



Updated 12/18/2020

See below for a summary of each new service and its key customer benefit announced at re:Invent 2020.

## AWS Categories: Serverless and Containers

### Red Hat OpenShift Service on AWS

#### **What is it?**

Red Hat OpenShift Service on AWS provides an integrated experience to use OpenShift. If you are already familiar with OpenShift, you can accelerate your application development process by leveraging familiar OpenShift APIs and tools for deployments on AWS. With Red Hat OpenShift Service on AWS, you can use the wide range of AWS compute, database, analytics, machine learning, networking, mobile, and other services to build secure and scalable applications faster. Red Hat OpenShift Service on AWS comes with pay-as-you-go hourly and annual billing, a 99.95% SLA, and joint support from AWS and Red Hat.

Red Hat OpenShift Service on AWS makes it easier for you to focus on deploying applications and accelerating innovation by moving the cluster lifecycle management to Red Hat and AWS. With Red Hat OpenShift Service on AWS, you can run containerized applications with your existing OpenShift workflows and reduce the complexity of management.

#### **Availability:**

ROSA is in limited preview at this time. Customers can register interest at: [https://pages.awscloud.com/ROSA\\_Preview.html](https://pages.awscloud.com/ROSA_Preview.html)

#### **Customer Benefits:**

- Clear path to running in the cloud: Red Hat OpenShift Service on AWS delivers the production-ready OpenShift that many enterprises already use on-premises today, simplifying the ability to shift workloads to the AWS public cloud as business needs change.
- Deliver high-quality applications faster: Remove barriers to development and build high-quality applications faster with self-service provisioning, automatic security enforcement, and consistent deployment. Accelerate change iterations with automated development pipelines, templates, and performance monitoring.
- Flexible, cost-efficient pricing: Scale per your business needs and pay as you go with flexible pricing with an on-demand hourly or annual billing model.

**Resources:** [Website](#)

### Amazon Elastic Container Registry (ECR) Public

#### **What is it?**

Amazon Elastic Container Registry (ECR) is a fully managed container registry that makes it easy to store, manage, share, and deploy your container images and artifacts anywhere. Amazon ECR eliminates the need to operate your own container repositories or worry about scaling the underlying infrastructure. Amazon ECR hosts your images in a highly available and high-performance architecture, allowing you to reliably deploy images for your container applications. You can share container software privately within your organization or publicly worldwide for anyone to discover and download.

#### **Availability:**

- ECR is available for use globally, see details on the [AWS Regions Table](#).

#### **Use Cases:**

- **NEW:** Public container image and artifact gallery: You can discover and use container software that vendors, open source projects and community developers share publicly in the Amazon ECR public gallery. Popular base images such as operating systems, AWS-published images, Kubernetes add-ons and files such as Helm charts can be found in the gallery.
- Team and public collaboration: Amazon ECR supports the ability to define and organize repositories in your registry using namespaces. This allows you to organize your repositories based on your team's existing workflows. You can set which API actions another user may perform on your repository (e.g., create, list, describe, delete, and get) through resource-level policies, allowing you to easily share your repositories with different users and AWS accounts, or publicly with anyone in the world.

#### **Customer Benefits:**

- Reduce your effort with a fully managed registry: Amazon Elastic Container Registry eliminates the need to operate and scale the infrastructure required to power your container registry. There is no software to install and manage or infrastructure to scale. Just push your container images to Amazon ECR and pull the images using any container management tool when you need to deploy.
- Securely share and download container images: Amazon Elastic Container Registry transfers your container images over HTTPS and automatically encrypts your images at rest. You can configure policies to manage permissions and control access to your images using AWS Identity and Access Management (IAM) users and roles without having to manage credentials directly on your EC2 instances.
- Provide fast and highly available access: Amazon Elastic Container Registry has a highly scalable, redundant, and durable architecture. Your container images are highly available and accessible, allowing you to reliably deploy new containers for your applications. You can reliably distribute public container images as well as related files such as helm charts and policy configurations for use by any developer. ECR automatically replicates container software to multiple AWS Regions to reduce download times and improve availability.

**Resources:** [Website](#)

## Amazon Elastic Container Service (ECS) Anywhere

### **What is it?**

Amazon Elastic Container Service (ECS) Anywhere is a capability in Amazon ECS that enables customers to easily run and manage container-based applications on-premises, including on virtual machines (VMs), bare metal servers, and other customer-managed infrastructure.

With this announcement, customers will now be able to use ECS on any compute infrastructure, whether in AWS regions, AWS Local Zones, AWS Wavelength, AWS Outposts, or in any on-premises environment, without installing or operating container orchestration software.

### **Availability:**

Amazon ECS Anywhere is planned to be available in all standard regions where Amazon ECS is available.

### **Use Cases:**

- Use ECS as a common tool to deploy “anywhere”: ECS Anywhere offers customers a single container orchestration platform for consistent tooling and deployment experience across AWS and on-premises environments including now on customer-managed infrastructure. With ECS Anywhere, you get the same powerful simplicity of the ECS API, cluster management, monitoring, and tooling for containers running anywhere.
- Run containers on customer-managed infrastructure to meet specific requirements: ECS Anywhere enables customers to run workloads on-premises on their own infrastructure for reasons such as regulatory, latency, security, and data residency requirements.
- Leverage the simplicity of ECS while making use of existing capital investments: ECS Anywhere allows customers to utilize their on-premises investments as they need to in order to run containerized applications. Additionally, some customers are looking to use their on-premises infrastructure as base capacity while bursting into AWS during peaks or as their business grows. Over time, as they retire their on-premises hardware, they would continue to move the dial to use more compute on AWS until they have fully migrated.

### **Customer Benefits:**

- Fully managed cloud-based control plane: No need to run, update, or maintain container orchestrators on-premises.
- Consistent tooling and governance: Use the same tools and APIs for all container-based applications regardless of operating environment.
- Manage your hybrid footprint: Run applications in on-premises environments and easily expand to cloud when you're ready.

**Resources:** [Website](#)

## Amazon EKS Anywhere

### **What is it?**

Amazon EKS Anywhere is a new deployment option for Amazon EKS that enables you to easily create and operate Kubernetes clusters on-premises, including on your own virtual machines (VMs) and bare metal servers. EKS Anywhere provides an installable software package for creating and operating Kubernetes clusters on-premises and automation tooling for cluster lifecycle support.

EKS Anywhere creates clusters based on Amazon EKS Distro, the same Kubernetes distribution used by EKS for clusters on AWS. EKS Anywhere enables you to automate cluster management, reduce support costs, and eliminate the redundant effort of using multiple tools for operating Kubernetes clusters. EKS Anywhere is fully supported by AWS. In addition, you can leverage the EKS console to view all your Kubernetes clusters, running anywhere.

### **Availability:**

As an on-premises offering, EKS Anywhere can run anywhere

### **Use cases:**

- Train models in the cloud and run inference on premises: With EKS Anywhere, you can now combine and benefit the best of both worlds: train your ML model in the cloud, using AWS managed services and use the trained ML model in your on-premises setup.
- Workload migration (on-premises to cloud): With EKS Anywhere, you can have the same EKS tooling on-premises, and this consistency provides a quicker on-ramp of your Kubernetes-based workloads to the cloud. Increase operational efficiencies
- Application modernization: EKS Anywhere empowers you to finally address the modernization of your applications, removing the heavy lifting of keeping up with upstream Kubernetes and security patches, so you can focus on the business value.
- Data sovereignty: Some large data sets can not or will not soon leave the data center due to legal requirements concerning the location of the data. Yet EKS Anywhere helps to move the stateless part of the application to the cloud, while keeping data in place.
- Bursting: Seasonal workloads can require a lot of compute (5x to 10x more than the baseline) for a days or weeks. Being able to burst into the cloud provides this temporary capacity. With EKS Anywhere you can now manage your workloads across on-premises and the cloud consistently and cost-effectively.

### **Customer Benefits:**

- Simplify and automate Kubernetes management: EKS Anywhere provides you with consistent Kubernetes management tooling optimized to simplify cluster installation with default configurations for OS, container registry, logging, monitoring, networking, and storage.
- Create consistent clusters: Amazon EKS Anywhere uses EKS Distro, the same Kubernetes distribution deployed by Amazon EKS, allowing you to easily create clusters consistent with Amazon EKS best practices. EKS Anywhere eliminates the fragmented collection of vendor support agreements and tools required to install and operate Kubernetes clusters on-premises.
- Deliver a more reliable Kubernetes environment: EKS Anywhere gives you a Kubernetes environment on-premises that is easier to support. EKS Anywhere helps you integrate Kubernetes with existing infrastructure, keep open source software up to date and patched, and maintain business continuity with cluster backups and recovery.

**Resources:** [Website](#)

## AWS Proton

### **What is it?**

AWS Proton is the first fully managed application deployment service for container and serverless applications. Platform teams can use Proton to connect and coordinate all the different tools needed for infrastructure provisioning, code deployments, monitoring, and updates.

Proton enables platform teams to give developers an easy way to deploy their code using containers and serverless technologies, using the management tools, governance, and visibility needed to ensure consistent standards and best practices.

### **Availability:**

During preview: us-east-1, us-east-2, us-west-2, ap-northeast-1, and eu-west-1. Global region availability planned for GA

### **Use Cases:**

- Streamlined management: Platform teams use AWS Proton to manage and enforce a consistent set of standards for compute, networking, continuous integration/continuous delivery (CI/CD), and security and monitoring in modern container and serverless environments. With Proton, you can see what was deployed and who deployed it. You can automate in-place infrastructure updates when you update your templates.
- Managed developer self-service: AWS Proton enables platform teams to offer a curated self-service interface for developers, using the familiar experience of the AWS Management Console or AWS Command Line Interface (AWS CLI). Using approved stacks, authorized developers in your organization are able to use Proton to create and deploy a new production infrastructure service for their container and serverless applications.
- Infrastructure as code (IaC) adoption: AWS Proton uses infrastructure as code (IaC) to define application stacks and configure resources. It integrates with popular AWS and third-party CI/CD and observability tools, offering a flexible approach to application management. Proton makes it easy to provide your developers with a curated set of building blocks they can use to accelerate the pace of business innovation.

### **Customer Benefits:**

- Set guardrails: AWS Proton enables your developers to safely adopt and deploy applications using approved stacks that you manage. It delivers the right balance of control and flexibility to ensure developers can continue rapid innovation.
- Increase developer productivity: AWS Proton lets you adopt new technologies without slowing your developers down. It gives them infrastructure provisioning and code deployment in a single interface, allowing developers to focus on their code.
- Enforce best practices: When you adopt a new feature or best practice, AWS Proton helps you update out-of-date applications with a single click. With Proton, you can ensure consistent architecture across your organization.

**Resources:** [Website](#) | [What's new post](#)

## AWS Lambda Container Image Support & 1ms billing granularity

### **What is it?**

AWS Lambda supports packaging and deploying functions as container images, making it easy for customers to build Lambda based applications by using familiar container image tooling, workflows, and dependencies. Customers also benefit from the operational simplicity, automatic scaling with sub-second startup times, high availability, native integrations with 140 AWS services, and pay for use model offered by AWS Lambda. Enterprise customers can use a consistent set of tools with both their Lambda and containerized applications for central governance requirements such as security scanning and image signing. Customers can create their container deployment images by starting with either AWS Lambda provided base images or by using one of their preferred community or private enterprise images.

### **Availability:**

Container Image Support for AWS Lambda and 1ms billing granularity for AWS Lambda are available in all regions where AWS Lambda is available, except for regions in China.

### **Use Cases:**

- Build cross-platform applications, with both containers and AWS Lambda
- Large applications, or applications relying on large dependencies, such as machine learning, analytics, or data intensive apps.
- Customers who want to run serverless applications but have standardized on container tooling within their organizations

### **Customer Benefits:**

- Leverage familiar container tooling and workflows: Leverage the flexibility and familiarity of container tooling, and the agility and operational simplicity of AWS Lambda to be more agile when building applications.
- Get the flexibility of containers and agility of AWS Lambda: When invoked, functions deployed as container images are executed as-is, with sub-second automatic scaling. You benefit from high availability, only pay for what you use and can take advantage of 140 native service integrations.
- Build and deploy large workloads to AWS Lambda: With container images of up to 10GB, you can easily build and deploy larger workloads that rely on sizable dependencies, such as machine learning or data intensive workloads.

## Amazon EKS Add-ons

### **What is it?**

Amazon Elastic Kubernetes Service (Amazon EKS) gives you the flexibility to start, run, and scale Kubernetes applications in the AWS cloud or on-premises. Amazon EKS helps you provide highly-available and secure clusters and automates key tasks such as patching, node provisioning, and updates.

**NEW!** Add-ons – Add-ons are common operational software which extend the operational functionality of Kubernetes. You can use EKS to install and keep this software up to date. When you start an Amazon EKS cluster, you can select the add-ons that you would like to run in the cluster, including Kubernetes tools for observability, networking, autoscaling, and AWS service integrations.

### **Availability:**

Amazon EKS is generally available in all AWS public regions as of November 2020. Support in the new Osaka region is coming soon.

### **Use Cases:**

- Hybrid Deployments
- Web Applications
- Big data
- Machine Learning
- Batch Processing

### **Customer Benefits:**

- **NEW!** Service Integrations – AWS Controllers for Kubernetes (ACK) lets you directly manage AWS services from Kubernetes. ACK makes it simple to build scalable and highly-available Kubernetes applications that utilize AWS services.
- **NEW!** Integrated Kubernetes Console – EKS provides an integrated console for Kubernetes clusters. Cluster operators and application developers can use EKS as a single place to organize, visualize, and troubleshoot their Kubernetes applications running on Amazon EKS. The EKS console is hosted by AWS and is available automatically for all EKS clusters.
- **NEW!** Add-ons – Add-ons are common operational software which extend the operational functionality of Kubernetes. You can use EKS to install and keep this software up to date. When you start an Amazon EKS cluster, you can select the add-ons that you would like to run in the cluster, including Kubernetes tools for observability, networking, autoscaling, and AWS service integrations.

**Resources:** [Website](#) | [What's new post](#)

## Amazon EKS Distro

### **What is it?**

Amazon EKS Distro is a Kubernetes distribution used by Amazon EKS to help create reliable and secure clusters. EKS Distro includes binaries and containers of open source Kubernetes, etcd (cluster configuration database), networking, storage plugins, all tested for compatibility. You can deploy EKS Distro wherever your applications need to run.

You can deploy clusters and let AWS take care of testing and tracking Kubernetes updates, dependencies, and patches. Each EKS Distro verifies new Kubernetes versions for compatibility. The source code, open source tools, and settings are provided for reproducible builds. EKS Distro will provide extended support for Kubernetes, with builds of previous versions updated with the latest security patches. EKS Distro is available as open source on GitHub.

### **Availability:**

Amazon EKS Distro is open source software that can be run anywhere.

### **Customer Benefits:**

- **Get consistent Kubernetes builds:** EKS Distro provides the same installable builds and code of open source Kubernetes that are used by Amazon EKS. You can perform reproducible builds with the provided source code, tooling, and documentation.
- **Run Kubernetes on any infrastructure:** You can deploy EKS Distro on your own self-provisioned hardware infrastructure, including bare-metal servers or VMware vSphere virtual machines, or on Amazon EC2 instances.
- **Have a more reliable and secure distribution:** EKS Distro will provide extended support for Kubernetes versions in alignment with the Amazon EKS Version Lifecycle Policy, by updating builds of previous versions with the latest critical security patches.

**Resources:** [Website](#) | [What's new post](#)

## Amazon Managed Workflows for Apache Airflow

### **What is it?**

Amazon Managed Workflows are a managed orchestration service for Apache Airflow that makes it easy to set up and operate end-to-end data pipelines in the cloud at scale. Apache Airflow is an open-source tool used to programmatically author, schedule, and monitor sequences of processes and tasks referred to as “workflows.” With Managed Workflows you can use the same open source Airflow platform and Python language to create workflows without having to manage the underlying infrastructure for scalability, availability, and security. Managed Workflows automatically scale its workflow execution capacity up and down to meet your needs, and is integrated with AWS security services to enable fast and secure access to data.

### **Availability:**

us-east-1 (N. Virginia), us-east-2 (Ohio), us-west-2 (Oregon), eu-north-1 (Stockholm), eu-west-1 (Ireland), eu-central-1 (Frankfurt), ap-southeast-2 (Sydney), ap-northeast-1 (Tokyo), and ap-southeast-1 (Singapore)

### **Use Cases:**

- **Enable Complex Workflows:** Big data platforms often need complicated data pipelines that connect many internal and external services. To use this data, customers need to first build a workflow that defines the series of sequential tasks that prepare and process the data. Managed Workflows execute these workflows on a schedule or on-demand.
- **Coordinate Extract, Transform, and Load (ETL) Jobs:** You can use Managed Workflows as an open source alternative to orchestrate multiple ETL jobs involving a diverse set of technologies in an arbitrarily complex ETL workflow.
- **Prepare Machine Learning (ML) Data:** In order to enable machine learning, source data must be collected, processed, and normalized so that ML modeling systems like the fully managed service Amazon SageMaker can train on that data. Managed Workflows solve this problem by making it easier to stitch together the steps it takes to automate your ML pipeline.

### **Customer Benefits:**

- **Deploy Airflow rapidly at scale:** Get started in minutes from the AWS Management Console, CLI, AWS CloudFormation, or AWS SDK. Create an account and begin deploying Directed Acyclic Graphs (DAGs) to your Airflow environment immediately without reliance on development resources or provisioning infrastructure.
- **Run Airflow with built-in security:** With Managed Workflows, your data is secure by default as workloads run in your own isolated and secure cloud environment using Amazon’s Virtual Private Cloud (VPC), and data is automatically encrypted using AWS Key Management Service (KMS).
- **Reduce operational costs:** Managed Workflows are a managed service, removing the heavy lift of running open source Apache Airflow at scale. With Managed Workflows, you can reduce operational costs and engineering overhead while meeting the on-demand monitoring needs of end to end data pipeline orchestration.

**Resources:** [Website](#)

## Amazon MQ

### **What is it?**

Amazon MQ is a managed message broker service for Apache ActiveMQ and RabbitMQ that makes it easy to set up and operate message brokers on AWS. Amazon MQ reduces your operational responsibilities by managing the provisioning, setup, and maintenance of message brokers for you. Because Amazon MQ connects to your current applications with industry-standard APIs and protocols, you can easily migrate to AWS without having to rewrite code.

### **Availability:**

Amazon MQ is available in 19 AWS Regions, see details on the [AWS Regions Table](#).

### **Customer Benefits:**

- **Migrate quickly:** Connecting your current applications to Amazon MQ is easy because it uses industry-standard APIs and protocols for messaging, including JMS, NMS, AMQP 1.0 and 0-9-1, STOMP, MQTT, and WebSocket. This enables you to move from any message broker that uses these standards to Amazon MQ by simply updating the endpoints of your applications to connect to Amazon MQ.
- **Offload operational responsibilities:** Amazon MQ manages the administration and maintenance of message brokers and automatically provisions infrastructure for high availability. There is no need to provision hardware or install and maintain software and Amazon MQ automatically manages tasks such as software upgrades, security updates, and failure detection and recovery.
- **Durable messaging made easy:** Amazon MQ is automatically provisioned for high availability and message durability when you connect your message brokers. Amazon MQ stores messages redundantly across multiple Availability Zones (AZ) within an AWS region and will continue to be available if a component or AZ fails.

**Resources:** [Website](#)

### Amazon EC2 Mac Instances

#### **What is it?**

Mac instances enable customers to run on-demand macOS workloads in the cloud for the first time, extending the flexibility, scalability, and cost benefits of AWS to all Apple developers. Customers who rely on the Xcode IDE for creating iPhone, iPad, Mac, Apple Watch, Apple TV, and Safari apps can now provision and access macOS environments within minutes with simple mouse clicks or API calls, dynamically scale capacity as needed, and benefit from AWS's pay-as-you-go pricing.

