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NonStop Technical Boot Camp 2024
TBC24.TB13 The Art of the Possible 2024

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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.

Agenda

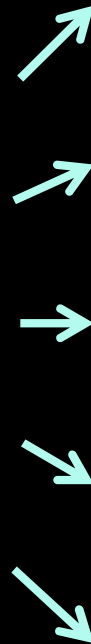Market Trends & Customer Needs

Creating New Services & Solutions for NonStop

Get most out of your Existing Applications!

ATC Research & POCs ...plus seeking your feedback

Q&A

The Art of the Possible: Innovating for a Purpose

Customers' Desired Business Outcomes & Business Impact

New Solutions & Services

New Architectural & Deployment Models

New forms of Consumption & Licensing

New ways to Create/Expose Assets

Common Standards/Skills/Tools

NonStop Fundamentals

MARKET TRENDS & CUSTOMER NEEDS

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
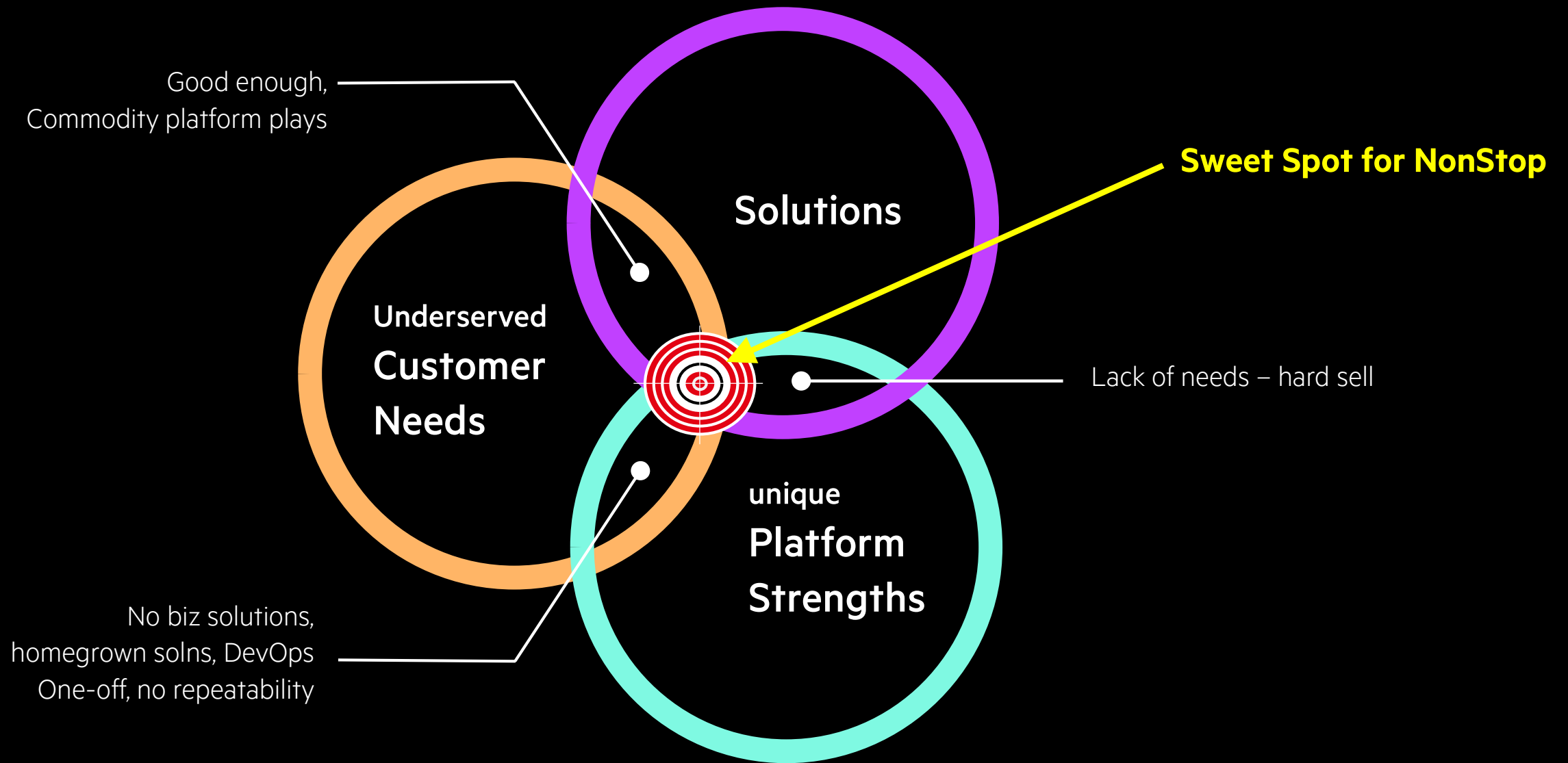
- ...with strong architectural qualities

Innovation
Agility
User Experience
Productivity

Cost
Time to Market
Risk
Effort

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CREATE MODERN SOLUTIONS

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The Modern NonStop and its Sweet Spot

Good enough,
Commodity platform plays

Sweet Spot for NonStop

Solutions

Underserved
Customer
Needs

Lack of needs – hard sell

unique
Platform
Strengths

No biz solutions,
homegrown solns, DevOps
One-off, no repeatability

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Quo vadis CIO?

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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
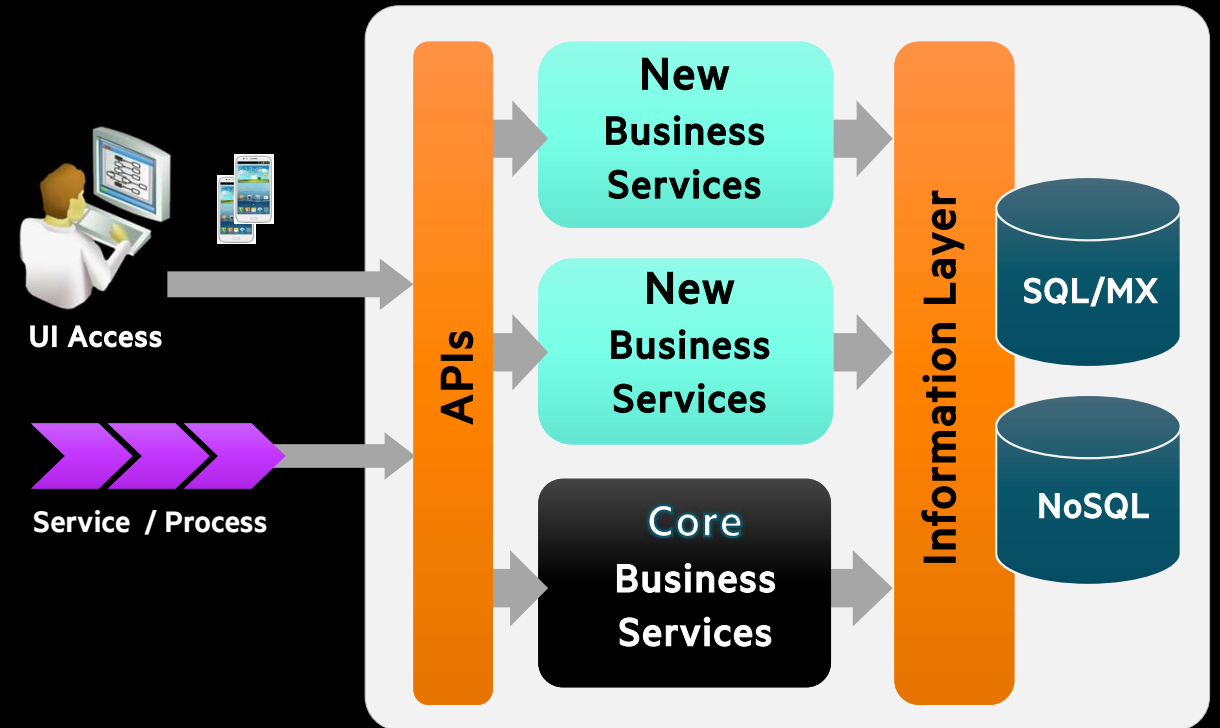
Innovative, agile services

