
# Why AWS for your SQL Server workloads

Chris Townsend, EPI-USE Sr. Solution Architect

Tom Staab, AWS Sr. Partner Solutions Architect

# Chris Townsend

AWS Well-Architected

aws partner network | immersion days

Senior AWS Solutions Architect

EPI-USE Services for AWS

- AWS Certificated for 7 Years
- 15+ Years in IT
- Well Architected Partner Trained
- AWS Immersion Days Certified
- AWS UserGroup Leader
- Microsoft Workloads Background

aws certified Cloud Practitioner

aws certified Solutions Architect Associate

aws certified Solutions Architect Professional

aws certified Developer Associate

aws certified SysOps Administrator Associate

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PASS Data Community SUMMIT 2023

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EPI-USE®

aws PARTNER Advanced Tier Services

- Immersion Day
- Solution Provider
- SAP Services Competency
- Managed Service Provider
- Migration Services Competency
- Public Sector Solution Provider
- Well-Architected Partner Program
- Amazon EC2 for Windows Server Delivery
- AWS Microsoft Workloads Services Competency

EPI-USE®

BORN IN THE CLOUD

EXCLUSIVE FOCUS ON aws

24/7 SERVICES TO PARTNERS GLOBALLY

NIMBLE GLOBAL REACH

SAP Gold Partner

SERVICES AND DEVELOPMENT PARTNER

SECURE, STABLE SCALABLE

aws 100 certified

AWS PARTNER NETWORK

A MEMBER OF: groupelephant.com™

BEYOND CORPORATE PURPOSE

20+ TRADING BRANDS

>3,500 EMPLOYEES

35+ YEAR OF EXPERIENCE

PRESENCE IN COUNTRIES 40

BEYOND CORPORATE PURPOSE

1% of revenue channelled in to the (ELEPHANTS, RHINOS & PEOPLE) PROGRAM

ERP™ erp.ngo

EPI-USE®

**24**
Cooperatives set up and running rural enterprises since 1994

**7**
Hubs and Community Centres set up directly impacting the local communities

**620**
Bicycles distributed in Limpopo and Northwest Province

**3**
**Beeline fencing initiatives**
to give job opportunities and income to the local communities

Total lives impacted, approx.
**500,000**
direct and indirect beneficiaries

# Tom Staab

Senior Partner Solution Architect

AWS

- 34 Years in IT
- Microsoft Workloads Background
- 24+ Years with SQL Server
- Speaker at SQL Saturdays, AWS Summits, PASS Summit, & re:Invent

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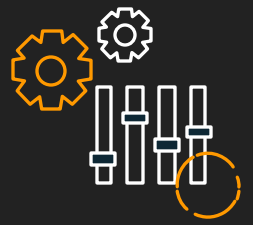
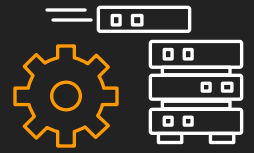
# Advantages of AWS for Microsoft workloads



BREADTH & DEPTH



RELIABLE & SECURE

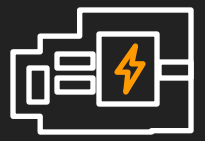
BEST PERFORMANCE

LOWER TCO & FLEXIBLE LICENSING

INNOVATION & EXPERIENCE

# Nitro System is the foundation of AWS

## Nitro Card



Local NVMe storage
Elastic Block Storage
Networking, monitoring, and security

## Nitro Security Chip

Integrated into motherboard
Protects hardware resources

## Nitro Hypervisor

Lightweight hypervisor
Memory and CPU allocation
Bare metal-like performance

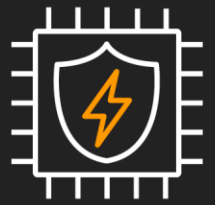
## Nitro Enclaves

Isolated environments for highly sensitive data processing
Utilizes EC2's Isolation Technology