Amazon EC2 Mac instances are built on Mac mini computers, and offer customers a choice of both the macOS Mojave (10.14) and macOS Catalina (10.15) versions.

#### **Availability:**

us-east-1 (N. Virginia), us-east-2 (Ohio), us-west-2 (Oregon), eu-west-1 (Ireland), and ap-southeast-1 (Singapore)

#### **Customer Benefits:**

- Quickly provision macOS environments: Time and resources previously spent building and maintaining on-premises macOS environments can now be refocused on building creative and useful apps. Development teams can now seamlessly provision and access macOS compute environments to enjoy faster app builds and convenient, distributed testing, without having to procure, configure, operate, maintain, and upgrade fleets of physical computers.
- Reduce costs: Mac instances allow developers to launch macOS environments within minutes, adjust provisioned capacity as needed, and only pay for actual usage with AWS's pay-as-you-go pricing. Developers save money since they only need to pay for the systems that are in use. For example, more capacity can be used when building an app, and less capacity when testing.
- Extend your toolkits: Amazon EC2 Mac instances provide developers seamless access to the broad set of over 175 AWS services so they can more easily and efficiently collaborate with team members, and develop, test, share, analyze, and improve their apps. Customers can leverage AWS services such as Elastic Block Store (EBS) for block-level storage, Elastic Load Balancer (ELB) for distributing build queues, Simple Storage Service (S3) for extreme scale object storage, Amazon Machine Images (AMIs) for orchestration, and CodeBuild for managed CI/CD.

**Resources:** [Website](#) | [What's new post](#)

### Amazon EC2 D3 and D3en Instances

#### **What is it?**

Amazon EC2 D3 and D3en instances provide cost-effective, high capacity local storage-per-vCPU for massively-scaled storage workloads. D3 and D3en instances are the next generation of dense HDD storage instances, offering 30% higher processor performance, increased capacity, and reduced cost compared to D2 instances. Additionally, D3 instances provide 2.5x higher networking speed and 45% higher disk throughput compared to D2 instances. D3en instances, enhanced storage and high-speed networking variants, provide 7.5x higher networking speed, 100% higher disk throughput, 7x more storage capacity (up to 336 TB), and 80% lower cost per-TB of storage compared to D2 instances.

D3 instances are a great fit for dense storage workloads including big data and analytics, data warehousing, and high scale file systems. D3en instances are a great fit for dense and distributed workloads including high capacity data lakes, clustered file systems, and other multi-node storage systems with significant inter-node I/O. With D3 and D3en instances, you can easily migrate from previous-generation D2 instances or on-premises infrastructure to a platform optimized for dense HDD storage workloads.

#### **Availability:**

us-east-1, us-east-2, us-west-2, and eu-west-1 regions

#### **Customer Benefits:**

- Lower costs: Next-generation Amazon EC2 D3 instances provide increased price-performance, and lower cost than D2 instances. D3 and D3en instances feature 30% higher compute performance than D2 instances. D3en instances also offer 80% lower cost-per-TB of storage compared to D2 instances.
- Better performance: D3 and D3en instances satisfy the needs of applications with high requirements for sequential storage throughput. D3 and D3en instances enable 45% and 100% higher disk throughput respectively compared to D2 instances. D3 and D3en instances provide 2.5x and 7.5x higher networking throughput respectively than D2 instances, allowing for high speed multi-node configurations.
- Maximize resource efficiency: D3 and D3en instances are powered by the AWS Nitro System, a combination of dedicated hardware and lightweight hypervisor, which delivers practically all of the compute and memory resources of the host hardware to your instances. This frees up additional compute, memory and I/O, allowing your applications to do more with available hardware resources including local, HDD storage.

**Resources:** [Website](#) | [What's new post](#)

## Amazon EC2 Instances Powered by AWS Graviton2 Processors

### **What is it?**

The new general purpose (M6g), general purpose burstable (T4g), compute optimized (C6g), and memory optimized (R6g) Amazon EC2 instances deliver up to 40% improved price performance over comparable x86-based instances for a broad spectrum of workloads including application servers, open source databases, in-memory caches, microservices, gaming servers, electronic design automation, high-performance computing, and video encoding. M6gd, C6gd, and R6gd are variants of these instances with local NVMe-based SSD storage, and C6gn instances deliver 100 Gbps networking for compute intensive applications with support for Elastic Fabric Adapter (EFA). These instances are powered by new AWS Graviton2 processors that deliver up to 7x performance, 4x the number of compute cores, 2x larger private caches per core, and 5x faster memory compared to the first-generation AWS Graviton Processors. AWS Graviton2 processors are built on advanced 7 nanometer manufacturing technology. They utilize 64-bit Arm Neoverse cores and custom silicon designed by AWS, and introduce several performance optimizations versus the first generation. AWS Graviton2 processors provide 2x faster floating-point performance per core for scientific and high-performance computing workloads, custom hardware acceleration for compression workloads, fully encrypted DRAM memory, and optimized instructions for faster CPU-based machine learning inference.

### **Availability:**

US East (N. Virginia, Ohio), US West (N. California, Oregon), Europe (Ireland, Frankfurt, London), Canada (Central) and Asia Pacific (Mumbai, Singapore, Sydney, Tokyo) regions

### **Customer Benefits:**

- Best price performance for a broad spectrum of workloads: AWS Graviton2-based general-purpose (M6g), general-purpose burstable (T4g), compute-optimized (C6g), and memory-optimized (R6g) EC2 instances deliver up to 40% better price performance over comparable current generation x86-based instances for a broad spectrum of workloads such as application servers, micro-services, video encoding, high-performance computing, electronic design automation, compression, gaming, open-source databases, in-memory caches, and CPU-based machine learning inference.
- Extensive ecosystem support: AWS Graviton2 processors, based on the 64-bit Arm architecture, are supported by popular Linux operating systems including Amazon Linux 2, Red Hat, SUSE, and Ubuntu. Many popular applications and services from AWS and Independent Software Vendors also support AWS Graviton2-based instances, including Amazon ECS, Amazon EKS, Amazon ECR, Amazon CodeBuild, Amazon CodeCommit, Amazon CodePipeline, Amazon CodeDeploy, Amazon CloudWatch, CrowdStrike, Datadog, Docker, Drone, GitLab, Jenkins, NGINX, Qualys, Rancher, Rapid7, Tenable, and TravisCI. Arm developers can also leverage this ecosystem to build applications natively in the cloud, thereby eliminating the need for emulation and cross-compilation, which are error prone and time consuming.
- Enhanced security for cloud applications: Developers building applications for the cloud rely on cloud infrastructure for security, speed and optimal resource footprint. AWS Graviton2 processors feature key capabilities that enables developers to run cloud native applications securely, and at scale, including always-on 256-bit DRAM encryption and 50% faster per core encryption performance compared to first-generation AWS Graviton. Graviton2 powered instances are built on the Nitro System that features the Nitro security chip with dedicated hardware and software for security functions, as well as encrypted EBS storage volumes by default.

**Resources** [Website](#)

## Amazon EC2 G4ad instances

### **What is it?**

G4ad instances are powered by AMD Radeon Pro V520 GPUs, providing the best price performance for graphics intensive applications in the cloud. These instances offer up to 45% better price performance compared to G4dn instances, which were already the lowest cost instances in the cloud, for graphics applications such as remote graphics workstations, game streaming, and rendering that leverage industry-standard APIs such as OpenGL, DirectX, and Vulkan. They provide up to 4 AMD Radeon Pro V520 GPUs, 64 vCPUs, 25 Gbps networking, and 2.4 TB local NVMe-based SSD storage.

### **Availability:**

us-east-1 (N. Virginia), us-east-2 (Ohio), us-west-2 (Oregon), eu-west-1 (Ireland), and ap-southeast-1 (Singapore)

### **Use Cases:**

- Virtual Workstations
- Graphics intensive applications

### **Customer Benefits:**

- Highest Performance and Lowest Cost Instances for Graphics Intensive Applications: G4ad instances are the lowest cost instances in the cloud for graphics intensive applications. They provide up to 45% better price performance, including up to 40% better graphics performance, compared to G4dn instances for graphics applications such as remote graphics workstations, game streaming, and rendering that leverage industry standard APIs such as OpenGL, DirectX, and Vulkan.
- Simplified Management of Virtual Workstations at the Lowest Cost in the Cloud: G4ad instances allow customers to configure virtual workstations with high-performance simulation, rendering, and design capabilities in minutes, allowing customers to scale quickly. Customers can use AMD Radeon Pro Software for Enterprise and high-performance remote display protocol, NICE DCV, with G4ad instances at no additional cost to manage their virtual workstation environments with support for up to two 4k monitors per GPU.
- Dependability in Third Party Applications: The AMD professional graphics solution includes an extensive Independent Software Vendor (ISV) application testing and certification process called the Day Zero Certification Program. This helps ensure that developers can leverage the latest AMD Radeon Pro Software for Enterprise features combined with the reliability of certified software on the day of the driver release.

**Resources:** [Website](#)



## AWS Wavelength Zone in Las Vegas

### **What is it?**

Today, we are announcing the availability of a new AWS Wavelength Zone on Verizon's 5G Ultra Wideband network in Las Vegas. Wavelength Zones are now available in eight cities, including the seven previously announced cities of Boston, San Francisco Bay Area, New York City, Washington DC, Atlanta, Dallas, and Miami.

AWS Wavelength brings AWS services to the edge of the 5G network, minimizing the latency to connect to an application from 5G connected devices. Application traffic can reach application servers running in Wavelength Zones, AWS infrastructure deployments that embed AWS compute and storage services within the communications service providers' datacenters at the edge of the 5G networks, without leaving the telco provider's network. This reduces the extra network hops to the Internet that can result in latencies of 10s of milliseconds, preventing customers from taking full advantage of the bandwidth and latency advancements of 5G.

### **Availability:**

Today, Wavelength was announced for availability in Las Vegas. In August 2020, AWS announced the launch of two Wavelength Zones, in San Francisco and Boston, with Verizon. Wavelength Zones in 8 other cities in the United States are planned for launch in 2020. Globally, AWS is partnering with other leading edge telecommunications companies including KDDI, SK Telecom, and Vodafone to launch Wavelength across Europe, Japan, and South Korea in 2020, with more telco partners coming soon.

### **Use cases:**

- Connected Vehicles: Cellular Vehicle-to-Everything (C-V2X) is an increasingly important platform for enabling intelligent driving, real-time HD-maps, road safety, and more.
- Interactive Live Video Streams: Wavelength provides the ultra-low latency needed to live stream high-resolution video and high-fidelity audio, as well as to embed interactive experiences into live video streams.
- AR/VR: By accessing compute resources on AWS Wavelength, AR/VR applications can reduce the Motion to Photon (MTP) latencies to the <20 ms benchmark needed to offer a realistic customer experience.
- Smart Factories: Industrial automation applications use ML inference at the edge to analyze images and videos to detect quality issues on fast moving assembly lines and trigger actions to remediate the problem.
- Real-time gaming: With AWS Wavelength, the most demanding games can be made available on end devices that have limited processing power by streaming these games from game servers in Wavelength Zones.
- Healthcare: ML-assisted diagnostics: AI/ML driven video analytics and image matching solutions help doctors speed up diagnosis of observed conditions.

### **Customer Benefits:**

- Ultra-low latency for 5G: Wavelength combines AWS compute and storage services with the high bandwidth and low latency of 5G networks to enable developers to innovate and build a whole new class of applications that serve end-users with ultra-low latencies over the 5G network.
- Consistent AWS experience: Wavelength enables you to use familiar and powerful AWS tools and services to build, manage, secure, and scale your applications.
- Flexible and scalable: With Wavelength, you can start small and scale as your needs grow, without worrying about managing physical hardware or maximizing the utilization of purchased capacity.
- Global 5G network: Wavelength will be available within communications service providers' (CSP) networks such as Verizon, Vodafone, KDDI, and SK Telecom. More CSPs around the world will be available in the near future.

**Resources:** [Website](#) | [What's New post](#)

## Amazon EC2 instances powered by Habana Accelerators

### **What is it?**

Amazon EC2 instances powered by Habana accelerators are a new type of EC2 instance specifically optimized for deep learning training workloads to deliver the lowest cost-to-train machine learning models in the cloud. Habana-based instances are ideal for deep learning training workloads of applications such as natural language processing, object detection and classification, recommendation engines and autonomous vehicle perception. Habana, an Intel company, will provide the SynapseAI SDK and tools that simplify building with or migrating from current GPU-based EC2 instances to Habana-based EC2 instances. SynapseAI will be natively integrated with common ML frameworks like TensorFlow and PyTorch, and provide the ability to easily port existing training models from using GPUs to Habana accelerators. Customers will be able to launch the new EC2 instances using AWS Deep Learning AMIs, or via Amazon EKS and ECS for containerized applications, and also have the ability to use these instances via Amazon SageMaker.

### **Availability:**

Amazon EC2 Habana-based instances will be available in April 2021 in 3 sizes across in 2 regions: us-east-1 and us-west-2.

They can be purchased as On-Demand, Reserved Instances, Savings Plan or Spot Instances. Habana-based instances are also available for use with Amazon SageMaker, Amazon EKS and Amazon

### **Customer Benefits:**

- Better performance and lower cost: Habana based EC2 instances will leverage up to 8 Habana Gaudi accelerators and deliver up to 40% better price performance than current GPU-based EC2 instances for training deep learning models. Habana-based instances also provide customers the ability to scale out from a single accelerator to hundreds in significantly reducing time-to-train.

**Resources:** [Website](#)



## AWS Trainium

### **What is it?**

AWS Trainium is high performance machine learning (ML) chip, custom designed by AWS to provide the best price performance for training machine learning models in the cloud. The Trainium chip is specifically optimized for deep learning training workloads for applications including image classification, semantic search, translation, voice recognition, natural language processing and recommendation engines. AWS Trainium uses the AWS Neuron SDK which is integrated with popular ML frameworks, including TensorFlow, MXNet, and PyTorch, allowing customers to easily migrate from using GPU instances for training deep learning models with minimal code changes. AWS Trainium will be available via Amazon EC2 instances and AWS Deep Learning AMLs as well as managed services including Amazon SageMaker, Amazon ECS, EKS, and AWS Batch.

### **Availability:**

AWS Trainium will be available in all AWS commercial and GovCloud regions.

### **Use Cases:**

- Virtual Workstations
- Graphics intensive applications

### **Customer Benefits:**

- Better performance and lower cost: AWS Trainium will deliver the most cost-effective ML training in the cloud and will offer the most TFLOPS of compute power of any ML instance in the cloud. Customers will be able to achieve significantly better performance in training machine learning models and realize dramatically lower cost compared to AWS EC2 GPU instances.

**Resources:** [Website](#)

## AWS Outposts 1U and 2U Servers

### **What is it?**

AWS Outposts is a fully managed service that extends AWS infrastructure, AWS services, APIs, and tools to virtually any datacenter, co-location space, or on-premises facility for a truly consistent hybrid experience. AWS Outposts is ideal for workloads that need low latency access to on-premises applications or systems, local data processing, and to securely store sensitive customer data that needs to remain anywhere there is no AWS region, including inside company-controlled environments or countries.

AWS Outposts 1U and 2U form factors are rack-mountable servers that provide local compute and networking services to edge locations that have limited space or smaller capacity requirements. Outposts servers are ideal for customers with low-latency or local data processing needs for on-premises locations, like retail stores, branch offices, healthcare provider locations, or factory floors.

AWS will deliver Outposts servers directly to you, and you can either have your onsite personnel install them or have them installed by a preferred third-party contractor. After the Outposts servers are connected to your network, AWS will remotely provision compute and storage resources so you can start launching applications.

AWS Outposts 1U and 2U form factors will be available in 2021. To receive more information about Outposts servers, sign up [here](#).

### **Availability:**

At GA, Outposts can be shipped to and installed in the following countries  
NA – US; EMEA - All EU countries, Switzerland, and Norway; APAC - Australia, Japan, and South Korea.

### **Use Cases:**

- Low Latency: Customers with low latency requirements need to make near real time responses to end user applications or have to communicate with other on-premises systems or control on-site equipment. They have adopted the Amazon cloud for centralized operations but need to run compute, graphics, or storage intensive workloads on premises to execute localized workflows with precision and quality.
- Local Data Processing: Customers that need to access data stores that will remain on-premises for a time. Some customers run data intensive workloads that collect and process hundreds of TBs of data a day. They would like to process this data locally to respond to events in real time and to have better control on analyzing, backing up, and restoring the data.

### **Key Verticals**

- Manufacturing Automation: Use AWS services to run manufacturing process control systems such as MES and SCADA systems and applications that need to run close to factory floor equipment.
- Health Care: Apply analytics and machine learning AWS services to health management systems that need to remain on premises due to low latency processing or patient health information (PHI) requirements.
- Telecommunications: Use cloud services and tools to orchestrate, update, scale, and manage the lifecycle of Virtual Network Functions (VNFs) across cloud, on premises, and edge.
- Media & Entertainment: Access the latest GPU innovations on premises for graphics processing, audio and video rendering.
- Financial Services: Build next-generation trading and exchange platforms that serve all participants at low latency.
- Retail: Leverage AWS database, container, and analytics services to enable retail innovations such as connected store experiences, run point-of-sale systems to process in-person transactions locally.

### **Customer Benefits:**

- Run AWS Services On Premises
- Store and Process Data On Premises
- Truly Consistent Hybrid Experience
- Fully Managed Infrastructure

**Resources:** [Website](#)

## AWS Local Zones

### **What is it?**

AWS Local Zones are a type of AWS infrastructure deployment that places AWS compute, storage, database, and other select services closer to large population, industry, and IT centers. With AWS Local Zones, you can easily run latency-sensitive portions of applications local to end-users in a specific geography, delivering single-digit millisecond latency for use cases such as media & entertainment content creation, real-time gaming, live video streaming, AR/VR, and machine learning inference.

Each AWS Local Zone location is an extension of an AWS Region where you can run your latency-sensitive applications using AWS services such as Amazon Elastic Compute Cloud, Amazon Virtual Private Cloud, Amazon Elastic Block Store, Amazon Elastic Container Service, and Amazon Elastic Kubernetes Service in geographic proximity to end-users. AWS Local Zones provide a high-bandwidth, secure connection between local workloads and those running in the AWS Region, allowing you to seamlessly connect back to your other workloads running in AWS and to the full range of in-region services through the same APIs and tool sets. You can build and deploy applications using AWS services in proximity to your end-users and reduce end-to-end throughput needs for your applications. AWS Local Zones are managed and supported by AWS, bringing you all of the scalability, and security benefits of the cloud. With AWS Local Zones, you can easily build and deploy latency-sensitive applications closer to your end-users using a consistent set of AWS services and pay only for the resources that you use.

### **Availability:**

AWS Local Zones are generally available in Los Angeles, CA and in preview in Boston, Houston, and Miami. Get started with the LA Local zones [here](#). Customers can sign up for access to the preview for Local zones in Boston, Houston, and Miami [here](#).

### **Use Cases:**

- Media & Entertainment Content Creation: Run latency-sensitive workloads, such as live production, video editing, and graphics-intensive virtual workstations for artists in geographic proximity to AWS Local Zones.
- Real-time Multiplayer Gaming: Deploy latency-sensitive game servers in AWS Local Zones to run real-time multiplayer game sessions and maintain a reliable gameplay experience. With AWS Local Zones, you can deploy your game servers closer to your players than ever before for a real-time and interactive in-game experience.
- ML: Easily host and train models continuously for high performance low-latency inference at the edge. Work with your data, experiment with algorithms, and visualize your output faster in AWS Local Zones.
- Video Streaming: Live stream video content with single digit milli-second latency and high fidelity to your end users. Perform computation and analysis of your video content close to the event and seamlessly extend across Availability Zones and AWS Local Zones close to your end users for high fidelity streaming.
- AR/VR: Support AR/VR applications by performing computation and analysis close to your end users with AWS Local Zones. Effectively reduce the Motion to Photon (MTP) latencies to the <20 ms benchmark needed to offer a realistic customer experience.