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?

The Answer to the CIOs Challenges is...
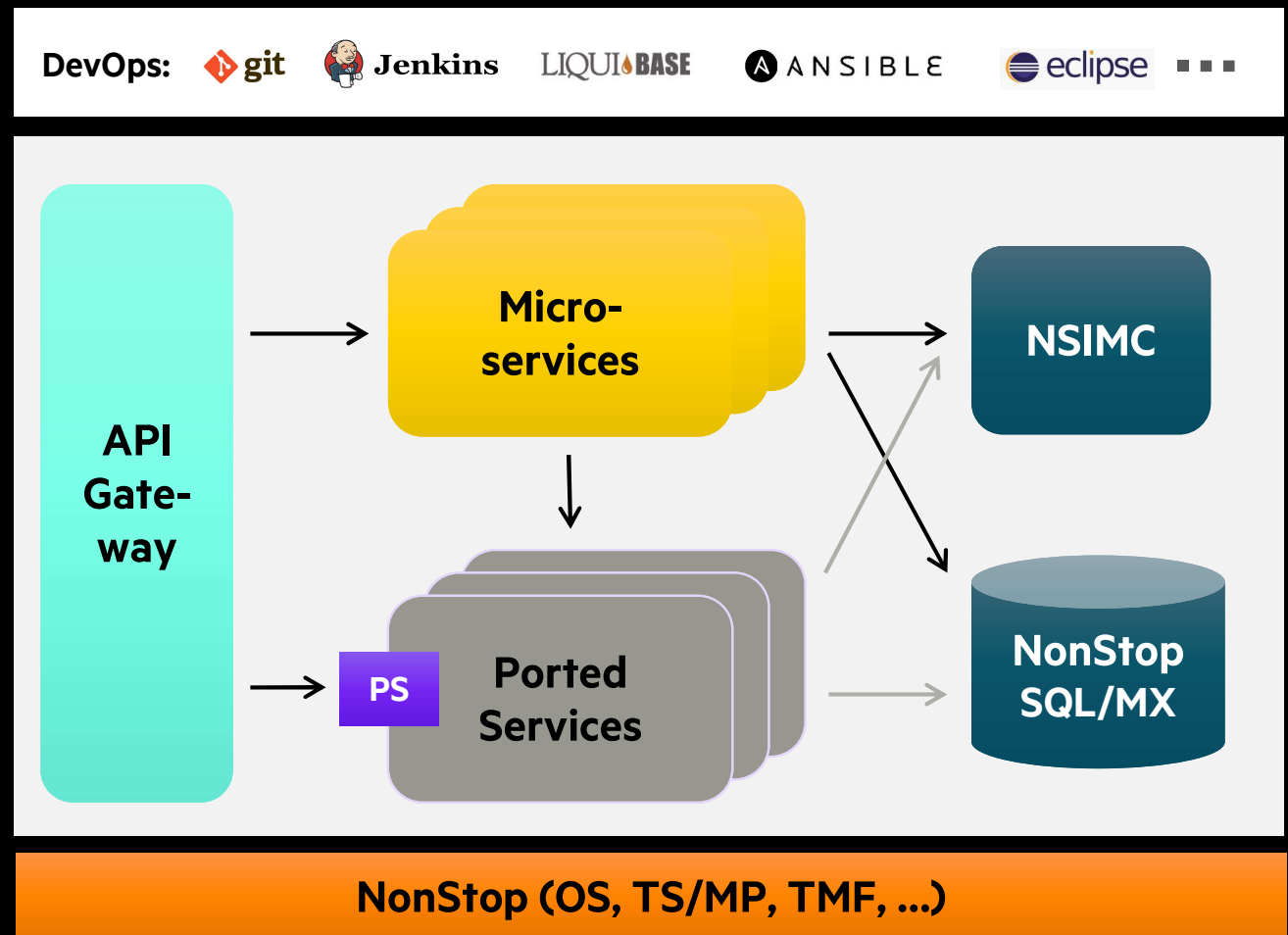
HPE NonStop...

- 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

UI Access

Service / Process

APIs

New Business Services

New Business Services

Core Business Services

Information Layer

SQL/MX

NoSQL

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

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

DevOps: git · Jenkins · LIQUI BASE · ANSIBLE · eclipse · ■ ■ ■

API Gate-way → Micro-services → NSIMC

Micro-services → NonStop SQL/MX

PS → Ported Services → NonStop SQL/MX

NonStop (OS, TS/MP, TMF, ...)

