Migrating to Cloud
How to migrate your on premise systems to Cloud

Presented by Robert Carey

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Agenda

- **Trends in Cloud**

- **Why MicroStrategy Cloud ?**

- **Cloud Offering**

- **What to consider before moving to Cloud**

- **Cloud Migration Advisory & Tools**

- **Best practices**

Trends in Cloud

Trends in Cloud

"The Number Of Cloud Services And Solutions (SaaS, Paas, IaaS) Will Continue To Rise"

- Subscription-based software-as-a-service (SaaS) will grow at an 18% CAGR by 2020, according to Bain & Company.

- **Investment in platform-as-a-service (PaaS) will grow from 32% in 2016 to 56% in 2019, making it the fastest-growing sector of cloud platforms, according to KPMG.**
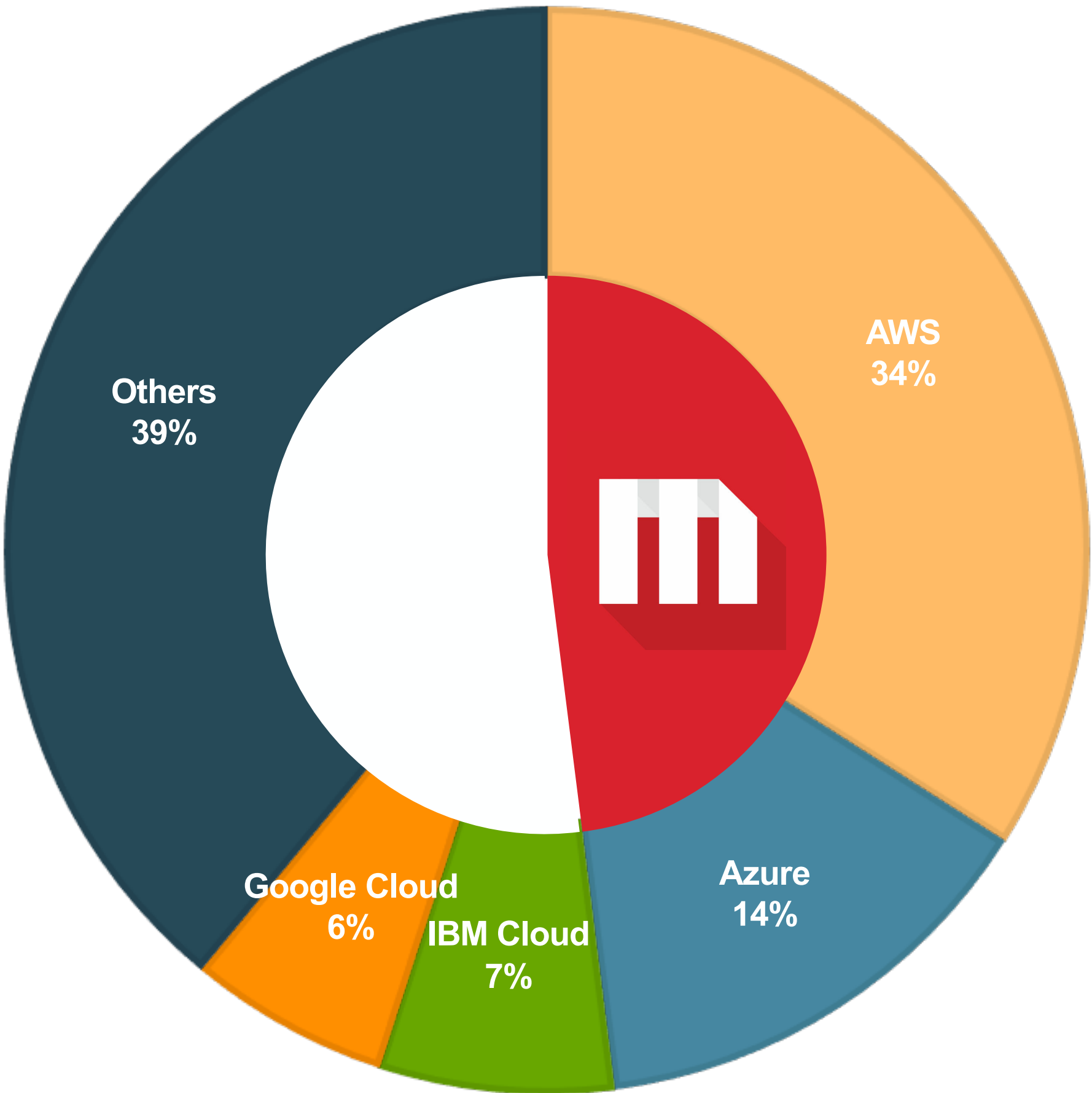
Source: Forbes

Cloud Vendors
AWS and Azure

GLOBAL PUBLIC CLOUD SERVICE MARKET SHARE
Q3 2018

- Most feature rich offering
- Greatest global reach

AWS
34%

Azure
14%

IBM Cloud
7%

Google Cloud
6%

Others
39%

- Leverage existing MSFT Enterprise License Agreement
- Strong Hybrid Cloud enablement
- Appealing to Amazon resistant retailers

Catalyst for Cloud

- Compelling event (hardware in EOL, headcount challenges, need for upgrade)

- Agility (iterate quickly, economic focus, need flexibility, product savvy, heavy development activities)

- SMB (no BI, failed implementation, need trusted advisors, want to run their company on one platform, one killer solution to land and expand, cost effective)

- The OEM (multi-tenant ready and single tenant workflows, RESTful API and automation, rapid deployment)

- Existing customers (scheduler to save money, rapid development cycles, new versions built in minutes

- The Enterprise with a Cloud First Strategy (moving from capex to opex models)

- An existing customer that is CPU bound (switch to NU and achieve Cloud elasticity)

Cloud Customers

Pharma / Health Care

AstraZeneca

GENTIVA

Takeda

DeRoyal

AmerisourceBergen

Financial Services

MARSH & McLENNAN COMPANIES

BPCE

enova.

elan polo international

MERCER

Retail / Consumer Goods

RODAN+FIELDS

BED BATH & BEYOND

McDonald's

LUCKY BRAND EST. 1990
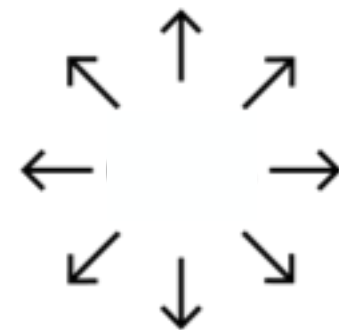
DR PEPPER SNAPPLE GROUP

COTY

celio*

BRICO DEPOT

KOHL'S

Why MicroStrategy Cloud ?