## Nitro SSD

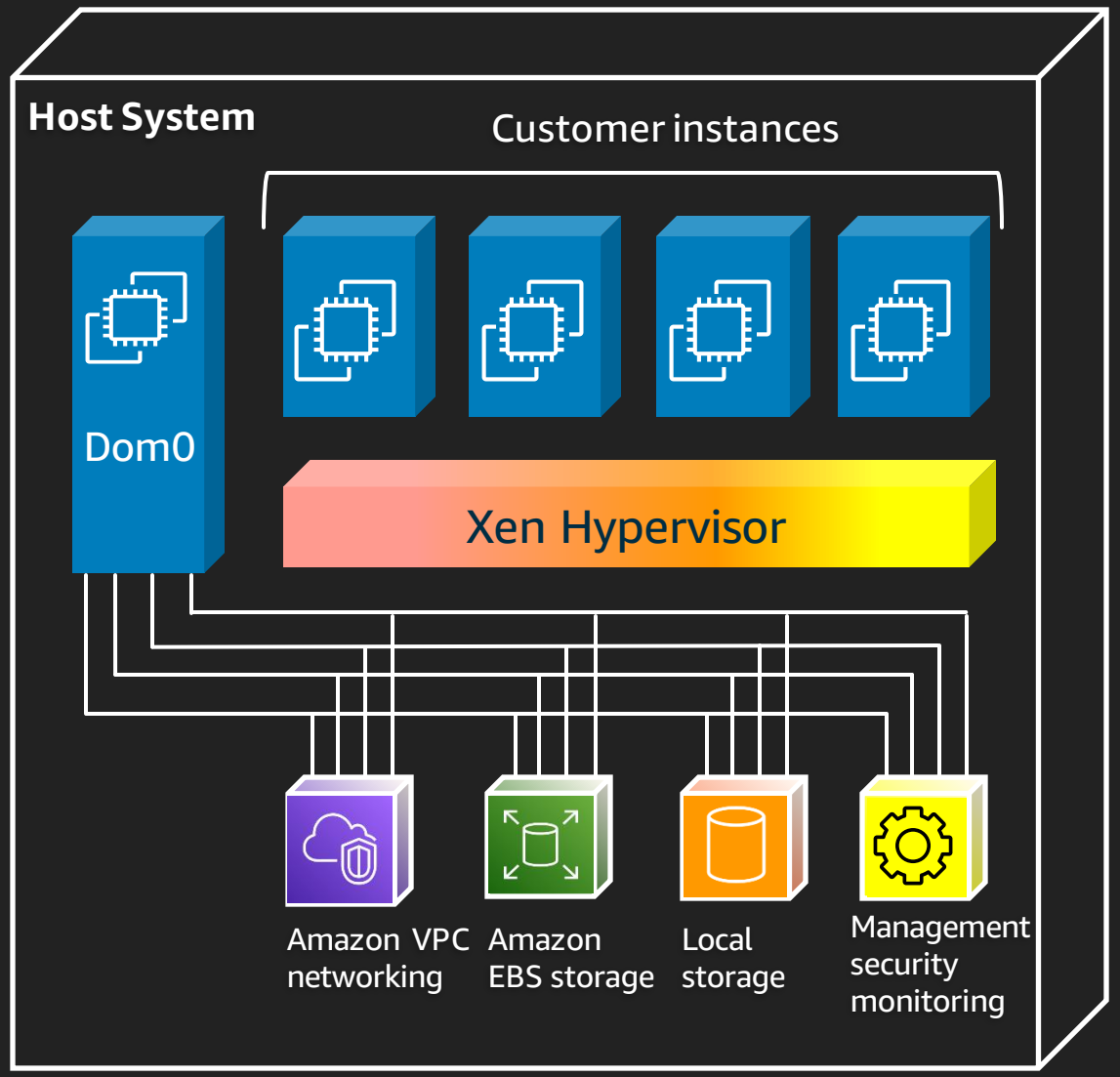
60% lower I/O latency
Firmware Upgrades w/o Interruption
Encryption at rest

