and maintainability
  - ...sounds familiar?
- Popular microservices frameworks run just fine on NonStop, e.g. Spring Boot, Vert.x, etc.
- Deploy standalone or in NonStop middleware, under TS/MP control



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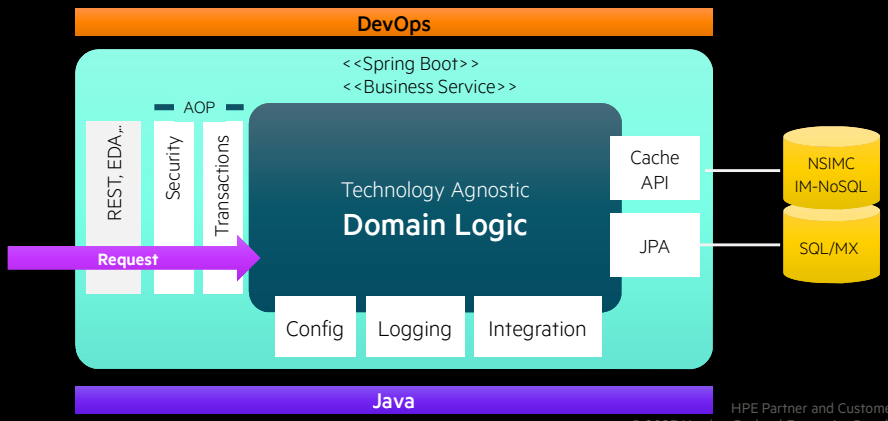
Creating platform-agnostic (Micro-)Services – SPRING Boot Example

Often times people worry about requiring NonStop specific code

- Yes, you can create well designed, platform agnostic services that run just fine on NonStop!
- Leverage state of the art technologies; DevOps and Cloud Native principles & practices
- Allow customers to leverage ubiquitous skills & remember: the same services just run better on NonStop….



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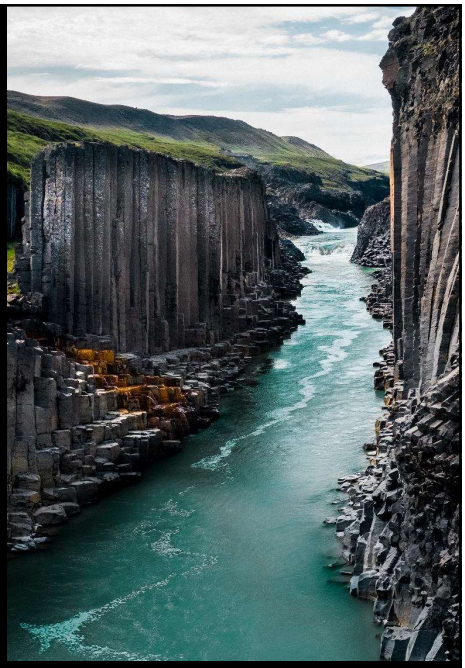
APIs - Living in an API-driven World

- APIs are ruling the world
- APIs everywhere – from business-/data-services, to manageability, …
- Popular everywhere – from edge to cloud, from on-prem traditional to public clouds
- Built upon Service Oriented Architecture (SOA) principles
- A must-have in an as-a-Service world
- REST: simplicity wins

- REST/JSON is most popular
- Alternative choices available on NonStop
  - e.g. GraphQL, OData, …



