
AWS
re:Invent
NOV. 28 – DEC. 2, 2022 | LAS VEGAS, NV

ENT205

How to save costs and optimize Microsoft workloads on AWS

Maya Newhagen

Sr. Manager, WW Optimization & Licensing Assessments (OLA) Program

Amazon Web Services

Rajesh Rathod

Sr. Manager, EC2 Product Management – SQL Server, Licensing, and Migration Acceleration

Amazon Web Services

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What you can expect to learn from this session

- How AWS offers you many high-performing options for your Microsoft workloads
- How to avoid potentially expensive and punitive licensing restrictions
- Products and programs to right-size your infrastructure and save on Microsoft licensing costs

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Thanksgiving time

FOR TRUSTING AWS TO RUN YOUR MICROSOFT WORKLOADS COST EFFECTIVELY FOR OVER 14 YEARS



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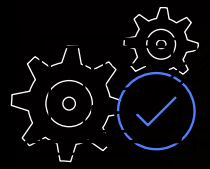
The economic benefits of cloud extend well beyond cost savings

	Cost Savings (TCO)	Staff Productivity	Operational Resilience	Business Agility
What is it?	Infrastructure cost savings and cost avoidance	Efficiency improvement by function on a task by task basis	Improved SLAs and reducing unplanned outage	Deploy new features and applications faster and reduce errors
Examples	52% reduction in TCO (GE)	Troubleshooting time reduced by 75% (Transcat)	Seeing up to 99.99% availability (Vodafone Italy)	“our projects no longer last years, they last months” (Autodesk)

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Levers of cost savings



PRODUCT INNOVATIONS



INFRASTRUCTURE AND LICENSING COST OPTIMIZATIONS



MIGRATION AND MODERNIZATION PROGRAMS

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Product innovation

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Broadest and deepest compute platform choices

Categories

General purpose

Burstable

Compute intensive

Memory intensive

Storage
(high i/o, dense)

GPU compute

Graphics intensive

Capabilities

Choice of processor
(AWS, Intel, AMD)

Fast processors
(up to 4.5 GHz)

High memory footprint
(up to 24 TiB)

Instance storage
(HDD and NVMe)

Accelerated computing
(GPU, FPGA, and ASIC)

Networking
(up to 100 Gbps)

Bare metal

Size
(Nano to 32xlarge)

Options

Windows, Linux, Unix, macOS

Amazon EBS

Amazon Elastic Inference

Elastic Fabric Adapter

500+

INSTANCE TYPES

for virtually every workload and business need

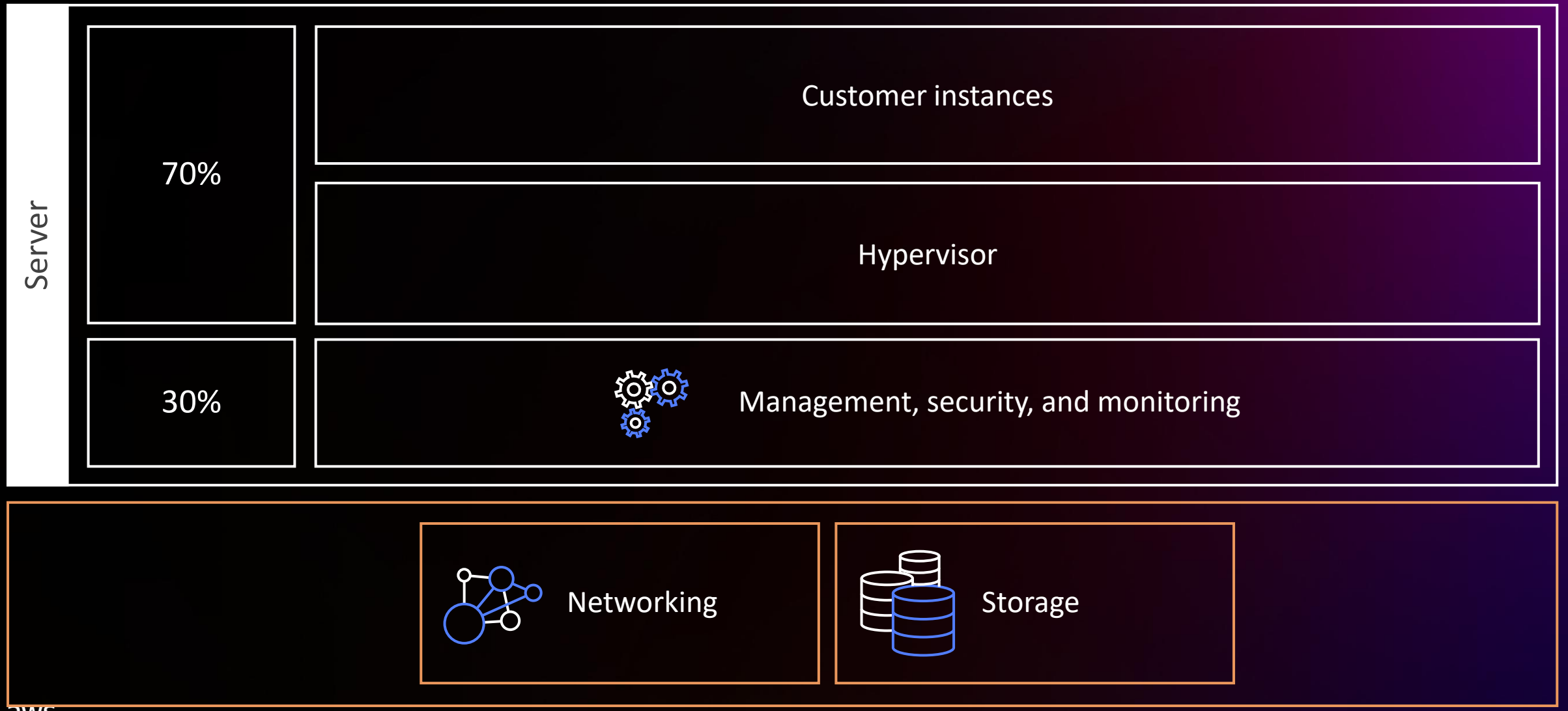
NITRO SYSTEM

Reimagined virtualization infrastructure

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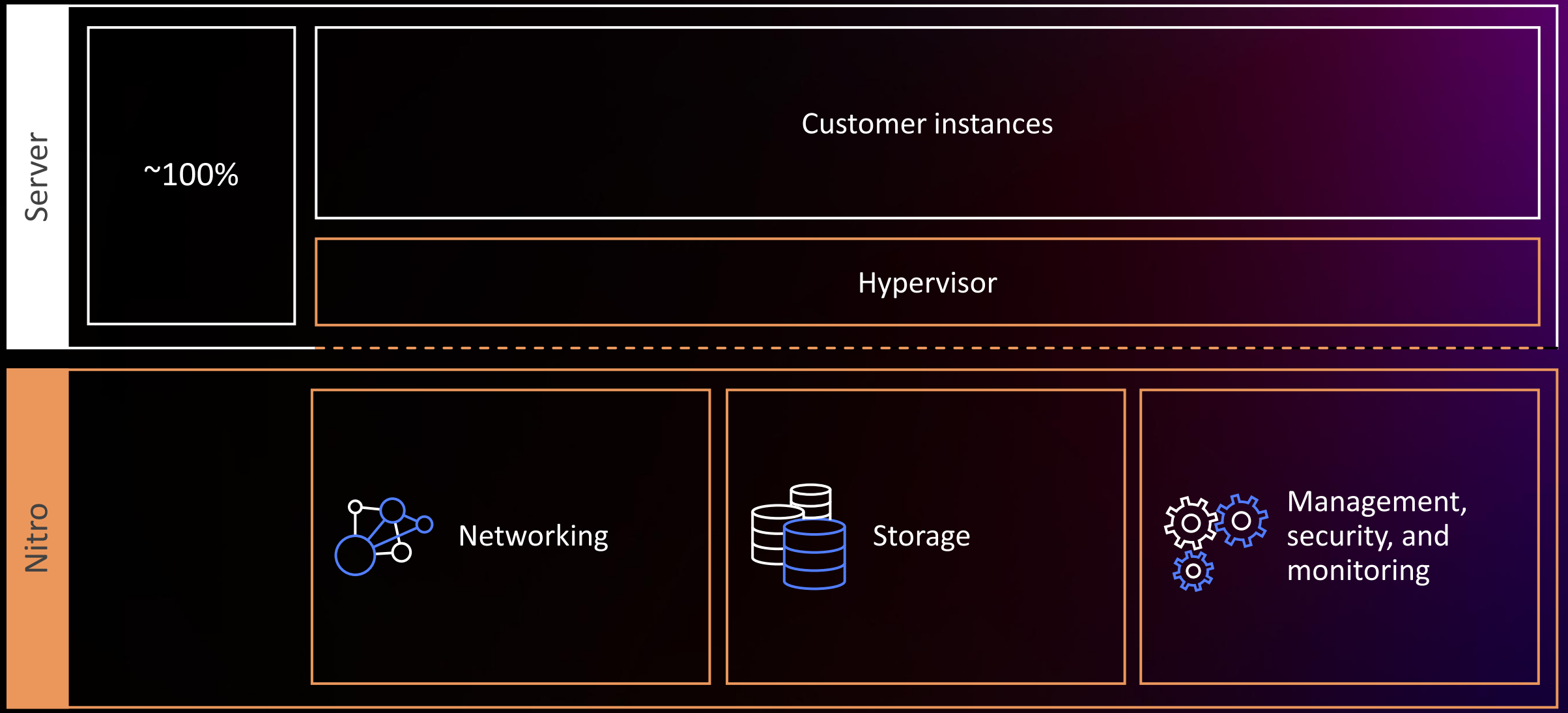
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Pre-Nitro EC2 “Instance” host architecture