Enabling the Intelligent Enterprise
Solutions to Traditional Enterprise Management Problems

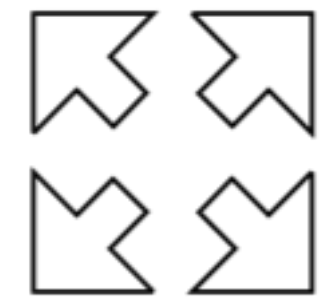| **Deployment**	**Scalability**	**Maintenance**	**Management**
System set up and configuration takes days or weeks	Systems can't scale to match growth	Upgrading systems requires 100's of hours of planning and staff	System Management requires multiple tools
Accelerate time to value by deploying a reference Intelligence Architecture in minutes	Scale up to meet growing user and data requirements or down to save cost	Focus on application development and not maintenance with one click upgrades	Reduce administrative overhead through simple and centralized administration

MicroStrategy

Benefits of MicroStrategy Cloud

- Simple and fast deployments of environments
  - Deploy fully configured enterprise environments in 30 minutes or less

- Flexible and easy to maintain
  - Schedule restarts and stop & start activities to reduce cost and administrative maintenance

- Scalable
  - Resize instances as needed to handle peak processing

- Global Availability
  - Global reach via AWS and Azure regions

- Highly available architecture
  - Clustered environments leveraging separate availability zones
  - Robust Disaster Recovery strategies across regions

- Security
  - SOC2 Certification, HIPAA Certification, PCIDSS Certification, Privacy Shield Certification, ISO27001 Certification, GDPR

- A quick video from one of our customers and their experience with MicroStrategy Cloud

Global Availability- AWS

MSTR Cloud Console is certified on **16 Regions** **marked in green**

- **US East**
  Northern Virginia (6), **Ohio (3)**
- **US West**
  Oregon (3), **Northern California (3)**
- **GovCloud (US)**
  US-East (3), US-West (3)
- **Canada**
  Central (2)
- **South America**
  São Paulo (3)
- **Europe**
  Ireland (3), **Frankfurt (3)**, **London (3)**, **Paris (3)**
- **Asia Pacific**
  Singapore (3), **Sydney (3)**, **Tokyo (4)**, **Seoul (2)**, **Mumbai (2)**
- **China**
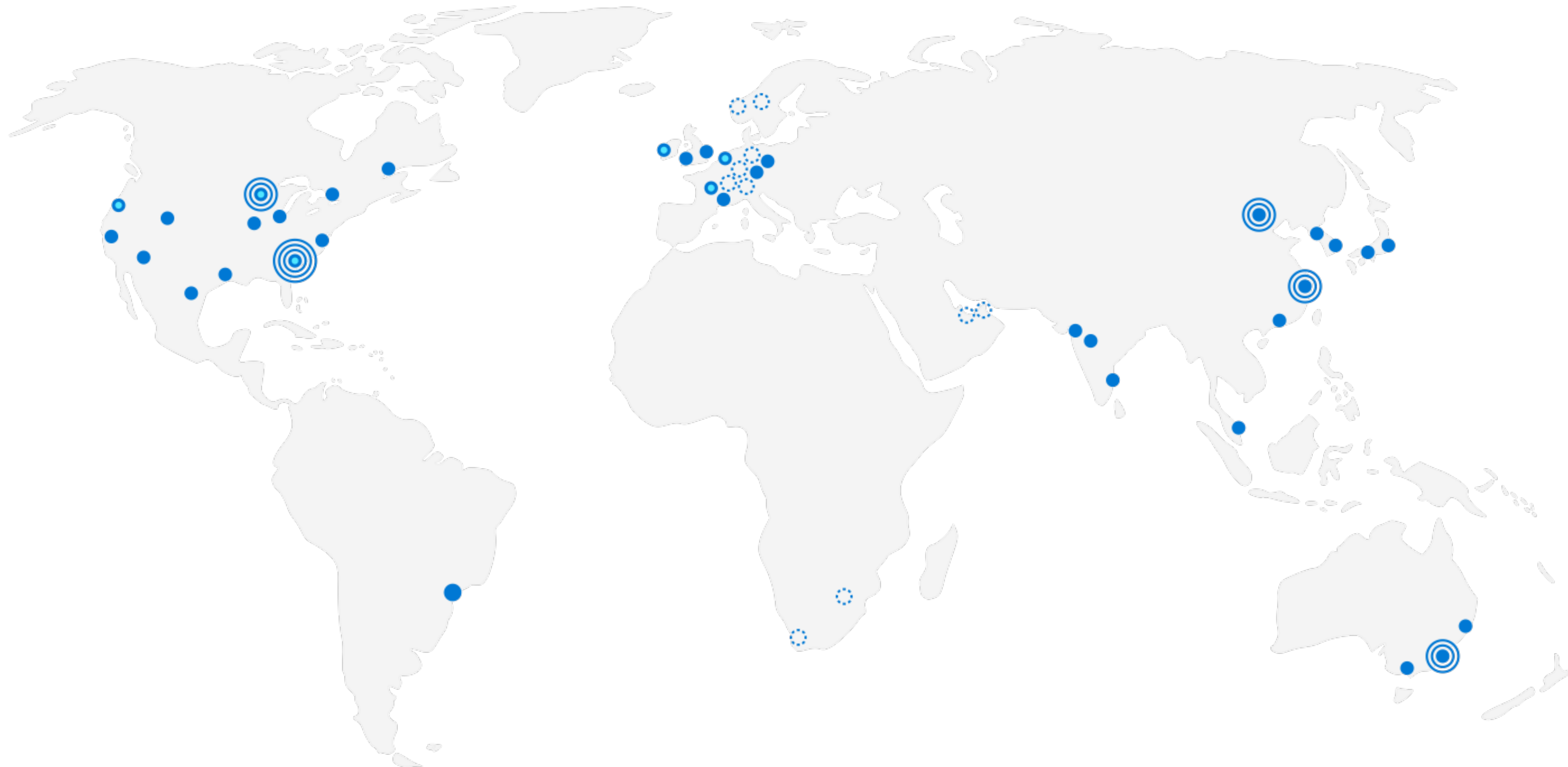 Beijing (2), Ningxia (3), HK SAR (coming soon)
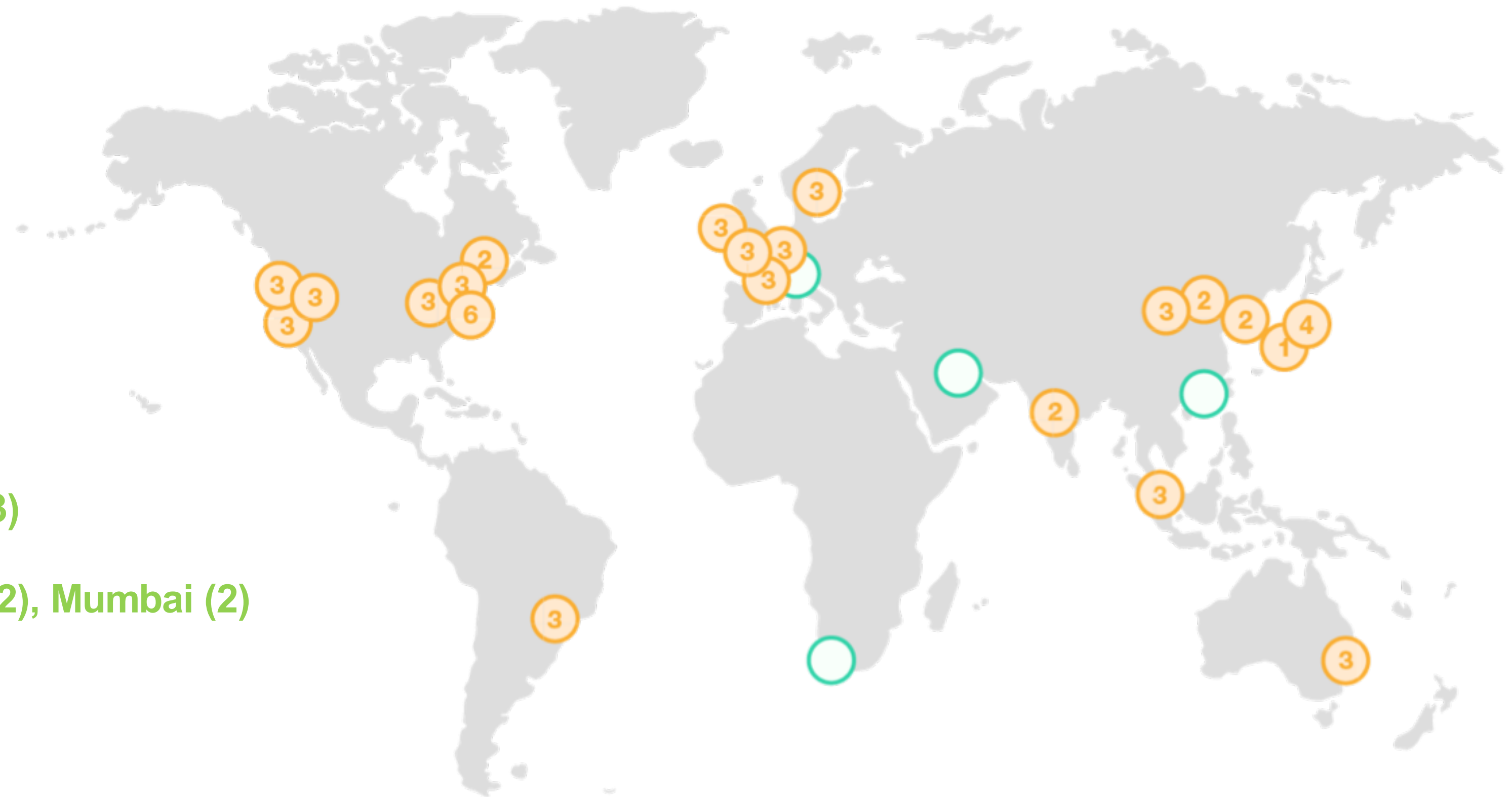
Ⓗ Current   ◯ Coming Soon