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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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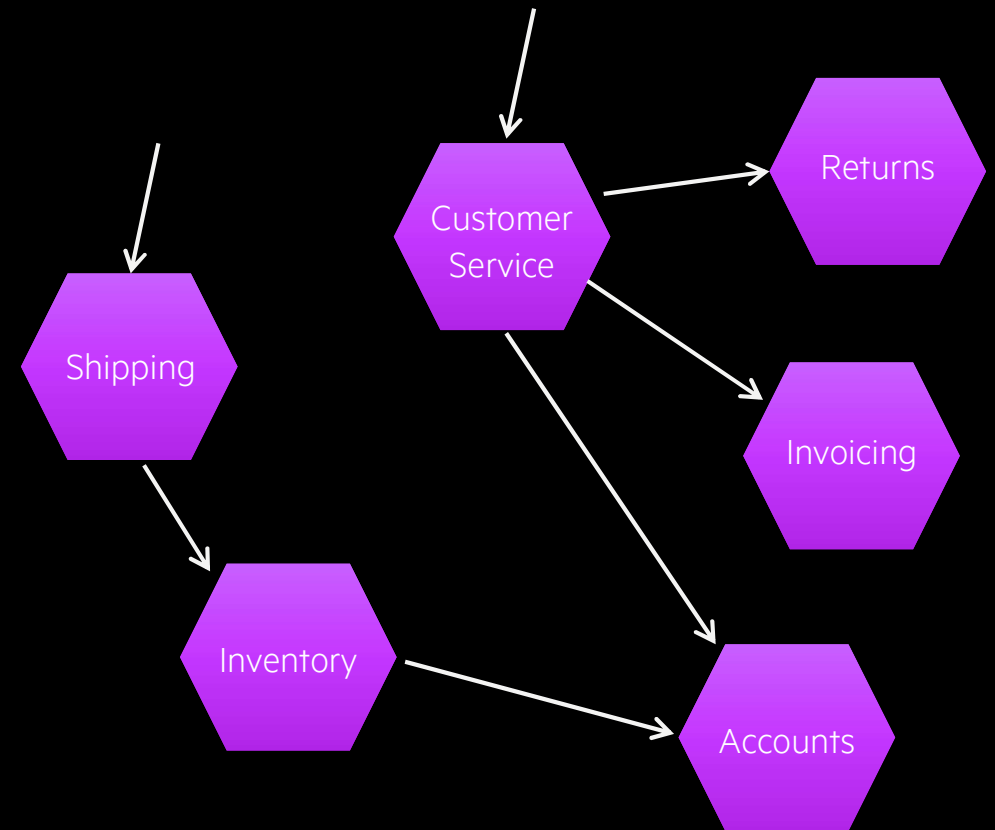
APIs - Living in an API-driven World

- 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
- Easy, no-code API enablement with API Gateway Products
- Alternative API choices available on NonStop
  - e.g. GraphQL, OData, …
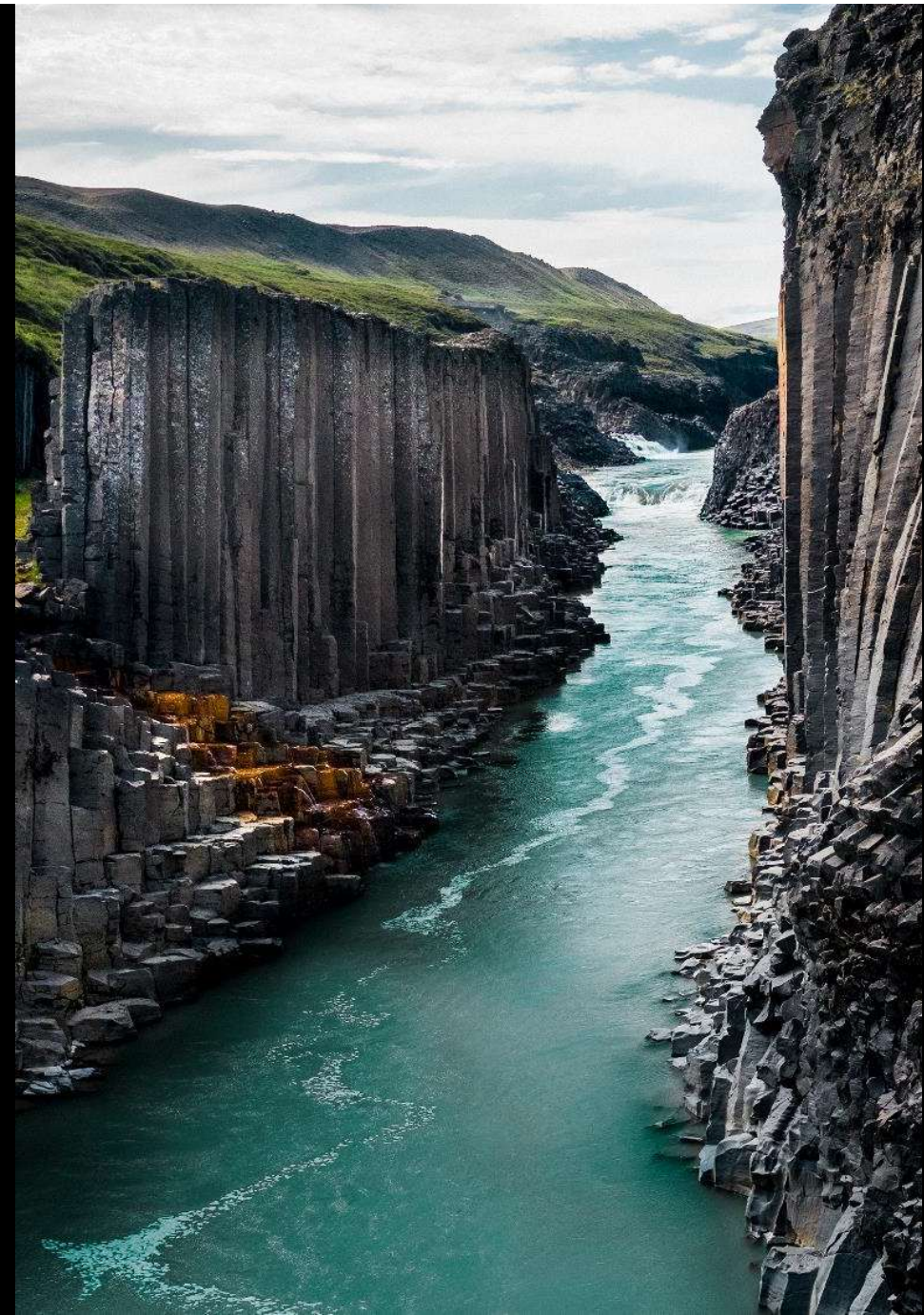
DEVOPS