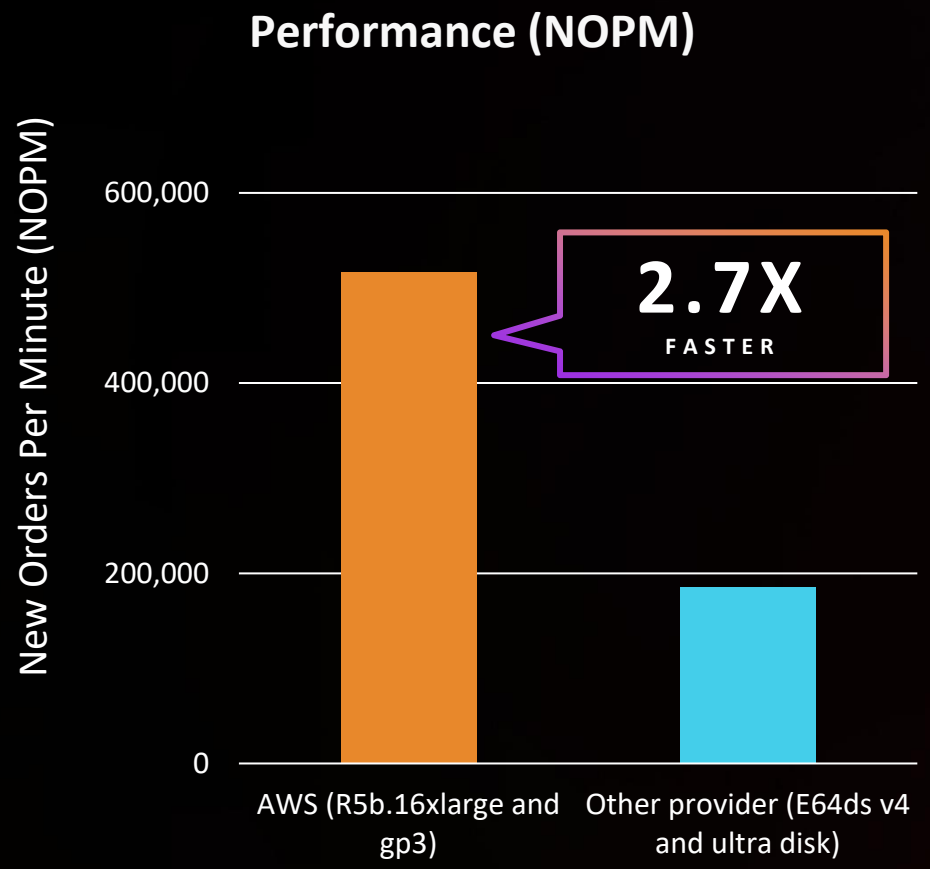
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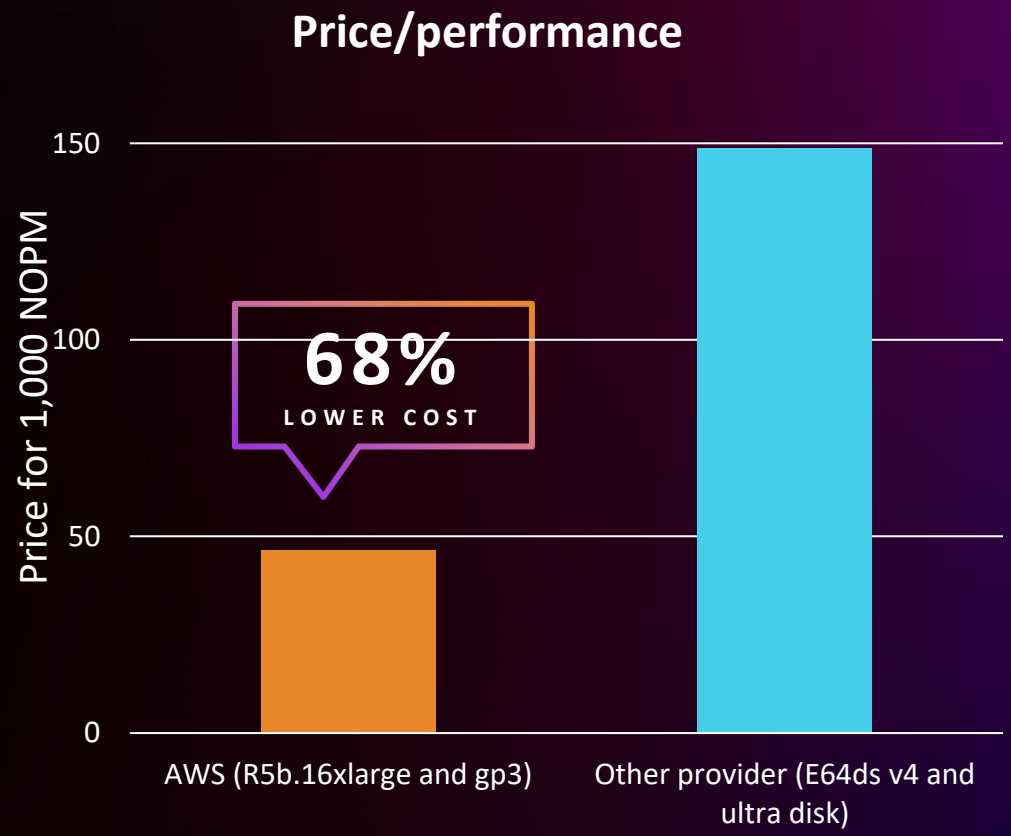
The AWS Nitro architecture



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AWS delivers 2.7x faster performance than another provider





Source: Principled Technologies https://facts.pt/izcNe5y

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Fully managed storage options



Amazon FSx for NetApp ONTAP



Amazon FSx for Windows File Server



Amazon FSx for OpenZFS



Amazon FSx for Lustre

Fully managed and integrated **as an AWS service**

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“Highly available, performant storage for our SQL nodes and reduced SQL licensing costs – a win-win ”