Global Availability- Azure
MSTR Cloud Console is certified on **1** Region

- **East US2 (Virginia)**, more coming soon

MicroStrategy Managed Cloud Compliance and Certifications

Security that meets or exceeds industry standards and best practices

Security is MicroStrategy's #1 priority

MicroStrategy strives to implement strong control practices in order to effectively maintain the security and availability of the MicroStrategy Cloud and associated data

We ensure that your data is secure at all network, and application levels from any attacks. We follow the latest industry standards on many compliances and certifications

Usher secures digital and physical assets using biometric and location based authentication to deter security threats for Analytic and Mobile components

Service Organization Controls (SOC) over the security, availability, and processing integrity of a system and the confidentiality and privacy of the information processed by the system.

Health Insurance Portability and Accountability Act (HIPAA) designed to provide privacy standards to protect patients' medical records and other health information.

Privacy Shield is intended for organizations within the EU or US that store customer data and is designed to prevent accidental information disclosure or loss. We had a Safe Harbor designation and we are in the midst of certifying to this newly created policy.

Payment Card Industry Data Security Standard (PCI DSS) is a proprietary information security standard for organizations that handle cardholder information.

International Organization for Standardization (ISO 27001-2) is a security management standard that specifies security management best practices and comprehensive security controls following the ISO 27002 best practice guidance.

General Data Protection Regulation (GDPR) is the protection of all EU citizens from privacy and data breaches in an increasingly data-driven world

MicroStrategy

Cloud Offering

CLOUD

Centralized Administration: Manage Tasks in One Place

Schedule Events: Start, Stop, Resize, Terminate

Schedule events based on your needs and requirements

- Start
- Stop
- Resize
- Terminate
- Upgrade

Start, stop, and restart instances

Calendar view of all scheduled events

Rapid Intelligence Architecture Deployment

Dramatically Improve Time to Value

Reduce the time to deploy Intelligence Architecture from weeks to minutes.

- Deploys MicroStrategy, fully configured and ready to use, in less than an hour
- Scales to meet specific geographic, user, application or data needs
- Out of box standard configurations that meet individual needs from Team to Enterprise
- Deployable in a new or existing AWS/Azure Account

- Little IT involvement
- No Capital expenditure

Team
All-in-one system designed for team application development and sharing.

ENVIRONMENT COMPONENTS

Server

☐ Add Developer Instance

Department
Distributed system for department and small enterprise applications.