## Nitro TPM

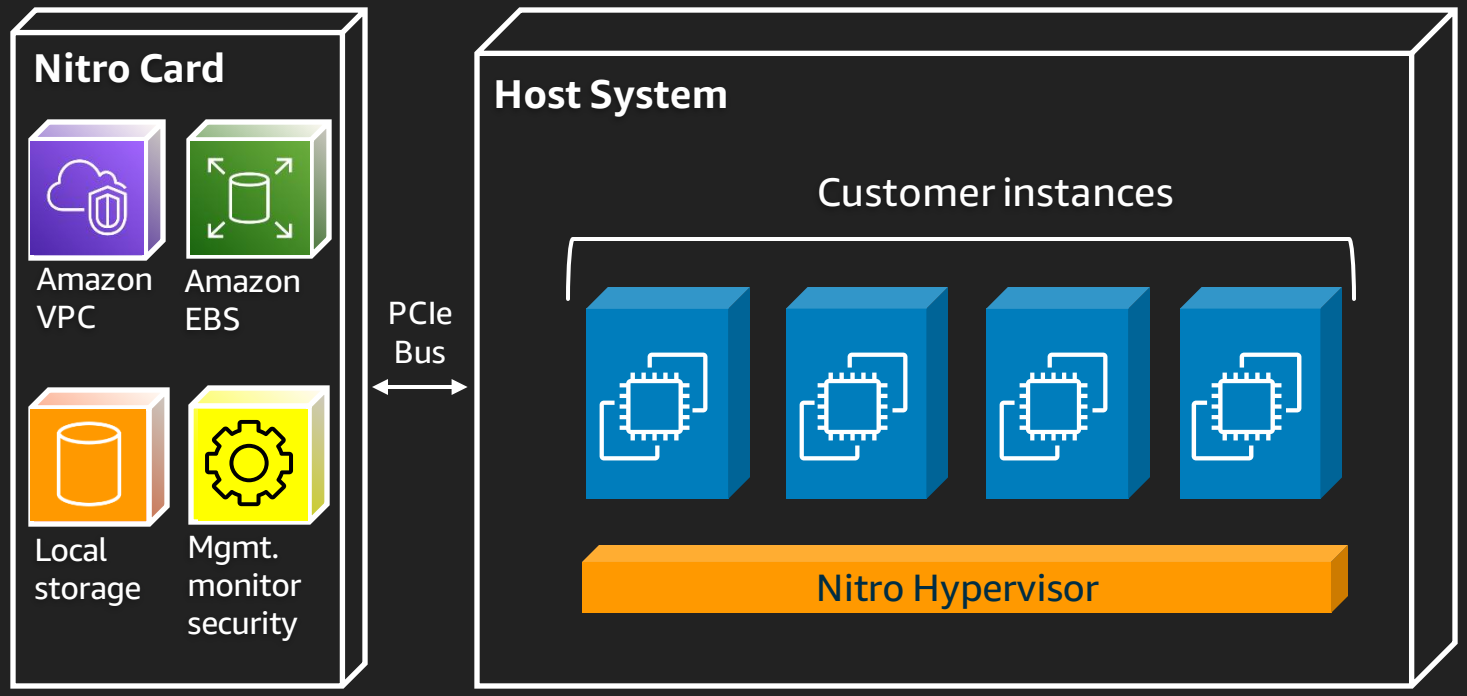


TPM 2.0 specification
Cryptographic attestation of instances integrity

# Before Nitro …

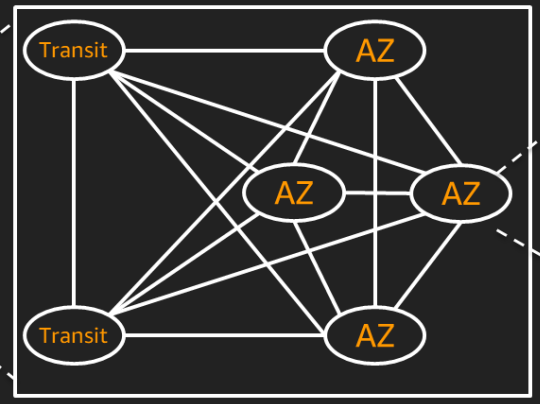


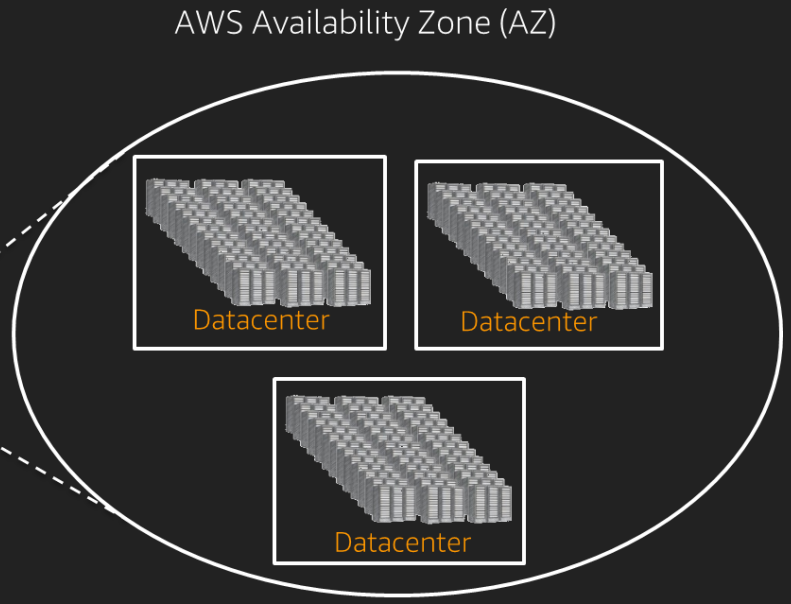
# With Nitro



# AWS Region Design

AWS Regions are comprised of multiple AZs for high availability, high scalability, and high fault tolerance. Applications and data are replicated in real time and consistent in the different AZs