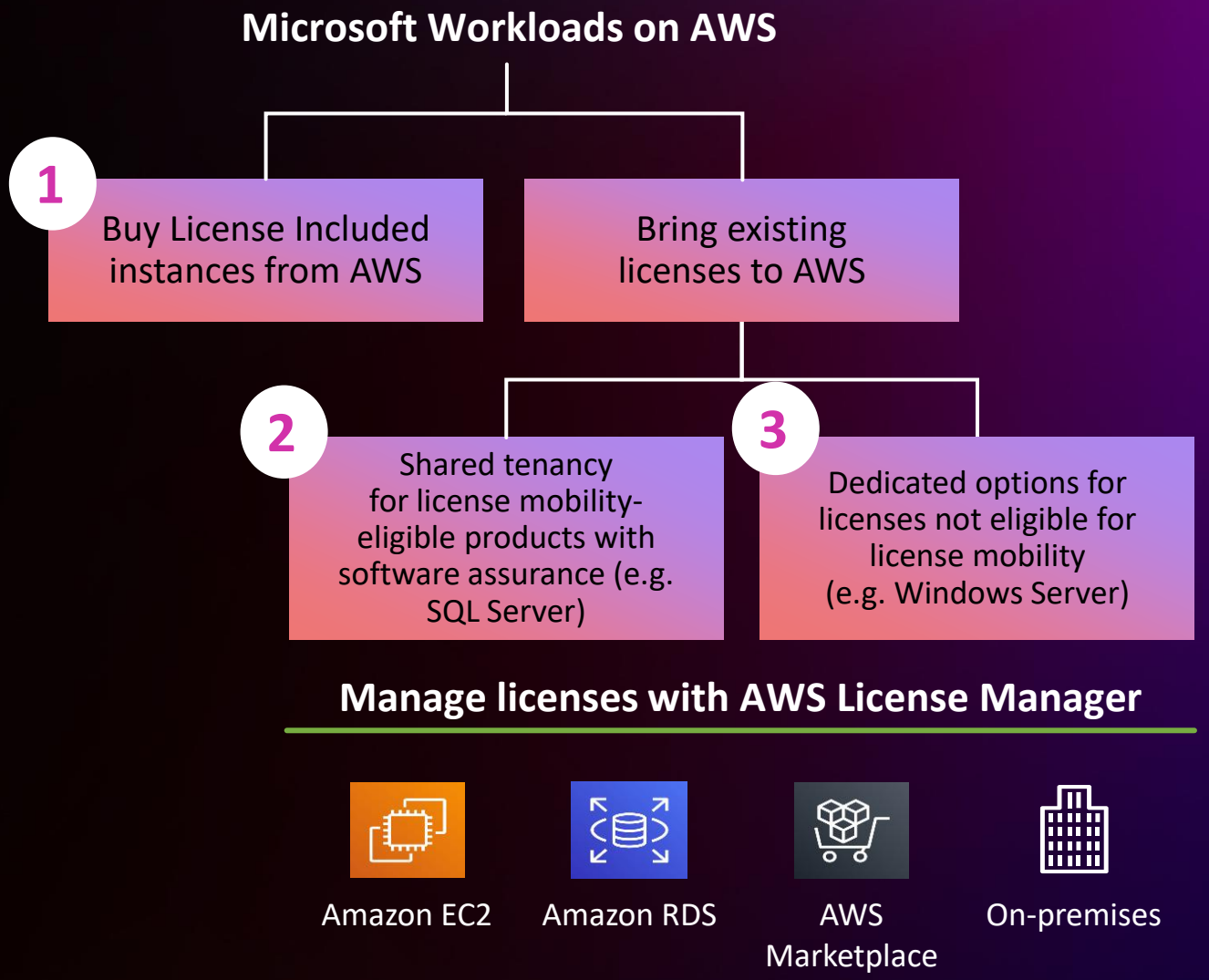
Urs Bertschinger

VP, Research and Development, Change Healthcare

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Licensing options

1. Flexible pay-as-you-go licensing choices
2. Bring your License Mobility benefits to AWS
3. Dedicated options for products without License Mobility



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License-included instances from AWS

Advantages

- ✓ AWS manages the Amazon Machine Image (AMI)
- ✓ Pay per use
- ✓ Per-second billing for Windows Server and SQL Server
- ✓ Easy charge-back to business
- ✓ No true-ups or software compliance audits
- ✓ No software upgrade fees

Windows Server

- New and older versions
- No client access licenses (CALs) needed

SQL Server

- Windows and Linux versions
- Enterprise, Standard, and Web Editions

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License Mobility on shared Amazon EC2 instances



Microsoft application with License Mobility

EC2 Windows AMI

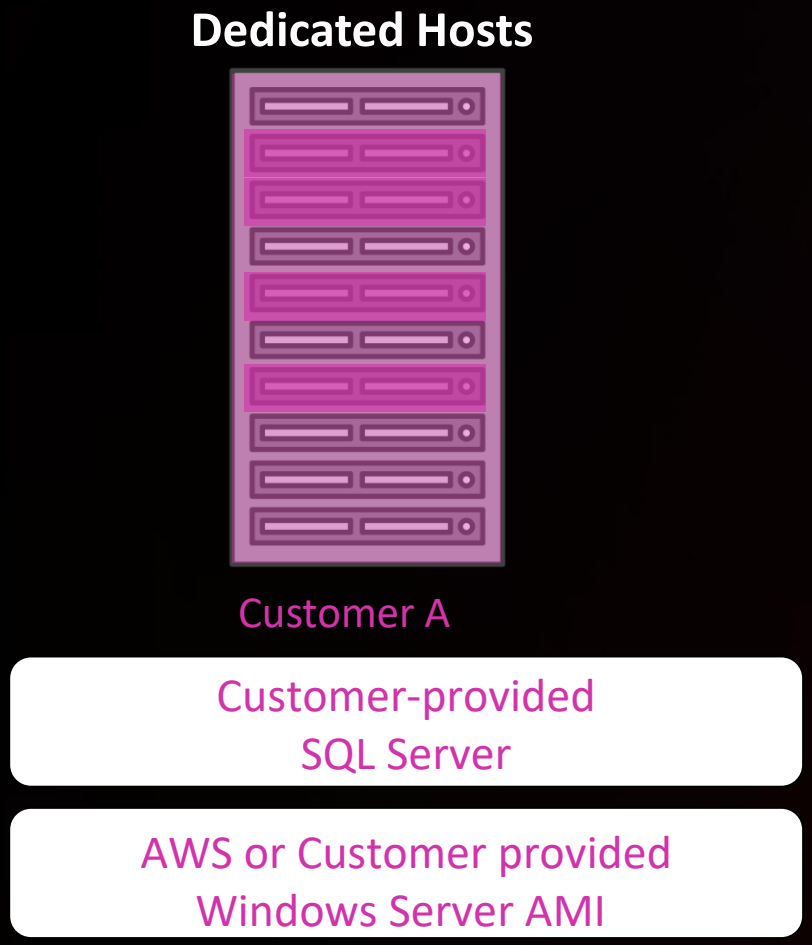
SQL Server with License Mobility

EC2 Windows or Linux AMI

AWS does not recommend customers bring licenses for Windows Server, Windows Desktop, Microsoft Office, or MSDN to default tenancy

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Bring Windows Server licenses to Dedicated Hosts