ENVIRONMENT COMPONENTS

Server + Metadata

☐ Add Developer Instance

Enterprise
Distributed and redundant system for scalable, enterprise-grade and global applications.

ENVIRONMENT COMPONENTS

Server + Metadata HA

☑ Add Developer Instance

MicroStrategy

Modular Deployment Options
Choose one or multiple reference architectures

Team

Department

Enterprise High Availability

Amazon EC2

Amazon EC2

Amazon EC2

RDS DB instance

Amazon EC2

Amazon EC2

Amazon EC2

RDS DB instance

RDS DB Instance

100

10,000

100,000+

Number of users

MicroStrategy

Cloud Architecture

| Analytics and Mobility
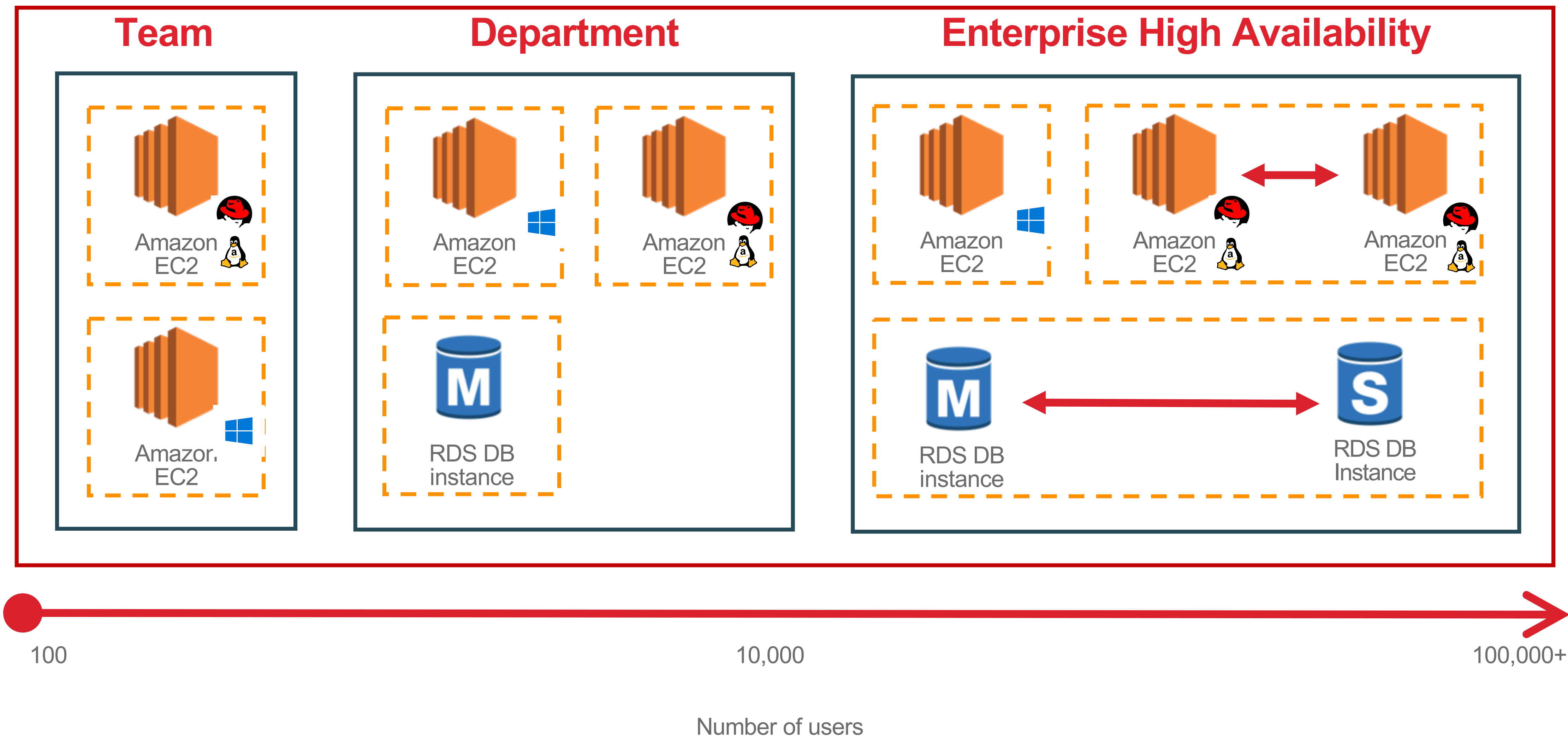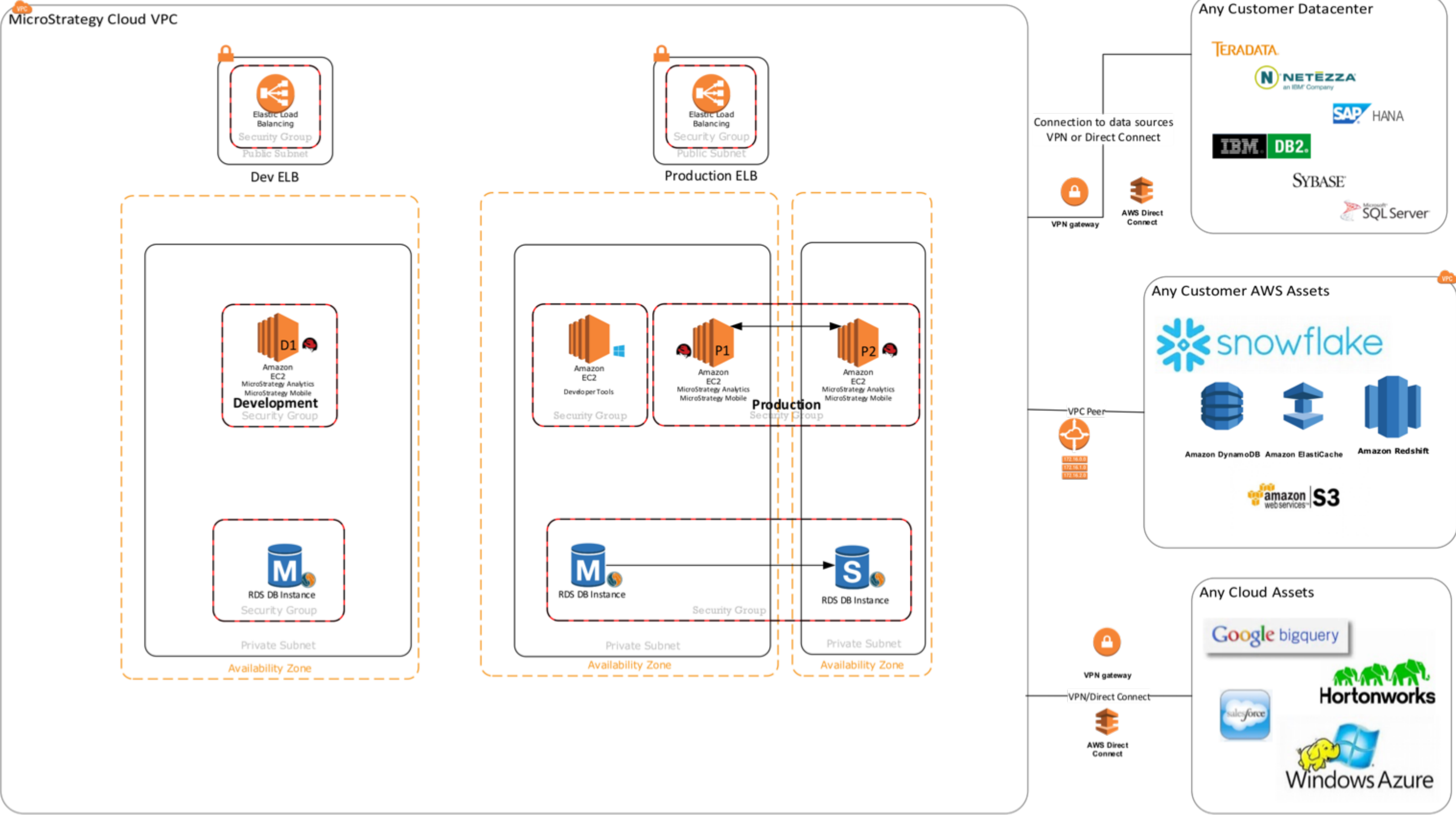
Two Deployment Options for MicroStrategy on AWS or Azure