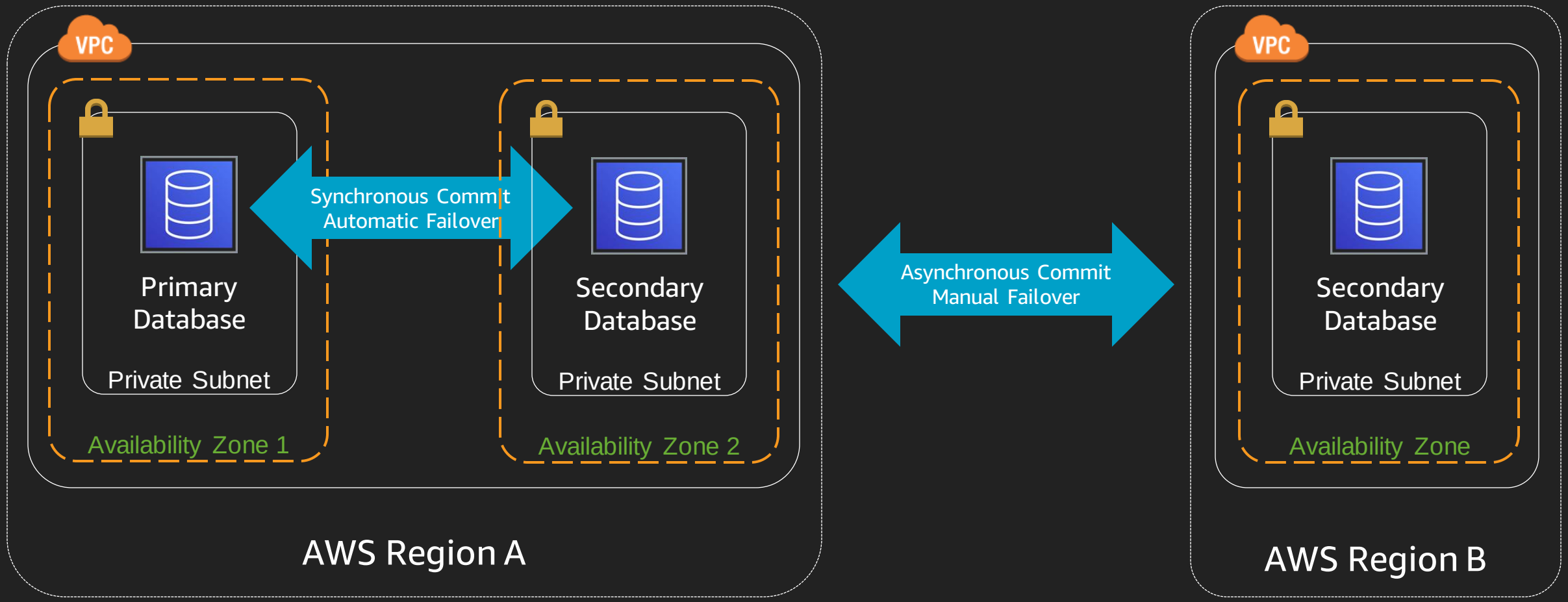




A **Region** is a physical location in the world where we have multiple **Availability Zones**.

**Availability Zones** consist of one or more discrete data centers, each with redundant power, networking, and connectivity, housed in separate facilities.

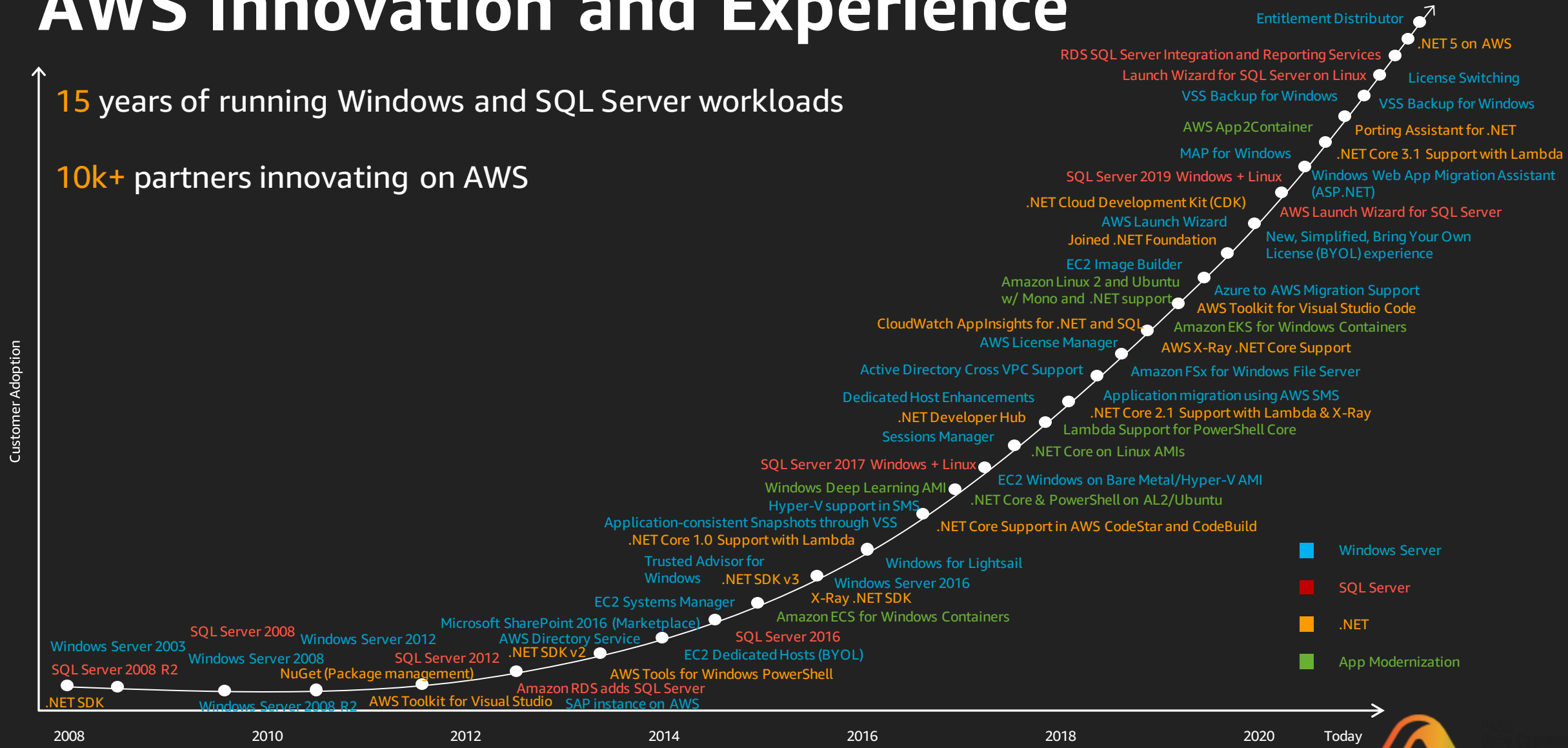
# High Availability and Disaster Recovery