Bring Windows Server licenses

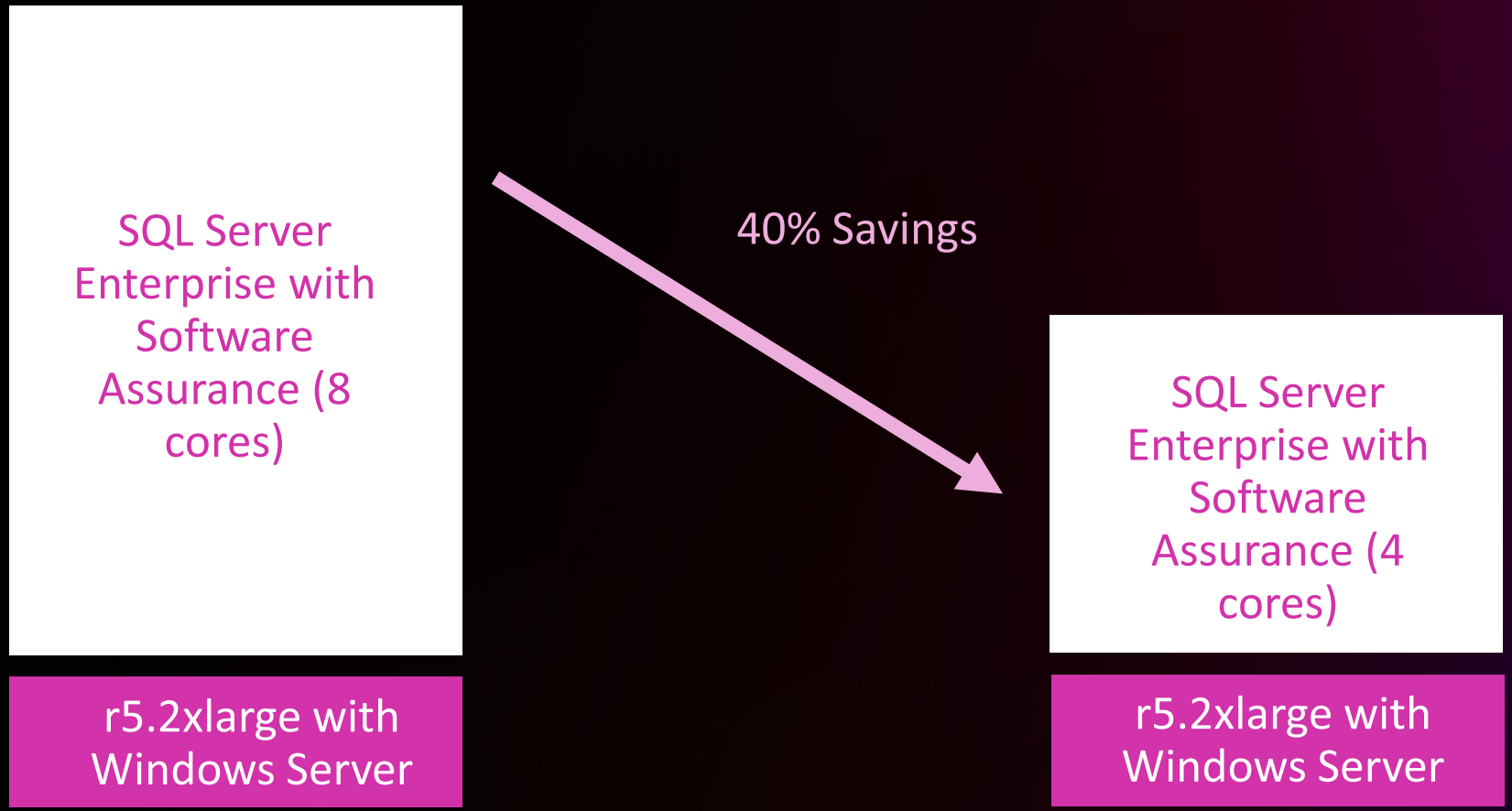
- ✓ No Software Assurance required
- ✓ Maximize virtualization benefits of Windows Datacenter Edition
- ✓ Simplified management of Dedicated Hosts

Minimize SQL Server licenses

- ✓ No Software Assurance required
- ✓ Option to license per physical core
- ✓ Maximize virtualization benefits of SQL Server Enterprise Edition

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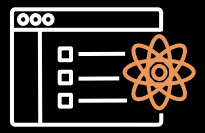
Reduce CPU-based licensing costs with Optimize CPU



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New!

Introducing Microsoft Office and Visual Studio on Amazon EC2



Amazon provided licenses

Fully-compliant, no long-term commitments (per user/per month)



Broad choice of Amazon EC2 instances

Launch instances on-demand, provide optimal capacity and right hardware to your end users



No compromises on security and compliance

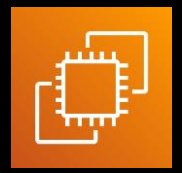
Easily provision standardized development machines managed by your IT

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Getting started with Microsoft Office and Visual Studio on Amazon EC2

Step 1: Discover & Subscribe



Amazon EC2

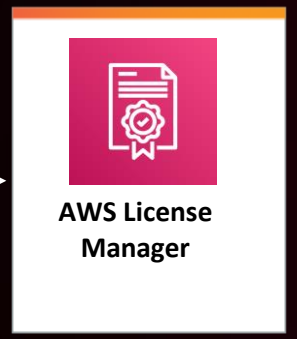


AWS Marketplace

Step 2: Manage Licensing



Onboard to Managed Microsoft Active Directory on AWS Cloud



Easily manage user-based licenses for Microsoft Office or Visual Studio on AWS License Manager

Step 3: Launch



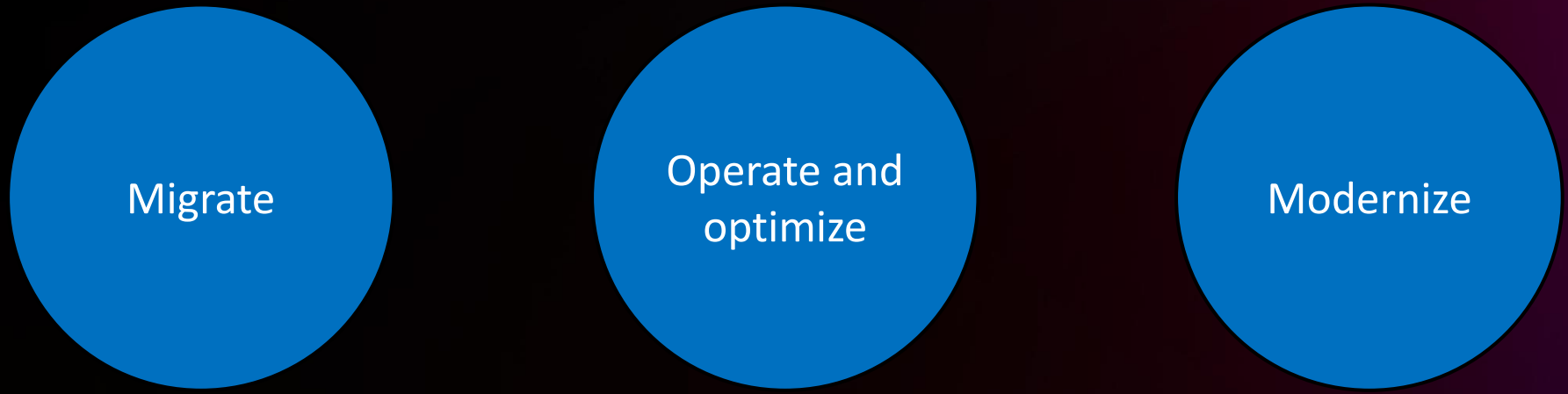
Launch fully compliant instances with Amazon provided licenses for Microsoft Office and Visual Studio

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Cost optimization journey with AWS products and programs

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Cost optimization journey



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Cost optimization starts before migration



1. Identify AWS resource optimization opportunities
   - ✓ Over-provisioning for peak
   - ✓ Over-specified/under-utilized resources
   - ✓ Outdated hardware requiring significant licensing costs

2. Identify Microsoft license savings
   - ✓ Evaluate cloud native or open source alternatives to eliminate licensing costs
   - ✓ Reduce CPU configurations
   - ✓ Leverage BYOL and reduce future EA commitments
   - ✓ Optimize use of SQL Server Standard