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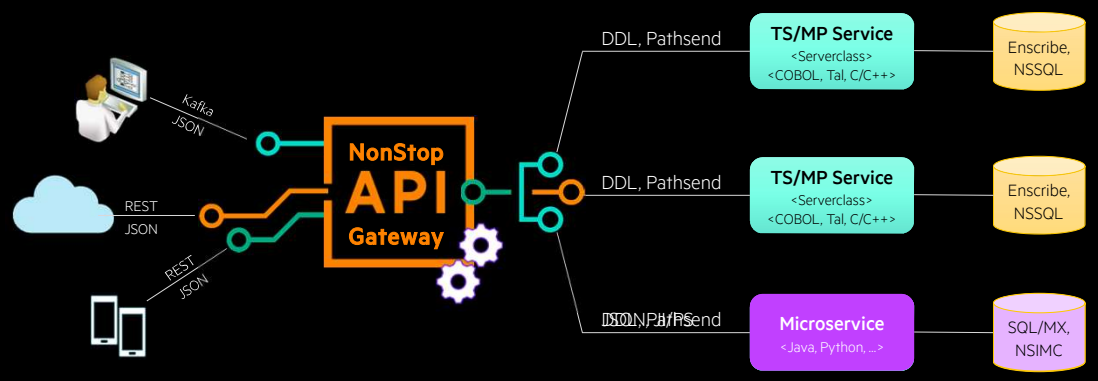
API Gateway: No-code API Enablement



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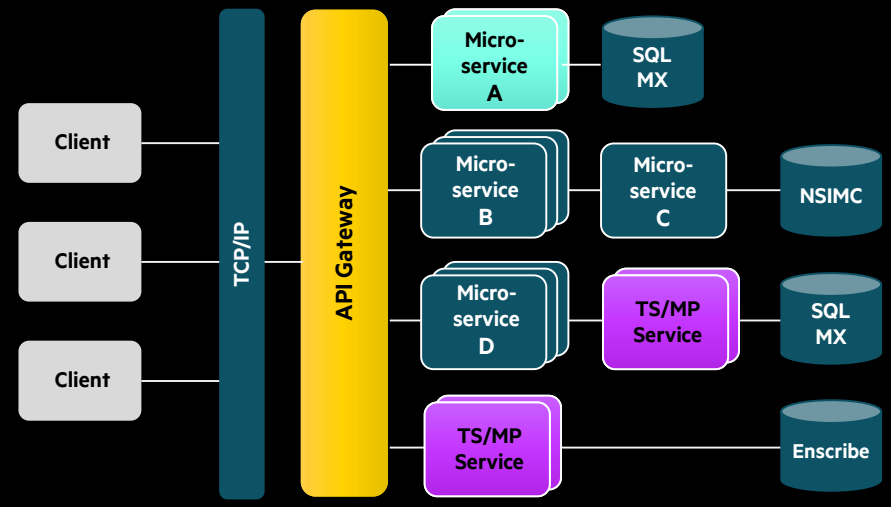
API GATEWAY as ENABLER to the WORLD OF APIs



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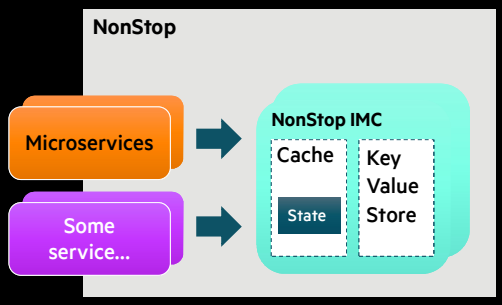
NonStop IMC. The fault-tolerant, in-memory NoSQL Database

In-memory Cache and NoSQL Key/Value Store based on Redis

- Based on open source Redis
- Supports all features of Redis
- Implemented as NonStop process pair
- On- and off-platform access
- Active data replication guarantees 100% data consistency (unlike Redis Master-Slave)
- NonStop Measure integration gives fine grained performance statistics



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New Solutions: Accelerate Value Capture For Ports to NonStop

Business Logic
Middleware, Frameworks, Languages

Database
Drivers, ORMs, KVS ...

SW- & Sys Infratructure
DevOps / System Tools
.....

- Middleware/frameworks for Java
- Microservices frameworks
- PathSockets
- TS/MP enhancements
- API Gateway
- Apache http
- KLT *)

- Java, Python, C++, Kotlin, Scala, Groovy, Clojure, ...