### **Customer Benefits:**

- Low latency to local end-users: AWS Local Zones place compute, storage, database, and other select AWS services closer to end-users to enable you to open up new possibilities and deliver innovative applications and services that require single-digit millisecond latencies for more end users.
- Consistent AWS experience: AWS Local Zones enable you to use the same AWS infrastructure, services, APIs, and tool sets that you are familiar with in the cloud. Applications also have fast, secure, and seamless access to the full breadth of services in the parent region.

**Resources:** [Website](#)

## Amazon EC2 M5zn Instances

### **What is it?**

Amazon EC2 M5 Instances are the next generation of the Amazon EC2 General Purpose compute instances. M5 instances offer a balance of compute, memory, and networking resources for a broad range of workloads. This includes web and application servers, small and mid-sized databases, cluster computing, gaming servers, caching fleets, and app development environments. Additionally, M5d, M5dn, and M5ad instances have local storage, offering up to 3.6TB of NVMe-based SSDs.

### **Customer Benefits:**

- Flexibility and choice: Choose between a selection of 60 different instance choices with multiple processor options (Intel Xeon Scalable processor or AMD EPYC processor), storage options (EBS or NVMe SSD), network options (up to 100 Gbps), and instance sizes to optimize both cost and performance for your workload needs.
- Lower TCO: By leveraging the higher number of cores per processor, M5 instances provide customers with a higher instance density than the previous generation, which results in a reduction in per-instance TCO. With the largest instance size of 24xlarge, customers can scale-up and consolidate their workloads on a fewer number of instances, to help lower their total cost of ownership.
- Maximize resource efficiency: M5 instances are built on the AWS Nitro System, a combination of dedicated hardware and lightweight hypervisor which delivers practically all of the compute and memory resources of the host hardware to your instances for better overall performance and security.

**Resources:** [Website](#)

## Amazon EC2 R5b Instances

### **What is it?**

Amazon EC2 R5 instances are the next generation of memory optimized instances for the Amazon Elastic Compute Cloud. R5 instances are well suited for memory intensive applications such as high-performance databases, distributed web scale in-memory caches, mid-size in-memory databases, real time big data analytics, and other enterprise applications. Additionally, you can choose from a selection of instances that have options for local NVMe storage, EBS optimized storage (up to 60 Gbps), and networking (up to 100 Gbps).

### **Customer benefits:**

- Flexibility and Choice: Choose from a selection of almost 60 different instance choices with options for processors (Intel Xeon Scalable processor or AMD EPYC processor), instance storage (NVMe SSD), EBS volumes storage (up to 60 Gbps), networking (up to 100 Gbps), and instance sizes to optimize both cost and performance for your workload needs.
- More memory: R5 instances support the high memory requirements of certain applications to increase performance and reduce latency. R5 instances deliver additional memory per vCPU and the largest size, r5.24xlarge, provides 768 GiB of memory, allowing customers to scale-up and consolidate their workloads on a fewer number of instances.
- Maximize resource efficiency: R5 instances are powered by the AWS Nitro System, a combination of dedicated hardware and lightweight hypervisor, which delivers practically all of the compute and memory resources of the host hardware to your instances. This frees up additional memory for your workloads which boosts performance and lowers the \$/GiB costs.

**Resources:** [Website](#)

## AWS Categories: End User Compute

### New features in Amazon Connect

#### **What is it?**

Amazon Connect is an easy to use omnichannel cloud contact center that helps you provide superior customer service at a lower cost. Over 10 years ago, Amazon's retail business needed a contact center that would give our customers personal, dynamic, and natural experiences. We couldn't find one that met our needs, so we built it. We've now made this available for all businesses, and today thousands of companies ranging from 10 to tens of thousands of agents use Amazon Connect to serve millions of customers daily.

#### **Availability:**

To learn about Amazon Connect's availability see the [Amazon Connect Regions Table](#).

#### **Use Cases:**

- Omnichannel customer service: Amazon Connect provides a seamless omnichannel experience through a single unified contact center for voice, chat, and task management. Amazon Connect offers high-quality audio capabilities, natural interactive voice response (IVR), and interactive chatbots that operate seamlessly with web and mobile chat contact flows.
- Automated agent assist: Amazon Connect Wisdom leverages machine learning to help agents resolve customer issues faster using powerful search to quickly find relevant content, like frequently asked questions (FAQs), step-by-step instructions, and wikis, across multiple knowledge repositories, such as Salesforce, ServiceNow, and Zendesk. Amazon Connect Wisdom also uses real-time analytics to detect customer issues and provide the agent's relevant content in real time, resulting in faster issue resolution and improved customer satisfaction.

#### **Customer Benefits:**

- Make changes in minutes not months: Amazon Connect is so simple to set-up and use, you can increase your speed of innovation. With only a few clicks, you can set up an omnichannel contact center and agents can begin talking and messaging with customers right away. Making changes is easy with an intuitive UI that allows you to create voice and chat contact flows, or agent tasks without any coding, rather than custom development that can take months and cost millions of dollars.
- Save up to 80% compared to traditional contact center solutions: Amazon Connect costs less than legacy contact center systems. With Amazon Connect you pay only for what you use, plus any associated telephony and messaging charges. With Amazon Connect there are no minimum monthly fees, long-term commitments, upfront license charges, and pricing is not based on peak capacity, agent seats, or maintenance.
- Easily scale to meet unpredictable demand: Amazon Connect has the flexibility to scale your contact center up or down to any size, onboarding tens of thousands of agents in response to normal business cycles or unplanned events. As part of the AWS cloud, you can support your customers by accessing Amazon Connect from anywhere in the world on secure, reliable, and highly scalable infrastructure. All you need is a supported web browser and an internet connection to engage with customers from anywhere.

**Resources:** [Website 1](#) | [Website 2](#) | [What's new post 1](#) | [What's new post 2](#)

## AWS Categories: AI/ML

### Amazon SageMaker Pipelines

#### **What is it?**

Amazon SageMaker Pipelines is the world's first machine learning (ML) CI/CD service accessible to every developer and data scientist. SageMaker Pipelines brings CI/CD practices to ML reducing the months of coding required to manually stitch together different code packages to just a few hours.

ML workflows are typically out of reach for all but the largest enterprises, because they are hard to build. To build ML workflows, you typically need to create hundreds of code packages for data preparation, model training, and model deployment, and stitch them together so they run as a sequence of steps. The process is tedious and error prone because you need to define the order of the steps while keeping track of dependencies between each step, making it slow and difficult to scale model production.

With just a few clicks in SageMaker Pipelines, you can create an automated machine learning workflow. SageMaker Pipelines takes care of all the heavy lifting involved with managing the dependencies between each step of the workflow and orchestrates them so you can scale to thousands of models in production and expand your use of machine learning across more lines of business.

#### **Availability:**

Amazon SageMaker Pipelines is available in all AWS Regions where SageMaker is available. See details on the [AWS Regions Table](#)

#### **Use Cases:**

- Workflows are required for all machine learning applications, so Amazon SageMaker Pipelines can be used for all ML use cases.

#### **Customer Benefits:**

- Compose and manage ML workflows: Amazon SageMaker Pipelines enables you to build an automated sequence of steps to move models from concept to production. You can build every step of the ML lifecycle with an easy to use Python interface for creating pipelines to develop and deploy models, automate the process through built-in CI/CD templates, and monitor the pipelines using SageMaker Studio. You can also manage the dependencies between each step, build the correct sequence, and execute the steps automatically, reducing months of coding to a few hours.
- Scale workflows to thousands of models: Amazon SageMaker Pipelines automatically tracks code, datasets, and model versions through each step of the machine learning lifecycle. This enables you to go back and replay model generation steps, troubleshoot problems, and reliably track the lineage of models at scale, across thousands of models in production.
- Track and access model versions in a model registry: You can have hundreds of machine learning workflows in your business, each with a different version of the same model, which makes tracking model versions tedious and time-consuming. To help you track versions, Amazon SageMaker Pipelines provides a central repository of trained models called a model registry. You can access the model registry through SageMaker Studio or programmatically through the Python SDK making it easy to deploy your models you are responsible for, across development and production

**Resources:** [Website](#) | [What's new post](#)

### Amazon SageMaker Data Wrangler

#### **What is it?**

SageMaker Data Wrangler takes the tedium out of preparing training data by allowing data scientists and ML engineers to analyze and prepare data for machine learning applications from a single interface. Instead of requiring complex queries to collect data from different sources, SageMaker Data Wrangler connects to data sources with just a few clicks. Its ready-to-use visualization templates and built-in data transforms streamline the process of cleaning, verifying, and exploring data so you can produce accurate ML models without writing a single line of code. Once your training data is prepared, you can automate data preparation and, through integration with SageMaker Pipelines, add it as a step into your ML workflow.

#### **Availability:**

Amazon SageMaker Data Wrangler is available in all AWS Regions where SageMaker Studio is available. See details on the [AWS Regions Table](#)

#### **Use Cases:**

- Cleanse & Explore Your Data: Data scientists need to collect data in various formats from different sources, which requires creating complex queries and using import tools to load the data into a data preparation environment. The data selection tool in Amazon SageMaker Data Wrangler makes it easy to select and query data from one of several data sources. Once data is imported, you can view statistics and access a suite of built-in data transforms designed to reduce tedious tasks such as data cleansing and exploration.
- Visualize & Understand Your Data: SageMaker Data Wrangler provides a set of visualization templates, such as histograms, scatter plots, and box and whisker plots, so you can quickly detect outliers or extreme values within a data set without the need to write code. You can also use ML model report capabilities to gain an understanding of important columns in your data set, and proactively identify potential inconsistencies in the data preparation workflow.
- Enrich Your Data: Data scientists must use feature engineering to transform data into a format that can be used to build an accurate ML model. SageMaker Data Wrangler provides pre-configured data transformation tools so you can easily perform feature engineering. Within SageMaker Data Wrangler, you can also identify imbalance in datasets and spot potential bias in training data.

#### **Customer Benefits:**

- Operationalize ML workflows faster: With a single visual interface, you can manage all steps of the data preparation workflow and quickly operationalize it into a production setting. Without manually sifting through and translating hundreds of lines of data preparation code, you can export your data preparation workflow to a notebook or code script to easily bring the workflow into production.
- Select and Query Data with a Few Clicks: Preparing high-quality training data often requires the creation of complex queries to collect data in various formats from different sources. With SageMaker Data Wrangler's data selection tool, you can quickly select data from multiple data sources, such as Amazon Athena, Amazon Redshift, AWS Lake Formation, Amazon S3, and Amazon SageMaker Feature Store. You can write queries for data sources and import data directly into SageMaker from various file formats, such as CSV files, parquet files, and database tables.
- Easily Transform Data: Amazon SageMaker Data Wrangler offers a rich selection of pre-configured data transforms, such as convert column type, rename column, and delete column, so you can transform your data into formats that can be effectively used for ML models without writing a single line of code. You can convert a text field column into a numerical column with a single click, or author custom transforms in PySpark, SQL, and Pandas to provide flexibility across your organization.

**Resources:** [Website](#)

## Amazon DevOps Guru

### What is it?

Amazon DevOps Guru is a machine learning (ML) powered DevOps service that gives you a simpler way to measure and improve an application's operational performance and availability and reduce expensive downtime—no machine learning expertise required.

Using machine learning models informed by years of operational expertise in building, scaling, and maintaining highly available applications at Amazon.com, DevOps Guru identifies behaviors that deviate from normal operating patterns. When DevOps Guru identifies a critical issue, it automatically alerts you with a summary of related anomalies, the likely root cause, and context on when and where the issue occurred. DevOps Guru also, when possible, provides prescriptive recommendations on how to remediate the issue.

### Availability:

us-east-1 (N. Virginia), us-east-2 (Ohio), us-west-2 (Oregon), eu-west-1 (Ireland), and ap-northeast-1 (Tokyo)

### Use Cases:

- Operational audits: IT managers responsible for reliability of their applications can use DevOps Guru to get a quick summary of all the operationally significant events, identified and sorted by their severity. In the console, you can search for issues in specific applications, identify trends, and decide where developers should spend their time and resources.
- Proactive resource exhaustion planning: Build predictive alarming for exhaustible resources such as memory, CPU, and disk space with DevOps Guru. It forecasts when resource utilization will exceed the provisioned capacity, and informs you by creating a notification in the dashboard, helping you avoid an impending outage.
- Predictive maintenance: Site reliability engineers can use DevOps Guru insights to prevent incidents before they occur. DevOps Guru flags medium- and low severity findings that might not be critical but, if left alone, worsen over time and affect the availability of your application. This helps you plan, prioritize, and avoid unforeseen downtime.

### Customer Benefits:

- Automatically detect operational issues: DevOps Guru continuously analyzes streams of disparate data and watches thousands of metrics to establish normal bounds for application behavior. It discovers and classifies resources like application metrics, logs, events, and traces in your account, automatically identifies deviations from normal activity, and surfaces high severity issues to quickly alert you of downtime.
- Resolve issues quickly with ML-powered insights: DevOps Guru helps to reduce your issue resolution time and assists in root cause identification by correlating multiple metrics and events anomalies. When an operational issue occurs, it generates insights with a summary of related anomalies, contextual information about the issue, and when possible actionable recommendations for remediation.
- Easily scale and maintain availability: As you migrate and adopt new AWS services, DevOps Guru automatically adapts to changing behavior and evolving system architecture. With DevOps Guru, you save time and effort otherwise spent on monitoring applications and manually updating static rules and alarms. In just a few clicks, DevOps Guru starts analyzing your AWS application activity.

Resources: [Website](#)

## Amazon SageMaker Feature Store

### What is it?

Amazon SageMaker Feature Store is a feature store for machine learning (ML) serving features in both real-time and in batch. Using SageMaker Feature Store, you can store, discover, and share features so you don't need to recreate the same features for different ML applications saving months of development effort.

Your ML models use inputs called “features” to make predictions. For example, lot size could be a feature in a model that predicts housing prices. Features need to be available in large batches for training and also in real-time to make fast predictions. For example, in a housing price predictor model, users expect an immediate update as new listings become available. The quality of your predictions is dependent on keeping features consistent, but requires months of coding and deep expertise to keep features consistent across training and development environments.

Amazon SageMaker Feature Store provides a consistent set of features so you get the exact same features for training and inference, and you can easily share features across your organization which improves collaboration and eliminates rework.

### Availability:

Amazon SageMaker Feature Store is available in all AWS Regions where SageMaker is available. See details on the [AWS Regions Table](#)

### Use Cases:

- Model features are required for all machine learning applications, so Amazon SageMaker Feature Store can be used for all ML use cases.

### Customer Benefits:

- Develop models faster: Amazon SageMaker Feature Store provides a central repository of features so they can be used for many applications across your organization. By discovering and reusing features that are already deployed, you spend less time on data preparation and feature computation and more time on innovation.
- Increase model accuracy: Accuracy of ML models can be increased by looking at model metadata such as the dataset used, model attributes, and hyperparameters. In addition to the actual features, Amazon SageMaker Feature Store stores metadata for each feature so you can understand its impact while building and training models.
- Track model lineage for compliance: With Amazon SageMaker Feature Store, you can track lineage of the feature generation process. The feature store maintains the data lineage for every feature providing the required information to understand how a feature was generated. This helps with addressing compliance requirements in regulated industries.

Resources: [Website](#) | [What's new post](#)

## Distributed training on Amazon SageMaker

### **What is it?**

Training models on large datasets can take hours, slowing down your ability to deploy your latest innovations into production. You can split large training datasets across multiple GPUs (data parallelism), but splitting data can take weeks of experimentation to do efficiently. Also, more advanced ML use cases may require large models. For example, models can have billions of parameters and be petabytes in size. As a result, the models are often too big to fit on a single GPU. You can split large models across multiple GPUs (model parallelism), but finding the best way to split up the model and adjust training code can take weeks and delay your time to market.

For customers using GPUs, Amazon SageMaker makes it faster to perform data parallelism and model parallelism. With minimal code changes, SageMaker helps split your data across multiple GPUs in a way that achieves near-linear scaling efficiency. SageMaker also helps split your model across multiple GPUs by automatically profiling and partitioning your model with fewer than 10 lines of code in your TensorFlow or PyTorch training script

### **Availability:**

Distributed training is available in all AWS Regions where SageMaker is available. See details on the [AWS Regions Table](#).

### **Use Cases:**

- **Object Detection:** For object detection, model training time is often a bottleneck, slowing data science teams down as they wait several days or weeks for results. SageMaker's data parallelism library can help data science teams efficiently split training data and quickly scale to hundreds or even thousands of GPUs, reducing training time from days to minutes.
- **Natural Language Processing:** In natural language understanding, data scientists often improve model accuracy by increasing the number of layers and the size of the neural network which creates models with billions of parameters such as GPT-2, GPT-3, T5, and Megatron. Splitting model layers and operations across GPUs can take weeks, but the model parallelism library in SageMaker automatically analyzes and splits the model efficiently to enable data science teams to start training large models within minutes.
- **Computer Vision:** In computer vision, hardware constraints often force data scientists to pick batch sizes or input sizes that are smaller than they would prefer. For example, bigger inputs may improve model accuracy but may cause out-of-memory errors and poor performance with smaller batch sizes. SageMaker offers the flexibility to easily train models efficiently with lower batch sizes or train with bigger inputs by leveraging managed distributed training.

### **Customer Benefits:**

- **Reduce training time:** Amazon SageMaker reduces training time by 25% or more by making it easy to split training data across GPUs. For example, training Mask R-CNN on p3dn.24xlarge runs 25% faster on SageMaker compared to Horovod. The reduction in training time is possible because SageMaker manages the GPUs running in parallel to achieve optimal synchronization.
- **Optimized for AWS:** Using open source tools for distributed training that are not optimized for AWS results in poor scaling efficiency. SageMaker's data parallelism library provides communication algorithms that are designed to fully utilize the AWS network and infrastructure to achieve near-linear scaling efficiency. For example, BERT on p3dn.24xlarge instances achieves a scaling efficiency of 88% using SageMaker, or a 27% improvement over the same model using Horovod.
- **Support for popular ML framework APIs:** SageMaker enables you to reuse existing APIs for training without writing any custom SageMaker training code. SageMaker supports DistributedDataParallel (DDP) for PyTorch and Horovod for TensorFlow.

**Resources:** [Website](#) | [What's new post](#)

## Amazon CodeGuru updates

### **What is it?**

Amazon CodeGuru is a developer tool that provides intelligent recommendations to improve your code quality and identify an application's most expensive lines of code. Integrate CodeGuru into your existing software development workflow to automate code reviews during application development and continuously monitor application's performance in production and provide recommendations and visual clues on how to improve code quality, application performance, and reduce overall cost.

### **Use Cases:**

- **Improve application performance:** Amazon CodeGuru Profiler is always searching for application performance optimizations, identifying your most "expensive" lines of code and recommending ways to fix them to reduce CPU utilization, cut compute costs, and improve application performance.
- **Detect deviation from AWS API and SDK best practices:** Amazon CodeGuru Reviewer is trained using rule mining and supervised machine learning models that use a combination of logistic regression and neural networks to look at code changes intended to improve the quality of the code, and cross-references them against documentation data.

### **Customer Benefits:**

- **Catch code problems before they hit production:** For code reviews, developers commit their code to GitHub, GitHub Enterprise, Bitbucket Cloud, and AWS CodeCommit and add CodeGuru Reviewer as one of the code reviewers, with no other changes to the normal development process. CodeGuru Reviewer analyzes existing code bases in the repository, identifies hard to find bugs and critical issues with high accuracy, provides intelligent suggestions on how to remediate them, and creates a baseline for successive code reviews.
- **Fix Security Vulnerabilities:** CodeGuru Reviewer Security Detector leverages machine learning and AWS's years of security experience to improve your code security. It ensures that your code follows best practices for KMS, EC2 APIs and common Java crypto and TLS/SSL libraries. When the security detector discovers an issue, a recommendation for remediation is provided along with an explanation for why the code improvement is suggested, thereby enabling Security Engineers to focus on architectural and application-specific security best-practices.
- **Continuous monitoring to proactively improve code quality:** For every pull request initiated, CodeGuru Reviewer automatically analyzes the incremental code changes and posts recommendations directly on the pull request. Additionally, it supports full repository or code base scan for periodic code maintainability, and code due diligence initiatives to ensure that your code quality is consistent.

