AWS re:Invent

WIN202-R

How to cost-optimize your Microsoft workloads on AWS

Patrick McFarland
Sales Manager
Amazon Web Services

Murtaza Chowdhury
Product Manager
Amazon Web Services

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What to expect from this session

Cost optimization journey for Microsoft workloads

Microsoft licensing options with AWS

License management & optimization of Microsoft workloads

How customers are leveraging their own licenses to save costs

Cost optimization journey for Microsoft workloads

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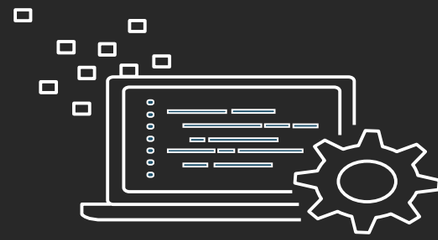
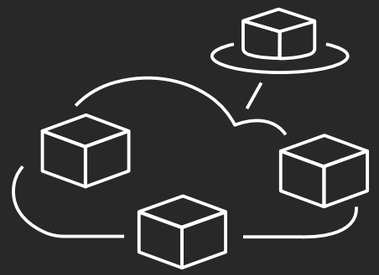
Cost optimization journey

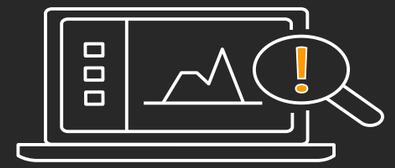
Migration Planning



Operate and Optimize



Modernize



Measure and Monitor

Cost optimization starts before migration

Migration Planning

AWS Migration Assessments

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   - ✓ Outdated hardware requiring significant licensing costs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
   - ✓ Reduce CPU configurations
   - ✓ Leverage BYOL and reduce future EA commitments
   - ✓ Optimize use of SQL Server Standard

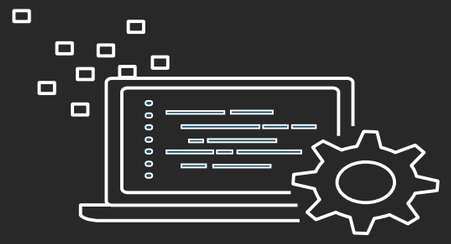
Example savings – 22% on SQL Server workloads

On-Premises
Cost: $800k

Direct Match
Cost: $950k

Right-sized with
SQL BYOL: $650k

Pillars of cost optimization for compute



Operate and Optimize

1. Right-size instances
   - ✓ Leverage newest instance families
   - ✓ Provide standardized configurations to developers
2. Increase elasticity
   - ✓ Smaller instances with auto-scaling
   - ✓ License-included instances for spikey workloads
   - ✓ Turn-off non-production instances
3. Leverage Amazon Elastic Compute Cloud (Amazon EC2) purchasing options
   - ✓ On demand initially and for spikey workloads
   - ✓ Savings Plans provide flexibility

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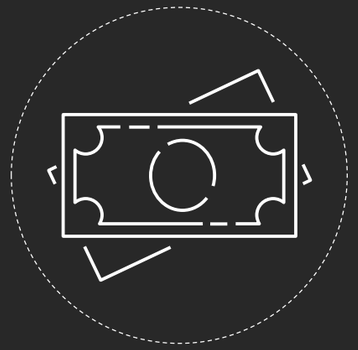
Savings Plans

Flexible purchase option that offers up to 72% discounts on Amazon EC2 and AWS Fargate usage

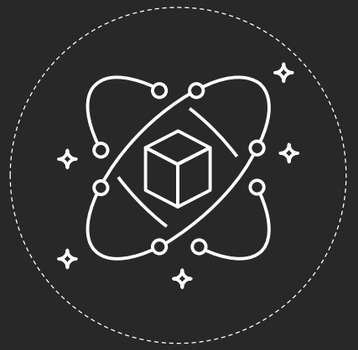
Easy to use

Receive discounted rates automatically in exchange for a monetary commitment



Significant discounts

Select from two types of savings plans to receive discounts of up to 72% on EC2 Instance Plans

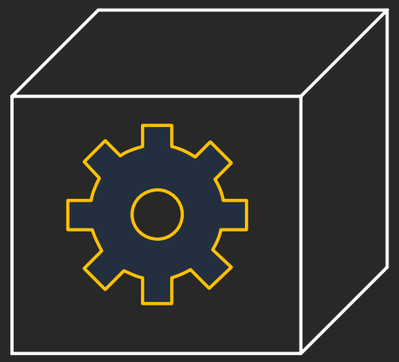


Flexible

Make a single commitment that applies across multiple AWS Compute Services, even as your requirements change

Same great discounts as EC2 Reserved Instances with more flexibility

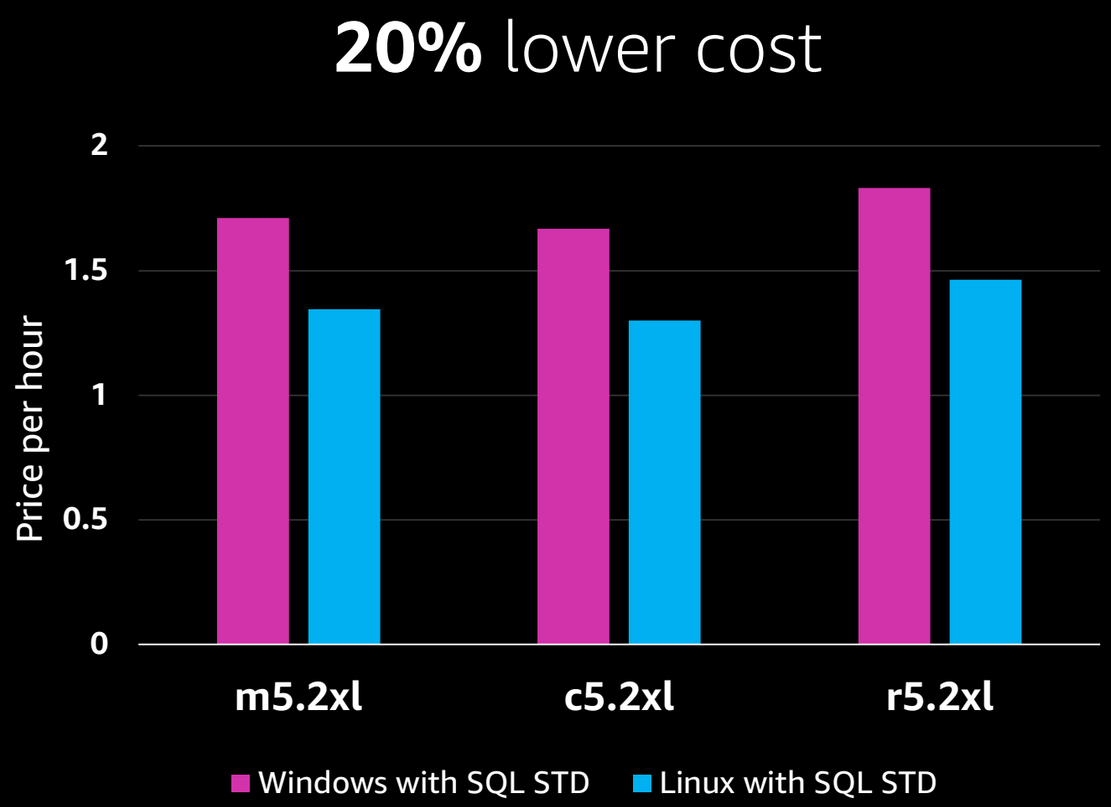
Modernize applications for ultimate cost savings



Monolithic Applications built on proprietary software

Microservices

SQL Server on Linux



Choice: Ubuntu, RHEL, Amazon Linux 2

Standardization across one operating system

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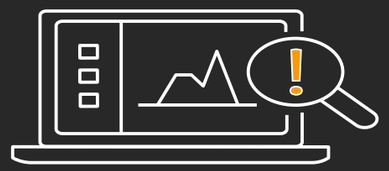
Get visibility and control of your costs



Measure and Monitor

1. Design your tagging standards & cost allocation
2. Automate identification of cost savings
3. Leverage reporting tools
4. Effective Microsoft licensing strategy

Microsoft licensing options with AWS

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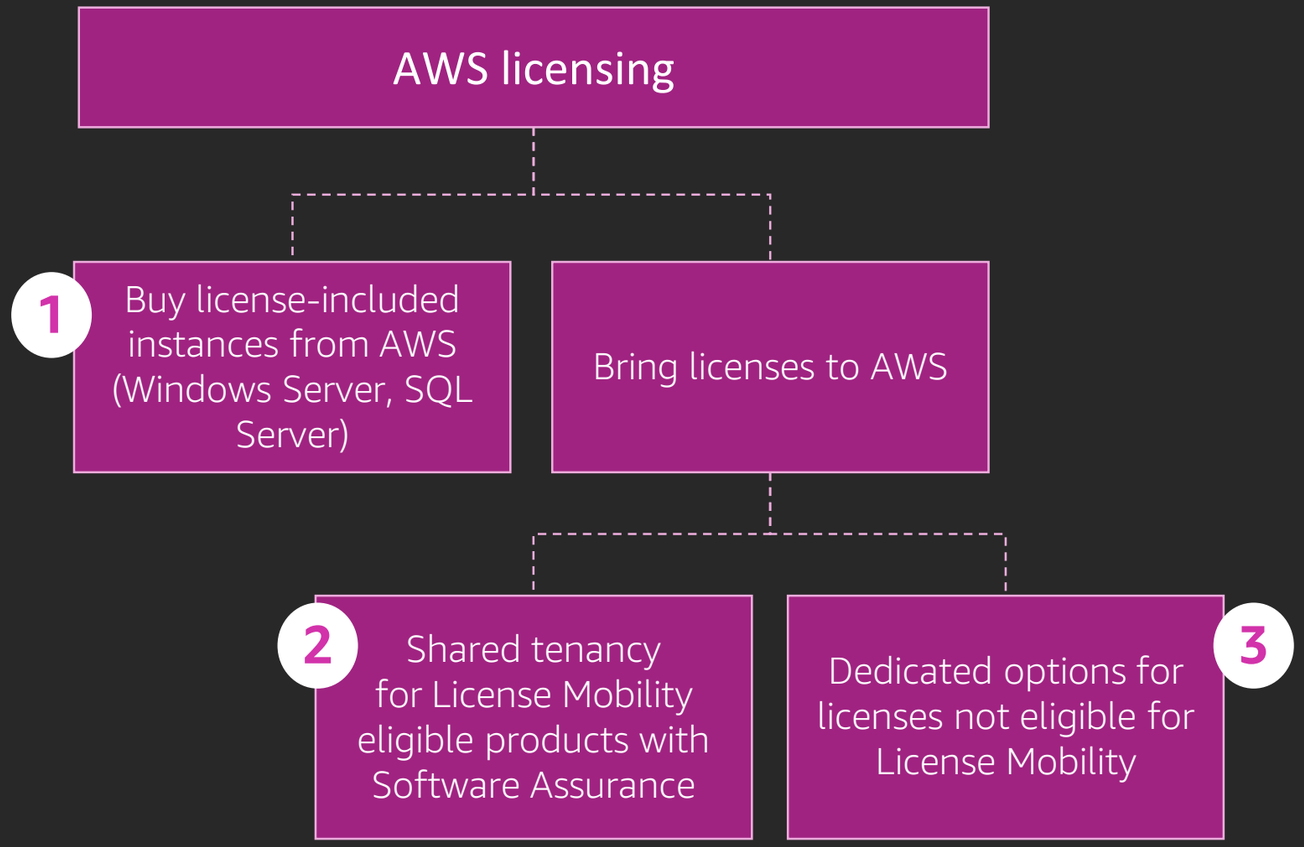
Flexible options for Microsoft licenses in the AWS Cloud