- 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
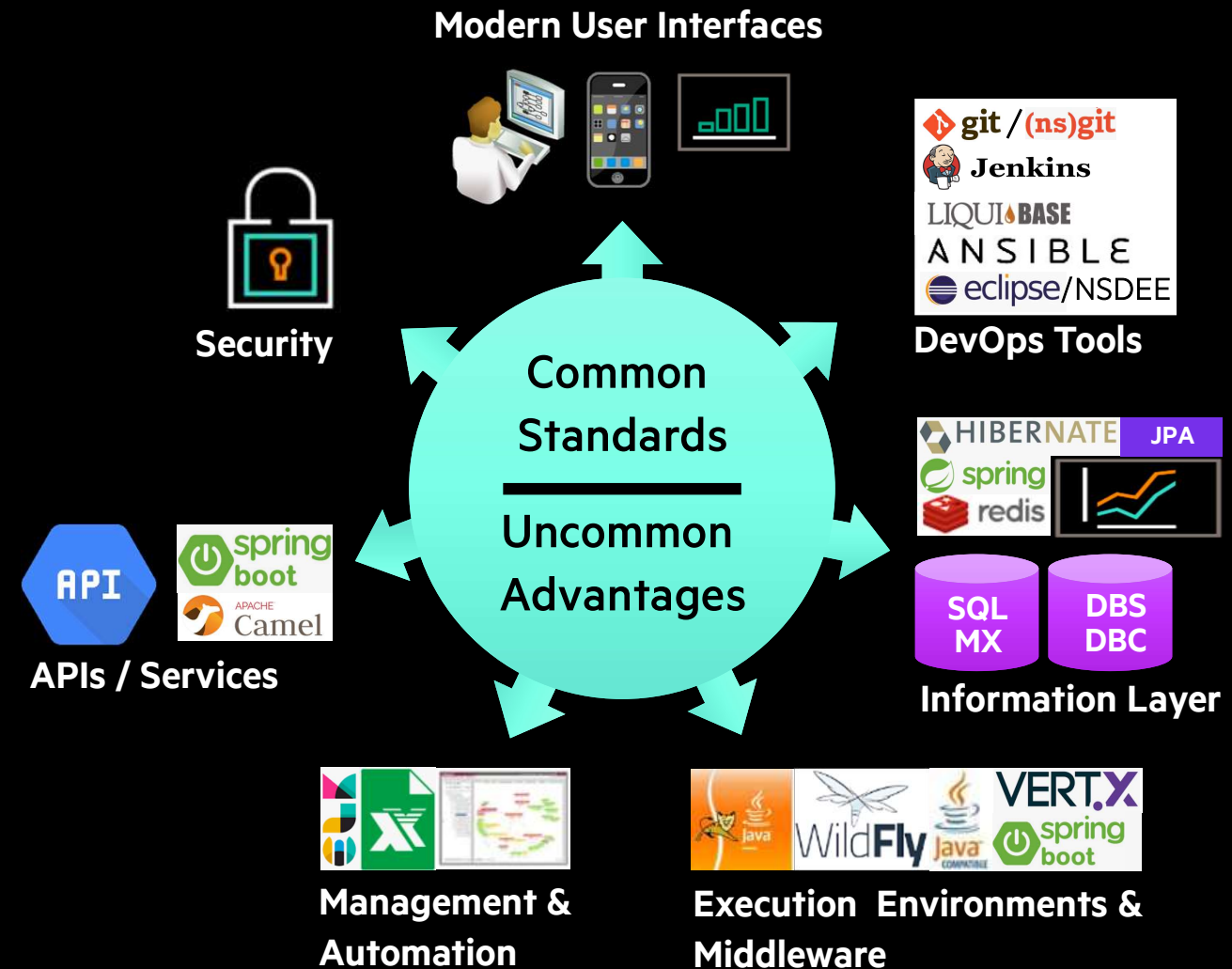- Increased importance of DevSecOps

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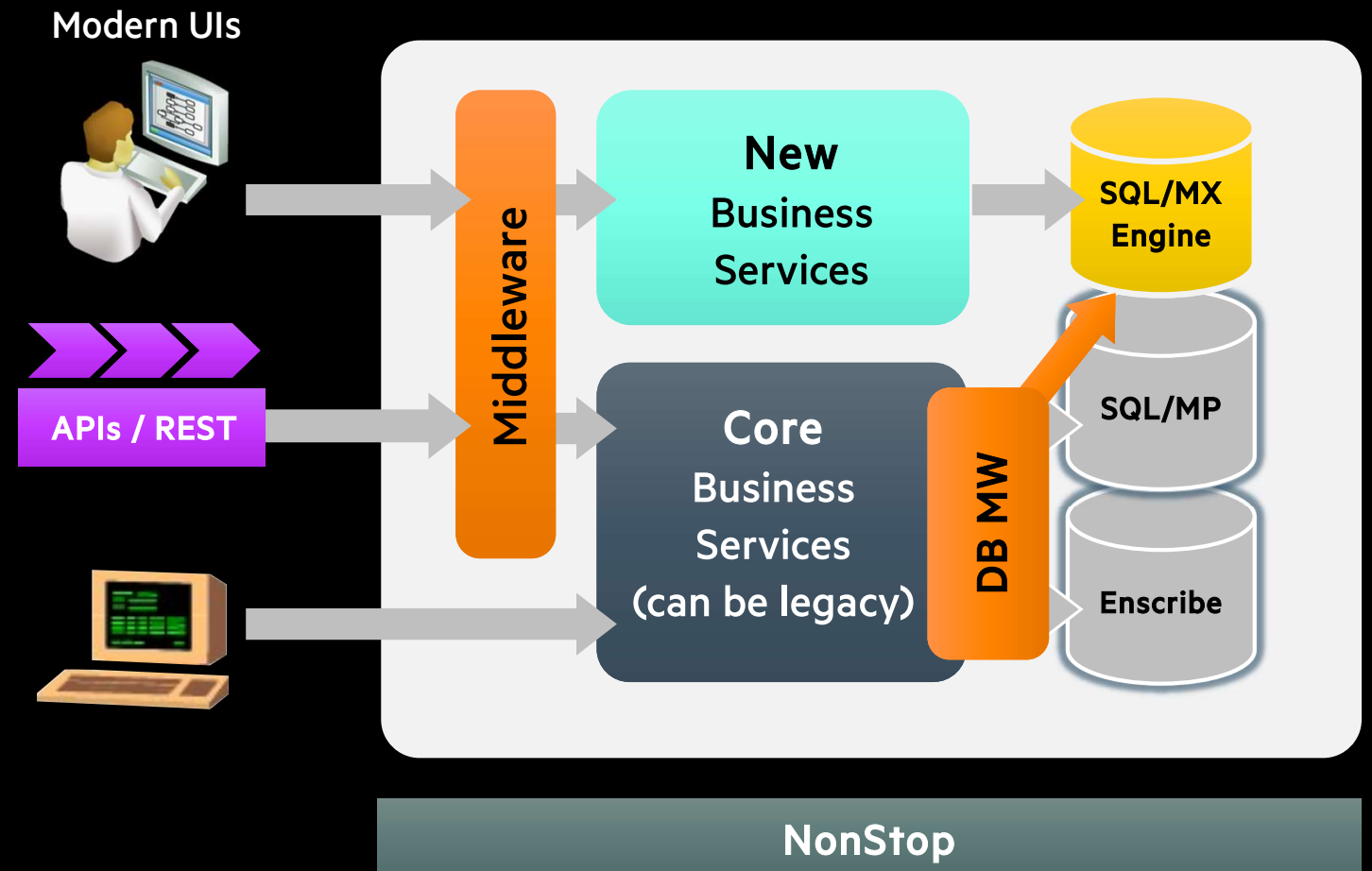
- User Interfaces
- APIs and Service Orientation
- Information Layer
- DevOps Tools
- Management & Automation
- Security
- Execution Environments

Modern User Interfaces

Security

DevOps Tools

git / (ns)git
Jenkins
LIQUIBASE
ANSIBLE
eclipse/NSDEE

Common Standards / Uncommon Advantages

HIBERNATE JPA
spring
redis

SQL MX   DBS DBC

Information Layer

API
spring boot
APACHE Camel

APIs / Services

Management & Automation

Java
WildFly Java
VERT.X
spring boot

Execution Environments & Middleware

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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

Modern UIs

APIs / REST

Middleware

New Business Services

Core Business Services (can be legacy)

DB MW

SQL/MX Engine

SQL/MP

Enscribe

NonStop

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Modernize existing NonStop Datastores

Enscribe

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

NonStop SQL/MP

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

NonStop SQL/MX

- Congrats, you're top notch already!!