**Resources:** [Website](#) | [What's new post](#)



## AWS for Industrial

### **What is it?**

'AWS for Industrial' is a new go-to-market umbrella initiative comprised of new and existing services and solutions from AWS and our strategic partners built and packaged specifically for developers, engineers and operators at industrial sites. AWS solutions can include reference architectures, AWS CloudFormation templates, deployment guides, and Quick Starts to help customers speed deployment of their own applications. Amazon Panorama Appliance, Amazon Panorama Device SDK, Amazon Monitron, Amazon Lookout for Vision, and Amazon Lookout for Equipment join an existing suite of services including AWS IoT SiteWise, the AWS Snow Family, AWS Outposts, and Amazon Timestream to make it easy for customers to digitize, monitor and optimize their industrial operations.

Increasingly, industrial customers across asset intensive industries such as manufacturing, energy, mining, transportation, and agriculture are leveraging new digital technologies to drive faster and better decisions. The 'AWS for Industrial' initiative simplifies the process of building and deploying innovative Internet of Things (IoT), Artificial Intelligence (AI), Machine Learning (ML), analytics and edge solutions to achieve step change improvements in operational efficiency, quality, and agility. Industrial customers seek cloud and edge solutions to their business problems rather than a collection of individual services, and with the additional product truth from our newly launched industrial services, the 'AWS for Industrial' initiative unites AWS offerings under a single go-to-market motion to meet the market demand across the multiple industrial customer sub-segments.

### **Availability:**

For availability of AWS services relevant for industrial customers such as Amazon Panorama (Appliance and SDK), Amazon Monitron, Amazon Lookout for Vision, Amazon Lookout for Equipment, AWS IoT SiteWise, the AWS Snow Family (Snowball, Snowcone), AWS Outposts, and Amazon Timestream, see details on the [AWS Regions Table](#).

### **Use Cases:**

- **Engineering & Design:** Modern product design requires sophisticated data storage, compute, and collaboration. With AWS and our extensive network of industrial partners, you can transform your engineering, design, and simulation efforts with the most comprehensive set of cloud solutions available today, while leveraging the highest level of security to protect your intellectual property
- **Production & Asset Performance Management:** Digital transformation enables industrial customers to maximize productivity and asset availability, and lower costs. To do this, industrial customers must liberate data from their legacy operational technology systems and leverage new tools in the cloud. With AWS and our network of leading industrial partners, you can transform your industrial operations with the most comprehensive and advanced set of cloud solutions available today, while taking advantage of security designed for the most sensitive industries.
- **Supply Chain Management:** As modern supply chains continue to expand, they also are becoming more complex and disparate — they require a unified view of data, while still being able to independently verify their transactions, such as production and transport updates. Solutions built using AWS services, such as Amazon Managed Blockchain, can provide the end-to-end visibility today's supply chains need to track and trace their entire production process with unprecedented efficiency.
- **Worker Safety & Productivity:** Industrial companies need to empower their teams with the technology needed to keep the organization healthy, safe, and productive. With AWS and our extensive network of industrial partners, you can keep your staff safe by monitoring employee health to meet pandemic guidelines, reduce errors with digital job aids, automate manual workflows, enhance productivity, and reduce manual processing and documentation.
- **Quality Management:** Industrial customers are increasingly focused on improving quality to maintain brand reputation, satisfy their customers, and manage costs. AWS and our extensive network of partners can help you customize and automate quality inspection with fast, fully scalable computer vision solutions to improve accuracy, reduce cost, and maintain the quality bar that your customers expect.

**Resources:** [Website](#) | [Industrial Blog](#)

## Amazon Lookout for Vision

### **What is it?**

Amazon Lookout for Vision enables you to find visual defects in industrial products, accurately and at scale. It uses computer vision to identify missing components in an industrial product, damage to vehicles or structures, irregularities in production lines, and even miniscule defects in silicon wafers — or any other physical item where quality is important such as a missing capacitor on printed circuit boards.

Visual inspection of industrial processes typically involves manual inspection, which can be tedious and inconsistent. For example, an automobile door assembly line requires quality inspectors to identify scratches or discoloration on newly painted door panels to prevent shipment of defective products. Computer vision brings speed, consistency, and accuracy, but implementation can be complex and require teams of data scientists to build, deploy, and manage the machine learning models needed to identify defects.

With Amazon Lookout for Vision you can automate real-time visual inspection with computer vision for processes like quality control and defect assessment - with no machine learning expertise required. You can get started in minutes by providing as few as 30 images for the process you want to visually inspect, such as machine parts or manufactured products. Amazon Lookout for Vision then analyses images from your cameras that monitor the process line, in real-time, to quickly and accurately identify anomalies like dents, cracks and scratches. It spots differences between the baseline images provided and the image feed from the process line, and reports the presence of product defects. Reports are available in an easy to use dashboard in the AWS management console, so that you can take action quickly and reduce further defects – saving you time and money.

### **Availability:**

us-east-2, us-west-2, us-east-1, eu-west-1, eu-central-1, ap-northeast-1, ap-northeast-2

### **Use Cases:**

- **Detect part damage:** With Amazon Lookout for Vision, customers will detect damage to a product's surface quality, color, and shape. For example, you can detect dents, scratches, and poorly welded surfaces on an automotive door panel across the fabrication and assembly processes.
- **Identify missing components:** Amazon Lookout for Vision will identify missing assembly components related to the absence, presence or placement and positioning of objects.
- **Uncover process issues:** Lookout for Vision can detect a defect that has a repeating pattern, which indicates a potential process issue. For example, you can detect repeated scruff marks on a nylon bobbin, which in combination with machine tag information can be used to identify an underlying process issue.

### **Customer Benefits:**

- **Quickly and easily improve processes:** Amazon Lookout for Vision gives you a fast and easy way to implement computer vision-based inspection in industrial processes, at scale. Provide as few as 30 baseline good images and Lookout for Vision will automatically build a model for you in minutes. You can then process images from IP cameras in batch or in real-time to quickly and accurately identify anomalies like dents, cracks and scratches.
- **Increase production quality, fast:** With Lookout for Vision you can reduce defects in production processes, real-time. It identifies and reports visual anomalies in an easy to use dashboard so you can take action quickly to stop more defects from occurring – increasing production quality and reducing costs.
- **Reduce operational costs:** Lookout for Vision reports trends in your visual inspection data, such as identifying processes with the highest defect rate, or flagging recent variations in defects. This gives you the ability to determine whether to schedule maintenance on the process line or reroute production to another machine before costly, unplanned downtime occurs.

**Resources:** [Website](#) | [What's new post](#)

## Amazon Monitron

### **What is it?**

Amazon Monitron is an end-to-end system that detects abnormal machine behavior, so you can enable predictive maintenance and reduce lost productivity from unplanned machine downtime. Reliability managers can quickly deploy Monitron to easily track machine health for industrial equipment such as bearings, motors, gearboxes, and pumps without any development work or specialized training.

Amazon Monitron enables customers to start proactively monitoring their equipment in just a few hours, without any software development or specialized training. Monitron is a secure end-to-end system that includes sensors to capture vibration and temperature data, gateways to automatically transfer data to the AWS Cloud, ML-based software that analyzes the data for abnormal machine patterns, and a companion mobile app for simple system setup and immediate notifications of abnormal machine behavior.

### **Availability:**

Amazon Monitron is available in us-east-1 and will be available in additional regions soon. You can buy Amazon Monitron Starter Kits, Sensors and Gateways on amazon.com and Amazon Business and ship them to any location in the US, UK and EU.

### **Use Cases:**

- **Enable predictive maintenance:** With Amazon Monitron, you can enable predictive maintenance for your equipment. Predictive maintenance is the activity of monitoring and evaluating the condition of equipment, detecting developing faults and planning specific corrective maintenance activities at a time when it is most cost effective. Monitron detects developing faults and notifies the technicians about it, allowing them to plan and execute corrective measures at an optimal time.
- **Monitor remotely:** With Monitron, you can remotely monitor equipment at your site without having to take readings manually. Amazon Monitron Sensor wakes up periodically and captures readings. When Amazon Monitron notifies you of a developing fault, you can schedule a time to investigate and execute a repair before secondary damage occurs, saving you time and money.
- **Track the condition of inaccessible equipment:** Today's safety standards require fixed guards to be mounted on rotating equipment to protect people from injury. Often fixed guards restrict maintenance technician's access to equipment to perform condition monitoring checks. Monitron Sensors are wireless and small, so the condition of components in restricted areas can now be monitored safely.

### **Customer Benefits:**

- **Easy to install, and easy to use:** Monitron works right out of the box. Monitron Sensors and Gateways are easy to install and use so technicians can start monitoring equipment in less than an hour.
- **Reduce unplanned downtime:** Monitron detects abnormal machine conditions proactively with ML technology and industry recognized vibration ISO standards, and thereby helps reduce costly and unplanned downtime.
- **Cost effective:** Monitron offers a cost-effective way to start monitoring your equipment, with low upfront hardware investment and pay-as-you-go software.
- **Continuously improving:** Reliability managers and technicians can add feedback directly in the Monitron mobile app and benefit from continuously improving ML model performance. Monitron Sensors and Gateways are remotely updated over the air (OTA), providing system improvements over the life of your installation.

**Resources:** [Website](#) | [What's new post](#)

## Amazon Lookout for Equipment

### **What is it?**

Amazon Lookout for Equipment is an industrial equipment anomaly detection service that uses your machine data to detect abnormal equipment behavior automatically, so you can avoid unplanned downtime and optimize performance. Further, Amazon Lookout for Equipment leverages the best machine learning (ML) model for the job by searching 28K algorithms and parameters to define the best fit analytics – making ML accessible and scaleable to industrial customers across all industrial machinery.

Lookout for Equipment enables operators to build custom ML models using their own historical, time-series machine data (temperature, vibration, rotation, pitch, rpms, flow rates, and more) along with historical maintenance events automatically. This service requires little or no ML expertise, which makes accessing and scaling ML across industrial assets assessable to industrial facilities and across industrial fleets. With Lookout for Equipment, little or no ML expertise is required. You pay only for what you use, there are no minimum fees, and no upfront commitments.

### **Availability:**

US West, eu-west-1, ap-northeast-2

### **Use Cases:**

- **Scaling Anomaly detection:** Amazon Lookout for Equipment automatically searches through up to 28,000 parameters to derive the optimal normal multi-variate relationships between each sensor within hours versus traditionally months of development. The result is being able to develop custom ML model specific to each equipment's unique operating conditions effectively across 100s, if not 1000s of equipment.
- **Enable advanced ML analytics in the hands of operators:** Until now, machine learning has been exclusively leveraged by data scientists. With Amazon Lookout for Equipment, an operator or engineer can enable machine learning insights for abnormal equipment detection for uses such as predictive maintenance. Amazon Lookout for Equipment provides a user friendly and workflow agnostic approach to leveraging ML so that an operator only needs to decide on the right inputs to use and use the right labeled examples of failure to generate insights in hours.
- **Integrate ML inference into your monitoring software:** Industrial companies are constantly working to avoid unplanned downtime, improve operational efficiency, and get actionable real-time alerts. With Amazon Lookout for Equipment, you can run ML inference on real-time data to detect abnormal equipment behavior. The results can be integrated into your existing monitoring software or you can leverage AWS IoT SiteWise to get alerts and visualize real-time output.

### **Customer Benefits:**

- **Automate the iterative steps of machine learning to enable access and scaleability:** Amazon Lookout for Equipment provides a user friendly UI to put advanced ML analytics in the hands of operators. This service also automates time and resource intensive iterative machine learning steps to enable scale across equipment, assets and applications.
- **Identify subtle issues earlier:** Amazon Lookout for Equipment automatically identifies equipment anomalies by learning the healthy state and operational relationships between sensors on each asset. Lookout for Equipment can then pinpoint subtle changes in patterns and the highest contributing factor which enables operations to respond quickly with greater confidence.
- **Best fit model for the application:** Amazon Lookout for Equipment not only automates machine learning steps but searches through thousands of machine data feature combinations to select the best ML model for the application.

**Resources:** [Website](#) | [What's new post](#)

## AWS Panorama

### **What is it?**

AWS Panorama is a managed service for building, deploying, and managing computer vision applications (Panorama applications) that can be deployed to edge devices (Panorama devices). The first Panorama device will be the AWS Panorama Appliance, a computer vision appliance, available in April 2021. The AWS Panorama Appliance Developer Kit will be available in limited quantity at re:Invent 2020 so application developers can build their apps ahead of AWS Panorama Appliance availability. The Panorama Appliance Developer Kit provides extra on-device logging and debugging to make it easier for developers to test and debug their computer vision applications.

AWS Panorama is a machine learning appliance and SDK, which allow you to bring computer vision (CV) to your on-premises cameras or on new Panorama enabled devices. This gives you the ability to make real-time decisions to improve your operations. With Panorama, you can use live video feeds to automate monitoring or visual inspection tasks, like evaluating manufacturing quality, finding bottlenecks in industrial processes, and assessing worker safety within your facilities.

### **Availability:**

Panorama is available in the us-east-1 (N. Virginia) and us-west-2 (Oregon) regions

### **Use Cases:**

- **Reimagined retail insights:** In retail environments, Panorama enables you to run multiple, simultaneous CV models using your existing onsite cameras. Applications for retail analytics, such as for people counting, heat mapping, and queue management, can help you get started quickly. By using the streamlined management capabilities that Panorama offers, you can easily scale your CV applications to include multiple process locations or stores.
- **Workplace safety and social distance monitoring:** Panorama allows you to monitor workplace safety, get notified immediately about any potential issues or unsafe situations, and take corrective action.
- **Supply chain efficiency:** In manufacturing and assembly environments, Panorama can help to provide critical input to supply chain operations by tracking throughput, recognizing bar codes or labels of parts or completed products, or monitoring individual workstations to measure productivity.
- **Manufacturing quality control:** Panorama can help improve product quality and decrease costs from manufacturing defects, by processing CV at the edge and notifying you immediately of any anomalies in production so you can take quick corrective action.

### **Customer Benefits:**

- **Real-time visibility for fast decision making:** You can analyze video feeds within milliseconds, enabling real-time visibility into operations and fast decision making with Panorama enabled devices or the Panorama Appliance.
- **Easily add to your existing infrastructure:** Plug AWS Panorama Appliance in, connect it to your network, and the device automatically identifies camera streams and starts interacting with your existing fleet of IP cameras. The Panorama Appliance also seamlessly works alongside your existing video management systems (VMS).
- **Enable CV in limited connectivity environments:** AWS Panorama devices run CV models directly on the device (at the edge), meaning you can get access to real-time predictions in remote and isolated places where cloud connectivity can be slow, expensive, or completely non-existent.

**Resources:** [Website](#) | [What's new post](#)

## Amazon HealthLake

### **What is it?**

Amazon HealthLake is a HIPAA-eligible service that enables healthcare providers, health insurance companies, and pharmaceutical companies to store, transform, query, and analyze health data in a consistent fashion in the AWS Cloud at petabyte scale. Health data is frequently incomplete and inconsistent, and is often unstructured, with information contained in clinical notes, laboratory reports, insurance claims, medical images, recorded conversations, and time series data.

Amazon HealthLake removes the heavy lifting of organizing, indexing, and structuring patient information, to provide a complete view of each patient's medical history in a secure, compliant, and auditable manner. It transforms unstructured data using specialized machine learning models, like natural language processing, to automatically understand and extract meaningful medical information from the data and provides powerful query and search capabilities. Organizations can use advanced analytics and ML models, such as Amazon QuickSight and Amazon SageMaker to analyze and understand relationships, identify trends, and make predictions from the newly normalized and structured data.

### **Availability:**

us-east-1 (N. Virginia)

### **Use Cases:**

- **Population health management:** Amazon HealthLake helps healthcare organizations analyze population health trends, outcomes, and costs. This gives organizations the tools to identify the most appropriate intervention for a patient population and choose better care management options with ready-to-use Jupyter notebooks with pre-trained ML algorithms.
- **Improving quality of care:** Amazon HealthLake aids hospitals, health insurance companies, and life sciences organizations to close gaps in care, improve quality, and reduce cost by bringing together a complete view of a patient's medical history. HealthLake provides a significant leap forward for these organizations by predicting disease onset and identifying patients requiring additional care.
- **Streamlined data operations:** Medical data, which takes many forms, from prescriptions to insurance claims to imaging, is difficult to ingest and make sense of. Amazon HealthLake removes the heavy lifting and reduces operational overhead using document classification, and natural language understanding such as text extraction, speech to text technologies, and medical comprehension capabilities to streamline data operations.

### **Customer Benefits:**

- **Easily transform health data:** Amazon HealthLake can automatically understand and extract meaningful medical information from raw, disparate data, such as prescriptions, procedures, and diagnoses - revolutionizing a process that was traditionally manual
- **Identify trends and make predictions:** Healthcare organizations can store, transform, and prepare their patient health information to unlock novel insights. This gives healthcare organizations new tools to improve care and intervene more quickly to save lives and reduce costs
- **Support interoperable standards:** Interoperability ensures that health data is shared in a consistent, compatible format across multiple applications. Amazon HealthLake creates a complete view of each patient's medical history, and structures it in the Fast Healthcare Interoperability Resources (FHIR) standard format to facilitate the exchange of information.

**Resources:** [Website](#) | [What's new post](#)

## Amazon SageMaker Edge Manager

### **What is it?**

Amazon SageMaker Edge Manager provides model management for edge devices so you can optimize, secure, monitor, and maintain machine learning models on fleets of edge devices such as smart cameras, robots, personal computers, and mobile devices.

Amazon SageMaker Edge Manager makes it easy to manage ML models on edge devices. SageMaker Edge Manager uses SageMaker Neo to compile and optimize models for edge devices. Then, SageMaker Edge Manager packages the model with its runtime and credentials for deployment. You have the flexibility to use AWS IoT Greengrass or your own on-device deployment mechanism to deploy models to the edge. Once a model is deployed, SageMaker Edge Manager manages each model on each device by collecting metrics, sampling input/output data, and sending the data securely to your Amazon S3 buckets for monitoring, labeling, and retraining so you can continuously improve model quality. And, because SageMaker Edge Manager enables you to manage models separately from the rest of the application, you can update the model and the application independently reducing costly downtime and service disruptions.

### **Availability:**

us-east-1, us-west-2, us-east-2, eu-west-1, eu-central-1, and ap-northeast-1, see details on the [AWS Regions Table](#).

### **Use Cases:**

- **Driver-assist dashcam:** Connected vehicle solution providers use Amazon SageMaker Edge Manager to operate ML models to driver dashcams. The models help detect pedestrians and road hazards to improve the safety of both drivers and pedestrians.
- **Theft detection:** Amazon SageMaker Edge Manager is used by retailers to identify theft during checkout. Image detection models run on smart cameras at checkout counters and send alerts when the merchandise does not match the scanned barcode.
- **Predictive maintenance:** Amazon SageMaker Edge Manager runs predictive maintenance models on gateway servers at manufacturing facilities in order to predict which machines are at high risk of failure. When possible failure is detected, alerts are sent to staff so they can remediate the issue

### **Customer Benefits:**

- **Run ML models up to 28x faster:** Amazon SageMaker Edge Manager automatically optimizes ML models for deployment on a wide variety of edge devices, including CPUs, GPUs, and embedded ML accelerators. SageMaker Edge Manager compiles your trained model into an executable that discovers and applies specific performance optimizations that will make your model run most efficiently on the target hardware platform.
- **Improve model quality:** Amazon SageMaker Edge Manager continuously monitors each model instance across your device fleet to detect when model quality declines. Declines in model quality can be caused differences in the data used to make predictions compared to the data used to train the model or by changes in the real world. For example, changing economic conditions could drive new interest rates affecting home purchasing predictions.
- **Easily integrate with device applications:** Amazon SageMaker Edge Manager supports gRPC, an open source remote procedure call, which allows you to integrate SageMaker Edge Manager into your existing edge applications through common programming languages, such as Android Java, C++, C#, and Python.