1. Flexible pay-as-you-go licensing choices
2. Bring your license mobility benefits to AWS
3. Bring your legacy licenses to AWS without paying software assurance



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1 License-included instances from AWS

Advantages

- ✓ AWS manages the Amazon Machine Image (AMI)
- ✓ Pay per use
- ✓ 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 & Web Editions

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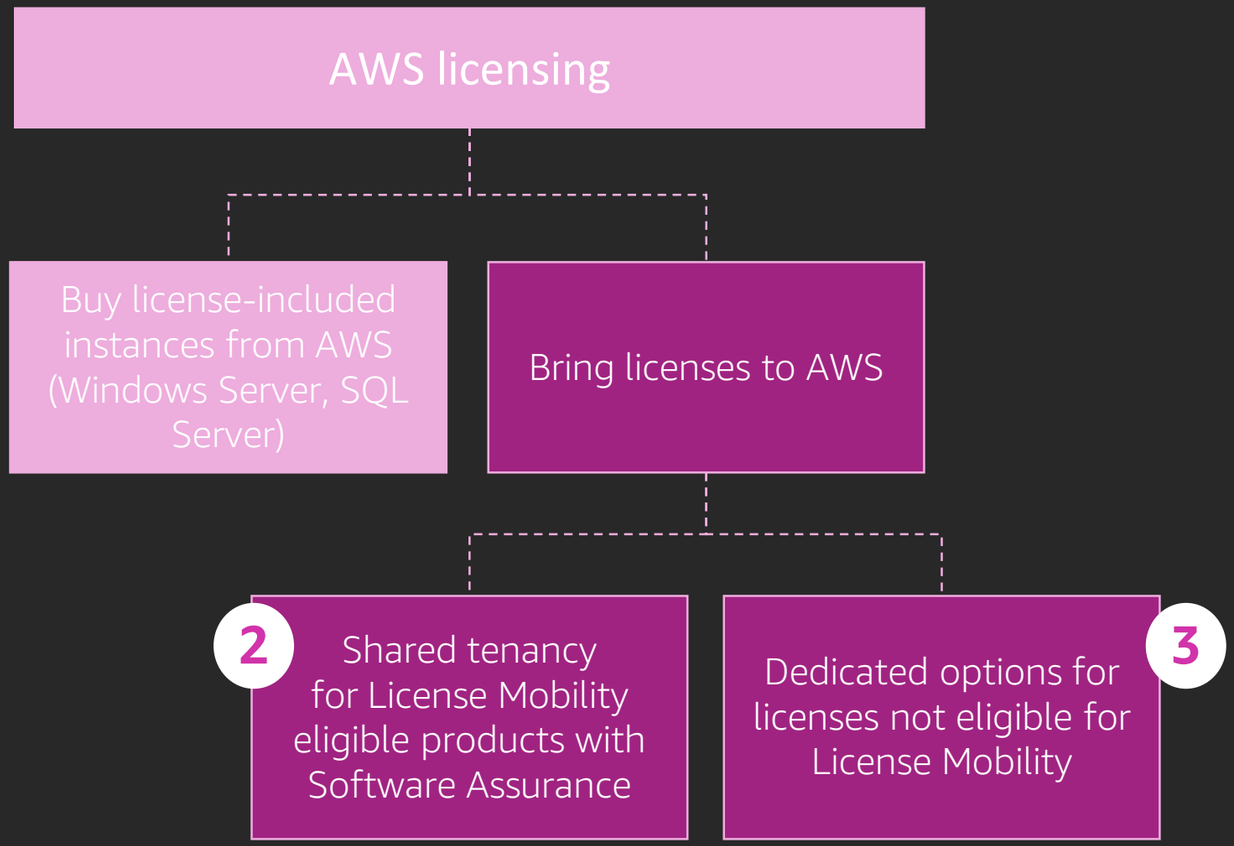
How to bring licenses to AWS



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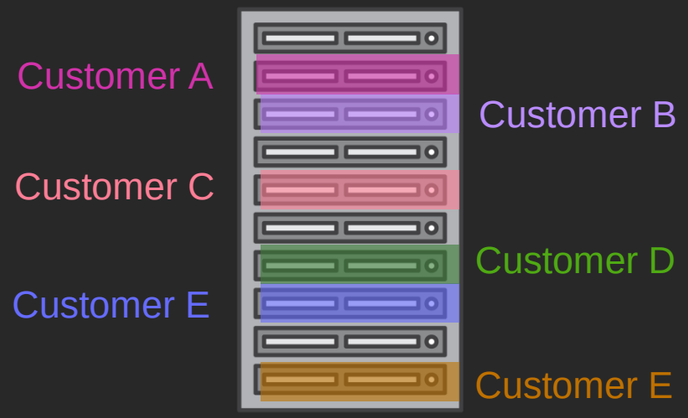
EC2 Instances: Shared and dedicated tenancy

Shared Tenancy Instances



Multi-tenant servers host instances for multiple customers

AWS determines which host instances run on

You ***pay per-instance***

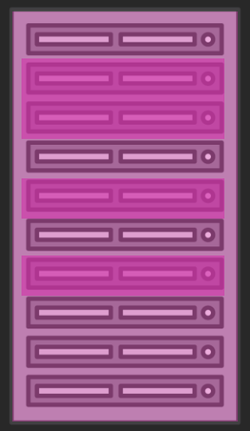
Dedicated Instances

Single-tenant servers host instances dedicated to ***one AWS account***

AWS determines which host instances run on

You ***pay per-instance*** + hourly fee per region

Dedicated Hosts



Single-tenant servers host instances dedicated to ***one AWS account***

Launch instances to same physical server through targeted ***placement***

You ***pay per-host, per-hour***

License Mobility on shared Amazon EC2 instances

Microsoft application with License Mobility

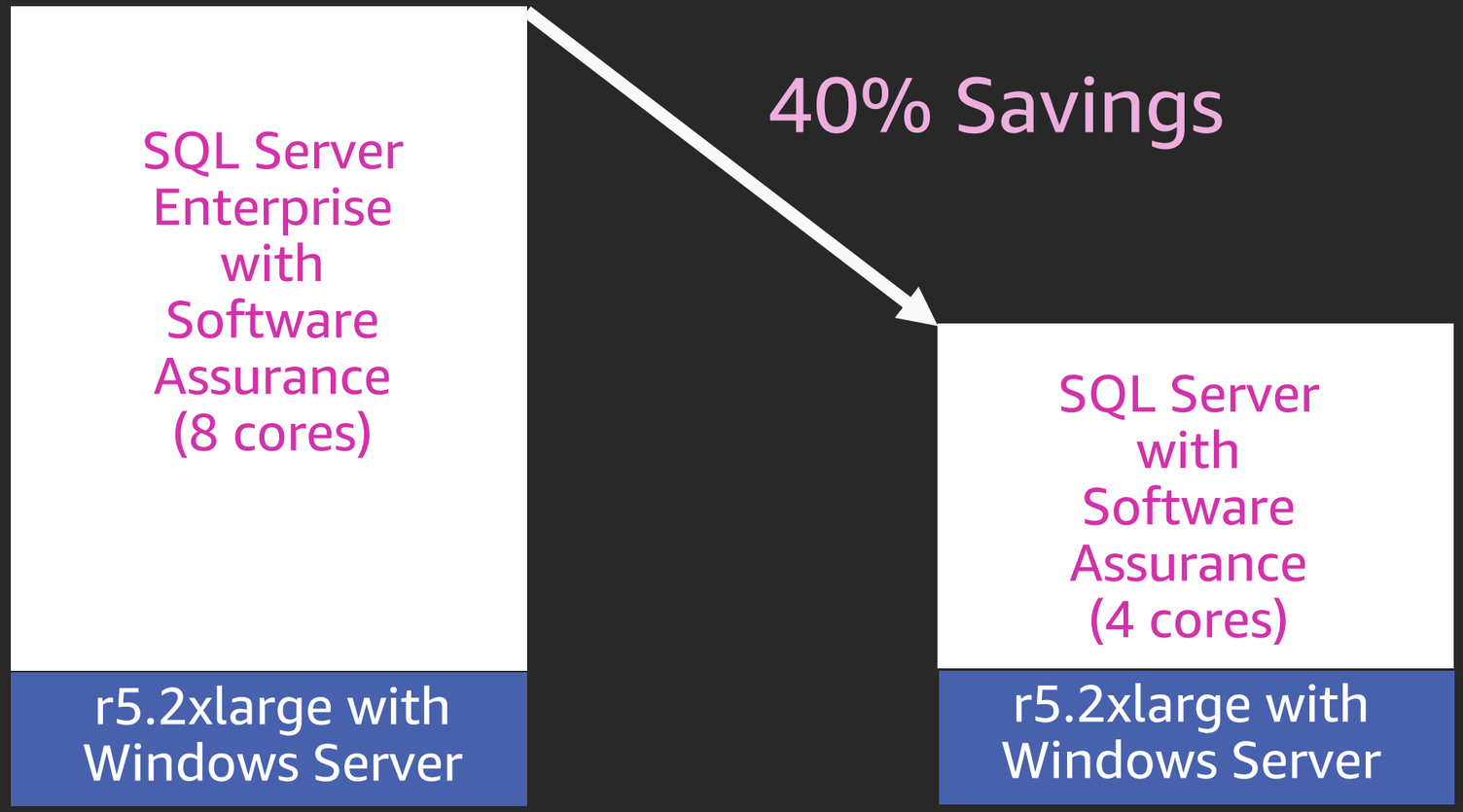
EC2 Windows AMI

SQL Server with License Mobility

EC2 Linux AMI

AWS recommends customers bring Windows Server, Windows Desktop, Microsoft Office, or MSDN to Dedicated tenancy.