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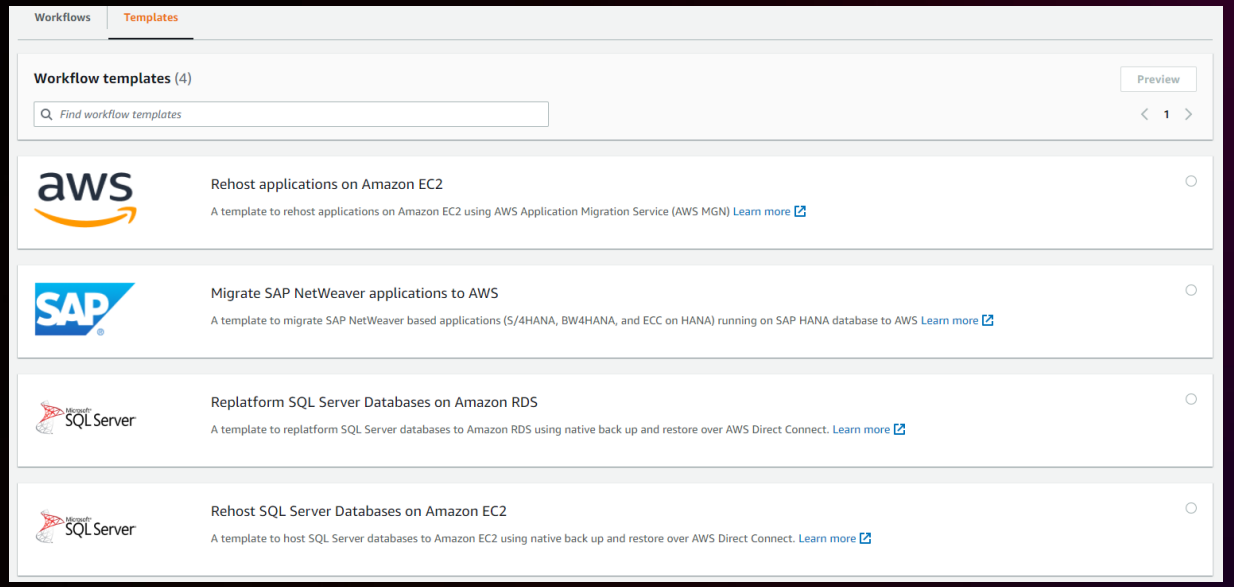
Cost optimization during migration

Migration orchestration

New!

Accelerate migrations and reduce costs with Migration Hub Orchestrator

- ✓ Achieve scale and repeatability using predefined workflow templates
- ✓ Automate and simplify your migration steps
- ✓ Reduce migration time and costs



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Pillars of cost optimization for compute

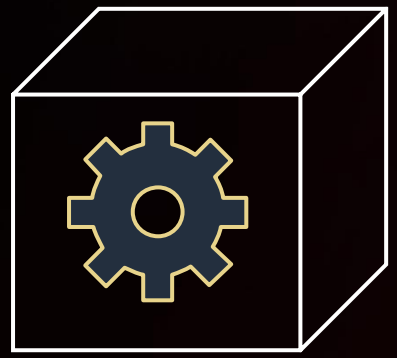


1. Use right compute instances for your use case
   - ✓ Use newest instance families
   - ✓ Provide standardized configurations to developers
2. Increase elasticity
   - ✓ Smaller instances with auto-scaling
   - ✓ License-included instances for spiky workloads
   - ✓ Turn-off non-production instances
3. Select right pricing plan for your workload
   - ✓ On demand initially and for spikey workloads
   - ✓ Savings Plans and convertible Reserved Instances provide flexibility
   - ✓ Design-in Spot Instances
4. Use AWS Compute Optimizer

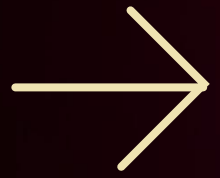
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Modernize applications for ultimate cost savings

Modernize



Monolithic applications built on proprietary software







Microservices

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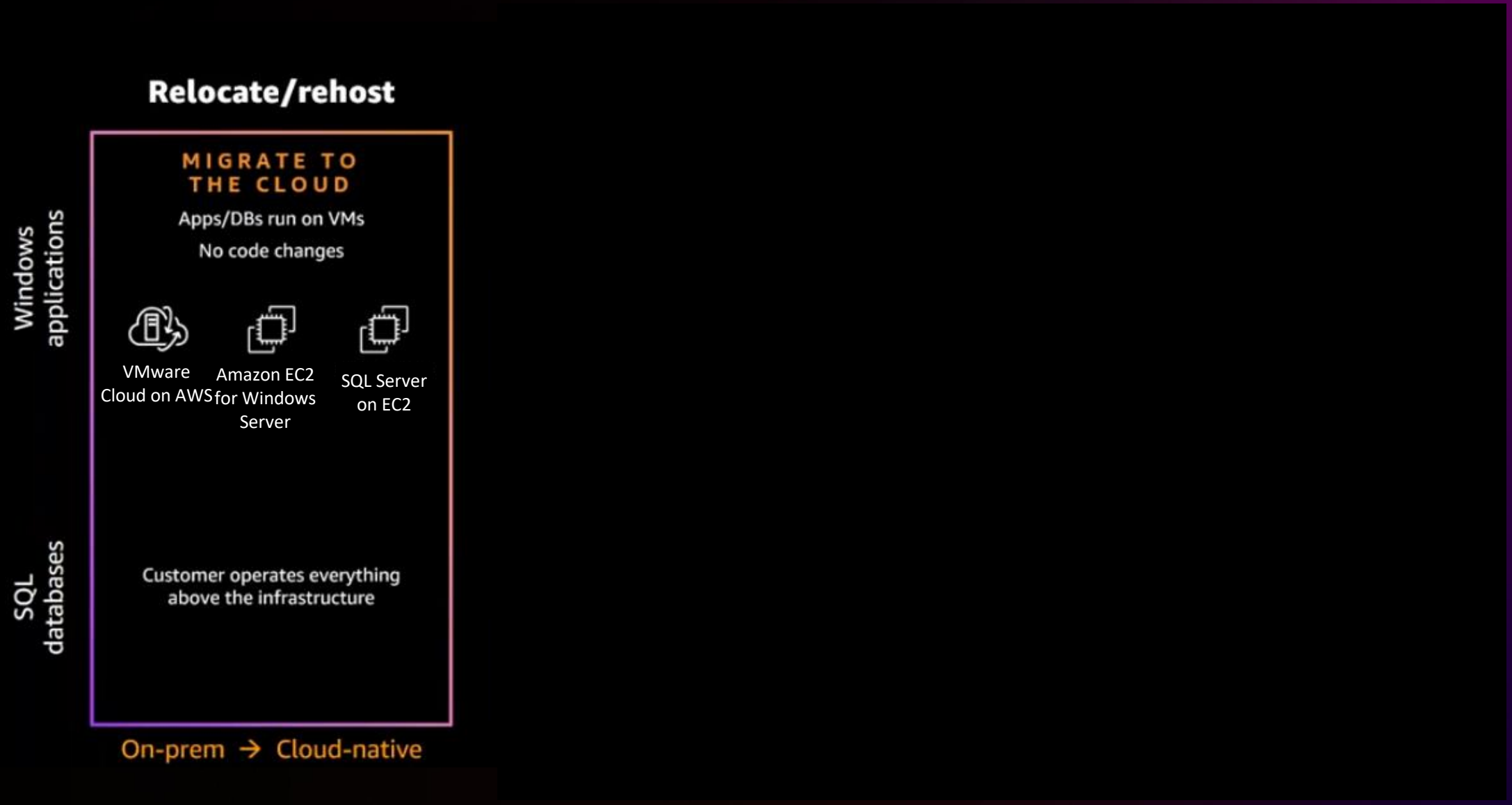
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Why are customers modernizing applications on AWS?