**Resources:** [External Website](#) | [What's new post](#)

## Amazon Lookout for Metrics

### **What is it?**

Amazon Lookout for Metrics uses machine learning (ML) to detect anomalies in virtually any time series-driven business and operational metrics—such as revenue performance, purchase transactions, and customer acquisition and retention rates—with no ML experience required.

Amazon Lookout for Metrics automatically connects to popular databases and SaaS applications to continuously monitor metrics that you care about, and sends you alerts as soon as anomalies are detected. When it finds anomalies, Amazon Lookout for Metrics immediately sends you alerts, groups anomalies that might be related to the same event, and helps you identify the root cause so that you can fix an issue or quickly react to opportunities. It also ranks anomalies in the order of severity, so that you can focus on what matters the most, and lets you to tune the results by providing feedback based on your knowledge about your business, and uses your feedback to improve the accuracy of results over time.

### **Availability:**

Amazon Lookout for Metrics is a gated preview and will available in 5 regions at launch: us-east-1, us-east-2, us-west-2, ap-northeast-1, and eu-west-1.

### **Use Cases:**

By metric category

- **Customer Engagement:** Ensure a seamless customer experience by detecting sudden changes in metrics across the customer journey such as during enrollment, login, and engagement.
- **Operational:** Proactively monitor metrics like latency, CPU utilization, and error rates to mitigate service interruptions.
- **Sales:** Quickly track changes in win rate, pipeline coverage, and average deal size to evaluate business growth opportunities.
- **Marketing:** With actionable marketing analytics, quickly detect how your campaigns, partners, and ad platform metrics affect your overall traffic volume, revenue, churn, and conversion.

By Industry

- **Retail:** Gain insights into category-level revenue and margin by monitoring inventory levels, item pricing, promotional traffic, and conversion.
- **Gaming:** Boost player engagement and optimize gaming revenue by monitoring changes in new users, active users, level-completion rate, in-app purchases, and retention rate.
- **Ad Tech:** Optimize ad spend by detecting spikes or dips in metrics like reach, impressions, views, and ad clicks.
- **Telecom:** Reduce customer frustration by detecting unexpected changes in network performance metrics, like tracking traffic channel (TCH), evolved packet core (EPC), and Erlang.

### **Customer Benefits:**

- **Highly accurate anomaly detection:** Detects anomalies in metrics with high accuracy using ML technology and over 20 years of experience at Amazon.
- **Actionable results at scale:** Helps you identify the root cause by grouping related anomalies together and ranking them in the order of severity, so that you can diagnose issues or identify opportunities quickly.
- **Integration with AWS databases and SaaS applications:** Connects with commonly used AWS databases and SaaS applications. Sends alerts through multiple channels, and automatically triggers pre-defined custom actions, such as filing trouble tickets when anomalies are detected.
- **Tunable results:** Uses your feedback on detected anomalies to automatically tune the results and improve accuracy over time.

**Resources:** [External Website](#) | [What's new post](#)

## Amazon SageMaker Debugger

### What is it?

With Amazon SageMaker Debugger you can detect bottlenecks and training problems in real-time so you can correct problems before the model is deployed to production. SageMaker Debugger collects, analyzes, and generates alerts, reports, and visualizations providing insights for you to act and train models faster.

Amazon SageMaker Debugger captures model metrics and monitors system resources and profiles ML framework resources during ML model training, without requiring additional code. All metrics are captured in real-time so you can correct issues during training, which speeds up training time and enables you to get higher quality models to production much faster.

### Availability:

Amazon SageMaker Debugger is available in all AWS Regions where SageMaker is available. See details on the [AWS Regions Table](#)

### Use Cases:

- Consolidate multiple tools: Amazon SageMaker Debugger provides a single, unified tool that data scientists can use to collect training data across different parameters in real-time, gain visibility into the effects of different parameter values, and receive alerts for the appropriate action to be taken.
- Visualize training data: Amazon SageMaker Debugger renders visualizations of training data and helps you visualize tensors in your network to determine their state at each point in the training process. This is useful in scenarios such as determining stale or saturated data or mapping effects of specific parameters on the model.
- Explain ML models better: Amazon SageMaker Debugger saves the state of ML models at periodic intervals and enables you to explain the model predictions in real-time during training or offline after the training is completed. This helps you to interpret better and explain the predictions the trained model makes. With SageMaker Debugger, you can explain the internal mechanics of an ML model and eliminate the black box aspects of predictions, leading to better business outcomes.

### Customer Benefits:

- Generate ML models faster: Amazon SageMaker Debugger helps generate ML models faster by providing you with full visibility and control during the training process, to quickly troubleshoot and take corrective measures. With SageMaker Debugger, you can take immediate action if any anomalies such as overfitting overtraining models are detected, resulting in faster model generation for deployment. With the insights provided by SageMaker Debugger, you can reduce the time required to troubleshoot models from weeks to days, with no additional code.
- Optimize system resources with no additional code: Using the profiling capability of Amazon SageMaker Debugger, you can automatically monitor system resources such as CPU, GPU, network, and memory to give you a complete view of current resource utilization. Additionally, the profiler suggests recommendations to reallocate resources if there are being underutilized or if there are bottlenecks, helping you to optimize resources effectively. You can profile your training job on the SageMaker Studio visual interface at any time.
- Make ML training transparent: Amazon SageMaker Debugger makes the training process transparent so you can explain if the ML model is progressively learning correct parameter values such as gradients to yield the desired results. Insights into the training data are provided by automatically capturing real-time metrics such as weights and tensors during training to help improve model accuracy. Debugging is made easy with a visual interface to analyze the debug data and take corrective actions specific to the models that are being trained.

Resources: [Website](#) | [What's new post](#) | [Detailed blog post](#)

## Amazon SageMaker Clarify

### What is it?

Amazon SageMaker Clarify provides data to help you make your machine learning (ML) models fair and transparent by detecting bias so you can take corrective action.

Amazon SageMaker Clarify detects bias across the entire ML workflow—including during data preparation, after training, and ongoing over time—and also includes tools to explain ML models and their predictions. You can skip the tedious processes of implementing third-party tools and improve fairness and transparency to improve trust with your customers, all within SageMaker. SageMaker Clarify also provides transparency through model explainability reports that you can share with customers, business leaders, or auditors, so all stakeholders can see how and why models make predictions.

### Availability:

Amazon SageMaker Clarify is available in all AWS Regions where SageMaker is available. See details on the [AWS Regions Table](#)

### Use Cases:

- Regulatory Compliance: Regulations such as the Equal Credit Opportunity Act (ECOA) or Fairness in Housing Act often require companies to remain unbiased and to be able to explain financial decisions. Amazon SageMaker can help flag any potential bias present in the initial data or in the financial model after training, and can also help explain which data caused an ML model to make a particular financial decision.
- Internal Reporting & Compliance: Data science teams are often required to justify or explain ML models to internal stakeholders, such as internal auditors or executives who would like more transparency. Amazon SageMaker can provide data science teams with a graph of feature importance when requested, and can quantify potential bias in an ML model or its data to provide the information needed to support internal presentations or mandates.
- Operational Excellence: Machine learning is often applied in operational scenarios, such as predictive maintenance or supply chain operations. However, data science teams may want insight into why a given machine needs to be repaired, or why an inventory model is recommending surplus stock in a particular location. Amazon SageMaker can detail the causes for individual predictions, helping data science teams to work with other internal teams to improve operations.

### Customer Benefits:

- Find imbalances in data: Amazon SageMaker Clarify is integrated with Amazon SageMaker Data Wrangler, making it simple to identify bias during data preparation. You specify attributes of interest, such as gender or age, and Amazon SageMaker Clarify runs a set of algorithms to detect the presence of bias in those attributes. After the algorithm runs, SageMaker Clarify provides a visual report with a description of the sources and severity of possible bias so that you can take steps to mitigate.
- Check your trained model for bias: Ensure that predictions are fair by checking trained models for imbalances, such as more frequent denial of services to one protected class than another. Amazon SageMaker Clarify is integrated with SageMaker Experiments so that after a model has been trained, you can identify attributes you would like to check for bias, such as income or marital status.
- Monitor your model for bias: While your initial data or model may not have been biased, changes in the world may cause bias to develop over time. For example, a substantial change in mortgage rates could cause a home loan application model to become biased. Amazon SageMaker Clarify is integrated with SageMaker Model Monitor, enabling you to configure alerting systems like Amazon CloudWatch to notify you if your model begins to develop bias.

Resources: [Website](#)



## Amazon SageMaker JumpStart

### **What is it?**

Amazon SageMaker JumpStart helps you quickly and easily get started with machine learning. To make it easier to get started, SageMaker JumpStart provides a set of solutions for the most common use cases that can be deployed readily with just a few clicks. The solutions are fully customizable and showcase the use of AWS CloudFormation templates and reference architectures so you can accelerate your ML journey. SageMaker JumpStart also supports one-click deployment and fine-tuning of more than 150 popular open source models for modalities such as natural language processing, object detection, and image classification.

### **Availability:**

Amazon SageMaker JumpStart is available in all AWS Regions where SageMaker is available. See details on the [AWS Regions Table](#)

### **Use Cases:**

- There are 15+ pre-built solutions for common ML use cases including predictive maintenance, demand forecasting, fraud detection, and personalized recommendations.

### **Customer Benefits:**

- Accelerate time to deploy over 150 open source models: Amazon SageMaker JumpStart provides one-click deployable ML models and algorithms from popular model zoos, including PyTorch Hub and Tensorflow Hub. One-click deployable ML models and algorithms are easily deployable for image classification, object detection, and language modeling use cases, minimizing the time to deploy ML models originating from outside of SageMaker.
- 15+ pre-built solutions for common ML use cases: With Amazon SageMaker JumpStart, you can move quickly from concept to production with pre-built solutions that include all of the components needed to deploy a ML application in SageMaker with a few clicks, including an AWS CloudFormation template, reference architecture, and getting started content. Solutions are fully customizable so you can easily modify to fit your specific use case and dataset, and can be readily deployed with just a few clicks. These end-to-end solutions cover common use case, from predictive maintenance, demand forecasting, to fraud detection and personalized recommendations.
- Get started with just a few clicks: Amazon SageMaker JumpStart provides notebooks, blogs, and video tutorials designed to help you when you want to learn something new or encounter roadblocks. Content is easily accessible within Amazon SageMaker Studio, enabling you to get started with ML faster.

**Resources:** [Website](#) | [What's new post](#)

## AWS Categories: Analytics

### AWS Glue DataBrew

#### **What is it?**

AWS Glue DataBrew is a new visual data preparation tool that makes it easy for data analysts and data scientists to clean and normalize data to prepare it for analytics and machine learning. You can choose from over 250 pre-built transformations to automate data preparation tasks, all without the need to write any code. You can automate filtering anomalies, converting data to standard formats, and correcting invalid values, and other tasks. After your data is ready, you can immediately use it for analytics and machine learning projects. You only pay for what you use - no upfront commitment.

#### **Availability:**

us-east-1 (N. Virginia), us-east-2 (Ohio), us-west-2 (Oregon), eu-west-1 (Ireland), eu-central-1 (Frankfurt), ap-southeast-2 (Sydney), and ap-northeast-1 (Tokyo).

#### **Use Cases:**

- Self-service visual data preparation for analytics and machine learning: AWS Glue DataBrew enables you to explore and experiment with data directly from your data lake, data warehouses, and databases, including Amazon S3, Amazon Redshift, AWS Lake Formation, Amazon Aurora, and Amazon RDS. You can choose from over 250 prebuilt transformations in AWS Glue DataBrew to automate data preparation tasks, such as filtering anomalies, standardizing formats, and correcting invalid values. After the data is prepared, you can immediately use it for analytics and machine learning.

#### **Customer Benefits:**

- Profile data to evaluate data quality: Evaluate the quality of your data by profiling it to understand data patterns and detect anomalies; connect terabytes and even petabytes of data directly from your data lake, data warehouses, and databases.
- Clean and Normalize data without writing code: Choose from over 250 built-in transformations to visualize, clean, and normalize your data with an interactive, point-and-click visual interface.
- Map Data Lineage: Visually map the lineage of your data to understand the various data sources and transformation steps that the data has been through.
- Automate data preparation tasks: Automate data cleaning and normalization tasks by applying saved transformations directly to new data as it comes into your source system.

**Resources:** [Website](#)

### AWS Glue Elastic Views

#### **What is it?**

AWS Glue Elastic Views is a new capability of AWS Glue that makes it easy to build materialized views to combine and replicate data across multiple data stores without you having to write custom code.

New applications and features often require you to combine data that resides across multiple data stores, including relational and non-relational databases. Accessing, combining, replicating, and keeping this data up-to-date requires manual work and custom code that can take months of development time.

With AWS Glue Elastic Views, you can use familiar Structured Query Language (SQL) to quickly create a virtual table—called a view—from multiple different source data stores. Based on this view, AWS Glue Elastic Views copies data from each source data store and creates a replica—called a materialized view—in a target database. AWS Glue Elastic Views monitors for changes to data in your source data stores continuously, and provides updates to your target data stores automatically, ensuring data accessed through the materialized view is always up-to-date.

#### **Availability:**

AWS Glue Elastic Views is available in limited preview in US East (N. Virginia), US East (Ohio), US West (Oregon), EU (Ireland), and Asia Pacific (Tokyo). Customers can apply for the preview [here](#).

#### **Use Cases:**

- Combine data across multiple databases and data stores: AWS Glue Elastic Views combines data from more than one data store in near-real time. For example, you can combine data from an Amazon DynamoDB database with data from an Amazon Aurora database and copy it to Amazon Redshift.
- Replicate data across multiple databases and data stores: AWS Glue Elastic Views replicates data across multiple databases and data stores. For example, you can create a copy of a DynamoDB table in Amazon Elasticsearch Service to enable full text search on the DynamoDB data.
- Integrate operational and analytical systems: AWS Glue Elastic Views simplifies running analytical queries on your most recent operational data. For example, you can create database views over data in your operational databases and materialize those views in your data warehouse or data lake.

#### **Customer Benefits:**

- Use familiar SQL to create a materialized view: AWS Glue Elastic Views enables you to create materialized views across many databases and data stores using familiar SQL. AWS Glue Elastic Views supports Amazon DynamoDB, Amazon Redshift, Amazon S3, and Amazon Elasticsearch Service, with support for more data stores to follow.
- Copies data from each source data store to a target data store: AWS Glue Elastic Views handles all of the heavy lifting of copying and combining data from source to target data stores, without you having to write custom code or use unfamiliar ETL tools and programming languages. AWS Glue Elastic Views reduces the time it takes to combine and replicate data across data stores from months to minutes.
- Automatically keeps the data in the target data store updated: AWS Glue Elastic Views monitors for changes to data in your source data stores continuously, and provides updates to your target data stores automatically. This ensures that applications always access up-to-date data in the materialized views.

**Resources:** [Website](#)



## Amazon QuickSight Q

### **What is it?**

Amazon QuickSight Q uses machine learning-powered, natural language query (NLQ) technology to enable business users to ask ad-hoc questions of their data in natural language and get answers in seconds. To ask a question, users simply type it into the Amazon QuickSight Q search bar. Amazon QuickSight Q uses machine learning (natural language processing, schema understanding, and semantic parsing for SQL code generation) to generate a data model that automatically understands the meaning of and relationships between business data, so users can receive highly accurate answers to their business questions in seconds by simply using the business language that they are used to. Amazon QuickSight Q comes pre-trained on large volumes of real-world data from various domains and industries like sales, marketing, operations, retail, human resources, pharmaceuticals, insurance, energy, and more, so it is already optimized to understand complex business language. For example, sales users can ask, "How is my sales tracking against quota?", or retail users can ask, "What are the top products sold week-over-week by region?" Furthermore, users can get more complete and accurate answers because the query is applied to all of the data, not just the datasets in pre-determined model. And because Amazon QuickSight Q does this automatically, it eliminates the need for BI teams to spend time in building and updating data models, saving weeks of effort.

### **Availability:**

Amazon QuickSight Q will be in Gated Preview where customers need to sign-up to get access.

### **Use Cases:**

- Amazon QuickSight Q is optimized to understand complex business language and data models from multiple domains, including
  - Sales ("How is my sales tracking against quota?")
  - Marketing ("What is the conversion rate across my campaigns?")
  - Retail ("What are the top products sold week over week by region?")
  - HR, Advertising, amongst others

### **Customer Benefits:**

- Get answers in seconds: With Amazon QuickSight Q, business users can simply type a question in plain English and get an answer such as a number, chart, or table in seconds.
- Use business language that you are used to: With Amazon QuickSight Q, you can ask questions using phrases and business language that you use every day as part of your functional or vertical domain. Amazon QuickSight Q is optimized to understand complex business language and data models from multiple domains
- Ask any question on all your data: Amazon QuickSight Q provides answers to questions on all of your data. Unlike conventional NLQ- based BI tools, Q is not limited to answering questions from a single dataset or dashboard

Resources: [Website](#) | [What's new post](#)

## Amazon Redshift AQUA

### **What is it?**

Today, in the analytics press release, we announced that AQUA (Advanced Query Accelerator) for Amazon Redshift preview is now open to all customers and AQUA will be generally available in January 2021.

AQUA is a new distributed and hardware-accelerated cache that enables Redshift queries to run up to 10x faster than other cloud data warehouses. Existing data warehousing architectures with centralized storage require data be moved to compute clusters for processing. As data warehouses continue to grow over the next few years, the network bandwidth needed to move all this data becomes a bottleneck on query performance.

AQUA takes a new approach to cloud data warehousing. AQUA brings the compute to storage by doing a substantial share of data processing in-place on the innovative cache. In addition, it uses AWS-designed processors and a scale-out architecture to accelerate data processing beyond anything traditional CPUs can do today.

### **Availability:**

Customers can [sign up for the AQUA preview](#) now and will be contacted within a week with instructions. In order to use AQUA, customers must be using RA3.4xl or RA3.16xl nodes in us-east-1 (N. Virginia), us-west-2 (Oregon), or us-east-2 (Ohio) regions.

### **Customer Benefits:**

- Brings compute closer to storage - AQUA accelerates Redshift queries by running data intensive tasks such as such as filtering and aggregation closer to the storage layer. This avoids networking bandwidth limitations by eliminating unnecessary data movement between where data is stored and compute clusters.
- Powered by AWS-Designed Processors - AQUA uses AWS-designed processors to accelerate queries. This includes AWS Nitro chips adapted to speed up data encryption and compression, and custom analytics processors, implemented in FPGAs, to accelerate operations such as filtering and aggregation.
- Scale out Architecture - AQUA can process large amounts of data in parallel across multiple nodes, and automatically scales out to add more capacity as your storage needs grow over time.

Resources: [Website](#)

## Amazon Redshift ML

### **What is it?**

Redshift ML is a new capability for Amazon Redshift that make it easy for data analysts and database developers to create, train, and deploy Amazon SageMaker models using SQL. With Amazon Redshift ML, customers can use SQL statements to create and train Amazon SageMaker models on their data in Amazon Redshift and then use those models for predictions such as churn detection and risk scoring directly in their queries and reports.

### **Availability:**

The Redshift ML preview is available in: us-east-1 (N. Virginia), us-east-2 (Ohio), us-west-2 (Oregon), ca-central-1 (Canada Central), eu-west-1 (Ireland), eu-central-1 (Frankfurt), ap-northeast-1 (Tokyo), ap-southeast-2 (Sydney), and ap-southeast-1 (Singapore)

### **Use Cases:**

- Predictive analytics with Amazon Redshift: With Redshift ML, you can embed predictions like churn prediction, fraud detection, and risk scoring directly in queries and reports. Use the SQL function to apply the ML model to your data in queries, reports, and dashboards. For example, you can run the “customer churn” SQL function on new customer data in your data warehouse on a regular basis to predict customers at risk of churn and feed this information to your sales and marketing teams so they can take preemptive action such as sending these customers an offer designed to retain them.