Reduce CPU-based bring your own licensing costs with Optimize CPU



Bring Windows Server licenses to Dedicated Hosts

Dedicated Host

Customer A

Customer-provided SQL Server

Customer-provided Windows Server AMI

✓ Bring Windows Server licenses

- No Software Assurance required*
- Maximize virtualization benefits of Windows Datacenter Edition

✓ Minimize SQL Server licenses

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

*Windows Server licenses purchased prior to October 1, 2019

License management & optimization of Microsoft workloads

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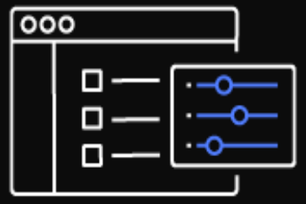
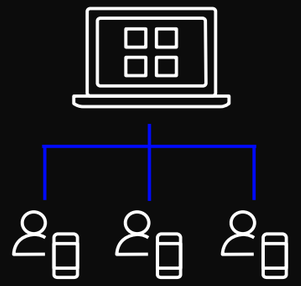
AWS License Manager

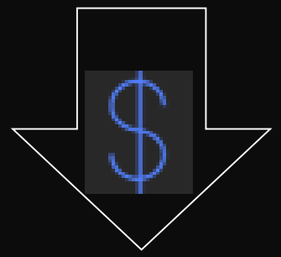
A one-stop solution for managing licenses from a variety of software vendors across hybrid environments



Allows administrators to customize license rules and enforce at resource launch



Manage license usage across all AWS accounts in cloud & on-premises



Reduce cost by leveraging existing investments and simplify true-ups

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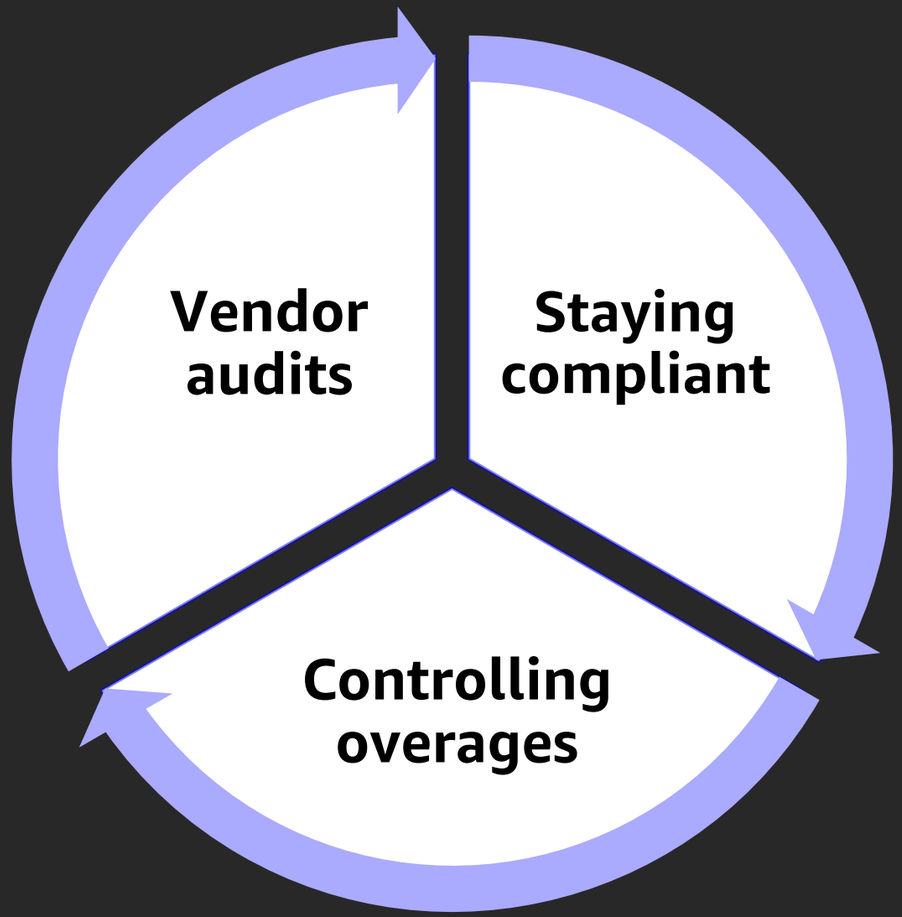
License management challenges



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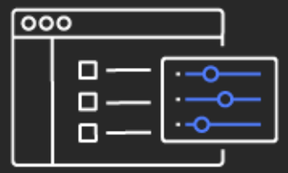
Easily track licenses using AWS License Manager

1



Emulate licensing terms as rules

2

Enforce licensing rules, stay compliant, and control overages

3

Centrally report usage

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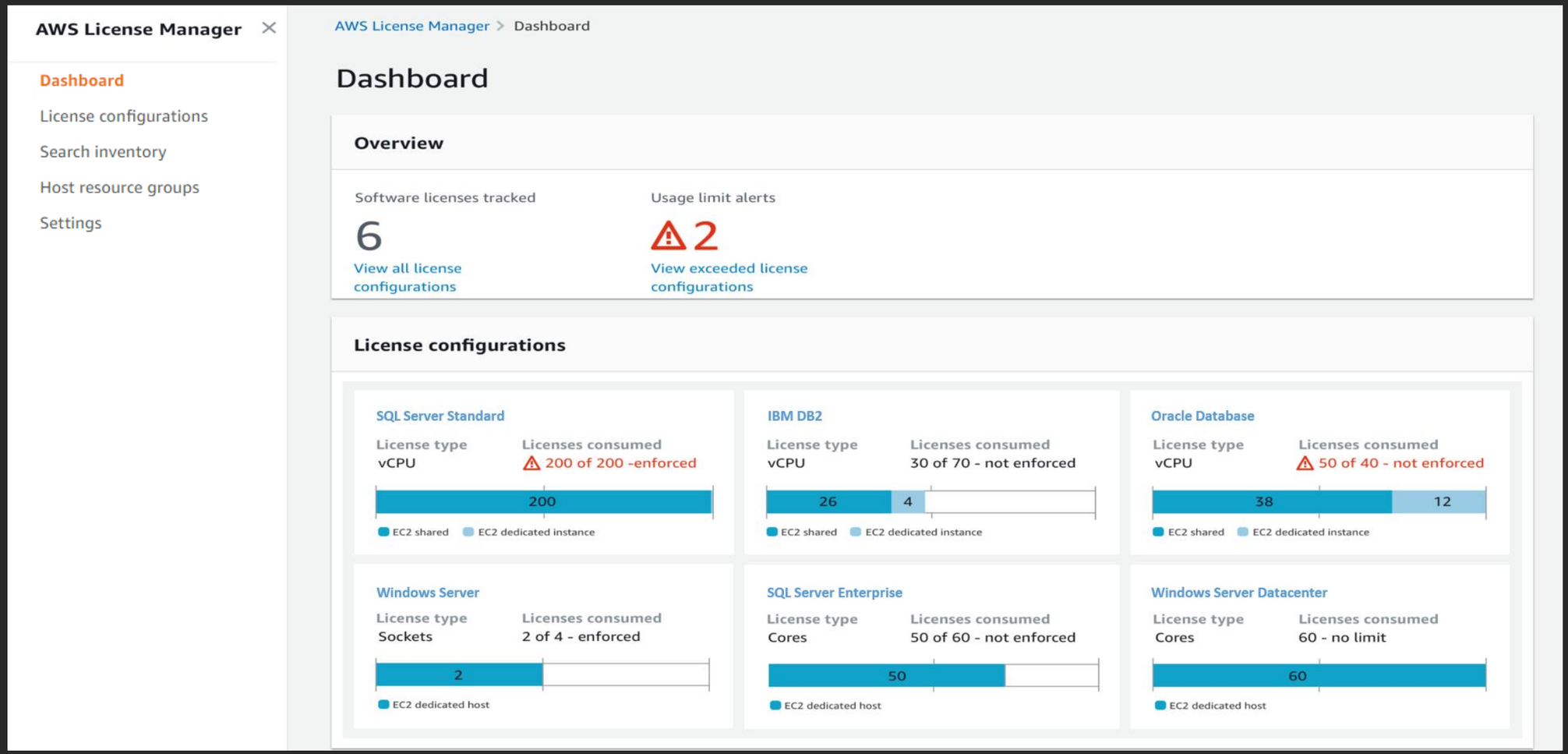
Leverage built-in dashboard



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What are customers saying?

Customers are using AWS License Manager to control usage based on their license terms; and make licensing true-ups and audits easier.

"Managing license deployments for large scale Microsoft SQL Server clusters is a time consuming, and often manual, process to oversee. AWS License Manager allows me to see real time deployments of a license across our infrastructure as well as manage our allocated license budget; which allows upcoming vendor license audits easier to manage." John Bowker, Product Owner, Xero

"This new capability will allow us to dramatically reduce the amount of time spent on license tracking and reporting. This tool is extremely simple to use and we can now obtain a snapshot of our license utilization in seconds, rather than hours. Having the ability to create custom rules, maintain compliance and keep an eye on spend is also a huge plus ..." Ian Wright, VP Cloud & Operations, Pearson

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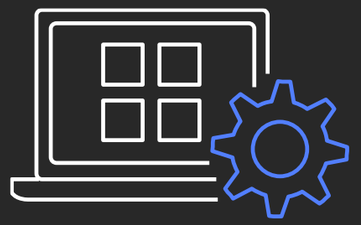
NEW