Deploy in your own AWS account or let us manage it for you in our account. Built on best practices for performance, security and availability

1

Managed by You

Deploy and manage your own dedicated, fully configured MicroStrategy Enterprise Platform
License Model - Perpetual or Term

2

Managed by Us

MicroStrategy will deploy and manage your Private Cloud instance as a dedicated Platform as a Service
License Model – Perpetual or Subscription

1 - MicroStrategy on AWS Managed by You

For organizations who want more control and have the expertise to maintain and manage the environment

Easy Deployments
Deploy into customers AWS account in less than 30 minutes

Simple Migrations
Easily backup environment as .mstrbak file and migrate to the cloud

1-Click Upgrades
Upgrade to latest hotfix for latest security patches and upgrades

Administration Tools
Start/stop/restart at the environment, instance or service level during off peak hours

Scheduler
Schedule events to automate tasks, saving additional time and money

Scalability
Resize environment at anytime to save on costs

Monitor
Monitor and mange environments including memory and CPU utilization

Availability
AWS regional availability and High Availability

Share
Allow access to others to manage environment to oversee operations

Latest and Greatest
Deploy the latest version of MicroStrategy to experience the latest features and capabilities

API's
RESTful APIs to automate features and customized workflows

2 - MicroStrategy on AWS Managed by Us

For customers looking for a PaaS option, MicroStrategy deploys, manages and maintains the cloud environment on the customer's behalf

Easy Deployments
Deploy into customers AWS account in less than 30 minutes

Simple Migrations
Easily backup environment as .mstrbak file and migrate to the cloud

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Upgrade to latest hotfix for latest security patches and upgrades

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Quarterly Service Review which will capture major configuration of the MSTR application, infrastructure performance, support case snapshots and statistics, and other KPIs to measure success with the platform.

Daily backups of metadata, operating system files, and customer data stored within MSTR on AWS. 5 day backup storage retention (additional retention can be extended as a line item add-on)

Security & Compliance - SOC2 Certification, HIPAA Certification, PCIDSS Certification, Privacy Shield Certification, ISO27001 Certification

Monitoring and alerting on system KPIs, collected every 5 minutes, alerted to a 24x7 MSTR emergency response team.

Scheduled maintenance windows for operating system patching, security updates, and management of AWS infrastructure.

Cloud Migration Considerations

CLOUD

Migration Considerations

- Business objectives
  - Performance
  - Scalability
  - Focus on what matters to your business: building intelligent enterprises with the right architecture in mind

- Operational Objectives
  - Reduction of maintenance activities: security patching, upgrading infrastructure
  - Security – SOC 2, ISO-27001, HIPAA, PII, etc.
  - Disaster Recovery
  - Reduction of cost operating your own data centers

- Migration approach
  - On premise BI applications
    - Incremental migration versus one time
    - Upgrading versions?
  - Data warehouse migrations
    - Changing platforms?
    - ETL versus ELT
    - Data lake architecture
    - Connectivity

- The good news is that MicroStrategy can help you chart this path between your business and operational objectives!

Cloud Migration Advisory

- Everyone has heard the term at least once in their life: "A little planning goes a long way"