### **Customer Benefits:**

- No prior ML experience needed: Redshift ML makes it easy to benefit from the ML capabilities in Amazon SageMaker directly in Redshift so you don’t have to learn new platforms, tools, or languages. Redshift ML provides simple, optimized, and secure integration between Redshift and Amazon SageMaker and enables inference within the Redshift cluster, making it easy to use model predictions in queries and applications. There is no need to manage a separate inference model end point, and the training data is secured end-to-end with encryption.
- Use ML on your Redshift data using standard SQL: With Redshift ML you can create, train, and apply ML models on your Redshift data using standard SQL. To get started, use the CREATE MODEL SQL command in Redshift and specify training data either as a table or SELECT statement. Redshift ML then compiles and imports the trained model inside the Redshift data warehouse and prepares a SQL inference function that can be immediately used in SQL queries. Redshift ML automatically handles all the steps needed to train and deploy a model.

**Resources:** [What’s New blog](#) | [External Webpage](#) | [Detailed Blog](#) | [Leadership authored Blog](#)

## Amazon Redshift feature updates

### **What is it?**

We announced several features for Amazon Redshift, including:

- Amazon Redshift data sharing (preview): A new way to securely share live data across Redshift in an organization and externally. Data sharing improves the agility of organizations by giving them instant, granular and high-performance access to data across Redshift clusters without the need to copy or move it. Data sharing provides live access to the data so that users can see the most up-to-date and consistent information as it is updated in the data warehouse.
- RA3.xlplus GA: RA3 with managed storage enables customers to scale and pay for compute and storage separately. This new, smaller, node size joins the RA3.4xl and RA3.16xl nodes we launched last year.
- Amazon Redshift Automated Performance Tuning GA: A new self-tuning capability, Automatic Table Optimization, optimizes the physical design of tables by automatically setting sort and distribution keys to improve query speed, without requiring any administrator intervention.
- Partner console integration (preview): Enables customers to launch the Partner Integration Wizard from the Redshift cluster details page and select partners already integrated in the console to accelerate data onboarding. Our launch partners include Matillion, Sisense, FiveTran, Segment and ETLeap.
- Cross-AZ cluster recovery: A new ability to move a cluster to another Availability Zone (AZ) without any loss of data or changes to your applications.
- Federated Query updates (preview): With Redshift Federated query, customers can combine operational data that is stored in popular databases such as RDS and Aurora PostgreSQL. Now, we also offer RDS MySQL and Aurora MySQL support in preview.
- Native semi-structured data support with Super data type with JSON support (preview): A new data type SUPER that will support nested data formats such as JSON and enable customers to ingest, store, and query nested data natively in Amazon Redshift. JSON formatted data can be stored in SUPER columns.

### **Availability:**

- Amazon Redshift data sharing: US East (Ohio), US East (N. Virginia), US West (N. California), US West (Oregon), Europe (Frankfurt), Europe (Ireland), Asia Pacific (Tokyo), Asia Pacific (Sydney), and Asia Pacific (Seoul).
- RA3.xlplus nodes are generally available in Asia Pacific (Seoul, Sydney, Tokyo), Brazil (São Paulo), Canada (Central), EU (Ireland, Paris), US East (N. Virginia, Ohio), and US West (N. California, Oregon) regions.
- Automatic Table Optimization is available on Amazon Redshift version 1.0.21291 in all regions where the Redshift Advisor is available. Refer to the [this link](#) for Amazon Redshift Advisor availability.
- Partner console is available to new and existing customers. Refer to the [AWS Region Table](#) for Amazon Redshift availability.
- Cluster relocation capability is available in all commercial regions where the RA3 instance type is supported.
- Federated Query updates available to all Amazon Redshift customers for preview. Refer to the [AWS Region Table](#) for Amazon Redshift availability.
- The support for native semi-structured data processing in Amazon Redshift is available as public preview in SQL\_PREVIEW track.

**Resources:** [What’s new post \[Data Sharing\]](#) | [What’s new post \[RA3\]](#) | [What’s new \[Automated Performance Tuning\]](#) | [What’s new \[Partner console\]](#) | [What’s new \[Cross-AZ cluster recovery\]](#) | [What’s new \[Federated Query updates\]](#) | [What’s new \[Native semi-structured data support\]](#)

## Amazon EMR on Amazon EKS

### **What is it?**

Amazon EMR on Amazon EKS provides a new deployment option for Amazon EMR that allows you to run Apache Spark on Amazon Elastic Kubernetes Service (Amazon EKS). If you already use Amazon EMR, you can now run Amazon EMR based applications with other types of applications on the same Amazon EKS cluster to improve resource utilization and simplify infrastructure management across multiple AWS Availability Zones. If you already run big data frameworks on Amazon EKS, you can now use Amazon EMR to automate provisioning and management, and run Apache Spark up to 3x faster. With this deployment option, you can focus on running analytics workloads while Amazon EMR on Amazon EKS builds, configures, and manages containers.

### **Availability:**

Amazon EMR on Amazon EKS is available in all commercial AWS Regions except for AWS China (Beijing), AWS China (Ningxia), Asia Pacific (Osaka-Local), and AWS GovCloud (US) regions.

### **Use Cases:**

- Consolidated Workloads: Amazon EMR on Amazon EKS can rapidly start and run jobs from multiple customer organizations on the same infrastructure. Cost sensitive development jobs can be executed on compute provided by AWS Fargate, while production jobs requiring higher performance can be backed by Amazon EC2 Reserved Instances. Additional or unused capacity can be used for other containerized workloads such as pre- or post-processing of the data.
- Low Latency batch jobs: Amazon EMR on Amazon EKS can begin running jobs within seconds without having to wait for provisioning a dedicated cluster. Jobs can then be scheduled at increasing frequency to provide increased resolution of analytics.
- Distributed Analytics with Multi-AZ workloads: Amazon EMR on Amazon EKS simplifies operations of Spark workloads by running the job within a single AZ, or for higher-availability spreading the job across multiple AZs.

### **Customer Benefits:**

- Simplify Running Spark on Kubernetes: Amazon EKS provides customers with a managed experience for running Kubernetes on AWS, enabling you to add compute capacity using EKS Managed Node Groups or using AWS Fargate. EMR jobs can access their data on Amazon S3 while monitoring and logging can be integrated with Amazon CloudWatch. Amazon Identity and Access Management (IAM) enables role based access control for both jobs and to dependent AWS services.
- Consolidate workloads to run on Amazon EKS: Customers can run multiple Spark jobs simultaneously alongside other containerized workloads on the same Amazon EKS cluster. This results in reduced management overhead and increased resource utilization.
- Run jobs without the need to provision clusters: A job's dependencies and configuration parameters are stored within the job definition. This eliminates having to pre-create clusters that are tightly coupled to EMR versions, Spark parameters or job dependencies. EMR on EKS deploys, on-demand, the resources required to run the job based on the job definition, avoiding the need for pre-provisioned clusters for ad-hoc, interactive or batch workloads.

Resources: [Website](#) | [What's new post](#)

## AWS Lake Formation features: Transactions, Row-level Security, and Acceleration

### **What is it?**

AWS Lake Formation transactions, row-level security, and acceleration are now available for preview. These capabilities are available via new, open, and public update and access APIs for data lakes. These APIs extend AWS Lake Formation's governance capabilities with row-level security. In addition, with this preview, we introduce governed tables - a new Amazon S3 table type that supports atomic, consistent, isolated, and durable (ACID) transactions. AWS Lake Formation transactions simplify ETL script and workflow development, and allow multiple users to concurrently and reliably insert, delete, and modify rows across multiple governed tables. AWS Lake Formation automatically compacts and optimizes storage of governed tables in the background to improve query performance.

### **Availability:**

This feature is in preview in the US East (N. Virginia) AWS Region.

Resources: [Website](#)

### Amazon Aurora Serverless v2

#### **What is it?**

Amazon Aurora Serverless v2 (Preview) is the new version of Aurora Serverless, an on-demand, auto-scaling configuration of Amazon Aurora that automatically starts up, shuts down, and scales capacity up or down based on your application's needs. It scales instantly from hundreds to hundreds-of-thousands of transactions in a fraction of a second. As it scales, it adjusts capacity in fine-grained increments to provide just the right amount of database resources that the application needs. There is no database capacity for you to manage, you pay only for the capacity your application consumes, and you can save up to 90% of your database cost compared to the cost of provisioning capacity for peak load. Aurora Serverless v2 (Preview) is currently available in preview for Aurora with MySQL compatibility only.

#### **Availability:**

Amazon Aurora Serverless v2 is available in a gated preview for Amazon Aurora with MySQL compatibility in US East (N. Virginia) at this time.

#### **Use Cases:**

- Enterprise database fleet management: Enterprises with hundreds or thousands of applications, each backed by one or more databases, must manage resources for their entire database fleet. As application requirements fluctuate, continuously monitoring and adjusting capacity for each and every database to ensure high performance, high availability and remain under budget is a daunting task. With Aurora Serverless v2 (Preview), database capacity is automatically adjusted based on application demand and you no longer need to manually manage thousands of databases in your database fleet.
- Software-as-a-Service applications: Software-as-a-Service (SaaS) vendors typically operate hundreds or thousands of Aurora databases, each supporting a different customer, in a single cluster to improve utilization and cost efficiency. With Aurora Serverless v2 (Preview), SaaS vendors can provision Aurora database clusters for each individual customer without worrying about costs of provisioned capacity. It automatically shuts down databases when they are not in use to save costs and instantly adjusts databases capacity to meet changing application requirements.
- Scaled-out databases split across multiple servers: Customers with high write or read requirements often split databases across several instances to achieve higher throughput. However, customers often provision too many or too few instances, increasing cost or limiting scale. With Aurora Serverless v2 (Preview), customers split databases across several Aurora instances and let the service adjust capacity instantly and automatically based on need.

#### **Customer Benefits:**

- Highly Scalable: Scale instantly, from hundreds to hundreds-of-thousands of transactions, in a fraction of a second.
- Highly Available: Power your business critical workloads with the full breadth of Aurora features, including backtracking, cloning, Global Database, Multi-AZ, and read replicas.
- Cost effective: Scale in fine-grained increments to provide just the right amount of database resources and pay only for capacity consumed.

Resources: [Website](#)

### Amazon Babelfish for Aurora PostgreSQL

#### **What is it?**

Babelfish is a new translation layer for Amazon Aurora PostgreSQL that enables Aurora to understand commands from applications written for Microsoft SQL Server.

Migrating from legacy SQL Server databases can be time consuming and resource intensive. When migrating your databases, you can automate the migration of your database schema and data using the AWS Database Migration Service (DMS), but there is often more work to do, to migrate the application itself including re-writing application code that interacts with the database.

With Babelfish, Aurora PostgreSQL now understands T-SQL, Microsoft SQL Server's proprietary SQL dialect, and supports the same communications protocol, so your apps that were originally written for SQL Server can now work with Aurora with fewer code changes. As a result, the effort required to modify and move applications running on SQL Server 2014 or newer to Aurora is reduced, leading to faster, lower risk, and more cost-effective migrations.

#### **Availability:**

Available in preview in us-east-1. At GA, it will be available in all commercial regions.

#### **Customer Benefits:**

- Highly Scalable: Scale instantly, from hundreds to hundreds-of-thousands of transactions, in a fraction of a second.
- Reduce migration time and risk: With Babelfish, Amazon Aurora PostgreSQL supports commonly used T-SQL language and semantics which reduces the amount of code changes related to database calls in an application. As a result, the amount of application code you need to re-write is minimized, reducing the risk of any new application errors.
- Migrate at your own pace: With Babelfish, you can run SQL Server code side-by-side with new functionality built using native PostgreSQL APIs. Babelfish enables Aurora PostgreSQL to work with commonly-used SQL Server query tools, commands, and drivers. As a result, you can continue developing with the tools you are familiar with.

Resources: [Website](#) | [What's new post](#)

## **Amazon Neptune ML**

### **What is it?**

Amazon Neptune ML is a new capability of Amazon Neptune that uses Graph Neural Networks (GNNs), a machine learning technique purpose-built for graphs, to make easy, fast, and more accurate predictions using graph data. With Neptune ML, you can improve the accuracy of most predictions for graphs by over 50% when compared to making predictions using non-graph methods.

Using the Deep Graph Library (DGL), an open-source library that makes it easy to apply deep learning to graph data, Neptune ML automates the heavy lifting of selecting and training the best ML model for graph data, and lets users run machine learning on their graph directly using Neptune APIs and queries. As a result, you can now create, train, and apply ML on Amazon Neptune data in hours instead of weeks without the need to learn new tools and ML technologies.

### **Availability:**

Amazon Neptune ML is available in all AWS Regions where Neptune is available. See details on the [AWS Regions Table](#)

### **Use Cases:**

- Fraud Detection Companies lose millions (even billions) of dollars in fraud, and want to detect fraudulent users, accounts, devices, IP address or credit cards to minimize the loss. You can use a graph-based representation to capture the interaction of the entities (user, device or card) and detect aggregations such as when a user initiates multiple mini transactions or uses different accounts that are potentially fraudulent.
- Product recommendation Traditional recommendations use analytics services manually to make product recommendations. Neptune ML can identify new relationships directly on graph data, and easily recommend the list of games a player would be interested to buy, other players to follow, or products to purchase.
- Customer Acquisition: Neptune ML automatically recommends next steps, or product discounts to certain customers based on where they are in the acquisition funnel.
- Knowledge Graph: Knowledge graphs consolidate and integrate an organization's information assets and make them more readily available to all members of the organization. Neptune ML can infer missing links across data sources, identify similar entities to enable better knowledge discovery for all.

### **Customer Benefits:**

- Make predictions on graph data without ML expertise: Neptune ML automatically creates, trains, and applies ML models on your graph data. It uses DGL to automatically choose and train the best ML model for your workload, enabling you to make ML-based predictions on graph data in hours instead of weeks.
- Improve the accuracy of most predictions by over 50%: Neptune ML uses GNNs, a state of art ML technique applied to graph data that can reason over billions of relationships in graphs, to enable you to make more accurate predictions.

**Resources:** [Website](#) | [What's new post](#) | [Leadership authored Blog](#)

### Amazon EBS gp3 Volume

#### **What is it?**

Amazon EBS gp3 volumes are the latest generation of general-purpose SSD-based EBS volumes that enable customers to provision performance independent of storage capacity, while providing up to 20% lower price per GB than existing gp2 volumes. With gp3 volumes, customers can scale IOPS (input/output operations per second) and throughput without needing to provision additional block storage capacity. This means customers only pay for the storage they need.

#### **Customer Benefits:**

- Ease of use: gp3 volumes take all the guesswork out of provisioning capacity and performance for your applications. You get sustained, baseline performance of 3,000 IOPS at any volume size. This means that even if you don't provision any IOPS, your applications will consistently get this baseline performance for the smallest of volumes. For use cases where your application needs more performance than the baseline, you simply provision the IOPS or throughput you need, without having to add more capacity.
- Higher performance and throughput: gp3 volumes make it easy and cost effective for customers to meet the IOPS and throughput requirements for the majority of their applications, including virtual desktops, medium sized single instance databases such as Microsoft SQL Server and Oracle, latency sensitive interactive applications based on frameworks like Kafka and Spark, and dev/test environments. The new gp3 volumes deliver a baseline performance of 3,000 IOPS and 125 MB/s at any volume size. Customers looking for higher performance can scale up to 16,000 IOPS and 1,000 MB/s for an additional fee.
- Lower cost: gp3 offers SSD-performance at a 20% lower cost per GB than gp2 volumes. Furthermore, by decoupling storage performance from capacity, you can easily provision higher IOPS and throughput without the need to provision additional block storage capacity, thereby improving performance and reducing costs.

**Resources:** [Website](#) | [What's new post](#)

### Amazon EBS Provisioned IOPS Volume

#### **What is it?**

Provisioned IOPS volumes, backed by solid-state drives (SSDs), are the highest performance Elastic Block Store (EBS) storage volumes designed for your critical, IOPS-intensive and throughput-intensive workloads that require low latency.

Now in Preview: io2 Block Express: Customers that need sub-millisecond latency or need to go beyond the current single volume peak performance and throughput, can sign up for a preview of io2 volumes running on next generation Amazon EBS storage server architecture (io2 Block Express). Designed to provide 4,000 MB/s throughput per volume, 256K IOPS/volume, up to 64 TiB storage capacity, and 1,000 IOPS/GB as well as 99.999% durability and sub-millisecond latency. With io2 Block Express, customers now get SAN (Storage Area Network) like performance in a high durability block store in the cloud with the ability to scale, provision, and pay for just the capacity they need.

**Resources:** [Website](#) | [What's new post](#)

### AWS Amplify featuring New Admin UI

#### **What is it?**

AWS Amplify is a set of tools and services that can be used together or on their own, to help front-end web and mobile developers build scalable full stack applications, powered by AWS. With Amplify, you can configure app backends and connect your app in minutes, deploy static web apps in a few clicks, and easily manage app content outside the AWS console. Get to market faster with AWS Amplify.

NEW! The Amplify admin UI is an abstraction layer on top of the Amplify CLI, and lets you configure back-ends on AWS with a graphical user interface. It also allow you to manage content, users and user groups in the app and assign this outside of the group of developers working on the application. The admin UI does not require an AWS account until the point you need the CLI.

#### **Availability:**

All AWS markets.

#### **Customer Benefits:**

- Easily manage app users and app content: The Amplify admin UI (NEW!) provides even non-developers with administrative access to manage app users and app content without an AWS account.

### Amazon Location Service

#### **What is it?**

Amazon Location Service makes it easy for developers to add location data to applications without sacrificing data security and user privacy.

Location data is a vital ingredient in today's applications, enabling capabilities ranging from asset tracking to location-based marketing. However, developers face significant barriers when integrating location data into their applications. This includes cost, privacy and security compromises, and tedious and slow integration work.

With Amazon Location Service, you can easily add capabilities such as maps, points of interest, geocoding, routing (coming soon – at GA), geofences, and tracking to applications. You retain control of your location data with Amazon Location, so you can combine proprietary data with data from the service. Amazon Location provides cost-effective location-based services (LBS) using high-quality data from global, trusted providers Esri and HERE. With Amazon Location's affordable data, tracking and geofencing capabilities, and built-in metrics for health monitoring, you can bring sophisticated location-enabled applications to production quickly, without the high cost of custom development.

#### **Availability:**

Amazon Location Service is available in the US-East (N. Virginia), US-East (Ohio), US-West (Oregon), EU (Ireland), and Asia Pacific (Tokyo) AWS Regions.

#### **Use cases:**

- **User engagement & geomarketing:** Businesses can use location data to better engage and market to their customers. For instance, Amazon Location Service can trigger an event that prompts a notification to a café when a customer who ordered a coffee on their mobile app is nearby. See the [user engagement & geomarketing solution guide](#).
- **Asset tracking:** Asset tracking helps businesses understand the current and historical locations of their products, personnel, and infrastructure. Enterprises can use Amazon Location Service for asset tracking to optimize remote staffing, secure en-route shipment, maximize dispatch efficiency, and more. See the [asset tracking solution guide](#).
- **Delivery:** Location-based services help delivery applications store, track, and coordinate the source locations, delivery vehicles, and the destinations. See the [delivery solution guide](#).

#### **Use cases:**

- **Privacy and security:** With Amazon Location Service, you retain control of your organization's data. Amazon Location Service anonymizes all queries sent to data providers by removing customer metadata and account information. Additionally, sensitive tracking and geofencing location information, such as facility, asset, and personnel locations, never leaves your AWS account at all.
- **High-quality and cost-effective:** Amazon Location Service provides high-quality geospatial data from established, global providers Esri and HERE. Now you can affordably build applications using their data through Amazon Location, along with tracking and geofencing capabilities that you don't have to build in-house. Please visit our [data provider page](#) and [pricing page](#) to learn more.