More new License Manager capabilities



Automated discovery of existing licenses

Identify Amazon provided Windows and SQL Server

Better visibility and tracking

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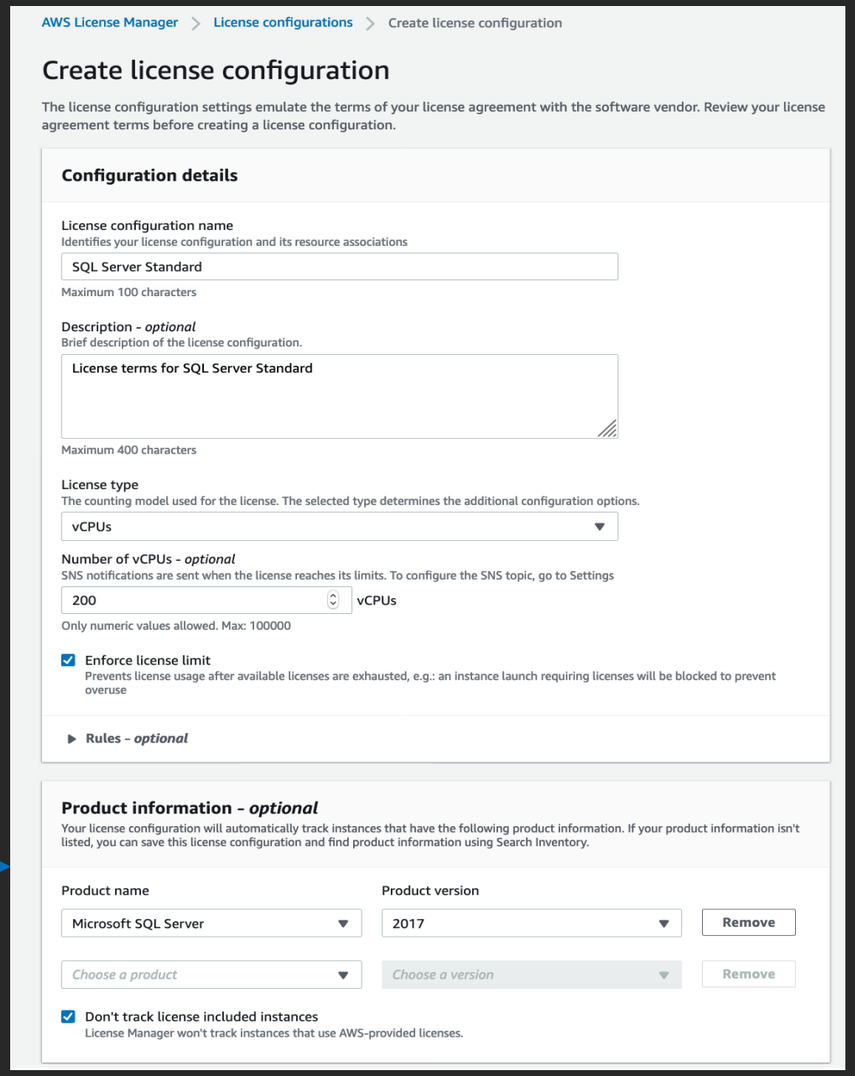
NEW

Specify product information to configure automated discovery

New: Define product information once and let License Manager track and notify you of changes



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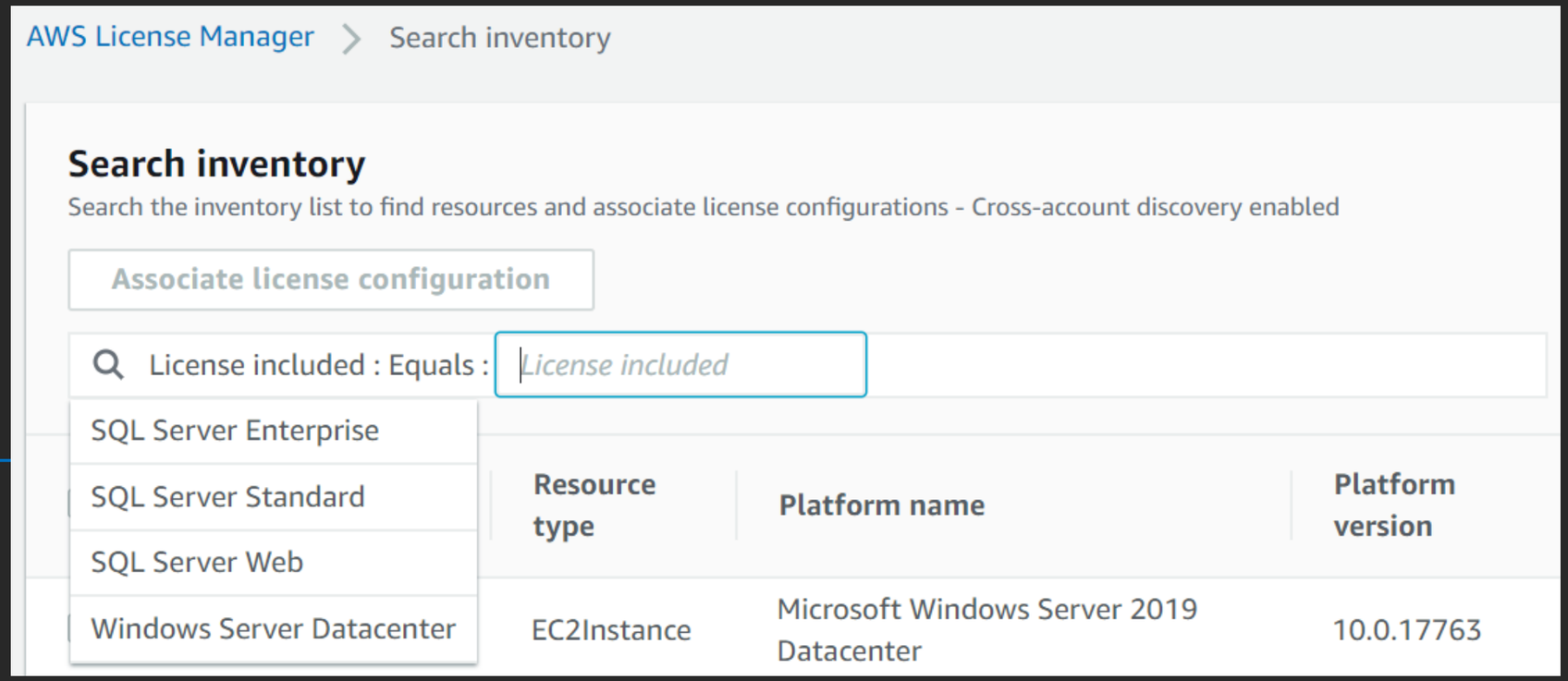
NEW

Filter out Amazon provided Windows and SQL Server

New: Easily identify Amazon provided Windows and SQL Server licenses to help you filter them out while reporting BYOL



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Manage a variety of software licenses

Operating system licenses

Windows Server, Red Hat, SUSE

Database licenses

SQL Server, Oracle Database, IBM DB2

Application licenses

SAP ERP, SharePoint Server, IBM WebSphere

Other third-party licenses

Manage a variety of software licenses based on vCPU, physical cores, physical sockets, and number of instances

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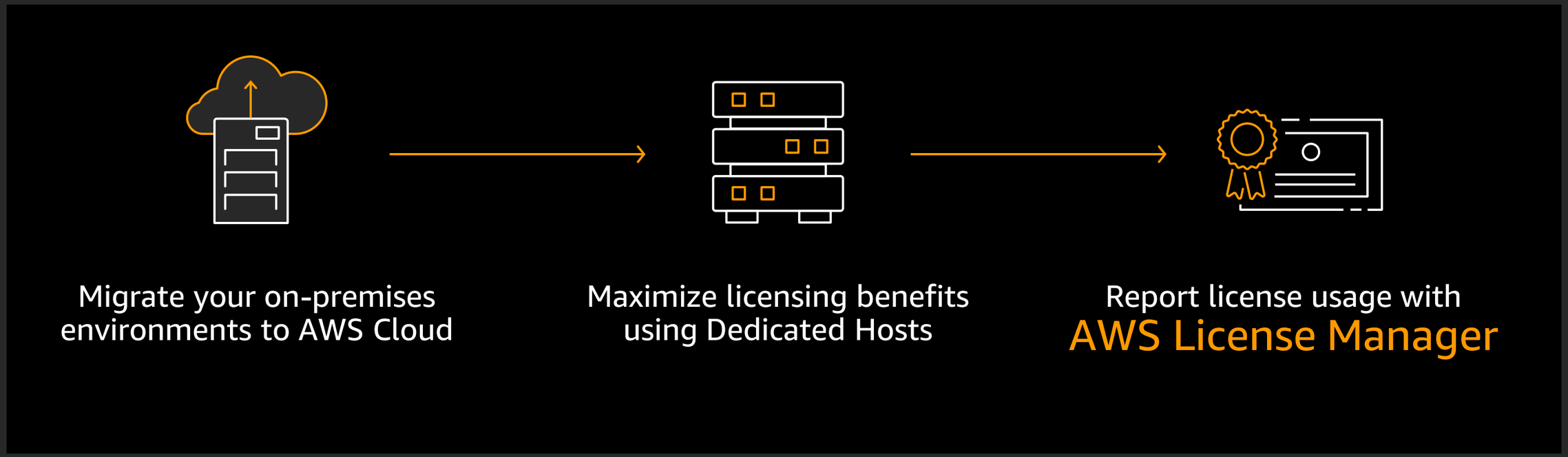
Windows and SQL Server BYOL customer journey



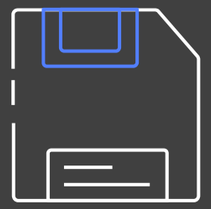
SQL Server licenses can be used with Shared and Dedicated Tenancy, based on license mobility

NEW

AWS License Manager simplifies running Windows and SQL Server workloads

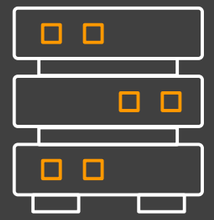
License tracking

Tracking and
reporting
Governance
True ups and audits



Media patching

Patching
Updates
Golden AMI creation



Host Management

Allocation/release
Capacity utilization
Instance placement

Provides centralized license tracking, media patching, and host management

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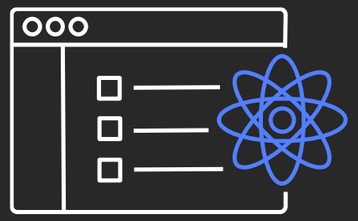
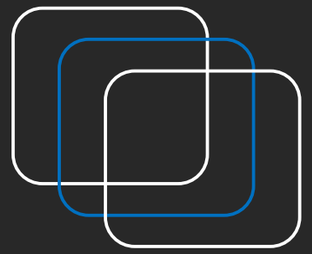
NEW

Media management

License Manager integrates with EC2 Image Builder



Generate automation to build VM images with a GUI



Reduce cost of building secure, compliant & up-to-date images

Improve service uptime by testing images before use in production

Quickly and easily automate the creation, management, and deployment of customized, up-to-date, and compliant “golden” VM images

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Host management

Windows BYOL

Elasticity of Amazon EC2 for Dedicated Hosts

- Bring your eligible SQL and Windows BYOL licenses to AWS
- Automate ongoing management of EC2 Dedicated Hosts
- Leverage existing license investments to save costs

Launch instances by simply specifying your AMI and instance type

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Specify host management preferences