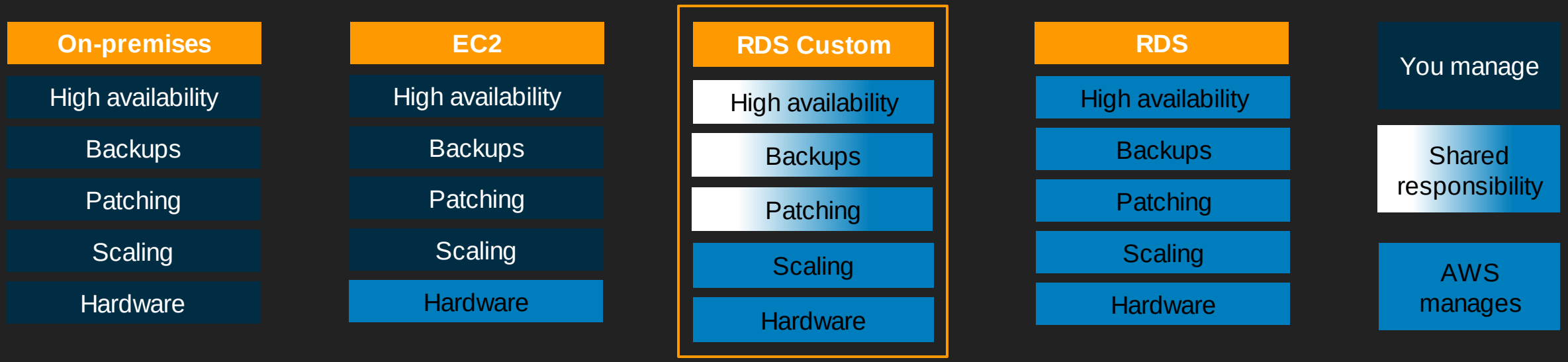
# AWS Innovation and Experience

15 years of running Windows and SQL Server workloads

10k+ partners innovating on AWS



# AWS Options for Your SQL Server Workloads



# AWS Purpose-built databases

| | Relational | Key value | Document | In memory | Graph | Time series | Ledger | Wide column |
|---|---|---|---|---|---|---|---|---|
| | Referential integrity, ACID transactions, schema-on-write | High-throughput, low-latency reads and writes; endless scale | Store documents and quickly access querying on any attribute | Query by key with microsecond latency | Quickly and easily create and navigate relationships between data | Collect, store, and process data sequenced by time | Complete, immutable, and verifiable history of all changes to application data | Scalable, highly available, and managed Apache Cassandra–compatible service |
| **AWS service(s)** | RDS, Aurora, Redshift | DynamoDB | DocumentDB | ElastiCache | Neptune | Timestream | QLDB | Keyspaces Managed Cassandra |
| **Common use cases** | Lift-and-shift, ERP, CRM, finance | Real-time bidding, shopping cart, social, product catalog, customer preferences | Content management, personalization, mobile | Leaderboards, real-time analytics, caching | Fraud detection, social networking, recommendation engine | IoT applications, event tracking | Systems of record, supply chain, health care, registrations, financial | Build low-latency applications, leverage open source, migrate Cassandra to the cloud |



aws

# Which is right for me?

What licensing model should I choose?

How much customization and control do I need?

What is my team's level of expertise?

Do I want to stay with SQL Server or go open source?

Who can help me do this?

# EPI-USE Services for AWS

### AWS Managed Services

After a client goes live with AWS, they still need to support the environment. EP-USE has the team, tools, and automated systems to support enterprises' AWS environments.

### Cloud Migrations

AWS migration services are fast, convenient and cost-effective.

### Microsoft Workloads on AWS

Deployment, Migration, Modernization, Optimization, and Management of Windows Server and Microsoft SQL Server instances.

### AWS Well-Architected

A Well-Architected Framework is a set of core strategies and base practices for architecting systems in the cloud.

### Billing as a Service

Enhanced billing support with optimized recommendations facilitating cost reductions for your AWS spend.

### Data Analytics

Intelligent, data-driven solutions using AWS

### SAP on AWS

Deployment, hosting and managed services of SAP systems.

### Desktop-as-a-Service

Enable access to apps and data while providing cost efficiencies and security compliance.