- The advisory package is a two week on site engagement

  - Includes business review and operational objectives with relevant stakeholders

  - Defines the scope of the migration

  - Plans out the work involved for the migration

  - Provides an architectural diagram of the desired cloud environment

  - Reviews with stakeholders on finalized project plan and architecture

  - Provides a framework and scope everyone can understand going into a migration
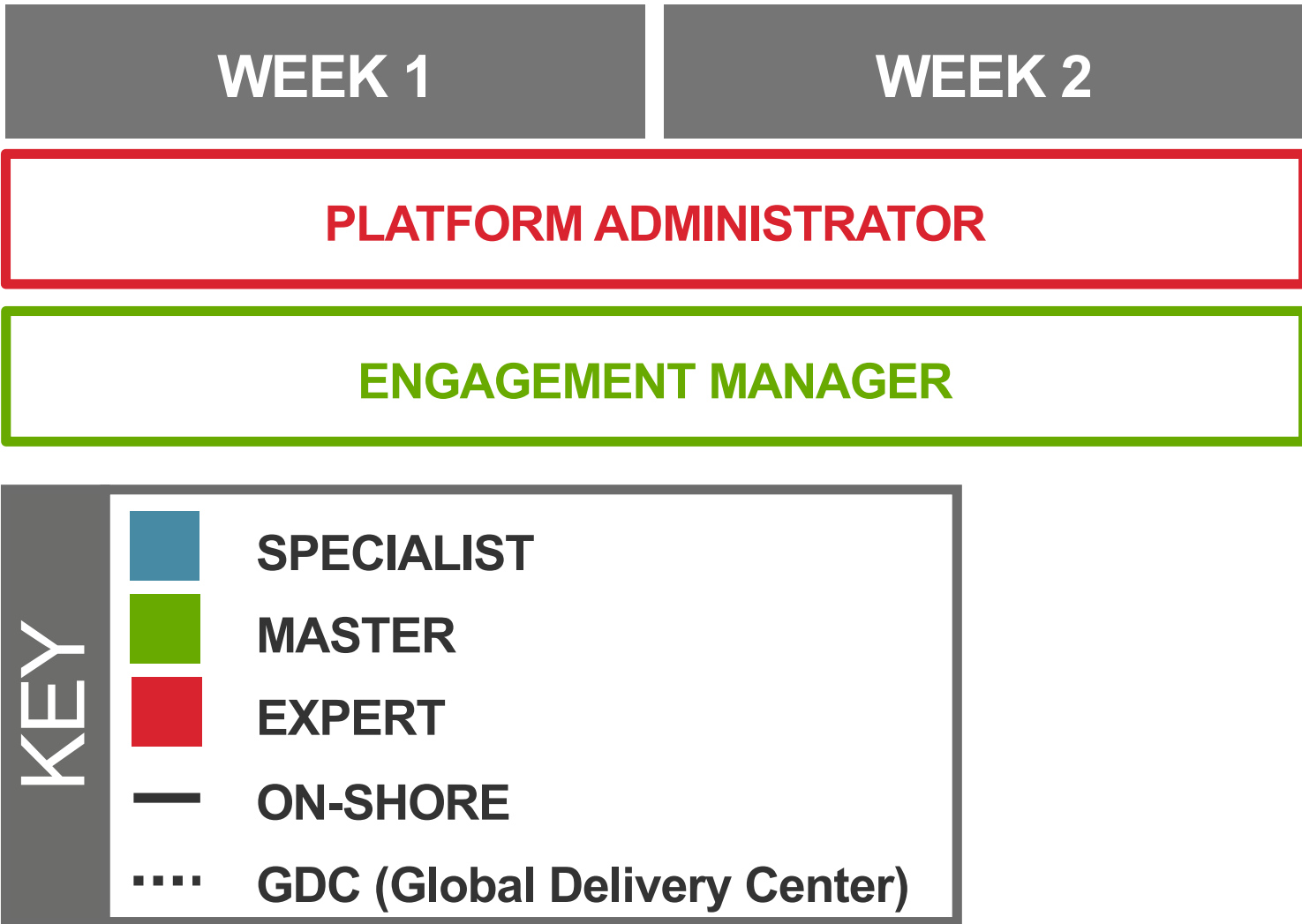
Cloud Migration Advisory Overview

Learn how to streamline your migration strategy for optimizing your environment in the cloud.

During the Cloud Migration Advisory, MicroStrategy will provide a blended delivery team to:

- Evaluate your intelligence ecosystem to develop a cloud migration strategy that helps you implement your ideal computing environment

- Outline your cloud requirements, develop your ideal architecture design

Outcomes include:

- A tailored cloud migration strategy that defines how to optimize intelligence ecosystem architecture, infrastructure, performance, and security in the cloud

- A customized cloud roadmap and architecture diagram to help you securely connect to enterprise assets and effectively operate and manage your environment

- Collaborative workshops to analyze your business goals and ensure your cloud migration strategy addresses your challenges

WEEK 1	WEEK 2
PLATFORM ADMINISTRATOR	
ENGAGEMENT MANAGER	

KEY
- SPECIALIST
- MASTER
- EXPERT
- ON-SHORE
- GDC (Global Delivery Center)

Delivery Methodology

The MicroStrategy Consulting teams apply our proven methodology and industry expertise.

ASSESS

Step 1: In-Depth Review & Analysis

ADVISE

Step 2: Recommendations

Step 1: Assess

Analyze environment and develop recommendations.

Components

- MicroStrategy conducts collaborative workshops to assess your current environment

- MicroStrategy reviews your intelligence ecosystem

- MicroStrategy assesses performance criteria of current on premise environments, identify critical reports to be tested

- MicroStrategy reviews the cloud architecture and assesses design with objectives and cloud strategy