- **Agility**
  - Decomposing monoliths to microservices brings freedom to adapt and experiment quickly
  - Port and containerize .NET applications and deploy using cloud-native tooling
- **Lower costs**
  - No longer pay for expensive Windows and/or SQL Server licensing saving more than 30% costs
- **Improve price/performance**
  - Amazon Aurora offers performance and availability of commercial-grade databases at 1/10th the cost
  - .NET 5/6 with AWS Graviton2 offers 40% better price/performance

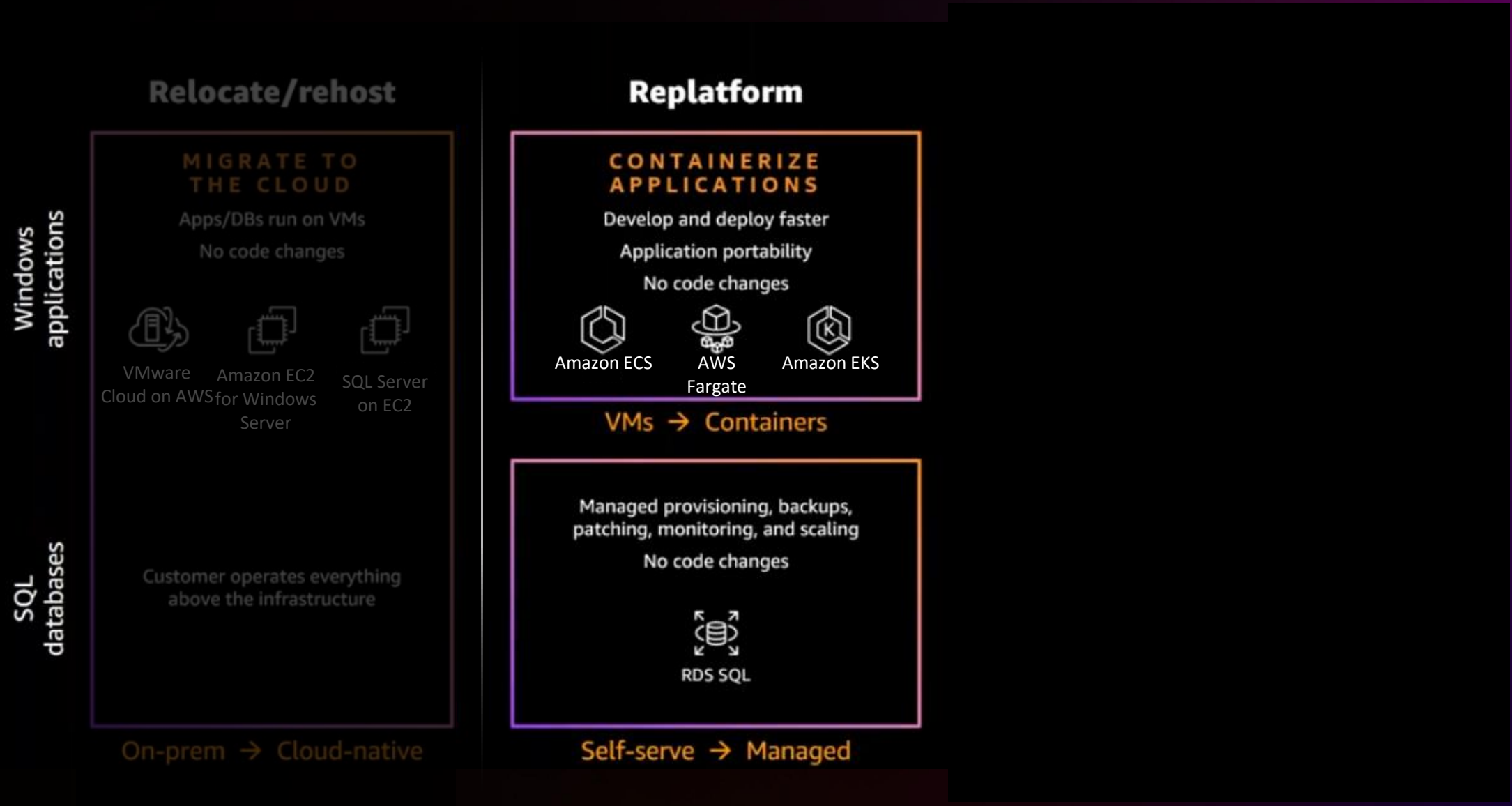
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Common migration and modernization pathways



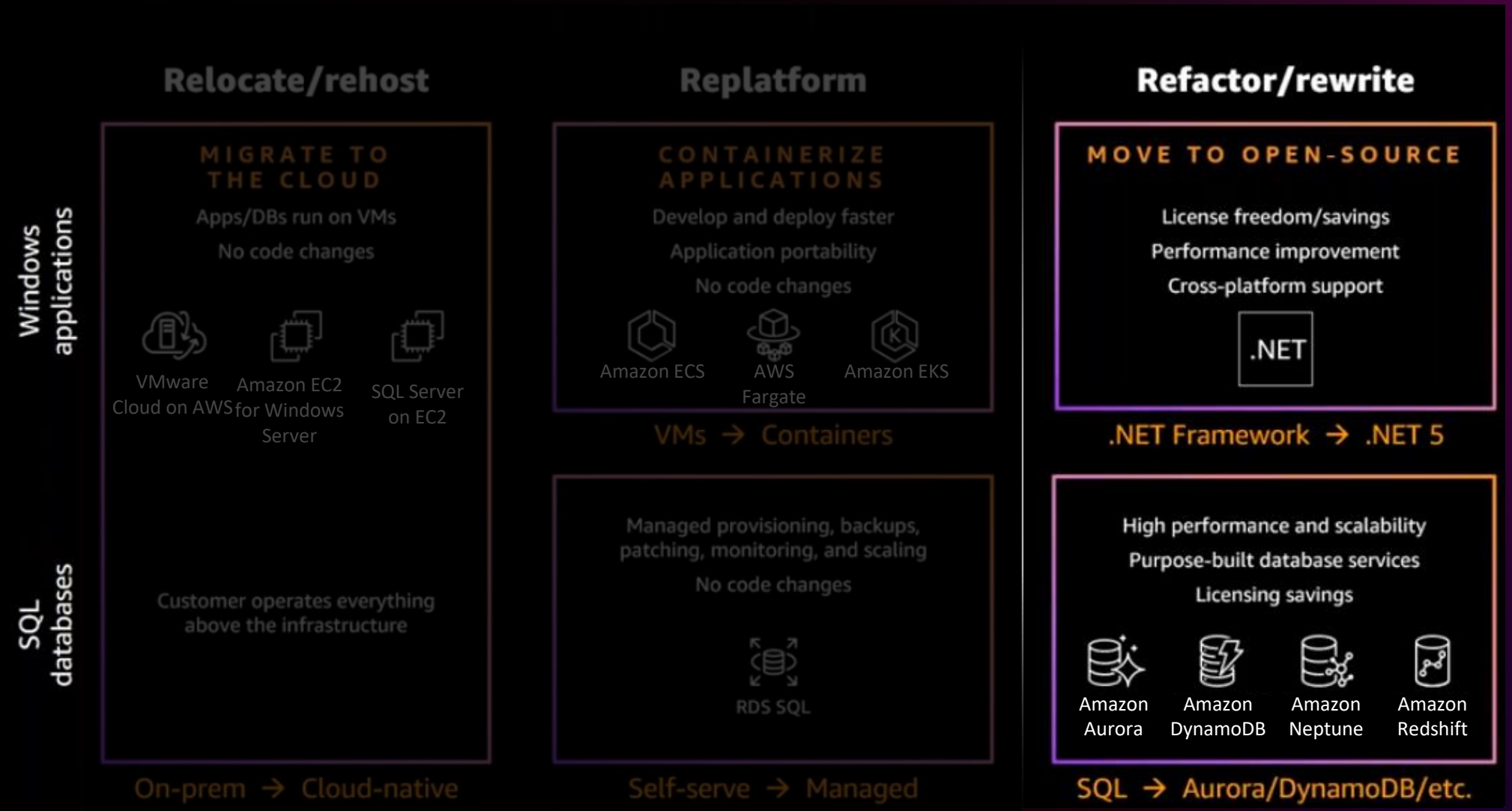
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Common migration and modernization pathways



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Common migration and modernization pathways



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New!