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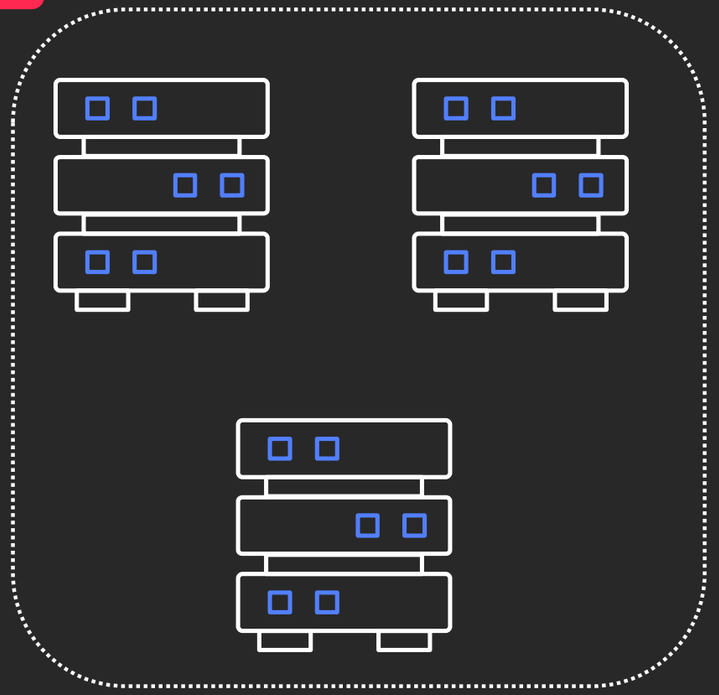
Host Resource Group



Collection of Dedicated Hosts that can be managed together as a single entity using your specified preferences

Simple settings in a Host Resource Group to automate

- ✓ Host allocation
- ✓ Instance placement
- ✓ Host release
- ✓ Host recovery

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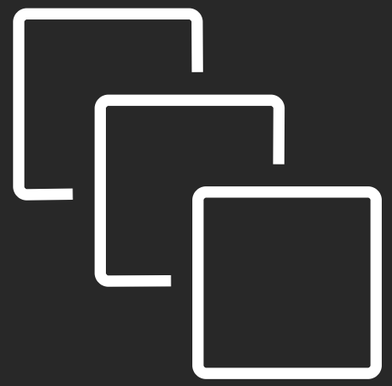
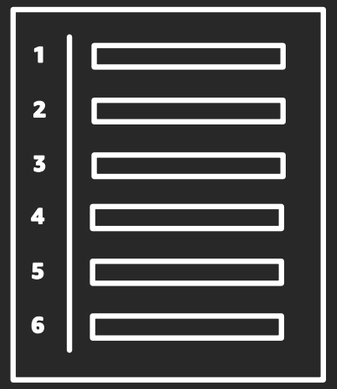
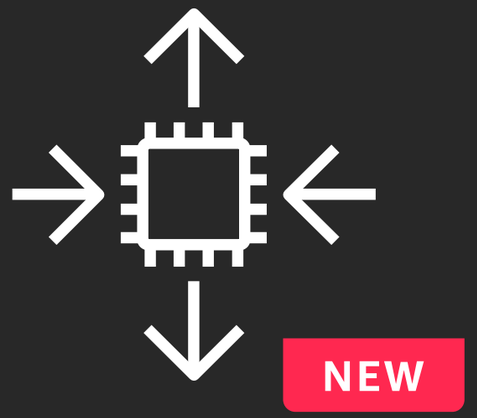
Launch BYOL instances by using your preferred mechanism while AWS manages Dedicated Hosts



Run-Instances



Amazon EC2 Launch Templates



Amazon EC2 Auto Scaling

aws ec2 run-instances on us-east-1 --instance-type c5.xlarge --image-id ami-ff55e085

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How does it work?

Host resource group → Windows and SQL

Launch a C5.xlarge

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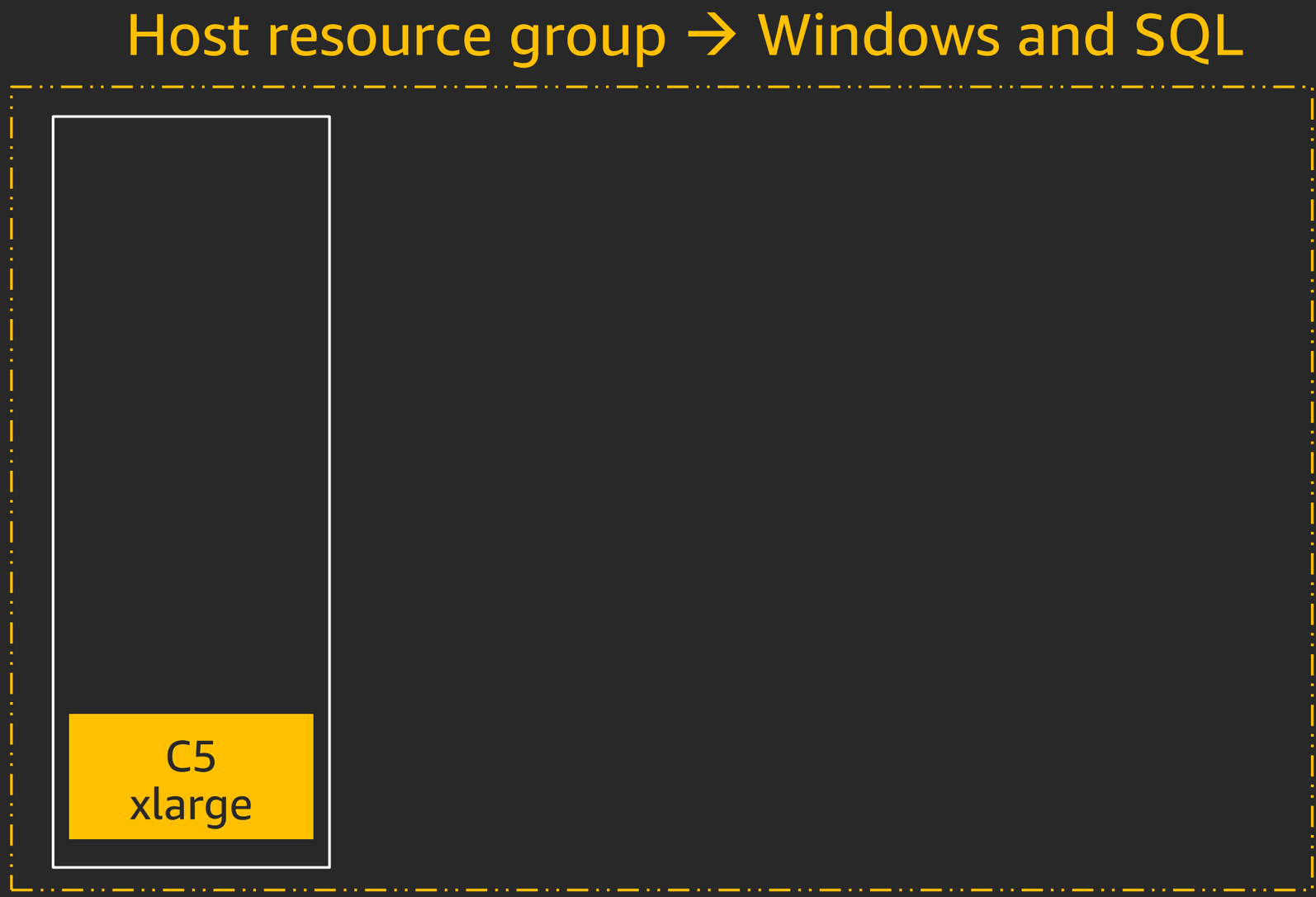
How does it work?

New C5 host allocated
&
C5.xlarge instance
placed on it



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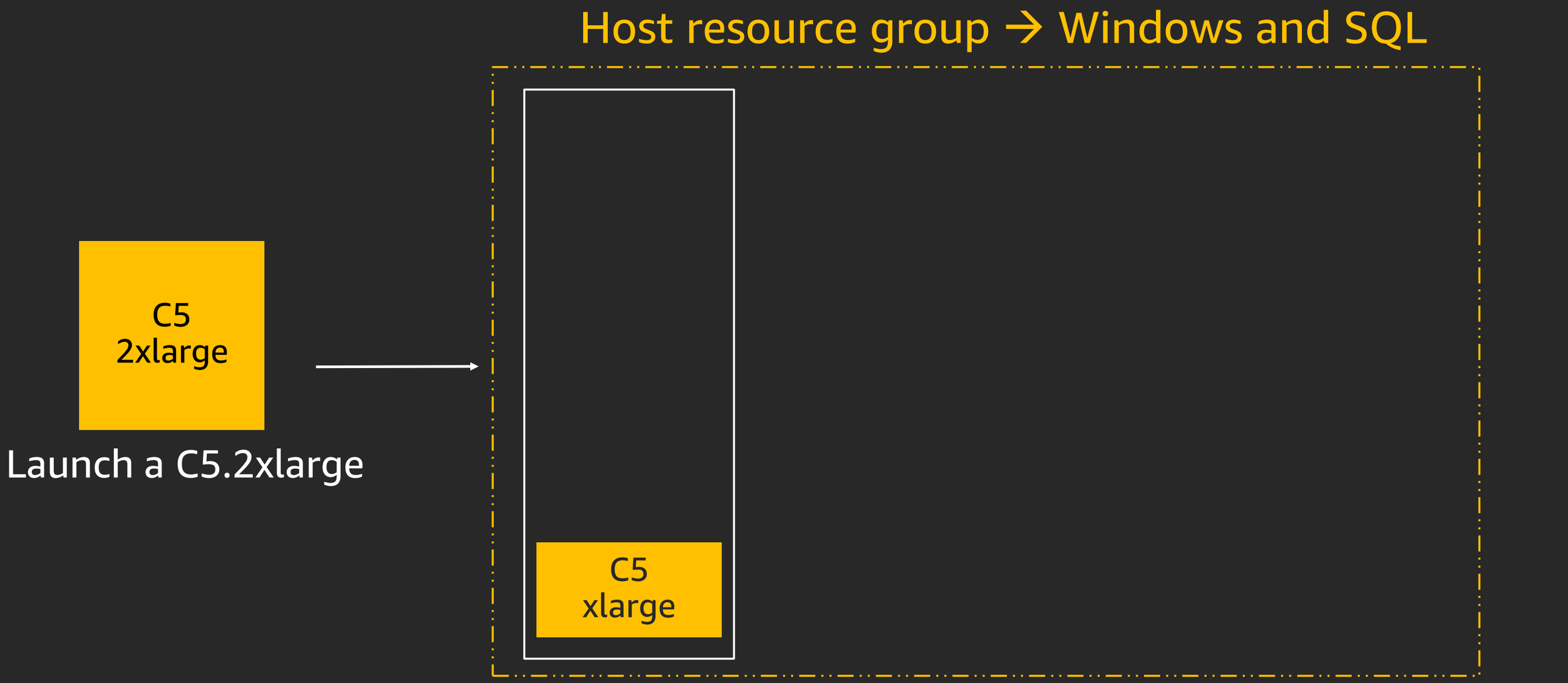
How does it work?