- NonStop SQL/MX
- NonStop DBS
- DB Compatibility (PLMX)
- JPA / Hibernate
- NonStop IMC (Redis)
- Liquibase DB Refactoring and DevOps
- NSDA
- ....

- NonStop Open Source Tools
- Eclipse/NSDEE
- Jenkins, Git, ...
- Ansible , NSMF, ...
- Liquibase
- Shadowbase
- OpenTracing, Zipkin, ...
- ELK integration
- ....

*) Future

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DEVOPS

- Focus on Operational & Delivery Performance to satisfy business needs
- DevOps is much more than just tools
- DevOps has crossed the chasm
- Key Outcomes people seek from DevOps
  - Significantly improved time-to-market
  - Lower failure rate of new releases
  - Lower lead time between fixes
  - Better employee engagement
- Broad NonStop support – not only for new technologies

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GET MOST OUT OF YOUR EXISTING APPLICATIONS!

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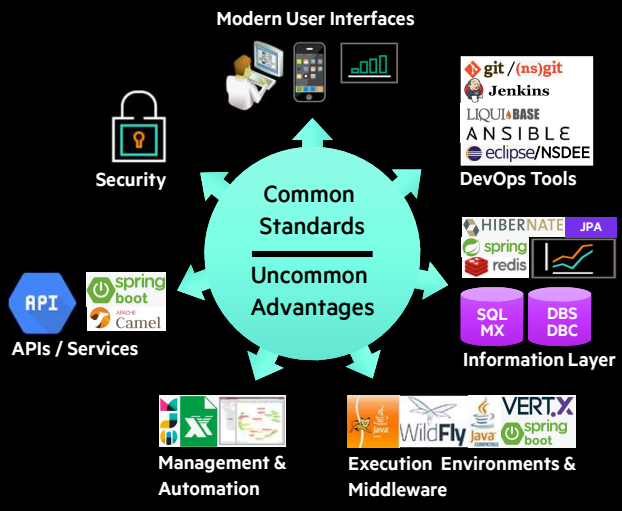
NonStop Modernization Domains

The seven technology domains to address customer needs for modernizing software architectures:

- User Interfaces
- APIs and Service Orientation
- Information Layer
- DevOps Tools
- Management & Automation
- Security
- Execution Environments



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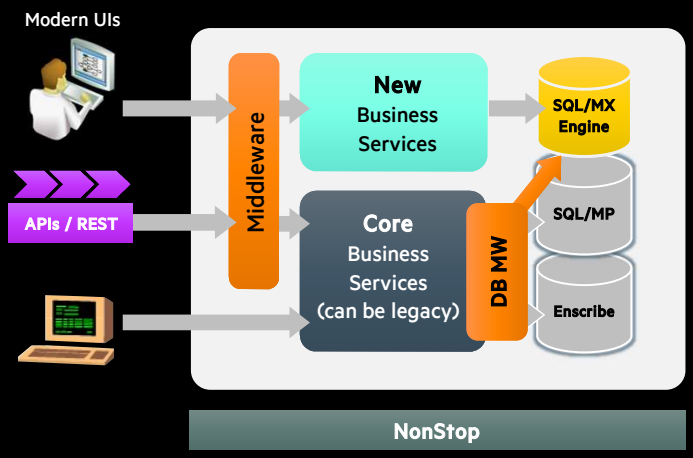
Modernization Strategy: Smooth Paths towards Modern Architectures

Focus: Business Outcomes & Value

- Evolutionary: Smooth Path/Low Risk, no big bang
- Quick Time-to-Market/Value
- Clean & Simple (no complexity!)
- Reusable & Extensible
- Easy to expose assets
- Develop new business services using ubiquitous skills
- Robust & Scalable from the beginning