Application modernization tools

AWS Modernization Calculator for Microsoft Workloads

Pricing Calculator for modernized architecture recommendations and cost estimates

Estimate cost of modernized architecture

Modernization cost estimates



Modernized Application
➤ Estimate cost

AWS Toolkit for .NET Refactoring

New Visual Studio IDE extension to fully refactor .NET Framework applications

Complete app transformation

Modernization pathway



.NET framework
.NET 6 on Linux Containers

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Application modernization tools

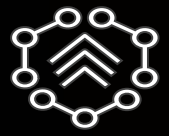
ASSESS | MODERNIZE

AWS Migration Hub
Strategy recommendations

Central tool across all phases of migration and modernization

Assess your application at scale

Modernization at scale



Application Recommendations

Porting Assistant for .NET

Easier and assisted refactoring to .NET 6

Minimize manual effort

Modernization pathway



.NET Framework
.NET 6

AWS App2Container

Faster containerization for existing applications

Accelerate modernization

Modernization pathway



.NET/Java on Win/Linux
Win/Linux containers

AWS Microservice Extractor for .NET

Reduced effort to transform monolithic applications into microservices

Accelerate refactoring

Modernization pathway



Monolith
Microservices

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Infrastructure and licensing cost optimization programs

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AWS Optimization and License Assessment (OLA)

Collect



Determine prospective workloads to optimize, and provide existing utilization data or collect utilization data for the underlying workloads using native AWS or third-party tooling.

Analyze



Analyze the data to model cost and licensing optimization scenarios

Plan



Review the results and build your business case or start a migration proof of concept

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Cloud migration and modernization outcomes



“We had a wide variety of enterprise SQL licenses in our technology mix. Leveraging the skills of our internal teams and CMD, we were able to rationalize our SQL spend by optimizing licensing versions in some cases, to save on database costs,”

Pradeep Nandavaram,
Head of Infrastructure & Cloud
Veolia Australia & New Zealand

Veolia is saving 67 percent on its database spend since migrating to AWS.

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On average, customers have been able to reduce the SQL Server cores that need to be licensed by 45%

Customers, on average, can reduce their Windows Server licenses by 77%



https://evolvecloudservices.com/esg-whitepaper

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OLA savings examples

National Hotel Chain
Windows VMs: 191
VM RightSizing: 44% ($300K)
SQL Optimization: 15% (287→244)

Construction
Windows VMs: 1,650
VM RightSizing: 68% ($670K)
SQL Optimization: 30% (1,441→1,004)

Global Engineering
Windows VMs: 3,106
VM RightSizing: 58% ($1.1M)
SQL Optimization: 31% (546→380)

Life Sciences
Windows VMs: 865
VM RightSizing: 52% ($3.1M)
SQL Optimization: N/A

Financial Services
Windows VMs: 865
VM RightSizing: 52% ($3.1M)
SQL Optimization: 35% (351→228)

Industrial Manufacturing
Windows VMs: 215
VM RightSizing: 37% ($309K)
SQL Optimization: N/A

Online Education
Windows VMs: 343
VM RightSizing: 73% ($858K)
SQL Optimization: 63% (216→80)

Travel Services
Windows VMs: 40
VM RightSizing: 68% ($670K)
SQL Optimization: 73% (768→204)

Consulting Services
Windows VMs: 1,050
VM RightSizing: 70% ($3.1M)
SQL Optimization: 27% (891→648)

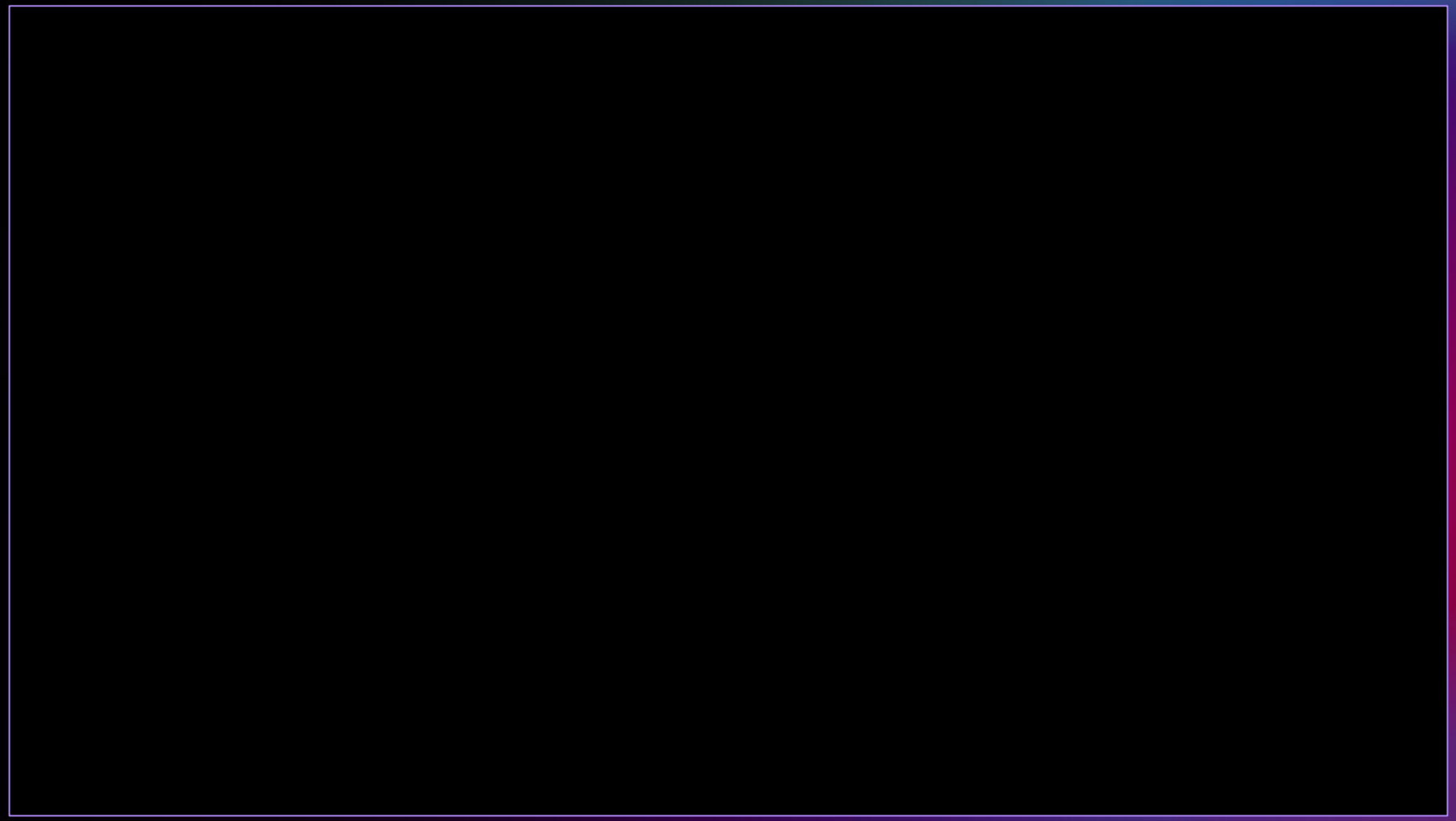
Life Insurance
Windows VMs: 324
VM RightSizing: 63% ($1.1M)
SQL Optimization: 52% (1,014→484)

Insurance
Windows VMs: 685
VM RightSizing: 32% ($740K)
SQL Optimization: 9% (3,155→2,860)

Retail Services
Windows VMs: 1,138
VM RightSizing: 50% ($6.6M)
SQL Optimization: N/A