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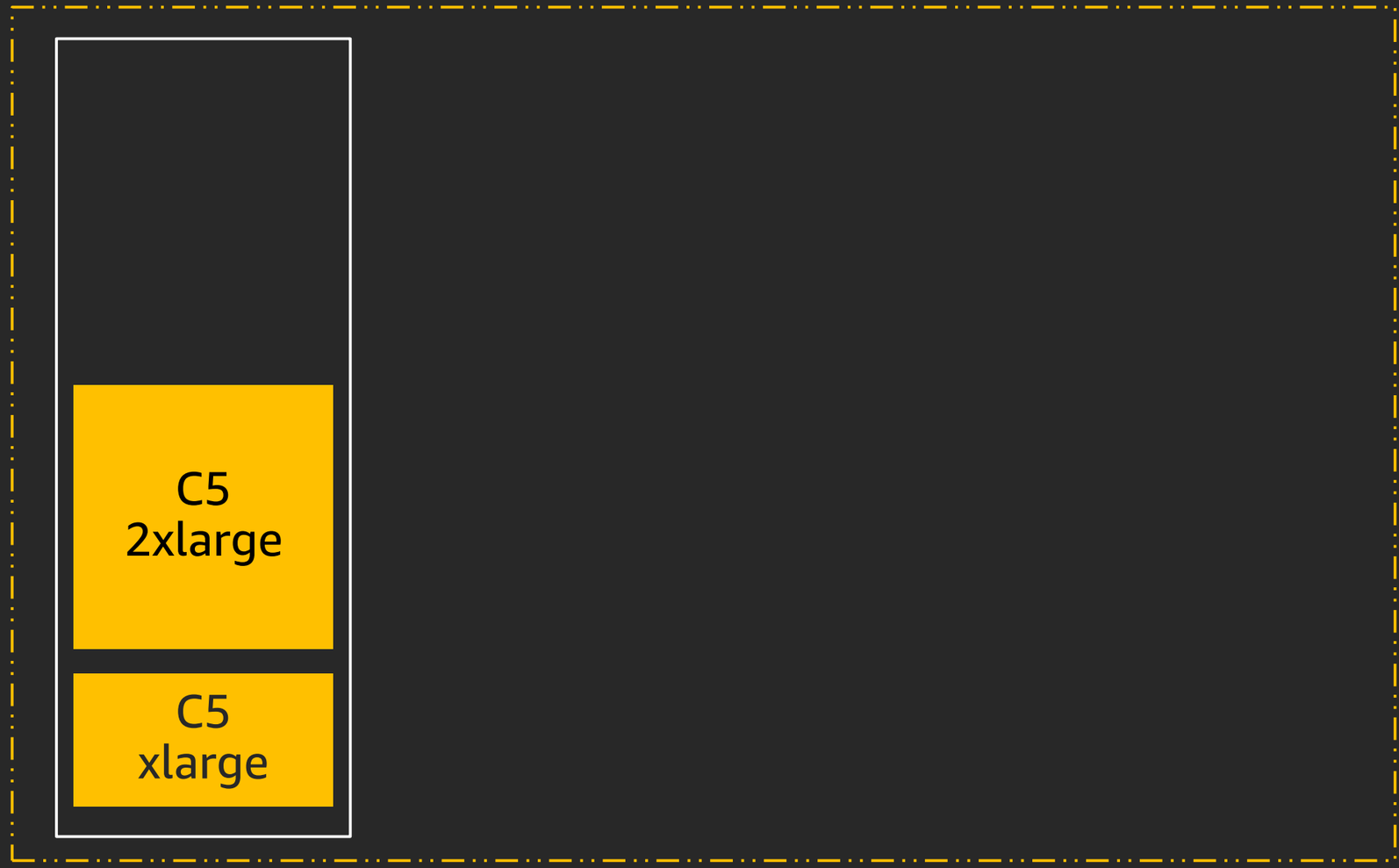
How does it work?

C5.2xlarge placed on earlier host



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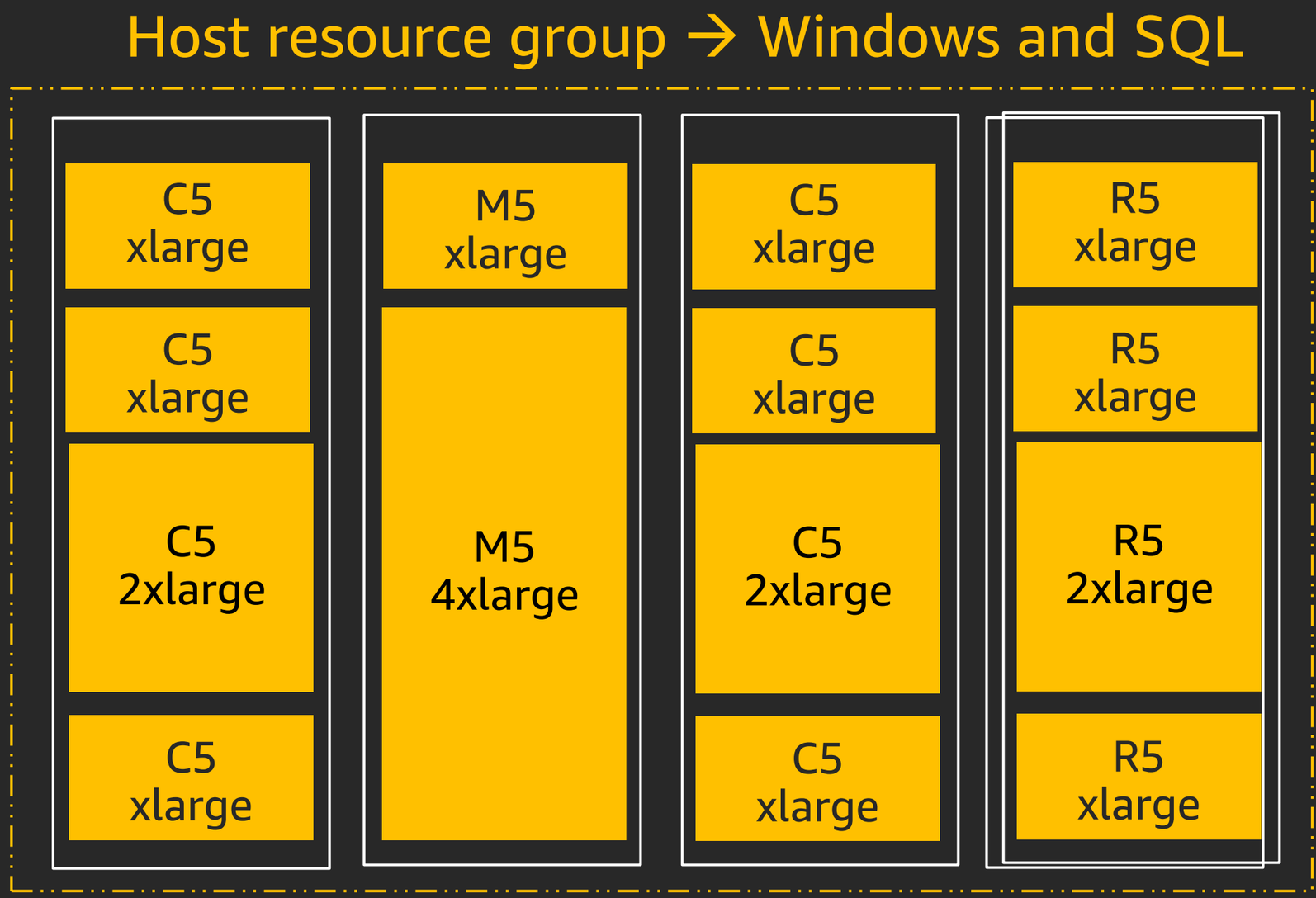
How does it work?

Subsequent launches of C5, M5, and R5, AWS automatically allocates hosts and places instances on them



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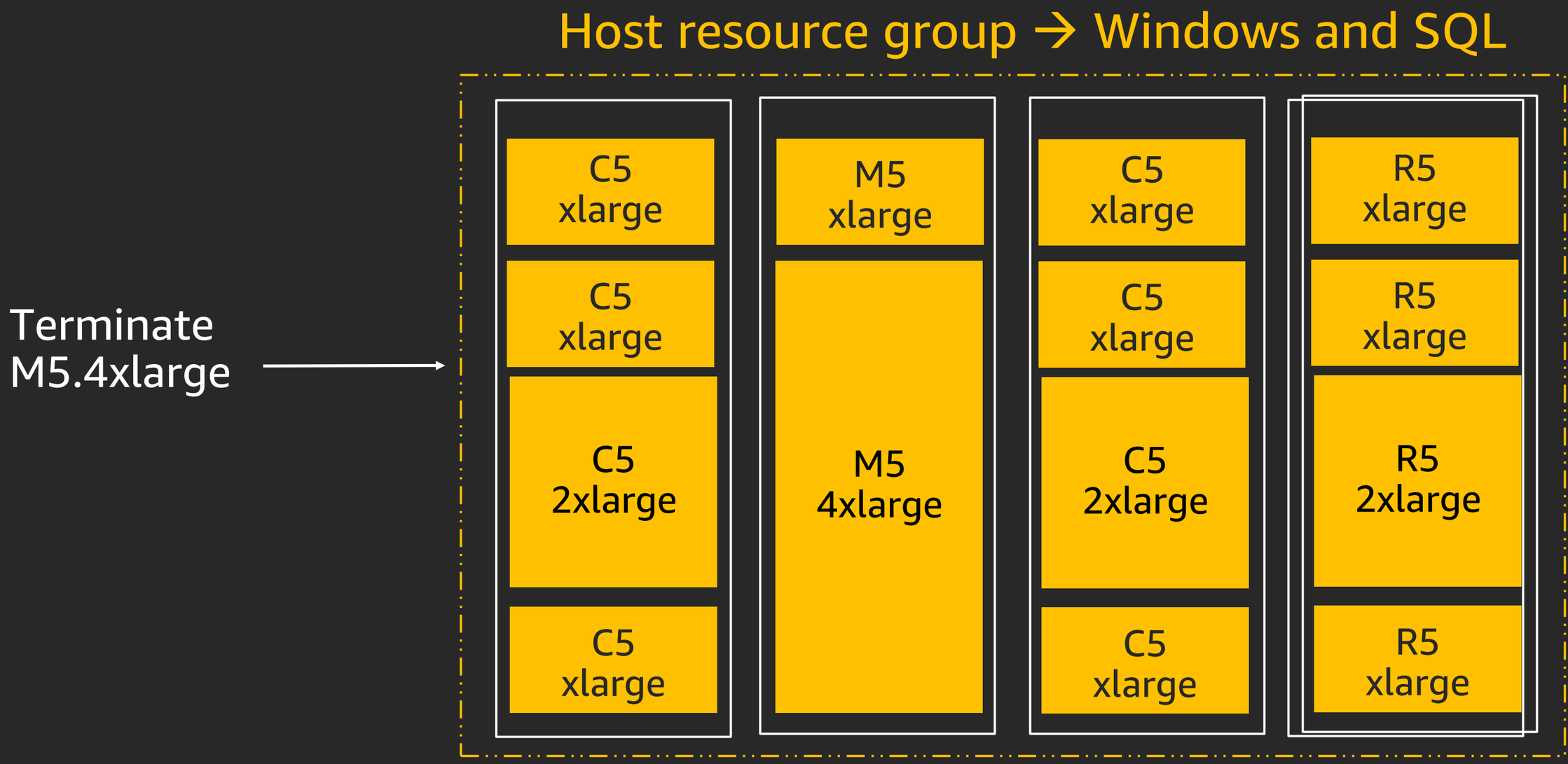
How does it work?