Some of our ATC Research & POCs

We want your feedback on these....

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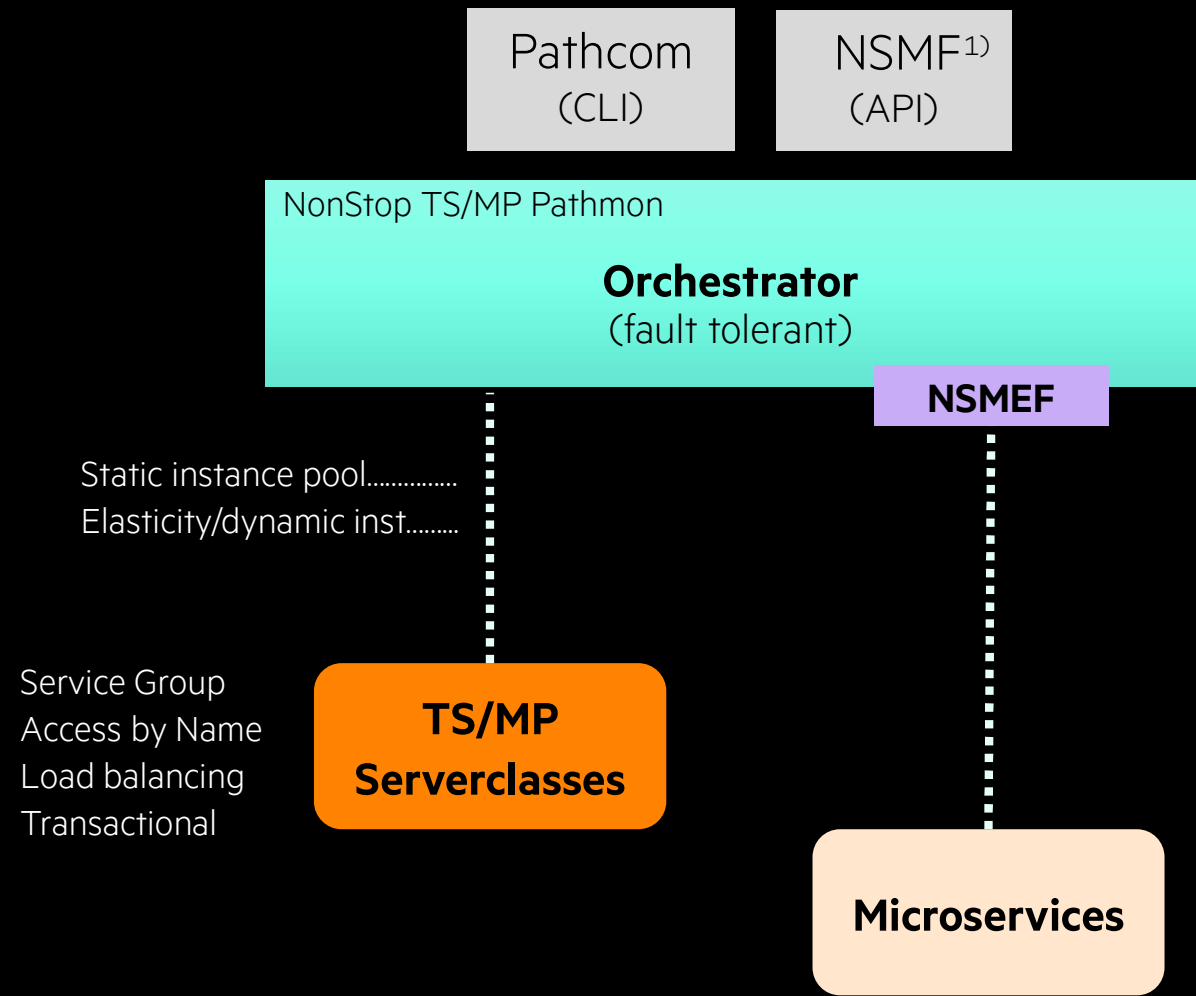# Orchestration
Kubernetes vs NonStop TS/MP

NonStop Service Orchestration

- TS/MP is NonStop's service orchestrator
- Proven, simple, robust, …
- Fault-tolerant, scalable & elastic
- Just works out of the box
- Similar functionality to K8s
- Scale services across systems

Proof of Concept

Pathcom
(CLI)

NSMF[1]
(API)

NonStop TS/MP Pathmon

Orchestrator
(fault tolerant)