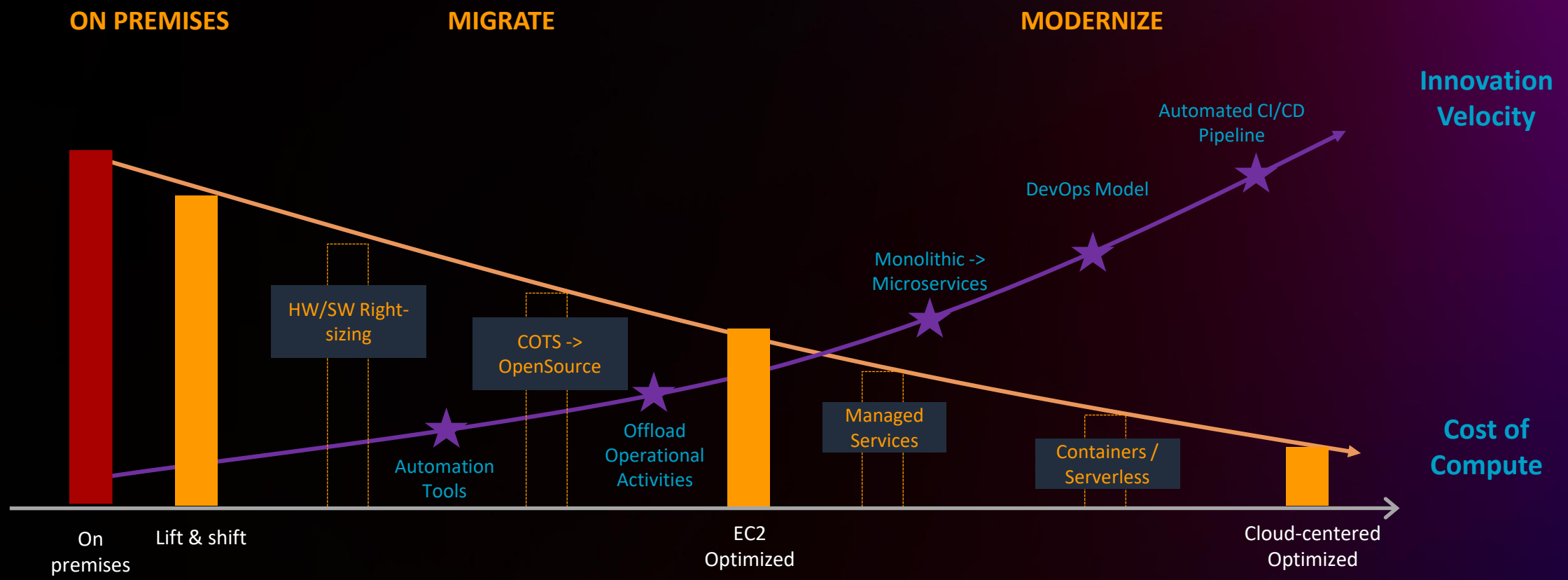
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Migration Evaluator Quick Insights Demonstration



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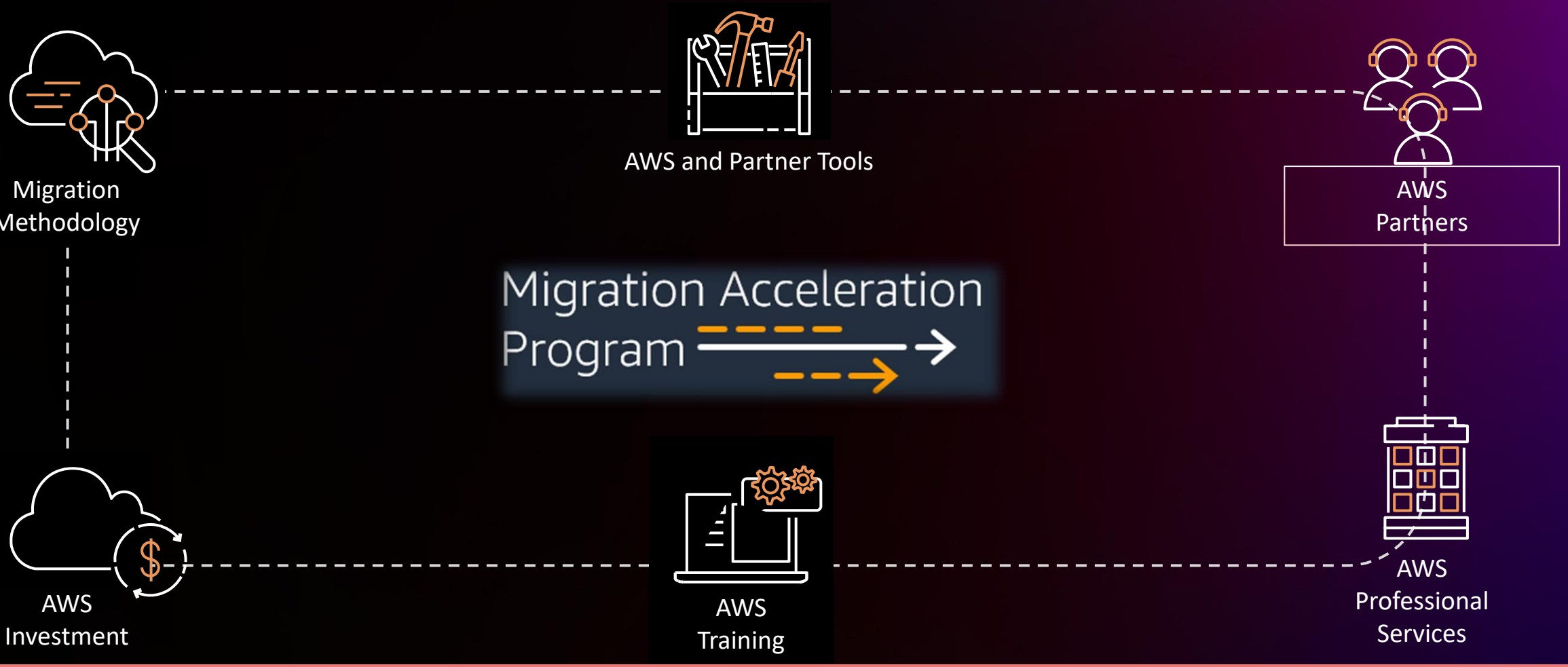
Fully realize the benefit of the cloud



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Migration Acceleration Program (MAP)

Flagship AWS program to help customers migrate and modernize to AWS using a proven approach



Using a proven framework greatly increases your speed to market

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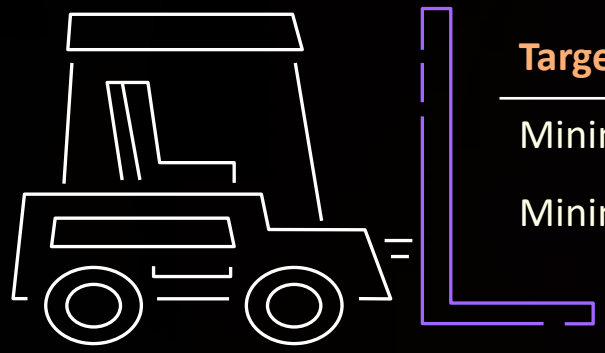


"People didn't think the move could be executed in such a short timeframe, especially given constraints around coronavirus."

Tiina Flytström
Head of Infrastructure and Cybersecurity
Finnair

Windows Migration Accelerator Offer

ACCELERATE YOUR LIFT AND SHIFT MIGRATION OF WINDOWS WORKLOADS TO AWS



Target Migration Velocity	Migration Scope	Credits offer
Minimum 80 servers per month	Min. 25 Windows servers	$250 per Windows server
Minimum 40 servers per month	Min. 15 Windows servers	$200 per Windows server

https://aws.amazon.com/application-migration-service/windows/

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Key takeaways

1. Save costs by rightsizing and optimizing licensing needs with AWS Optimization and Licensing Assessments
2. Consider price/performance while selecting right compute and storage options for your use case
3. Evaluate modernization options for existing or new workloads to eliminate or minimize the cost and restrictions of vendor licenses (Data, .NET Apps, Containers, Serverless)
4. Keep monitoring and optimizing your workloads with AWS and Partner tools
5. Use AWS programs to reduce the cost of migration, access technical assistance, and reduce risks

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Learn about cost savings opportunities and more

https://aws.amazon.com/windows



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Upcoming Microsoft workloads on AWS sessions

SESSION ID	TITLE
ENT208	**BREAKOUT** **Salesforce's journey of more than a billion messages: Innovating with AWS**
ENT319	**BUILDERS' SESSION** **Achieve high availability and disaster recovery with SQL Server**
ENT216	**BREAKOUT** **How NextGen Healthcare uses AWS to deliver better services for their clients**
ENT301	**CHALK TALK** **Babelfish: Efficiently modernize SQL Server to Amazon Aurora**

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Thank you!

Maya Newhagen
mayanew@amazon.com

Rajesh Rathod
rjesrt@amazon.com



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