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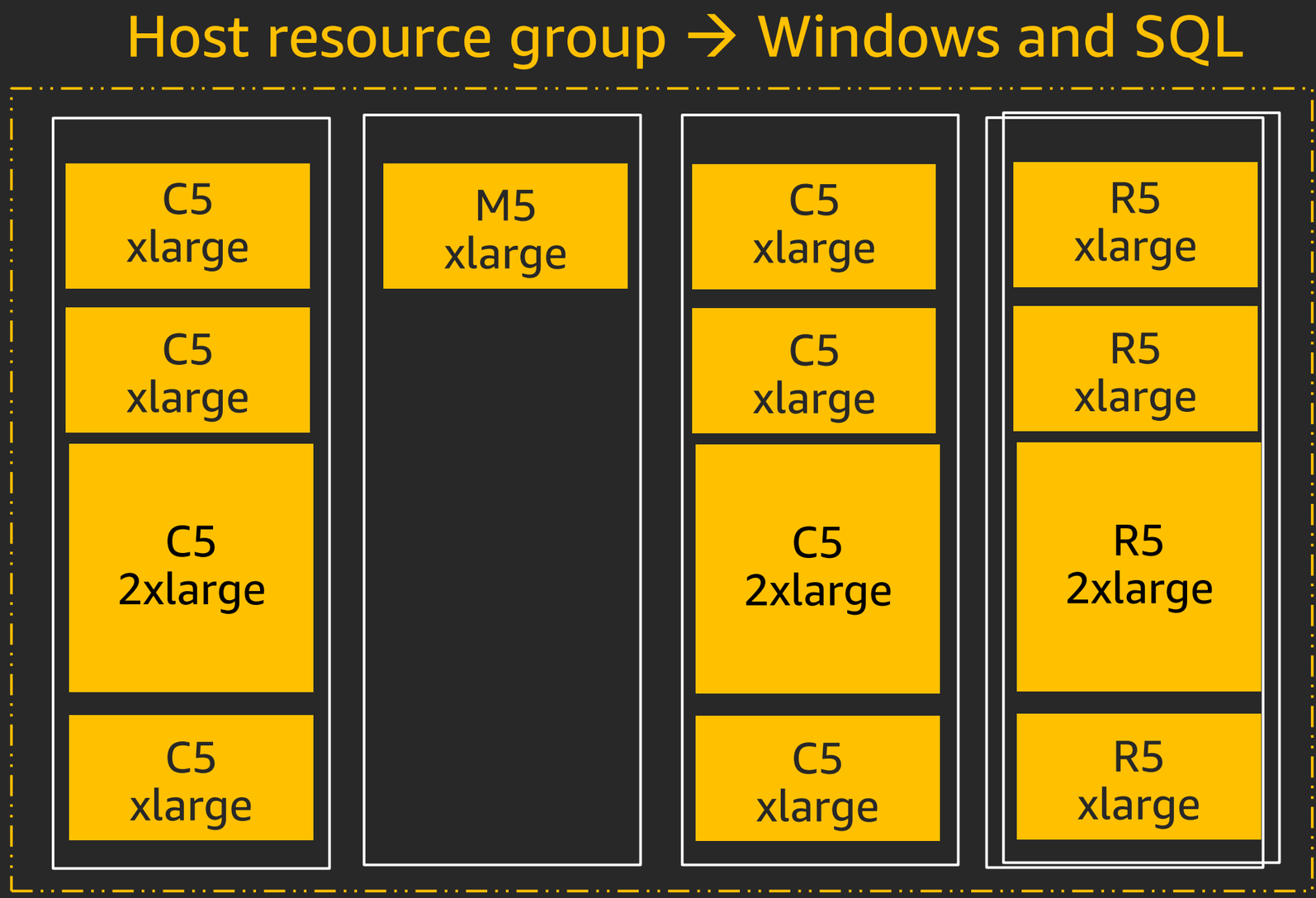
How does it work?

M5.4xlarge instance terminated



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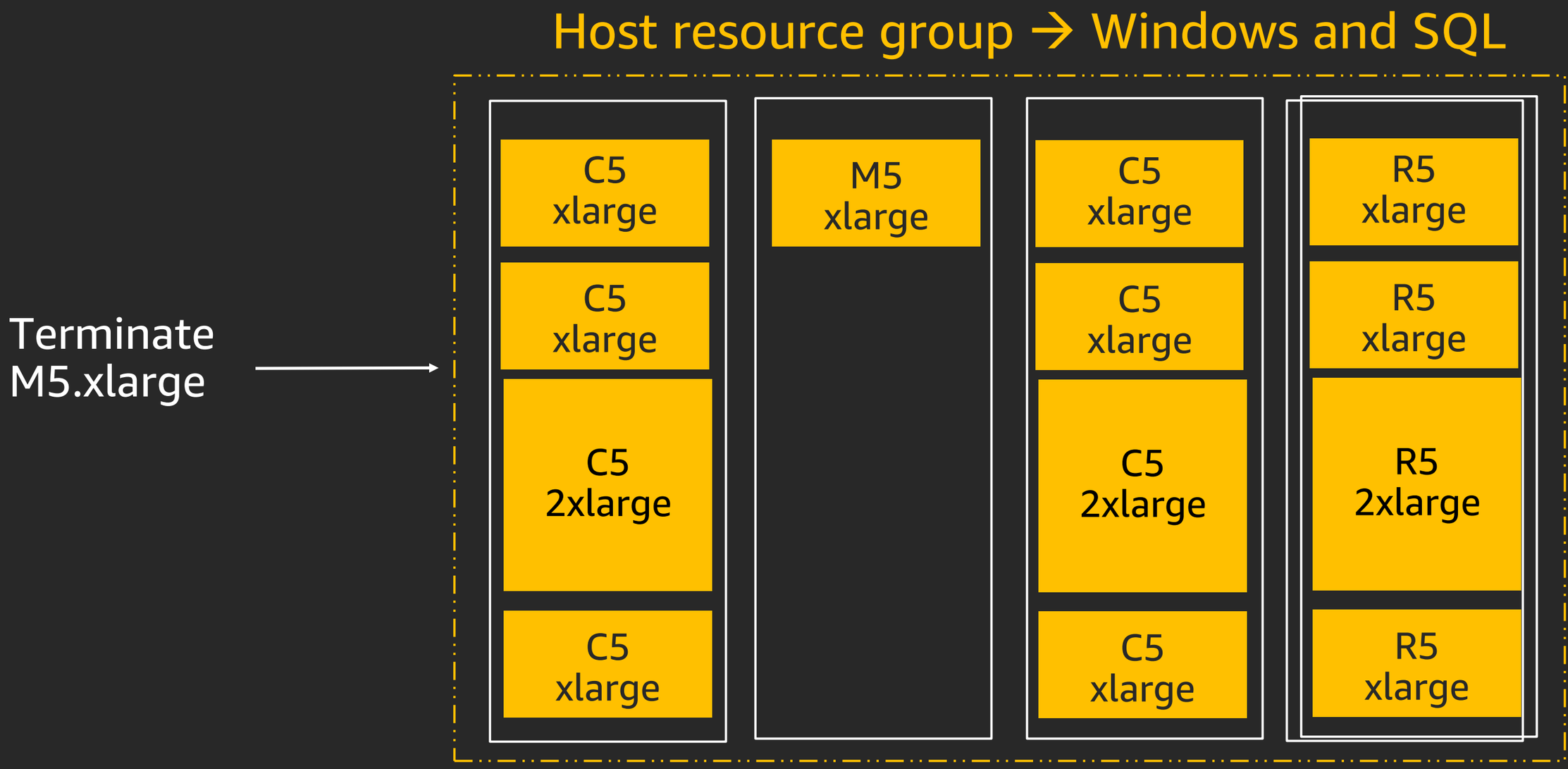
How does it work?