NSMEF

Static instance pool…………..
Elasticity/dynamic inst………

Service Group
Access by Name
Load balancing
Transactional

**TS/MP
Serverclasses**

Microservices

1) NSMF API will be with the future NSMF 2.0 support for TS/MP

In Contrast - Kubernetes (not on NonStop!)
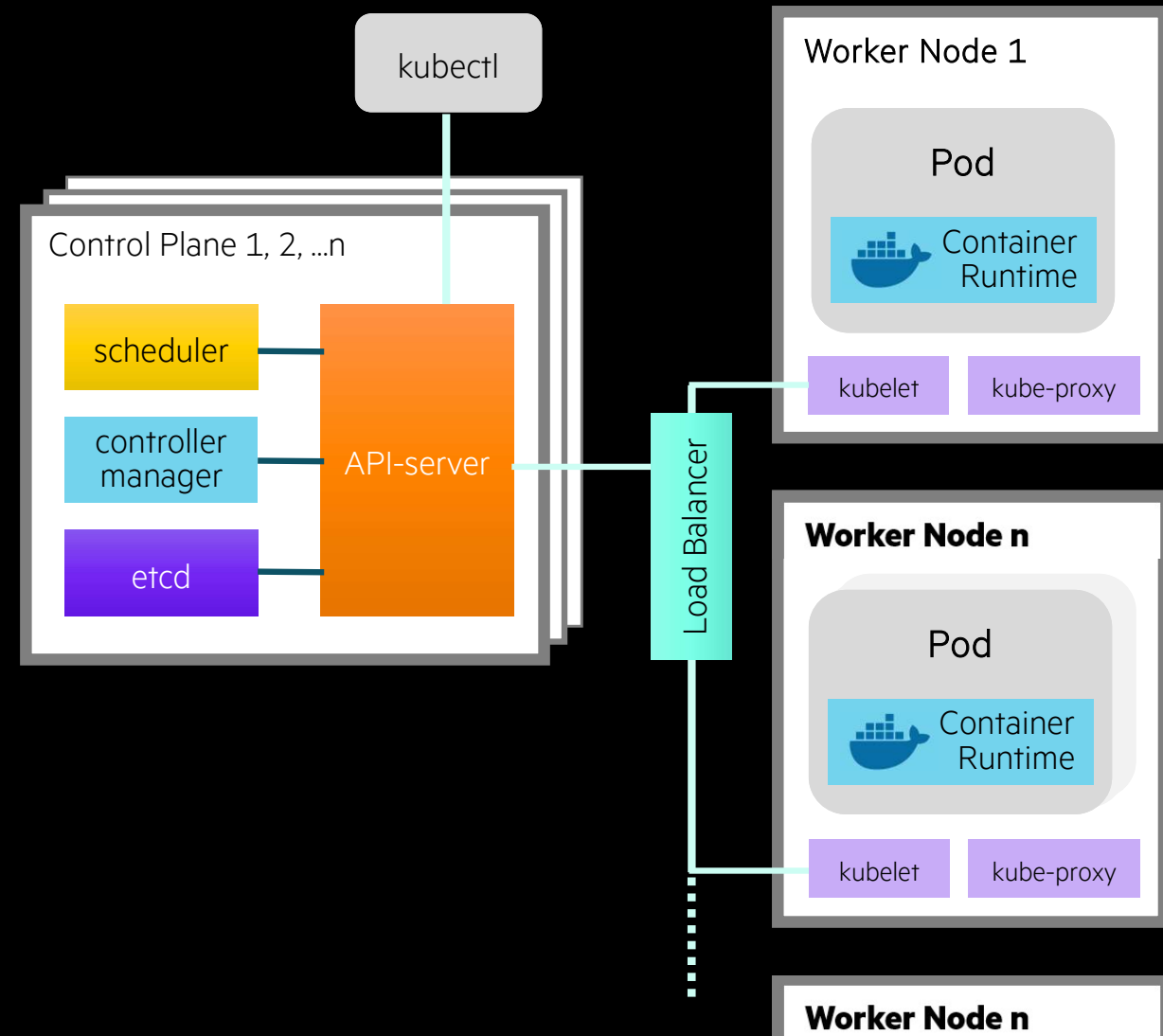
Some Key Components:

- API Server
  - Entry point to K8S cluster
- Controller Manager
  - Tracks cluster
- Scheduler
  - Container start and placement within cluster
- etcd
  - All configuration and status information

Pros:

- Powerful, open, flexible

Cons:

- Lots of components, instances, addresses, complexity, differences in CSP services
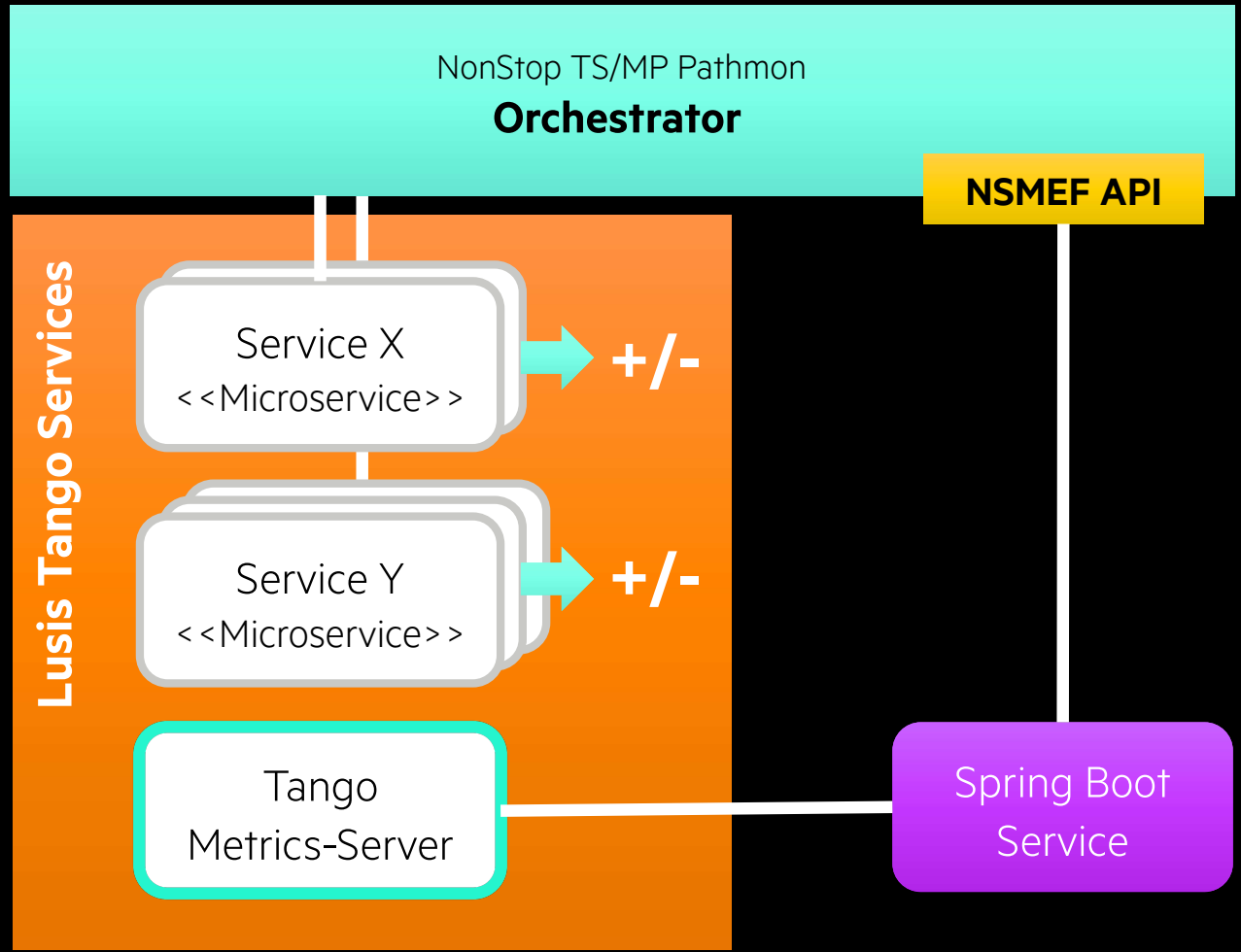- Manageability effort. Support?