**Resources:** [Website](#) | [What's new post](#)



### AWS Service Catalog AppRegistry

#### **What is it?**

AWS Service Catalog allows organizations to create and manage catalogs of IT services that are approved for use on AWS. These IT services can include everything from virtual machine images, servers, software, and databases to complete multi-tier application architectures. AWS Service Catalog allows you to centrally manage deployed IT services, your applications, resources, and metadata. This helps you achieve consistent governance and meet your compliance requirements, while enabling users to quickly deploy only the approved IT services they need.

With AWS Service Catalog AppRegistry, organizations can understand the application context of their AWS resources. You can define and manage your applications and their metadata, to keep track of things like cost, performance, security, compliance and operational status at the application level.

#### **Availability:**

For a full list of supported AWS Regions, see details on the [AWS Regions Table](#).

#### **Use Cases:**

- Define and Manage Applications and Metadata
- Create application definitions that include resource collections and metadata from AWS services and ISV partners.
- Integrate AppRegistry with your application development processes to maintain a single source of truth.
- Get application context - Know what application your resource belongs to, and vice versa.

#### **Customer Benefits:**

- Ensure compliance with corporate standards: AWS Service Catalog provides a single location where organizations can centrally manage catalogs of IT services. With AWS Service Catalog you can control which IT services and versions are available, what is configured in each of the available service, and who gets permission access by individual, group, department or cost center.
- Help employees quickly find and deploy approved IT services: With AWS Service Catalog, you define your own catalog of AWS services and AWS Marketplace software, and make them available for your organization. Then, end users can discover and deploy IT services using a self-service portal.
- Centrally manage IT service lifecycle: AWS Service Catalog enables you to add new versions of IT services, and end users are notified so they can keep abreast of the latest updates. With AWS Service Catalog you can control the use of IT services by specifying constraints, such as limiting the AWS regions in which a product can be launched.

**Resources:** [Website](#)

### AWS Systems Manager updates

#### **What is it?**

We announced several features for AWS Systems Manager, including:

- Application Manager is a new capability in AWS Systems Manager to enable customers to manage their applications from a single console. The new capability enables developers and operators to discover their applications, view operational data, and perform actions within the context of an application.
- Change Manager is a new change management feature of AWS Systems Manager. Change Manager simplifies the way you can request, approve, implement, and report on operational changes to your application configuration and infrastructure on AWS and on-premises.
- Fleet Manager is a new capability in AWS Systems Manager that helps you streamline and scale your remote server management process. Fleet Manager provides you with visual tools to manage your Windows, Linux, and macOS servers, so you can easily perform common administrator tasks for your fleet running on AWS and on-premises, without needing to remotely connect to these servers.

#### **Availability:**

- Application Manager: Available in all AWS Commercial Regions, AWS GovCloud (US) Regions and AWS China (Beijing) region.
- Change Manager: Available in all AWS Regions where Systems Manager is offered (excluding the AWS GovCloud (US) Regions and AWS China Regions).
- Fleet Manager: Available in all AWS Regions where Systems Manager is offered (excluding the AWS GovCloud (US) Regions and AWS China Regions).

**Resources:** [Website](#) | [What's new \(Application Manager\)](#) | [What's new \(Change Manager\)](#) | [What's new Fleet Manager](#)

## Amazon Managed Service for Grafana

### What is it?

Amazon Managed Service for Grafana is a fully managed rich, interactive data visualization service that is scalable, secure, and highly available. Using Amazon Managed Service for Grafana, you can analyze, monitor, and alarm on metrics, logs, and traces across multiple data sources, including AWS, third-party ISVs, databases, and other resources across your IT portfolio. Amazon Managed Service for Grafana offloads the operational management of Grafana by automatically scaling compute and database infrastructure as usage demands increase, with automated version updates and security patching.

### Availability:

Available in preview in us-east-1 (N. Virginia), and eu-west-1 (Ireland)

### Use Cases:

- Unified observability: Teams can use the instrumentation, data collection, and storage tools of their choice, while using Amazon Managed Service for Grafana to centralize and correlate data into a single dashboard. Sharing the right information at the right time from a centralized location helps reduce the time to detection, and improves application availability and customer experience.
- Container monitoring: Amazon Managed Service for Grafana connects to AWS Amazon Managed Service for Prometheus, Amazon CloudWatch, and other popular data sources. These data sources collect and store container metrics from Amazon Elastic Kubernetes Service, Amazon Elastic Container Service, and self-managed Kubernetes running on Amazon Elastic Compute Cloud
- One dashboard for all: Amazon Managed Service for Grafana supports a wide variety of data sources that enable users of all types to layer operational and business data into a consolidated view. Builders and developers can track their application logs alongside an operator's infrastructure health metrics, as well as business metrics for key stakeholders, all displayed in a single dashboard using a rich library of interactive visualizations.

### Customer Benefits:

- Enjoy the power of Grafana at scale: Use the powerful data visualizations you love from Grafana, with a few simple clicks. You don't need to worry about maintaining software or infrastructure – Amazon Managed Service for Grafana automatically scales compute and database resources in a highly available configuration, and takes care of software upgrades and security patching for you.
- Visualize, analyze, and correlate securely across multiple data sources Amazon Managed Service for Grafana securely and natively integrates with AWS services, via private VPC connections. Query AWS data sources across multiple accounts and multiple regions by discovering the resources in your account or across your Organizational Units, and automatically provisioning the right AWS Identity and Access Management (IAM) policies to access your data.
- Manage access to data and dashboards: Integration with AWS Single Sign-On lets you easily grant users access without having to manage multiple user identity pools. You can restrict read and write access to your data sources and dashboards so that the right users and teams can view their relevant data.

Resources: [Website](#) | [What's new post](#)

## Amazon Managed Service for Prometheus

### What is it?

Amazon Managed Service for Prometheus is a Prometheus-compatible monitoring and alerting service that makes it easy to monitor containerized applications at scale. The Cloud Native Computing Foundation's Prometheus project is a popular open source monitoring and alerting solution optimized for container environments. With Amazon Managed Service for Prometheus, you can use the open source Prometheus query language (PromQL) to monitor the performance of containerized workloads, without having to manage the underlying infrastructure for scalability, availability, and security.

### Use Cases:

- Unified container monitoring: Monitor containers running on Amazon EC2, Amazon ECS, and Amazon EKS on Amazon EC2 and AWS Fargate, as well as hybrid environments including on-premises. Use it together with Amazon Managed Service for Grafana for monitoring, alerts, and dashboard views across all your Kubernetes environments, including both host- and application-level monitoring.
- Troubleshooting and root cause analysis: Use the powerful PromQL language to detect errors faster and reduce mean time to resolution. Triggered alerts can be interrogated with PromQL to find systemic versus isolated health and performance issues across all your short-lived containers.
- Workload and application metrics monitoring: With the AWS Distro for OpenTelemetry, you can collect metrics from anywhere and enrich them with trace IDs. Prometheus' library of open source exporters for many popular application stacks (including Apache Kafka, Redis, Java/JMX, NGINX, and even Minecraft servers) can be used to send those metrics to Amazon Managed Service for Prometheus.

### Customer Benefits:

- The Prometheus you already know: Use the familiar, flexible Prometheus query language (PromQL) to filter, aggregate, and alarm on metrics, and quickly gain performance visibility for large volumes of metrics labels. Amazon Managed Service for Prometheus supports all metric types: gauge, counter, summary, and histogram. Amazon Managed Service for Prometheus makes it easy to import your existing Prometheus configurations such as recording and alerting rules.
- Prometheus at scale: Amazon Managed Service for Prometheus automatically scales as your ingestion and query needs grow, handling millions of unique time series metrics from large container deployments while maintaining consistent query response times. Amazon Managed Service for Prometheus is designed to be highly available using multi-AZ deployments, replicating data across three Availability Zones in the same Region.
- Prometheus with intrinsic security: Amazon Managed Service for Prometheus integrates with AWS Identity and Access Management for authentication and fine-grained permissions for users and groups. VPC PrivateLink provides easy and secure access to services hosted on AWS, keeping your network traffic within the AWS network. AWS Organizations integration allows for policy control, and API calls are logged to AWS CloudTrail.

Resources: [Website](#) | [What's new post](#)

## **AWS Distro for OpenTelemetry (Preview)**

### **What is it?**

AWS Distro for OpenTelemetry is a secure, production-ready, AWS-supported distribution of the OpenTelemetry project. Part of the Cloud Native Computing Foundation, OpenTelemetry provides open source APIs, libraries, and agents to collect distributed traces and metrics for application monitoring. With AWS Distro for OpenTelemetry, you can instrument your applications just once to send correlated metrics and traces to multiple AWS and Partner monitoring solutions. Use auto-instrumentation agents to collect traces without changing your code. AWS Distro for OpenTelemetry also collects metadata from your AWS resources and managed services, so you can correlate application performance data with underlying infrastructure data, reducing the mean time to problem resolution. Use AWS Distro for OpenTelemetry to instrument your applications running on Amazon Elastic Compute Cloud (EC2), Amazon Elastic Container Service (ECS), and Amazon Elastic Kubernetes Service (EKS) on EC2, AWS Fargate, and AWS Lambda, as well as on-premises.

### **Use Cases:**

- Send metrics and traces to AWS and third-party Partner monitoring services: Instrument applications once, then collect and send correlated metrics and traces to one or more AWS monitoring services such as Amazon CloudWatch, AWS X-Ray, and Amazon Elasticsearch Service, as well as third-party Partner monitoring solutions.
- Automate collection of traces: Automatically collect trace data for Java applications such as web applications built with Spring Boot, and servlet-based microservices. The auto-instrumentation agent in AWS Distro for OpenTelemetry captures all downstream requests made with Apache HTTP clients, AWS SDK clients, and JDBC-based SQL clients.
- Collect metadata on application resources: AWS Distro for OpenTelemetry automatically collects metadata about the underlying AWS resources where the application code is running. This metadata can be used in monitoring services to correlate application monitoring data with the infrastructure monitoring data needed to reduce mean time to resolution.

### **Customer Benefits:**

- Instrument once for multiple monitoring destinations: AWS Distro for OpenTelemetry lets you instrument your applications just once, instead of running multiple SDKs and agents to collect metrics and traces. You can then send those metrics and traces to multiple AWS monitoring solutions including Amazon CloudWatch and AWS X-Ray, as well as third-party monitoring solutions from AWS Partners.
- Extend visibility and triage faster: AWS Distro for OpenTelemetry lets you collect and correlate metrics and traces, along with contextual information and metadata about where the application is running. Increased visibility into your AWS resources speeds up performance troubleshooting and reduces mean time to resolution.
- Run OpenTelemetry with predictable performance: AWS tests OpenTelemetry components before each release to ensure quantifiable and predictable performance overhead. This helps you understand and account for the overall performance impact of using AWS Distro for OpenTelemetry in production environments.

**Resources:** [Website](#)

## AWS Categories: Security, Identity, and Compliance

### AWS Audit Manager

#### **What is it?**

AWS Audit Manager helps you continuously audit your AWS usage to simplify how you assess risk and compliance with regulations and industry standards. Audit Manager automates evidence collection to make it easier to assess if your policies, procedures, and activities, also known as controls, are operating effectively. When it is time for an audit, AWS Audit Manager helps you manage stakeholder reviews of your controls and enables you to build audit-ready reports with much less manual effort.

#### **Availability:**

us-east-1 (N. Virginia), us-east-2 (Ohio), us-west-1 (N. California), us-west-2 (Oregon), ap-southeast-2 (Sydney), ap-northeast-1 (Tokyo), ap-southeast-1 (Singapore), eu-west-1 (Ireland), eu-central-1 (Frankfurt), eu-west-2 (London)

#### **Use Cases:**

- Transition from manual to automated evidence collection: AWS Audit Manager enables you to move from manually collecting, reviewing, and managing evidence to a solution that automates evidence collection and helps to manage evidence security and integrity.
- Continuous auditing and compliance: With AWS Audit Manager, you have an increased level of transparency into usage activity and changes in the environment. You can continuously collect evidence, monitor your compliance posture, and proactively reduce risk by fine-tuning your controls.
- Internal risk assessments: Easily perform assessments to help assess risks unique to your business. You can customize a prebuilt framework or build your own framework from scratch. Then, launch an assessment to automatically collect evidence helping you validate if your internal controls are working as intended.

#### **Customer Benefits:**

- Easily map your AWS usage to controls: AWS Audit Manager provides prebuilt frameworks that include mappings of AWS resources to control requirements for well-known industry standards and regulations. A prebuilt framework includes a collection of controls with descriptions and testing information, which are grouped in accordance to the requirements of an industry standard or regulation, such as CIS AWS Foundations Benchmarks, GDPR, or PCI DSS. You can fully customize these prebuilt frameworks and controls to tailor them to your unique needs.
- Save time with automated collection of evidence: AWS Audit Manager saves you time by automatically collecting and organizing evidence as defined by each control requirement. With Audit Manager, you can focus on reviewing the relevant evidence to ensure your controls are working as intended. For example, you can configure an Audit Manager assessment to automatically collect configuration snapshots from resources on a daily, weekly, or monthly basis, subject to underlying AWS service configurations.
- Streamline collaboration across teams: AWS Audit Manager helps you streamline audit stakeholder collaboration. For example, the delegation feature enables you to assign controls in your assessment to a subject matter expert to review. You might delegate to a network security engineer to confirm the evidence properly demonstrates that you meet a specific security requirement. Audit Manager also allows team members to comment on evidence, upload manual evidence, and update the status of each control.

**Resources:** [Website](#) | [What's new post](#)

### AWS Fault Injection Simulator (coming in 2021)

#### **What is it?**

AWS Fault Injection Simulator is a fully managed chaos engineering service that makes it easier for teams to discover an application's weaknesses at scale in order to improve performance, observability, and resiliency. Chaos engineering is the process of stressing an application in testing or production environments by creating disruptive events, such as server outages or API throttling, observing how the system responds, and implementing improvements. Chaos engineering helps teams create the real-world conditions needed to uncover the hidden issues, monitoring blind spots, and performance bottlenecks that are difficult to find in distributed systems. However, creating these real-world conditions can be challenging or risky because teams need to stitch together a patchwork of tools and keep an experiment from impacting users.

#### **Availability:**

Coming in 2021. At that time, AWS Fault Injection Simulator will be available across all AWS Regions except KIX, China, GovCloud, and MPV.

#### **Use Cases:**

- **Periodic Game Day:** A Game Day simulates a failure or event to test systems, processes, and team responses. The purpose is to actually perform the actions the team would perform as if an exceptional event happened. You can use AWS Fault Injection Simulator to be conducted regularly so that your team builds "muscle memory" on how to respond to unexpected failures due to application errors or unusual traffic.
- **CI/CD pipeline integration:** A CI/CD pipeline automates your software delivery process. The pipeline builds code, runs tests, and safely deploys a new version of the application. You can implement AWS Fault Injection Simulator to the pipeline, enabling chaos experiments to be in regular testing procedure with standardized feedback loops for faster product iterations.

#### **Customer Benefits:**

- **Improve application performance, resiliency, and observability:** AWS Fault Injection Simulator makes it easy for teams to run and observe their experiments from end-to-end, making it easier to find their monitoring blind spots, performance bottlenecks, or other "unknown" weaknesses missed by traditional software tests.
- **Validate how your application performs on AWS:** AWS Fault Injection Simulator supports creating disruptive events across a range of AWS services, such as Amazon EC2, Amazon EKS, Amazon ECS, and Amazon RDS. Teams can run GameDay scenarios or stress test their most critical applications on AWS at scale, helping them ensure their application will behave as expected.
- **Safeguard chaos experiments:** AWS Fault Injection Simulator provides the fine-grained controls that teams need to define the specific conditions under which they want to stop an experiment or roll back to the pre-experiment state.

**Resources:** [Website](#)

### AWS CloudShell

#### **What is it?**

AWS CloudShell is a browser-based shell that makes it easy to securely manage, explore, and interact with your AWS resources. CloudShell is pre-authenticated with your console credentials. Common development and operations tools are pre-installed, so no local installation or configuration is required. With CloudShell, you can quickly run scripts with the AWS Command Line Interface (AWS CLI), experiment with AWS service APIs using the AWS SDKs, or use a range of other tools to be productive. You can use CloudShell right from your browser and at no additional cost.

#### **Availability:**

AWS CloudShell is available in five AWS Regions, see details on the [AWS Regions Table](#).

#### **Customer Benefits:**

- **No extra credentials to manage:** CloudShell inherits the credentials of the user signed in to the AWS Management Console, so there's no need to spend extra effort managing credentials locally.
- **Always up to date:** CloudShell provides a fully managed Amazon Linux 2 environment that has the latest versions of popular tools already installed and updated. You don't need to patch the environment or update the pre-installed tools.
- **No cost:** CloudShell provides you with a browser-based shell to run scripts and commands. It includes 1 GB of persistent storage per Region at no extra cost to you. You only pay for the AWS resources you use with CloudShell to create and run your applications.
- **Customizable:** With 1 GB of persistent storage per Region, you can store scripts, files, configuration preferences, and additional tools in your home directory. You can begin working immediately, without customizing your environment every time you use the shell.

**Resources:** [Website](#) | [What's new post](#)

### FreeRTOS Long Term Support

#### **What is it?**

With this release, developers can rely on a FreeRTOS version that provides feature stability, and security patches and critical bug fixes for two years. This makes it easier to identify and include only recommended changes to the FreeRTOS kernel and libraries, without adding the risk of introducing updates that could break an existing application.

#### **Availability:**

The FreeRTOS 202012.00 LTS release is available now to [download](#). To learn more, visit [FreeRTOS LTS](#) and the [documentation](#). Please send us feedback on the [Github](#) repository and the [forum](#) of FreeRTOS.

#### **Customer Benefits:**

- Feature Stability: FreeRTOS LTS libraries are easy to integrate with applications designed for resource constrained MCU-based devices.
- Security updates and critical fixes: AWS provides ongoing security and maintenance updates for LTS libraries, to ensure devices meet quality standards and are secure. LTS comes with security updates and bug fixes to the FreeRTOS kernel, IoT libraries, and AWS libraries for 2 years.
- Updateable with secure connectivity: FreeRTOS Long Term Support comes with a complete set of libraries, including IoT libraries and AWS specific libraries (for e.g. Device Shadows) with secure connectivity, and over-the-air update (OTA) functionality.

**Resources:** [What's new post](#) | [Blog](#) | [Website](#)

### AWS IoT Greengrass 2.0

#### **What is it?**

AWS IoT Greengrass 2.0 provides an open source edge runtime, a rich set of pre-built software components, tools for local software development, and new features for managing device software on large fleets of devices.

AWS IoT Greengrass is an Internet of Things (IoT) open source edge runtime and cloud service that helps you build, deploy, and manage device software. Customers use AWS IoT Greengrass for their IoT applications on millions of devices in homes, factories, vehicles, and businesses. You can program your devices to act locally on the data they generate, execute predictions based on machine learning models, filter and aggregate device data, and only transmit necessary information to the cloud.

#### **Availability:**

Please see the [AWS Region table](#) for all the regions where AWS IoT Greengrass is available.

#### **Customer Benefits:**

- Deploy Device software at scale: The entire software has been modularized to create the most flexible edge platform to easily build, deploy, and manage device software across millions of devices. Customers can now use a variety of programming languages, development environments, and open source software to develop, test, and launch IoT applications on the hardware of their choice.
- Completely modular: Because it is completely modular, customers can easily add or remove AWS IoT Greengrass features and choose the software components installed on their devices. AWS IoT Greengrass lets customers add features on more powerful devices or remove features from constrained devices with limited memory or compute power.
- Locally deployable and configurable: Customers can develop code locally on a device and then remotely deploy and manage their device software seamlessly on millions of devices without needing a firmware update. Customers can also organize their devices in groups and deploy and manage device software and configuration to a subset of devices or to all devices at once, simplifying the management and operations of their device fleets.
- Open Source: The AWS IoT Greengrass 2.0 Core client software is now open source, making edge computing more accessible to customers and adaptable to the hardware platform and industry requirements of their choice. Customers benefit from an open edge software environment that empowers them to develop, debug, and customize the IoT software needed on their devices.