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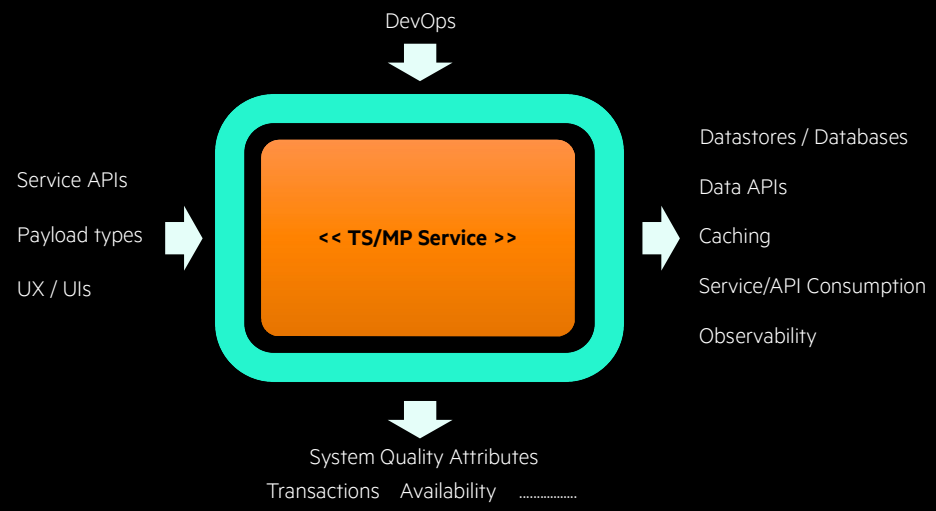
Existing NonStop Services with low change rate: Wrap & Reuse



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Modernize existing NonStop Datastores

- Comforte Escort*SQL (MP target) or Tandsoft Enscribe-2-SQL (MP+MX target)
- GraphQL
- Shadowbase Replication

- Leave existing apps unchanged
- Use SQL/MX engine with your existing MP tables for new services, remote access and tools

- Congrats, you're top notch already!!

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What if you already took a journey to Kubernetes & Co?

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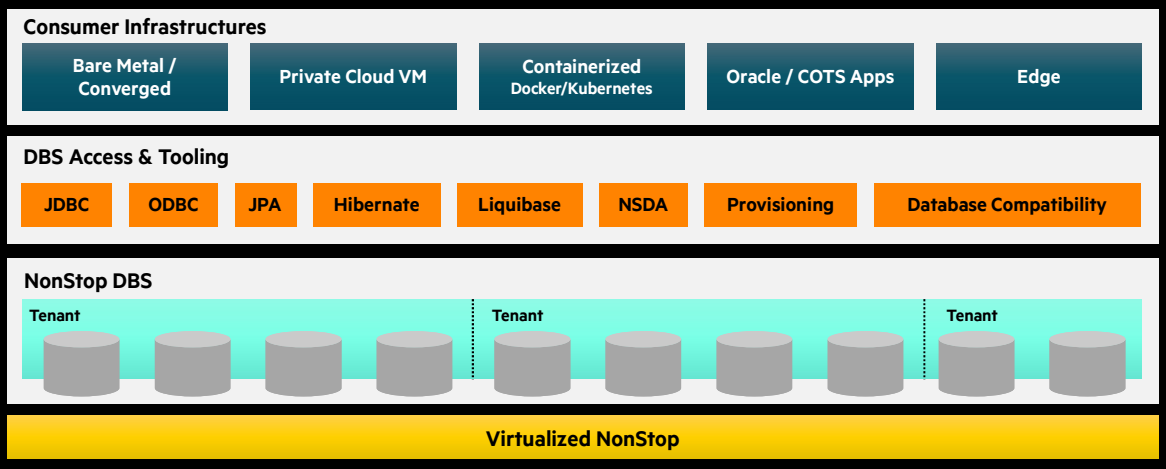
NonStop DBS – Powering your digital core

