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IT Modernization with AIOps: The Journey

Live Webcast

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Today's Presenters





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SNIA-At-A-Glance









50,000 IT end users & storage pros worldwide



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What

We

Educate vendors and users on cloud storage, data services and orchestration



Support & promote

business models and architectures: OpenStack, Software Defined Storage, Kubernetes, Object Storage



Understand Hyperscaler requirements Incorporate them into standards and programs



Collaborate with other industry associations

Agenda

- Digital Transformation
- Monolith to Microservices and Cloud Native
- Request Driven to Event Driven
- Architectural Fitness
- Journey to Hybrid Multi-Cloud
- Role of Data Architecture
- Managing Complexity with AI-Ops (AI for Infrastructure Operation)



Digital transformation, foundation for new customer experience



The Shift to Digital

Re-Imaging how Financial Services are delivered in the future by leveraging technology and data.



IDC FutureScape: Cloud Prediction Highlights

Prediction 1: By 2021, over 90% worldwide rely on a mix of on-premises / dedicated private clouds, several public clouds, and legacy platforms to meet their infrastructure needs.

Prediction 2: By 2022, 70% of enterprises will deploy unified VMs, Kubernetes, and multi-cloud management processes and tools to support robust multi-cloud management and governance across on-prem and public clouds.

Prediction 3: By 2022, 60% of organizations have invested in automation, orchestration, and development life-cycle management of cloud-native applications and platforms.



PREDICTION TIMING



Source: IDC Future scape 2020

A New "Species" of Enterprise Is Emerging



CapitalOne 80%

of code in enterprises' digital services will be externally sourced

2025



of enterprises will deploy code to production **daily** or faster

2025



new **apps/services** will be developed and deployed in support of the digital economy

2024



Source: IDC, Analyze the future 2020

A New "Species" of Enterprise Is Emerging



New generation of application development

- Low-code
- No-code

- New generation of application developers
- Domain expert developer
- Advanced Developers
- Citizen developers



Adaptive Data and Analytics Governance





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Source: Gartner, Evolve Your Data and Analytics Connect with Gartner

Governance to Prepare for the Future

From Monoliths to Cloud Native



 API

 Microservice

 Microservice

 Microservice

 DB

 DB

Service Oriented Architecture Hybrid Monolith-Microservices Microservices Architecture

All in one Tightly Coupled Scale Up Deploy

Log and Trace

Service Module Distribute Loosely Coupled, Decoupled Scale out Deploy

Monitor, Log and Trace



Serverless Architecture Stateful, stateless Immutable, Mutable infrastructure

> Function Assemble Decoupled Automatic Scale

Monitoring, Log , Trace and Alert (observe)



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Journey to Cloud Native, IT Modernization





Scalability is one of the core elements of design

Design Consideration:

X axis: Scaling by horizontal duplication

e.g. Cloning

Y axis: Scaling by functional decomposition

e.g. Splitting different things (Functions)

Z axis: Scaling by data partition

e.g. Splitting similar things





Communication Patterns, Push/Pull & Pub/Sub



Event Driven





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Decomposition of Monolith to Microservice, Banking Application

Operation & Execution



Risk and Compliance







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Architecture Fitness Function and Chaos Engineering





Atomic & Holistic

Continuous Process



Manual & Automatic



Trend & threshold

Chaos Monkey Latency Monkey Janitor Monkey Security Monkey



Chaos Gorilla Chaos Kong

Reference from Netflix chaos engineering concept

Software that deliberately attempts to wreak havoc on its systems



Cloud Native and Hybrid Multi-Cloud



End to End Monitoring, Alerting and Automated Respond (Observability)



Cloud native technologies empower organizations to build and run scalable applications in modern, dynamic environments such as public, private, and hybrid multi-clouds.



Data Services is the Foundation for Hybrid Multi-Cloud Infrastructure







FROM DATA WAREHOUSE TO DATA LAKE

Multiple repositories with 2 different physical data models

Liquidity

2





Source: Celent



New Data Architecture, Data Mesh Approach

Product thinking

Initiatives which are align with business outcomes. Structure teams around business capabilities

Platform thinking

Self service platform like storage, data catalogue, computation, access rights and data pipelines etc.

Domain Driven Design

Autonomous capability with clear bounded that run products independently

Self Services Platform Characteristics:

- Storage
- Data pipeline
- Discovery & Catalogue
- Access control
- Archiving
- Encryption



Data as a product characteristics:

- Discoverable
- Addressable
- Trustworthy
- Self-describing
- Interoperable
- Secure

Enterprise Hybrid Multi-Cloud, Modern infrastructure

Enterprise Applications





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Storage Characteristics for Cloud Native/Microservices

- Application Centric storage should be presented to and consumed by applications and not by
 operating systems or hypervisors
- Platform Agnostic storage should run anywhere and not have proprietary dependencies that lock an application to a particular platform or a cloud provider
- Declarative and Composable storage resources should be declared and composed just like all other resources required by applications and services
- API Driven and Self-Managed storage resources and services should be easy to provision, consume, move and manage via an API
- Agile storage should dynamically react to changes in the environment
- Natively Secure storage should integrate and provide inline security features
- Performant storage offers deterministic performance in complex distributed environments and scales efficiently
- Consistently Available storage platform should manage data distribution with a predictable, proven data model to ensure high availability, durability and consistency of application data
- Observability storage platform should provide logging, tracing, alert and automated respond



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Microservices/Cloud Native, Observability and Telemetry

- Basic Monitoring (HOST metrics like CPU, Disk, Memory, Latency, Network)
- System wide Monitoring (Core Infrastructure, Applications, IT operation, Business Services)
- Alerting, Visualizations, Automated respond
- Distributed Systems Tracking (Scale as infrastructure scales), Topology awareness
- Log Aggregation, Distributed tracing
- Automated Canary Analysis
- Static and Dynamic Thresholds with ML/AI
- Fault detection and mediation, fast recovery
- Service Quality
- Cost factors/management

The challenge is, how do you do all of this in a second



AlOps Platform Enabling Continuous Insights Across IT Operations Monitoring (ITOM)







Modern Enterprise Observability Platform





Architectural Patterns, Hybrid Multi Cloud data and analytics/AI platform



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- Digital transformation is a necessity especially after COVID 19
- Legacy application and infrastructure is a barrier to digitalization
- Journey to Cloud native and Microservices require rethinking your enterprise architecture
- We are at the age of Data centric architecture
- Managing Microservices environment is complex and require new approach such as AIOps
- Analytics/AI will be integrated in all aspect of enterprise life



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Thank you!



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