Auto-Elasticity
of a popular modern ISV solution

Lusis Tango Elasticity on HPE NonStop

NonStop TS/MP Pathmon
Orchestrator

NSMEF API

Lusis Tango Services

Service X
<<Microservice>>

➜ **+/-**

Service Y
<<Microservice>>

➜ **+/-**

Tango
Metrics-Server

Spring Boot
Service

Observability

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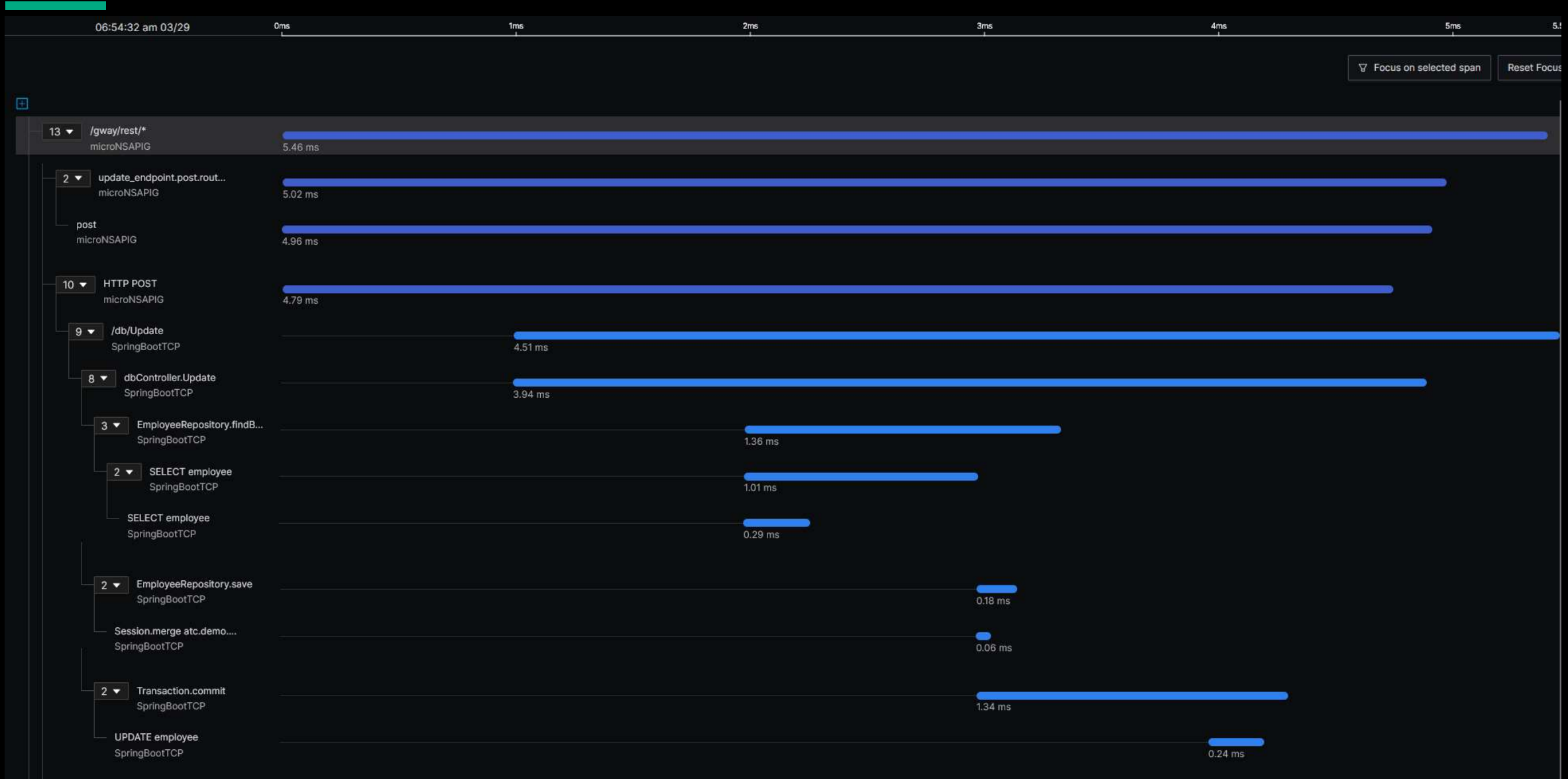
- Today's business use cases oftentimes consist of many distributed services spread over a heterogeneous IT environment
- Problem and pain point: smaller grained, highly distributed services with lots of interactions can make it very hard to maintain a good overview of the system's status – and extremely difficult to spot issues in a timely manner
- Focus on allowing to reconstruct a systems state through external observation
- Emerging from Application Platform Monitoring
- Three pillars of distributed services:
  - Tracing (Concept of Spans)
  - Metrics (e.g. Rate, Errors, Duration,...)
  - Logging
- Lots of Open Source:
  - OpenTelemetry!
  - ...and many more

App Service

Middleware & Frameworks

OpenTelemetry
API/SDK/Exporter

Collector

Backend
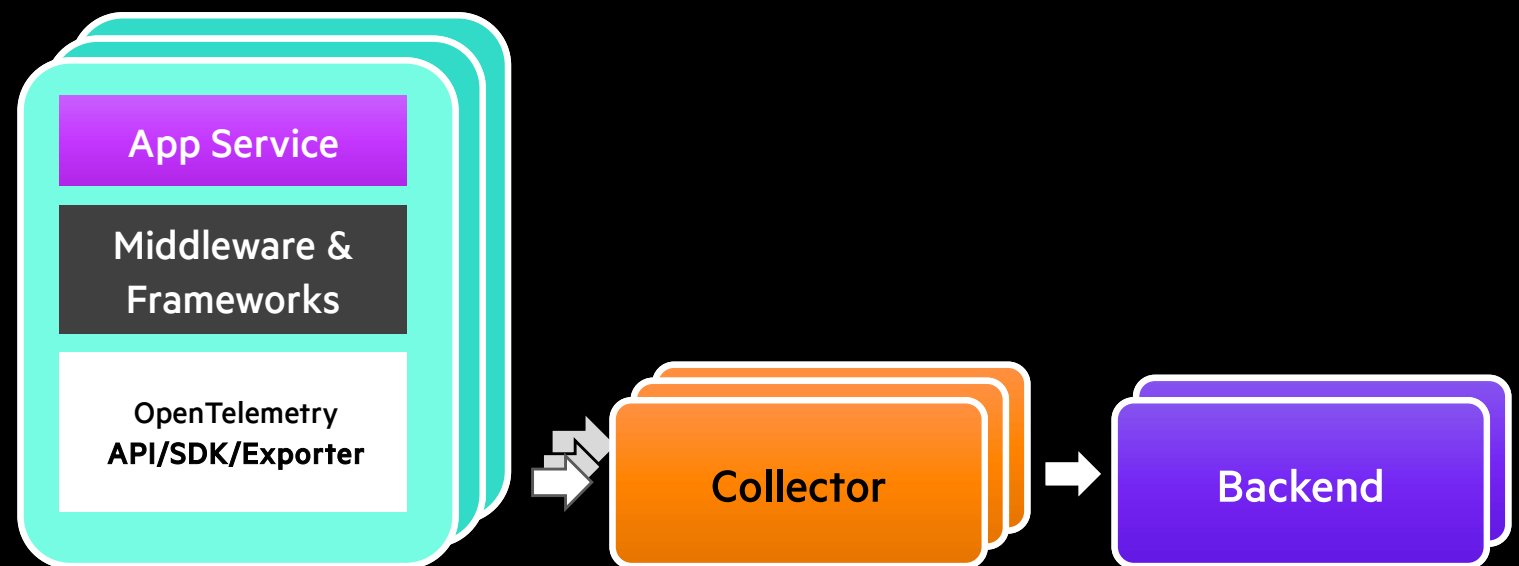
Observability – An OpenTelemetry on NonStop & SigNoz Example