Fault-tolerant, Massively Scalable, Flexible, Multi-tenant, DevOps ready



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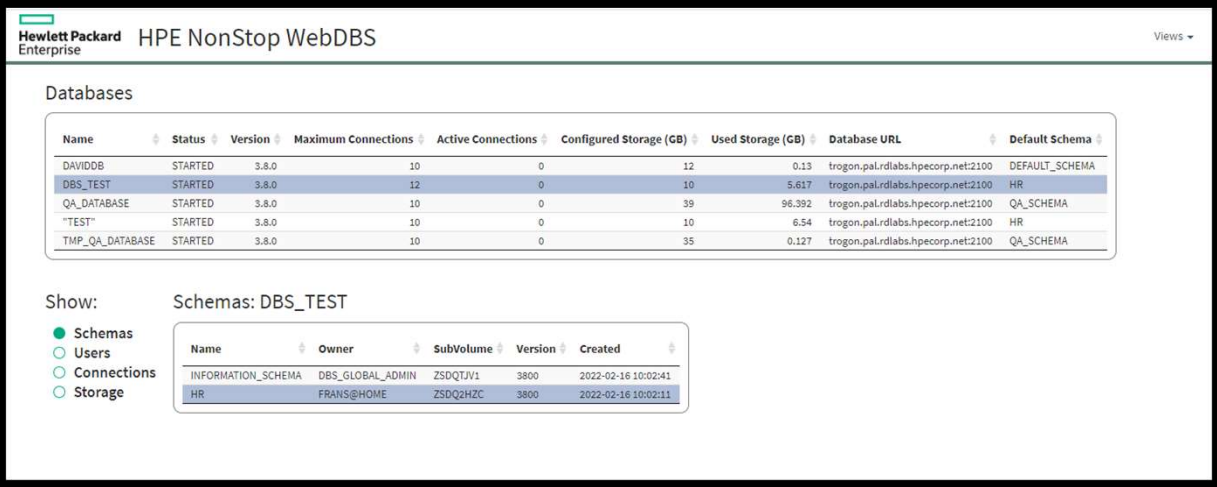
HPE Database Services UX - webdbs

R&D / Future



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Database Compatibility

- The Database environment did represent the highest effort when porting new solutions to NonStop
- DB Compatibility significantly accelerates ports.
- Extending functionality & value in multiple areas:
  - Stored Procedures (PL/MX)
  - Data Types (VARCHAR2, NUMBER, …)
  - Functions (count, avg, to_date, last_day, …)
  - Objects (Tables, Triggers, Materialized Views)
  - SQL dialect

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SUMMARY

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CIOs Common Needs – Met on NonStop

- Quick Time-to-Market and Time-to-Business Value
- Cost effectiveness, low TCO & low Risk
- High productivity of staff. No steep learning curve!
- User Experience. Ease of consumption & use!
- Quick and easy access, integration & composition of services and data
- Compliance, Regulation & legal Aspects
- Take advantage of Big Data Insights
- Leverage common technologies & standards
- …with strong architectural Qualities

- DevOps, Virtualization
- Common Technologies; Tools
- Modern Software Stack; DevOps
- SW Stack; vNS, Automation (Easy Button IaC, DevOps, …)
- APIs; Open Standards, NonStop Modernization, Partners
- Platform foundation; Security suites
- Digital Core, Database services, HTAP; IMDB; AI/ML
- Continued innovation on OS foundation and SW Stack
- The NonStop Fundamentals….

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The Art of the Possible - A Reality Today

- NonStop innovates to help you capture your business outcomes today and in future!
- Solve your (and your CIO's!) toughest, mission critical challenges in modern, state of the art ways by leveraging common skills & tools!
- Improve your business outcomes by modernizing where it matters most
- HPE & Partners have everything to build modern, unique solutions and architectures on NonStop today!

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Hewlett Packard
Enterprise
The Art of the Possible
Thanks!
Franz König
Director HPE WW Business Development & Advanced Technology Center (ATC)
May 2023
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