- MicroStrategy assesses networking constraints

Outcomes

- Custom cloud migration strategy that addresses your business challenges
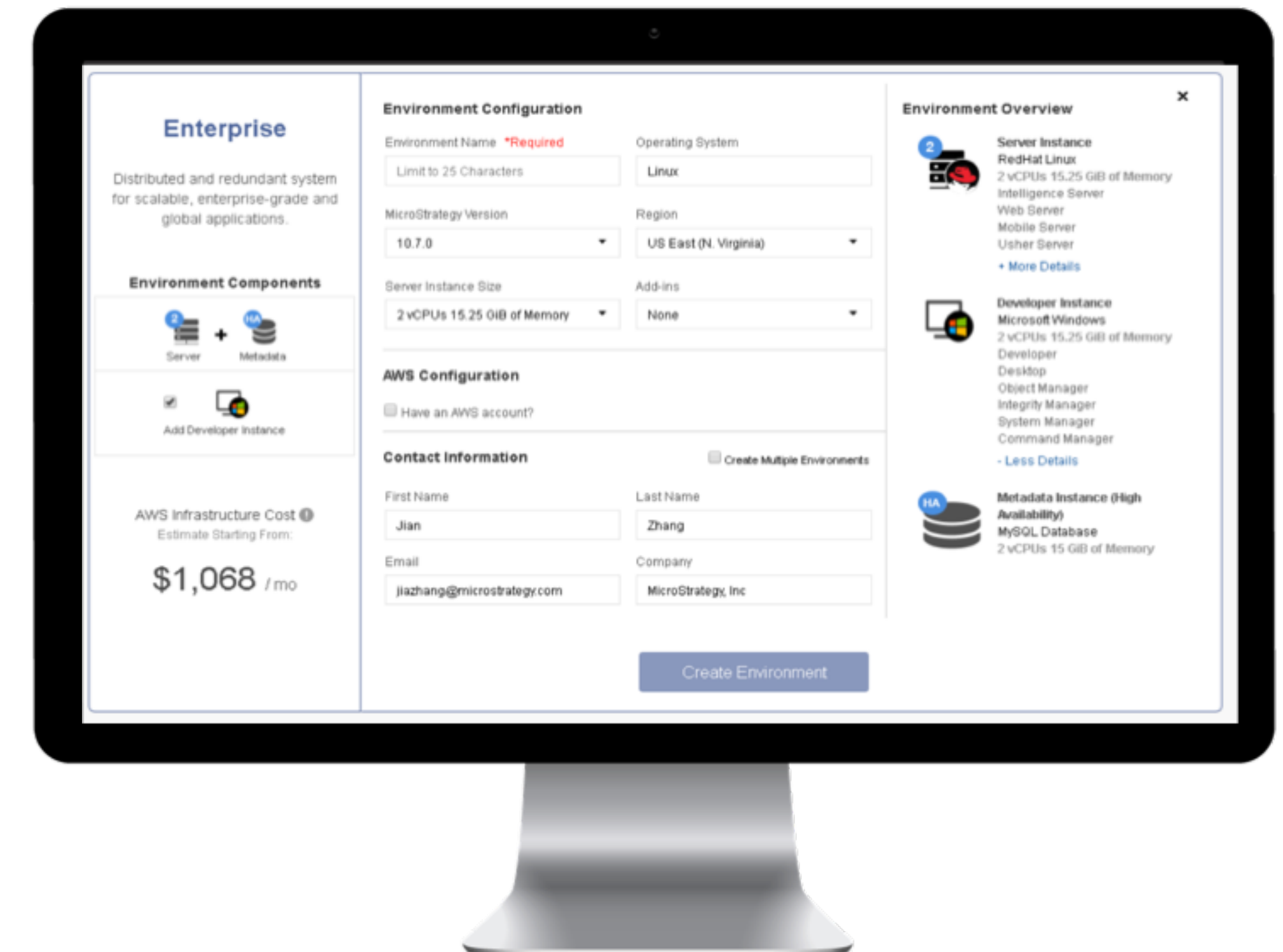
Step 2: Advise
Deliver recommendations and best practices.

Components

- MicroStrategy recommends a migration scope related to business objectives and cloud strategy

- MicroStrategy advises on a migration plan and resources required

- MicroStrategy advises on cloud architecture to meet objectives and performance requirements

- MicroStrategy advises on secure connections to data sources

- MicroStrategy advises on networking constraints

Outcomes

- A customized cloud roadmap and architecture diagram to help you protect, manage, and maintain your environment

- Demonstration on how to spin up a cloud environment

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Cloud Migration Tools

- MicroStrategy Cloud has invested heavily to help customers migrate with confidence:

  - MicroStrategy Backup is a tool used to backup all metadata and configuration files

  - Once the backup of your environment is created, a new version of this can be created and upgraded using the MicroStrategy Cloud Provisioning Console

  - An environment can be released within 30 minutes of spinning up the machines

  - Quick "How to" video

1 Take a backup of your current environment

2 Go to MicroStrategy on AWS

3 Select new version and Restore!

Best Practices

CLOUD

Cloud Migration Best Practices

- Complete an Enterprise Assessment prior to migration

- Complete a Cloud Migration Advisory engagement to assist with scope and architecture

- Cleanse your metadata prior to backup
  - Remove unused projects, objects and dependencies

- Use a sandbox in cloud to test production metadata quickly

- Create a test plan based on sandbox findings and validations

- Create a full parallel environment prior to migration
  - Use MicroStrategy 2019 integrity manager and load testing capabilities
  - Engage professional services if you are unable to test all reports

- Plan migration of lower environments
  - Freeze dates on development and production metadata are critical to success

- Plan communication to end users
  - Includes business validation testing
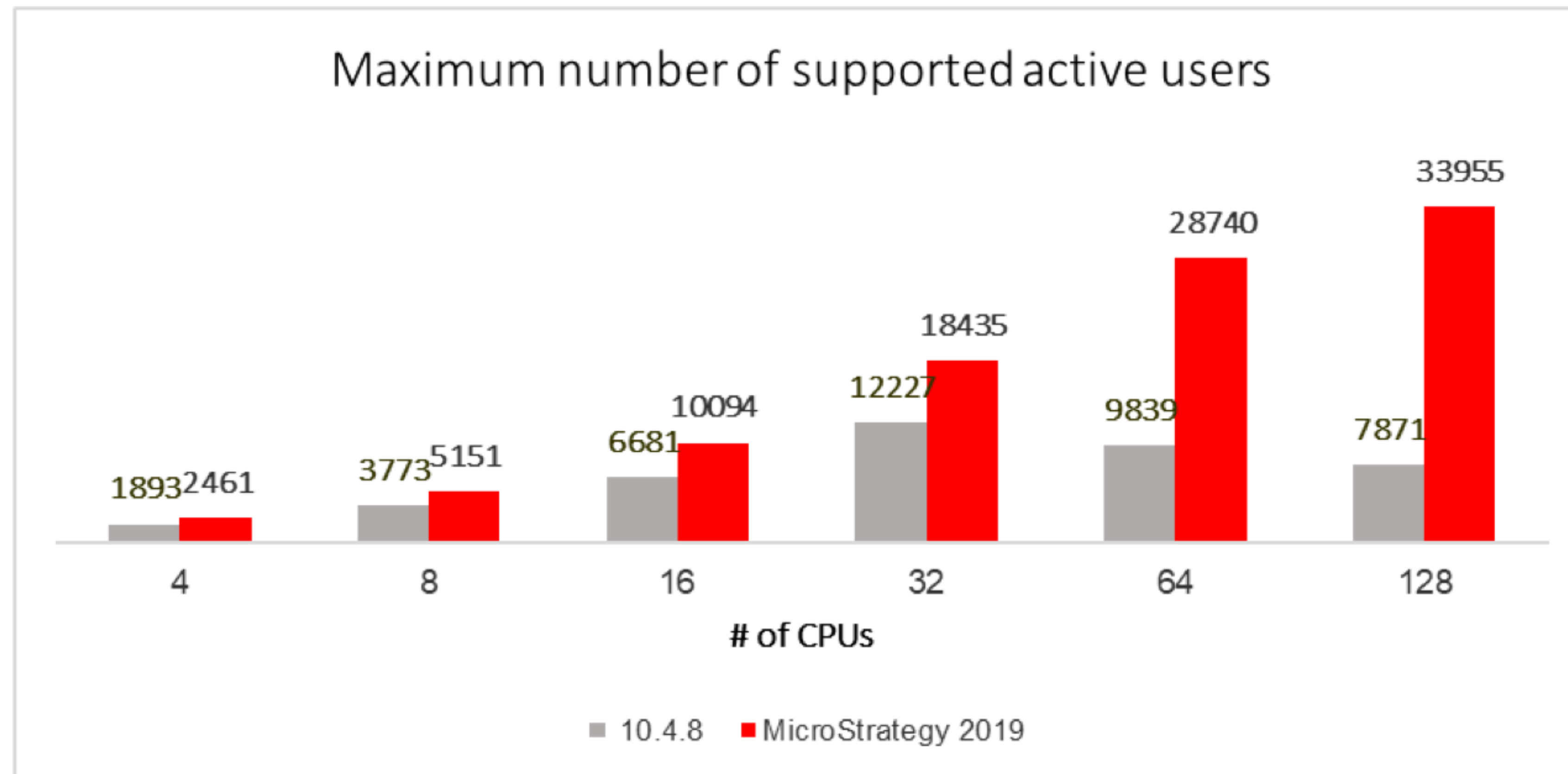 - Cutover plan and any outages related to the migration