Open Source

AI / ML

AI / ML and NonStop

- Exploring use cases and their dependencies based on Customer needs....

  - What are the most mission-critical AI/ML use cases?

  - Which architectural quality attributes are essential for these use cases?

  - At which lifecycle phase are these becoming essential?

  - What are the AI/ML frameworks you envision to use with NonStop?

  - What are the dominant AI/ML algorithms critical for your use cases?
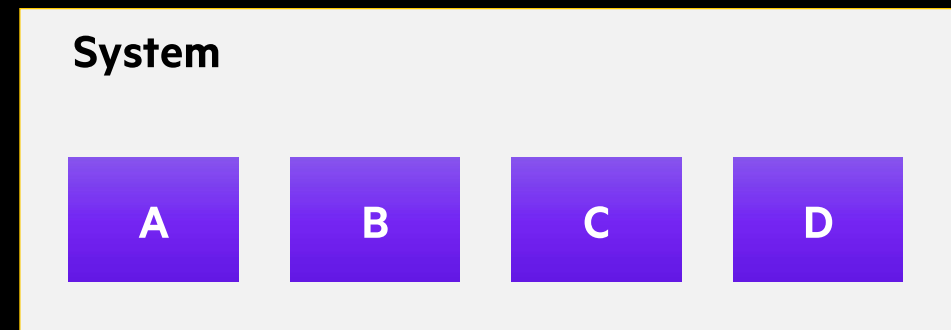
Fundamentals

Availability is hard – A Refresher

99.99% **vs** **99.999%**

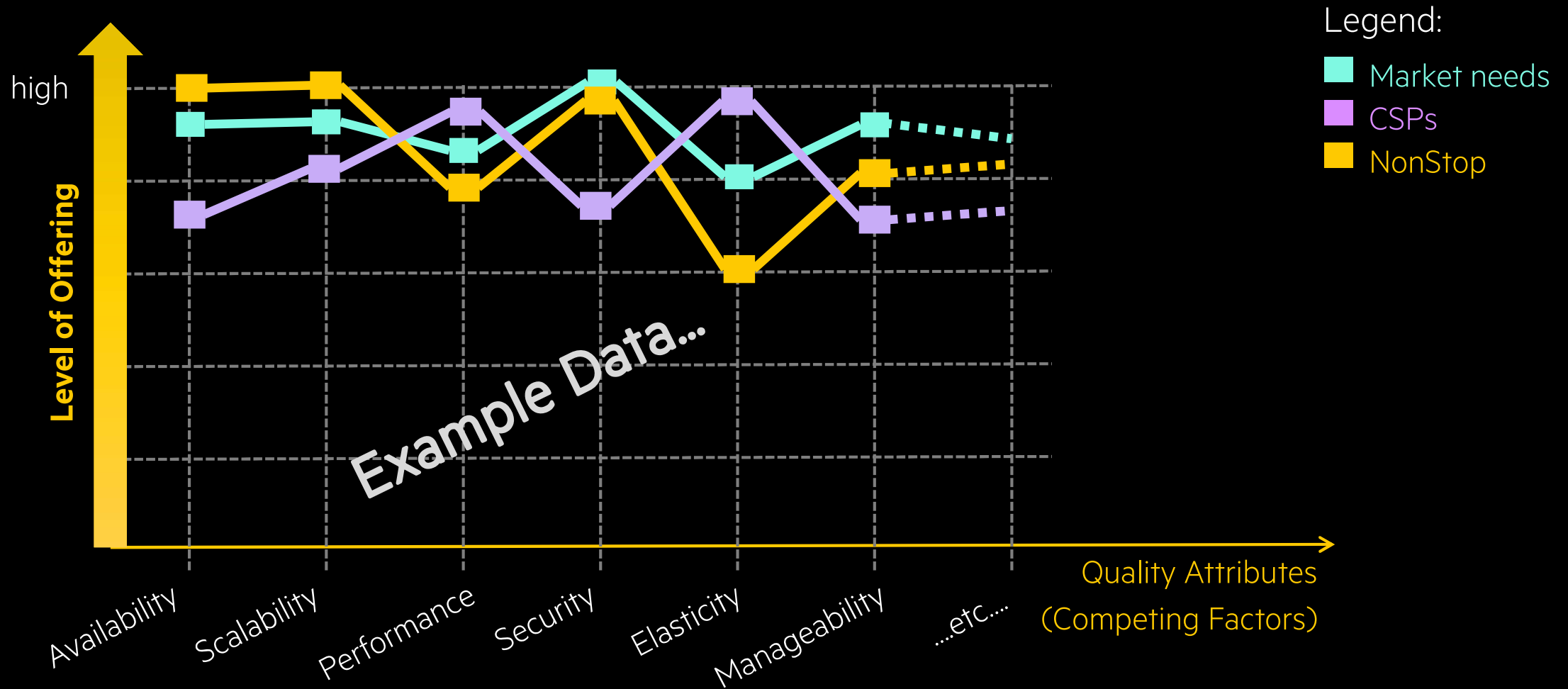4-nines vs 5-nines availability
…not a 0.009% difference!

This is
a factor of 10
better & harder!

Individual Component's vs Total Availability

System			
A	B	C	D

$$Av(Total) = Av(A) * Av(B) * Av(C) * Av(D)$$

The Importance of Architecture Quality Attributes – Now vs Future

SUMMARY

CIOs Common Needs – Are these met by 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….

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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Franz König, HPE
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NonStop Partnership– It's a Beautiful Thing!

HPE SLIDES AND MATERIALS USAGE

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