# Discovery – Portfolio Data Gathering

**Application**

- Owners & Business Impact
- Technology Stack
- Infrastructure Requirements

**Server**

- Physical/virtual
- OS version
- License Requirements
- CPU, RAM, Disk type, utilization

**Network**

- Device type
- Firewall rules
- Network connection
- Data Compliance

**Storage**

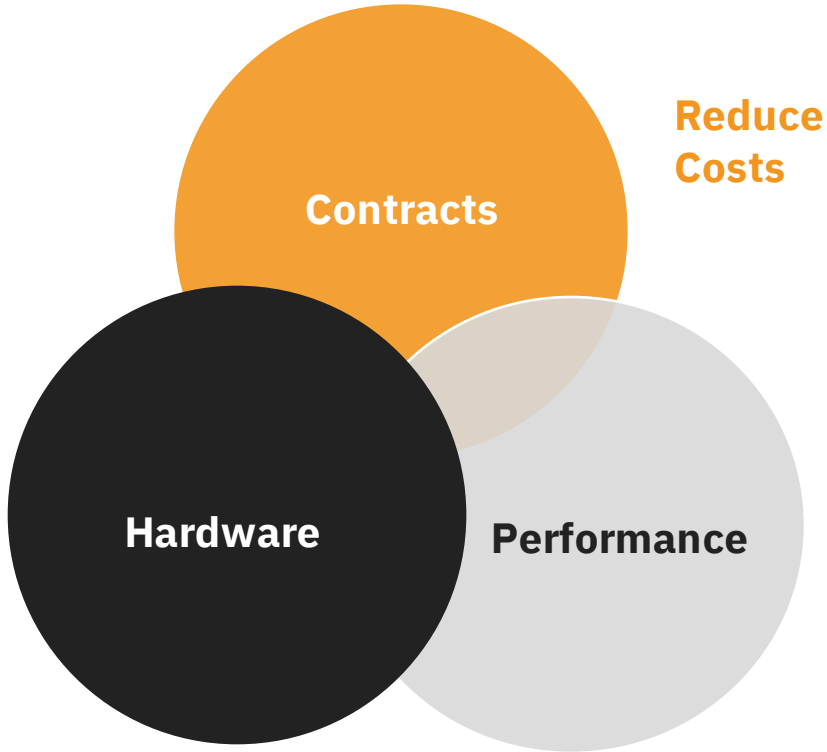
- Type
- Capacity
- Utilization
- Performance requirements

# Windows Holistic Application and Licensing Evaluation

#PASSDataCommunitySummit

# What is an W.H.A.L.E. assessment?

*The third-party licenses cost is on average 3 times the total cost of running these workloads in the AWS cloud. Licensing really matters!*



# W.H.A.L.E: Value provided from the assessment

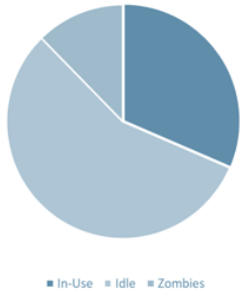
- Server inventory and utilization
- License inventory, optimizations, and review
- Right sized workloads and AWS costs

| WS Version | Servers | %of Estate OS Support Cycle | |
|---|---|---|---|
| <= WS 2008 R2: | 51 | 14% | Unsupported (2008/R2) |
| - WS 2012 | 68 | 19% | Extended Support (2012/R2) |
| - WS 2012 R2 | 106 | 30% | Extended Support (2012/R2) |
| - WS 2016 | 88 | 25% | Extended Support (2016) |
| - WS 2019 | 42 | 12% | Mainstream Support until 01/2024 |
| - WS 2022 | 0 | 0% | Mainstream Support until 01/2024 |
| WS Total: | 355 | 100% | |

| SQL Version | SQL Instances | %of Estate OS Support Cycle | |
|---|---|---|---|
| <= SQL 2008 R2: | 3 | 23% | Unsupported (2008/R2) |
| - SQL 2012 | 3 | 23% | Unsupported (2012) |
| - SQL 2014 | 1 | 8% | Extended Support (2014) |
| - SQL 2016 | 4 | 31% | Extended Support (2016) |
| - SQL 2017 | 0 | 0% | Mainstream Support until 10/2022 |
| - SQL 2019 | 2 | 15% | Mainstream Support until 01/2025 |
| SQL Total: | 13 | 100% | |

| Time In Use % | |
|---|---|
| In-Use | 22.52 |
| Idle | 40.88 |
| Zombies | 8.98 |

**# of zombies: 47**




| Environment and Licensing | |
|---|---|
| Zombies | 8.98 (47 zombie servers removed from future state modeling) |
| SQL Servers | 13 |
| SQL Edition | Enterprise (2012) Standard (2008 R2,2012,2014,2016,2019) |
| Windows Servers | 305 (288 after right-sizing) |
| RHEL/Linux Servers | 178 (166 after right-sizing) |
| Windows Desktops | 16 (removed from pricing) |