MicroStrategy 2019: Performance Improvements

MicroStrategy 2019 release benefits from the following major improvements

Major Improvement	Benefit
Memory Contract Management (MCM) improvements	• **Up to 45%** concurrency throughput increase • **Up to 10%** reduction in concurrent users response time
Windows Compiler upgrade	• **Up to 58%** concurrency throughput increase • **Up to 50%** reduction in concurrent users response time
Linux Compiler upgrade	• **Up to 17%** concurrency throughput increase • **Up to 12%** reduction in concurrent users response time
SmartHeap auto configuration	Enabled by default in MicroStrategy 2019

MicroStrategy 2019: Performance Improvements
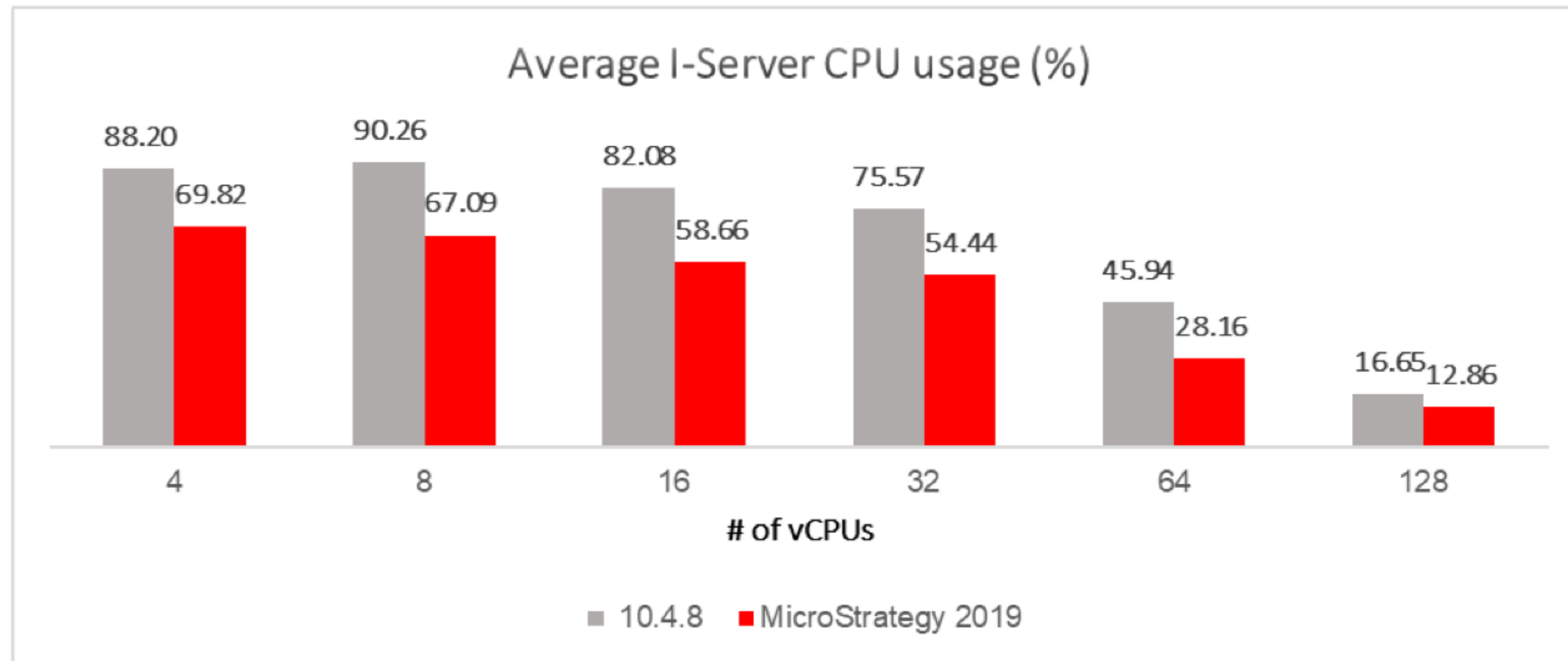
👍 MicroStrategy 2019 supports **more active users** as compared to MicroStrategy 10.4.8
  - 30% to 330% increase depending upon number of CPUs

Maximum number of supported active users

# of CPUs	10.4.8	MicroStrategy 2019
4	1893	2461
8	3773	5151
16	6681	10094
32	12227	18435
64	9839	28740
128	7871	33955

MicroStrategy 2019: Performance Improvements

👍 MicroStrategy 2019 **consumes less CPU** for the same number of active users as compared to MicroStrategy 10.4.8

- 20% - 25% less CPU consumption

Average I-Server CPU usage (%)

# of vCPUs	10.4.8	MicroStrategy 2019
4	88.20	69.82
8	90.26	67.09
16	82.08	58.66
32	75.57	54.44
64	45.94	28.16
128	16.65	12.86

MicroStrategy 2019: Performance Improvements

👍 MicroStrategy 2019 **supports faster response times** for the same number of active users as compared to MicroStrategy 10.4.8

- 40% - 60% faster response times

Response time (s)

# of vCPUs	10.4.8	MicroStrategy 2019
4	3.02	1.70
8	3.00	1.32
16	1.95	1.01
32	1.81	0.86
64	1.88	0.71
128	1.87	0.69