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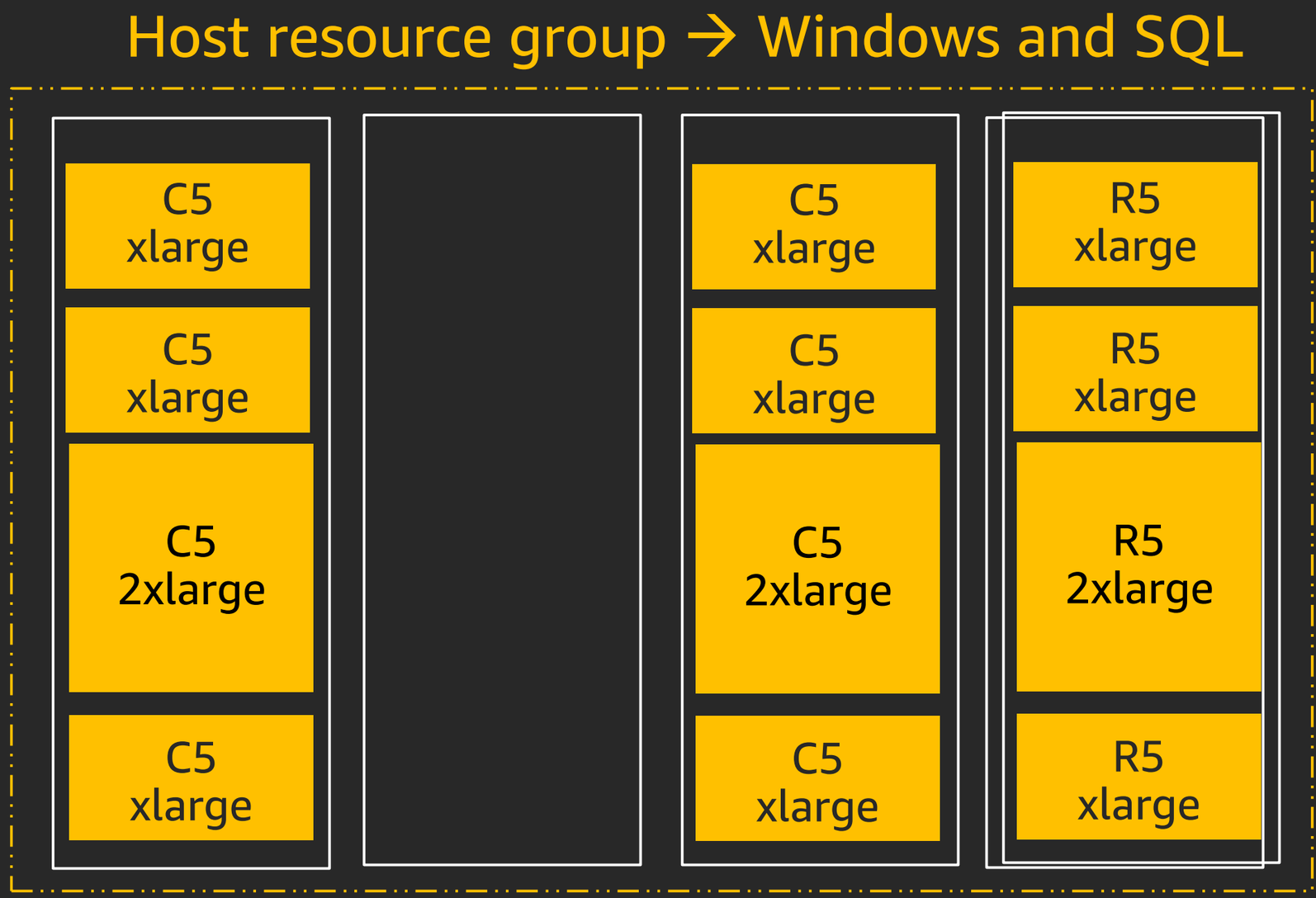
How does it work?

M5.xlarge instance terminated



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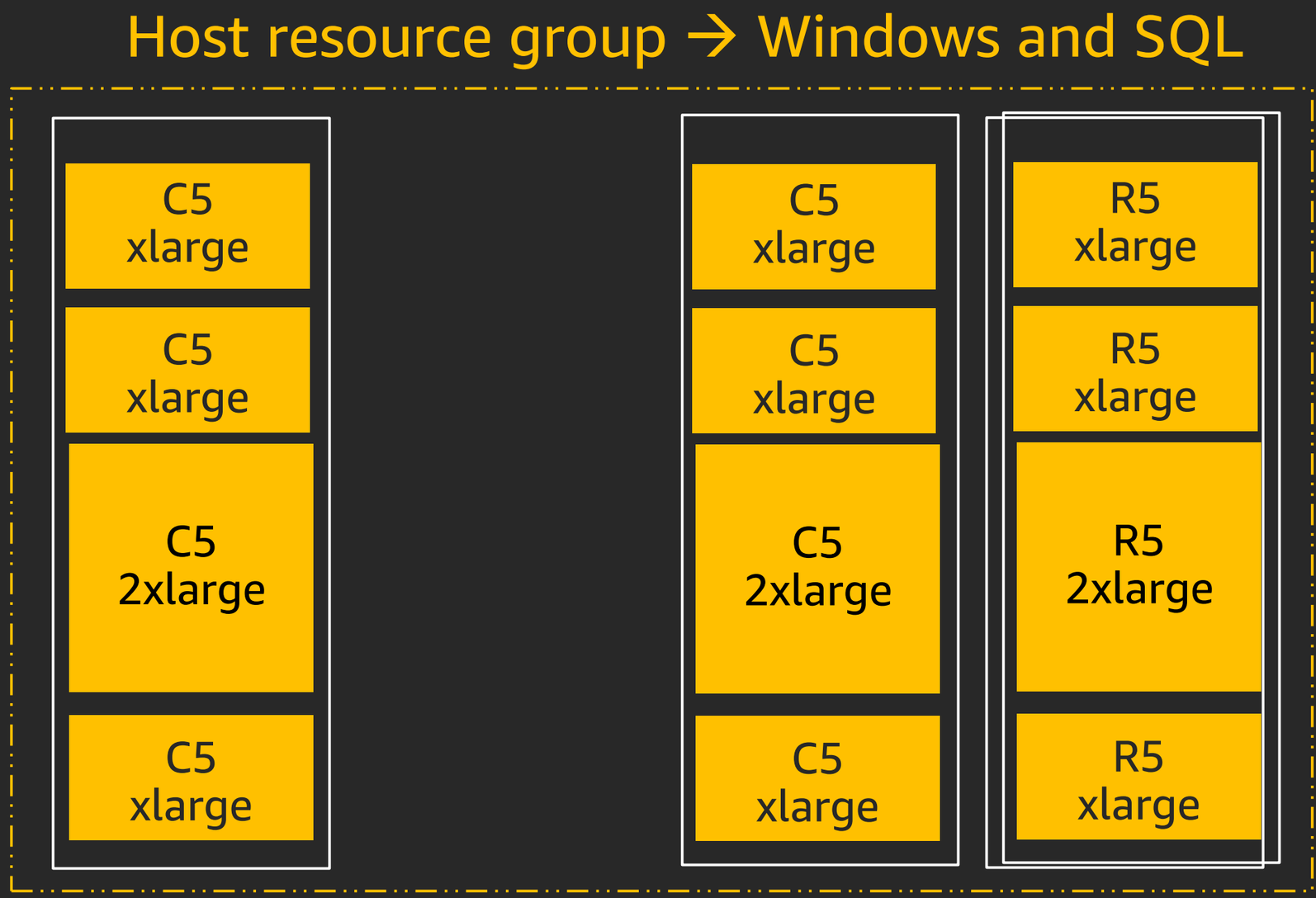
How does it work?

M5 host released



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Results in additional savings

NEW Multiple instance sizes

NEW Automatic allocation/release of hosts leveraging savings plans

NEW Cross account sharing

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Demo use case

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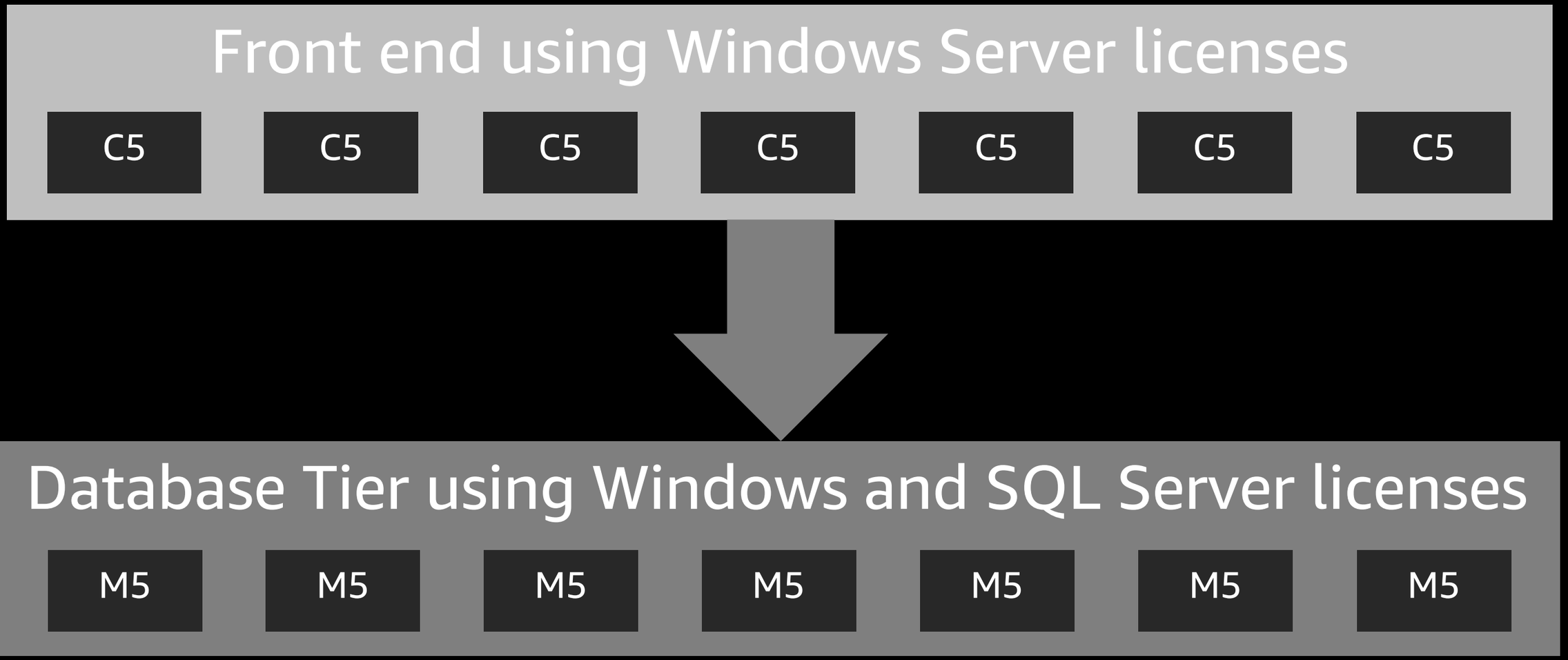
Use case and topology



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Demo

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Related breakouts

Wednesday, December 4

How to optimize TCO by bringing Microsoft licenses to AWS

Time – 9:15am | Aria, Level 1 West, Bristlecone 4 - Table 10

Wednesday, December 4

Meet license compliance needs with AWS License Manager

Time – 10:00am | Aria, Level 1 West, Bristlecone 2 - Table 7

Wednesday, December 4

Introduction to EC2 Image Builder

Time – 3:15pm | Bellagio, Grand Ballroom 5 Blue

Wednesday, December 4

Dive deep on how to save with AWS Savings Plans

Time – 5:30pm | Bellagio, Grand Ballroom 5 Black

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