# AWS Migrations

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# AWS Migration Methodology

## Assess

**Migration readiness assessment**

**Rapid migration business case**

Rapid discovery

TCO report

**Pre-MRP accelerators**

Briefing & workshops

Immersion day

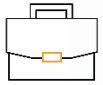
## Mobilize

Discovery & planning

Landing zone

Skills/centre of excellence

Migration experience



Business case/ TSO Logic

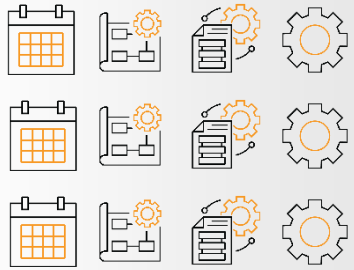
Migration plan

Operating model

Security & compliance

## Migrate & Modernise

**Migrate**



**Operate**

**Modernize**

**Create a case for change**

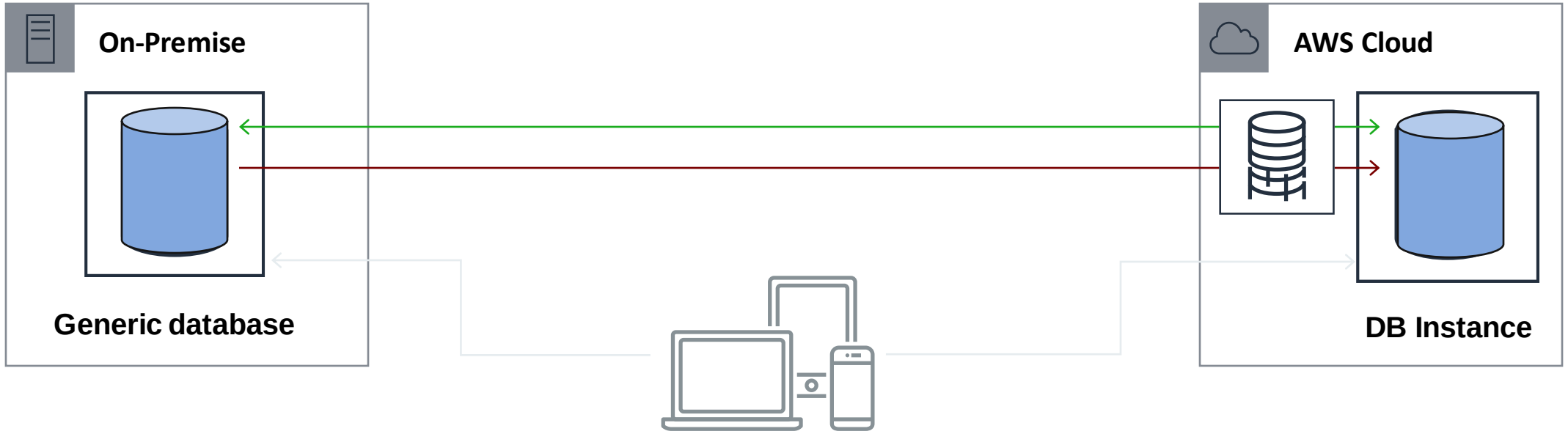
**Mobilization through experiences**

**Accelerate migration at scale**

# SQL Server Feature Comparison

| | Amazon RDS for SQL Server | SQL Server on Amazon EC2 |
|---|---|---|
| | 2014, 2016, 2017, 2019, 2022 | 2005*, 2008*, 2008 R2*, 2012, 2014, 2017, 2017, 2019, 2022 |
| Editions Supported: | Express, Web, Standard, Enterprise | |
| High Availability: | Multi-AZ Deployment | Self-managed; AlwaysOn, Mirror, Log Ship |
| Encryption: | Encrypted Storage using AWS KMS (all editions); TDE Support | |
| Authentication: | Windows & SQL Server Authentication | |
| Backups: | Managed automated backups | Maintenance plans & 3rd party tools |
| Maintenance: | Automatic software patching | Self-managed |

# AWS Database Migration Service




Start a replication instance

Connect to the source and target

Select tables, schemas, or databases

Let DMS create the target objects

Move data and synchronize objects

Switch applications when ready

# AWS Schema Conversion Tool

The AWS Schema Conversion Tool (AWS SCT) helps automate many database schema and code conversion tasks when migrating from source to target database engines

**Features**

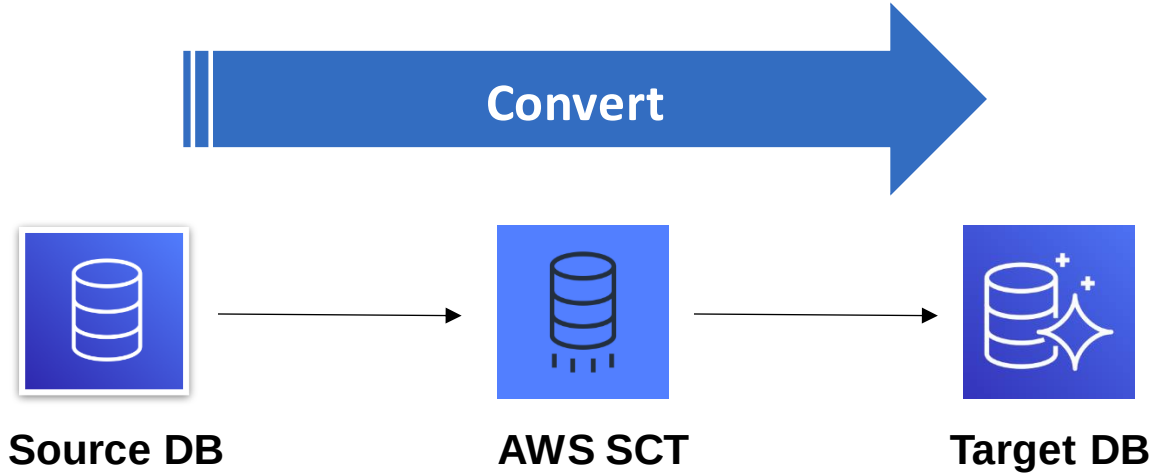
Convert database schema

Convert embedded application code

Code browser that highlights places where manual edits are required

Secure connections to your databases with SSL

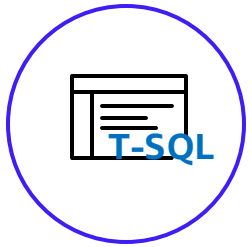
Assessment report includes executive summary, migration effort, suitable target, recommendations on conversion, backup and linked server changes.



# AWS Babelfish for Aurora PostgreSQL

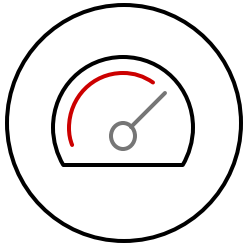
Migrate SQL Server applications to PostgreSQL in a fractions of the time compared to a traditional migration.

### Keep existing queries



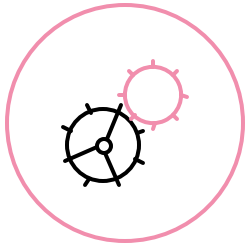

Translation layer enables Aurora PostgreSQL to understand Microsoft SQL Server's proprietary T-SQL

### Accelerate migrations



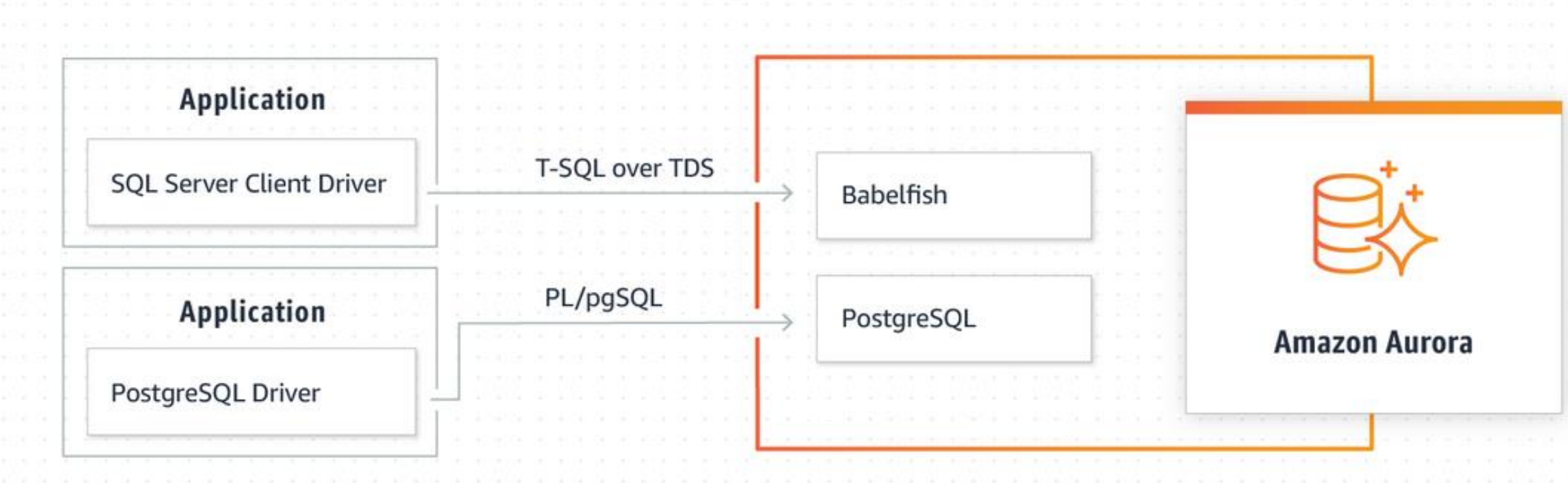
Lower risk and complete migrations faster, saving you months to years of work

### Freedom to innovate



Run T-SQL code side-by-side with new open source functionality and continue developing with familiar tools

# AWS Babelfish Architecture



# AWS Managed Services

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# Managed Support from EPI-USE

# Thank you

Lets Chat! Stop by Booth 411

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