**Resources:** [Website](#) | [What's new post](#) | [Blog](#)

## AWS IoT Core for LoRaWAN

### **What is it?**

AWS IoT Core for LoRaWAN is a fully managed capability that allows AWS IoT Core customers to connect and manage wireless devices that use low-power long-range wide area network (LoRaWAN) connectivity with the AWS cloud. Using AWS IoT Core, enterprises can now setup a private LoRaWAN network by connecting their own LoRaWAN devices and gateways to the AWS cloud - without developing or operating a LoRaWAN Network Server (LNS). This allows customers to eliminate the undifferentiated work and operational overhead of managing an LNS, and enables them to quickly connect and secure LoRaWAN device fleets at scale. AWS IoT Core for LoRaWAN also makes it easy to act on the data from connected devices using AWS services for processing, storage, analytics, or machine learning. With built-in integration with AWS IoT Rules Engine, AWS IoT Core for LoRaWAN automatically routes messages from connected LoRaWAN devices to customer defined rules, thus accelerating IoT application development.

### **Availability:**

US East (Northern Virginia) and EU (Ireland).

### **Use cases:**

- **Asset tracking and monitoring:** Industrial customers need to monitor the performance of equipment to ensure it is operating effectively and to predict when it requires maintenance to avoid costly equipment issues and reduce gaps in production. LoRaWAN connectivity has deep in-building penetration suitable for industrial facilities. AWS IoT Core for LoRaWAN can be used to connect these devices to the cloud and AWS IoT services, like AWS IoT SiteWise.
- **Connected buildings and city systems:** Real estate property owners and managers of commercial and residential buildings are increasingly deploying automation and remote monitoring solutions, ranging from lighting control, motion sensors or temperature monitors. These smart building solutions often require LoRaWAN connectivity to transmit device data through multiple thick walls and ceilings. AWS IoT Core for LoRaWAN can be used to connect these sensors and actuators to the cloud and integrate them into smart building applications.

### **Customer Benefits:**

- **Eliminate the need to develop or operate an LNS:** AWS IoT Core for LoRaWAN eliminates the undifferentiated development work and operational burden required to setup and manage an LNS and associated infrastructure. AWS IoT Core for LoRaWAN manages your device and gateway connections to the cloud, thus accelerates the network set-up time.
- **Reduce gateway and device onboarding friction:** AWS IoT Core for LoRaWAN supports open-source gateway-LNS protocol software called LoRa Basics Station. The AWS IoT Core for LoRaWAN gateway qualification program enables customers to source pre-tested LoRaWAN gateways and developer kits that meet the required Basics Station specification.
- **Accelerate IoT application development:** AWS IoT Core for LoRaWAN has built-in integration with AWS IoT Rules Engine so device data is automatically routed and transformed according to preset rules. This streamlines the process for application developers to translate proprietary LoRaWAN binary messages, so device data can be more easily integrated with cloud services.

**Resources:** [Website](#) | [What's new post](#)

## Fleet Hub for AWS IoT Device Management

### **What is it?**

AWS IoT Device Management includes the ability to create no-code, fully-managed web applications using Fleet Hub to visualize and interact with your device fleets connected to AWS IoT. With Fleet Hub, you can search across your large and diverse fleets and view device state and health data, in near real time—such as connection status, firmware version, country code, or battery level. You can program alarms, which are triggered by rule-based changes to device status and health metrics and customizable by each end user, to be notified of potential issues. Once alerted to an alarm, you can take built-in corrective actions, such as deploying a firmware update or rebooting a device. Fleet Hub's seamless integration with the many AWS IoT Device Management features as well as across other AWS IoT services allows you to easily interact with your devices to do so, like pushing an OTA ("over the air") update via Jobs or opening a Secure Tunnel to reconfigure a device. Users can access the web applications from a browser on any web-enabled desktop, tablet, or phone and sign-in with their corporate credentials through a single sign-on (SSO) experience; and IT administrators can control access to operational data from devices and equipment for different end users by adding users from their corporate directory and defining permissions through AWS Single-Sign On (SSO), Active Directory, and AWS Organizations.

### **Customer Benefits:**

- **Integrates with existing identify systems like AWS Single-Sign On (SSO), Active Directory, and AWS Organizations** for users to sign in with their corporate credentials.
- **Deploy in minutes with no code:** Administrators can create a web application without writing code, add users from their corporate directory to enable access to the web application, and grant users privileges to manage the web applications themselves.
- **Easily interact with device fleets:** View the aggregate health metrics of your fleet such as checking connectivity statuses of a fleet of thermostats or a specific device. Create alarms to be notified when a health metric, e.g. device temperature, falls below a user specified threshold, and take built-in corrective action, such as deploying a firmware update or rebooting a device.
- **View from your preferred device, anywhere:** Web applications created using Fleet Hub can be easily accessed via a desktop browser, phone, or in this case a tablet.

**Resources:** [Website](#) | [What's new post](#)



## AWS IoT SiteWise Edge

### **What is it?**

AWS IoT SiteWise Edge (Preview) is a new feature of AWS IoT SiteWise providing software that runs on-premises at industrial sites and makes it easy to collect, process, and monitor equipment data locally before sending the data to AWS Cloud destinations. SiteWise Edge is installed on local hardware such as third-party industrial gateways and computers, or on AWS Outposts and AWS Snow Family compute devices.

### **Availability:**

SiteWise Edge is available in regions of US East (N. Virginia), Europe (Ireland), Europe (Frankfurt) and US West (Oregon)

### **Customer Benefits:**

- Local data collection and processing: With AWS SiteWise Edge, customers can collect and locally process machine data first, and only send relevant data to the cloud for further analysis or cross-site visualization. Having all the data processed at the edge also means, it is available to their local applications without connectivity to the cloud. Once the data is processed, data is routed to AWS IoT SiteWise by default. Customers can choose to route data directly to other AWS services such as Amazon S3 and Amazon Timestream, for storage in their industrial data lake and additional analytics.
- Locally monitor and visualize assets: AWS SiteWise Edge includes a local version of the SiteWise Monitor visualization application, which is accessible through a web browser for process engineers, to locally monitor real-time and historical time series asset data.
- Disconnected operation with consistent asset models: Since AWS SiteWise Edge runs on premises, local applications that use data from AWS SiteWise Edge will continue to work, even when cloud connectivity is disrupted or latency sensitivity is high.

**Resources:** [Website](#) | [What's new post](#)

## AWS Categories: Marketplace

### Professional Services in AWS Marketplace

#### What is it?

Professional Services available in AWS Marketplace enable you to find and buy assessments, implementation, support, managed services, and training for your third-party software. AWS Marketplace helps you find the software and associated services you need to innovate all in one place, simplifying procurement. You can discover complete business solutions and curated service offerings from independent software vendors and consulting partners, and select payment options and contract terms that fit your needs. All charges are simplified onto your AWS bill.

You can get started today using AWS Marketplace, and take advantage streamlined vendor onboarding and standardized license terms to accelerate your time to contract.

#### Availability:

Professional Services in AWS Marketplace is available in 24 AWS Regions, see details on the [AWS Regions Table](#).

#### Professional Services Categories:

- Implementation: Help with configuration, set up, and deployment of third-party software
- Assessments: Evaluation of your current operating environment to find the right software for your organization
- Premium Support: Access to guidance and assistance from independent software vendors and consulting partners, designed for your needs
- Managed Services: End-to-end environment management from independent software vendors or consulting partners on your behalf
- Training: Tailored workshops, programs, and educational tools provided by experts to help your employees learn best practices

#### Customer Benefits:

- Find & buy complete cloud solutions: Purchase an end-to-end business solution- all in one place. With Professional Services, you can discover curated offerings and request associated services alongside your third-party software, so accessing the tools you need is easy.
- Simplify procurement cycles: Streamline subscriptions as you engage with independent software vendors and consulting partners. AWS Marketplace enables you to cut down on onboarding time and quickly get the software and associated services you need.
- Customize pricing, payment schedule, & terms: Obtain payment, contract terms, and pricing options that best fit your organization's needs. You can pay all charges up front, schedule predictable payments over time, or define contract terms to align with your requirements.

Resources: [Website](#)

### Managed Entitlements in AWS License Manager

#### What is it?

AWS License Manager makes it easier to manage your software licenses from vendors such as Microsoft, SAP, Oracle, and IBM across AWS and on-premises environments. AWS License Manager lets administrators create customized licensing rules that mirror the terms of their licensing agreements. Administrators can use these rules to help prevent licensing violations, such as using more licenses than an agreement stipulates. Rules in AWS License Manager help prevent a licensing breach by stopping the instance from launching or by notifying administrators about the infringement. Administrators gain control and visibility of all their licenses with the AWS License Manager dashboard and reduce the risk of non-compliance, misreporting, and additional costs due to licensing overages. Independent software vendors (ISVs) can also use AWS License Manager to easily distribute and track licenses.

AWS License Manager also simplifies the management of your software licenses that require Amazon EC2 Dedicated Hosts. In AWS License Manager, administrators can specify their Dedicated Host management preferences for host allocation and host capacity utilization. Once set up, AWS License Manager takes care of these administrative tasks on your behalf, so that you can seamlessly launch instances just like you would launch an EC2 instance with AWS-provided licenses.

At re:Invent we announced new capabilities allowing you purchase software licenses in AWS Marketplace and track them in AWS License Manager managed entitlements.

#### Customer Benefits:

- Gain control over license usage: The way organizations manage licenses can vary from using simple spreadsheets to highly customized solutions. Often, these approaches require manual and ad-hoc reporting that can be inaccurate and quickly outdated. With AWS License Manager, administrators can create custom licensing rules, provision, and track licenses across multiple accounts on AWS and on-premises environments. AWS License Manager centralizes license usage, providing organizations with greater visibility and control over how software licenses are used and can prevent misuse before it happens.
- Reduce costs: AWS License Manager provides a centralized view of license usage, so that administrators can determine the right number of licenses required, and not purchase more licenses than needed. With this improved visibility, you can also control overages and avoid penalties from licensing audits.

Resources: [Website](#)

## AWS Categories: Partners

### AWS SaaS Boost

#### **What is it?**

AWS SaaS Boost is an open source ready-to-use reference environment that helps Independent Software Vendors (ISVs) to accelerate your move to Software-as-a-Service (SaaS). From small specialized software businesses to large global solution providers, AWS SaaS Boost helps you accelerate moving your applications to AWS with minimal modifications. Build, provision, and manage your SaaS environment with greater confidence based on AWS best practices and proven patterns from hundreds of successful SaaS companies.

#### **Availability:**

Available in all regions. See details in the [AWS Regions Table](#).

#### **Customer Benefits:**

- Accelerate their development to a SaaS model on AWS faster with fewer resources.
- Remove the complexity and risk of building SaaS so product teams can focus on customer experience and innovation.
- Simplify SaaS operations with out-of-the box availability of key processes including automated onboarding, tenant monitoring and upgrade orchestration.

**Resources:** [Website](#) | [Blog](#)

### AWS SaaS Factory Insights Hub

#### **What is it?**

The AWS SaaS Factory Insights Hub is a growing library of business and technical content to help customers gain insights, make informed decisions, and enable themselves at any stage of the software-as-a-service (SaaS) journey on AWS. AWS Partners can search by topics most relevant to their business, content types, or specific business or technical role to find whitepapers, case studies, best practices, videos, and more.

#### **Use cases:**

- Whether you work for or with an organization offering SaaS solutions to customers, or you just want to take your SaaS knowledge to the next level, the AWS SaaS Factory Insights Hub will help customers stay up-to-date on all things SaaS on AWS.

#### **Customer Benefits:**

- AWS SaaS Factory Insights Hub allows customers to search and browse available resources by role, knowledge level, content category, content type, or keywords. Customers can also view all new and featured content to follow the latest updates from the AWS SaaS Factory team. They can find various resources covering both business and technical aspects of a SaaS delivery model, such as SaaS 101, SaaS product strategy, go-to-market (GTM), packaging and pricing, migration strategies, billing and metering, tenant isolation, and data partitioning.

**Resources:** [Website](#) | [Blog](#)

### SaaS Lens for the Well Architected Tool

#### **What is it?**

The SaaS Lens for the AWS Well-Architected Tool enables customers to review and improve their cloud-based architectures and better understand the business impact of their design decisions. The SaaS Lens for the AWS Well-Architected Tool measures architecture against best practices and provides actionable insights to achieve a well-architected system that is more likely to achieve reliability, security, efficiency, and cost-effectiveness in the cloud.

#### **Use cases:**

- Kick-off your SaaS Journey: Leverage the SaaS Lens Whitepaper, best practices and improvement plans by technical teams as a starting place to learn development concepts to begin your journey to SaaS.
- Improve your architecture: Review SaaS workload against a list of Best Practices and leverage the improvement plans and resources to gain knowledge to improve systems.
- Identify and resolve risks: The SaaS Lens for the Well-Architected Tool provides guidance to identify Medium-Risk and High-Risk issues that can impact your development roadmap.

#### **Customer Benefits:**

- Learn architectural best practices for designing and operating systems in the cloud.
- Measure your architecture against best practices and receive actionable insights for improvement.
- Have a well-architected system that is more likely to achieve reliability, security, efficiency, and cost-effectiveness in the cloud.

**Resources:** [Website](#) | [Whitepaper](#) | [Blog](#)

### Foundational Technical Review Lens in the Well-Architected Tool

#### **What is it?**

The AWS Foundational Technical Review (FTR) Lens in the AWS Well-Architected Tool provides a self-service way for AWS Partners to prepare for the Foundational Technical Review (formally known as the Technical Baseline Review). The AWS Well-Architected FTR Lens includes best practices for security, reliability, and operational excellence, representing the best-practice requirements necessary for membership in the AWS Partner Network. These best practices help partners take their first step to becoming Well-Architected.

#### **Availability:**

Available to customers and AWS Partners at no additional charge and is offered in all Regions where the [AWS Well-Architected Tool is available](#).

#### **Customer Benefits:**

- Easily identify risks in your architectures related to the Foundational Technical Review
- Identify how to make workload improvements, mitigate risks, and successfully complete the FTR.

**Resources:** [Website](#) | [User Guide](#) | [Foundational Technical Page](#)

## ISV Partner Path

### **What is it?**

ISV Partner Path, a distinct partner journey enabling a streamlined AWS Partner Network (APN) experience for Independent Software Vendors (ISVs) to build, market, and sell their solutions on AWS. ISV Partner Path accelerates an ISV's engagement with AWS through prescriptive guidance, curated programs, focused benefits, Marketplace capabilities, and unique co-selling access—all accessible with no tier-based requirements. We are introducing a new partner journey (ISV) in addition to the two (Consulting and Technology) today, separating ISV from the Technology Partner journey. We will not use APN Tiers (Registered, Select, Advanced) in the ISV Partner Path as the default leveling framework for ISV Partners

### **Availability:**

ISV Partner Path will be available in January 2021, following the announcement at reinvent on December 3 2020.

### **Customer Benefits:**

- Introducing ISV partner Path allows us remove the previous challenges that ISVs had with tier structure as well as reducing requirements for entry, therefore enabling them to engage more quickly with AWS.
- We will focus on the Partner solution instead of the Partner tier which makes this more relevant for the way that this Partner type goes to market with their customers

## ProServe Ready

### **What is it?**

The Public Sector ProServe Ready program provides AWS Consulting Partners a formal and standardized way to work with AWS Professional Services ("ProServe") on subcontracted engagements with AWS customers. Bringing ProServe Ready to our Public Sector Partners and customers accelerates our customers' journey to the cloud. ProServe Ready offers partners formalized training on ProServe best practices, enabling them to work seamlessly with AWS ProServe.

### **Availability:**

Currently in pilot in the US and EMEA

### **Customer Benefits:**

- Learn architectural best practices for designing and operating systems in the cloud.
- Measure your architecture against best practices and receive actionable insights for improvement.
- Have a well-architected system that is more likely to achieve reliability, security, efficiency, and cost-effectiveness in the cloud.

## Think Big for Small Business Pilot

### **What is it?**

Think Big for Small Business is an AWS Partner Network (APN) program to further enable and accelerate Small and/or Diverse Partners (often designated as Minority-Owned Business). The Program addresses their challenges in meeting APN tier requirements and incentivizes partner to grow and sustain their AWS businesses.

### **Availability:**

Ongoing global pilot

### **Use cases:**

- Whether you work for or with an organization offering SaaS solutions to customers, or you just want to take your SaaS knowledge to the next level, the AWS SaaS Factory Insights Hub will help customers stay up-to-date on all things SaaS on AWS.

### **Benefits:**

- The Program provides small/diverse partners in Registered and Select Tiers with provisional access to APN tier benefits through a set of requirements proportional to partner size, essentially giving them more time and needed resources to achieve APN requirements. It also offers a limited-time Technical Capability discount to small/diverse partners in the Public Sector Solution Provider Program and Public Sector Distribution while they work towards a competency. In addition, participating partners will have access to a Small Partner Guide to navigate all relevant AWS programs and resources for growing their business with AWS.

## AWS Public Safety & Disaster Response Competency Expands to include Technology Partners

### **What is it?**

We are excited to launch an additional track within this AWS Competency that showcases specialized and dedicated AWS Technology Partners.

The expansion includes the addition of 16 solutions from independent software vendors (ISVs) that deliver AWS Partner technology for emergency management operations, justice public safety applications, PSDR infrastructure resilience and recovery, 911 and emergency communications, and PSDR data and analytics.

**Resources:** [Website](#)

## AWS Partner Security Solutions for Government Workloads

### **What is it?**

Government agencies and public sector organizations need rapidly deployable and dependable security solutions to support their missions. To respond, Amazon Web Services (AWS) launched the Security Solutions for Government Workloads initiative under the Authority to Operate (ATO) on AWS Program. This initiative works with Public Sector partners, members of the AWS Partner Network (APN), to develop security solutions designed to meet the unique security and compliance requirements of public sector workloads.

The Security Solutions for Government Workloads initiative provides six different partner-designed offerings to support remote workforce security and web portal security for customer workloads.

AWS Public Sector Partners configure and manage these repeatable packages. This model enables global scalability and availability while supporting localized customizations for unique markets.

### **Customer Benefits:**

- Rapid solution deployment: Reduce ramp-up time and accelerate security capabilities for government and public sector customer workloads by using pre-configured and/or managed solutions.
- High standards for privacy and data security: Deploy security solutions configured and managed by AWS Public Sector Partners with a focus on end-to-end security enforcement and automation.
- Comprehensive security and compliance controls: Meet security and compliance standards for finance, retail, healthcare, government, and more with third-party validation of global compliance requirements achieved and continually monitored by AWS to help customers.

**Resources:** [Website](#)

## AI and ML Rapid Adoption Assistance For Public Sector Partners

### **What is it?**

The American AI Initiative directs U.S. government agencies to double down on efforts to advance artificial intelligence (AI) in order to protect and improve the security and economy of our nation. AI and related technologies (including machine learning [ML] and deep learning [DL]) can effectively transform the way the government operates.

AI and ML Rapid Adoption Assistance, is an additional benefit available for members of the Public Sector Partner (PSP) Program under the AWS Partner Network (APN). This initiative provides partners with a direct, scalable, and automated mechanism to reach out to AWS experts for assistance in delivering AI-based solutions that can help U.S. government agencies provide better services United States residents.

### **Partner Benefits:**

- Reduce ramp-up time for your AI and ML applications and deliver advanced technology solutions: The AWS AI and ML subject matter experts will help partners build an AI and ML roadmap and accelerate their solution development by guiding through the envision, enablement, and building phases.
- Differentiate your business and grow your AWS practice: Develop a business plan to expand your public sector customer base through the American AI Initiative. Achieve recognition for your AI and ML solutions through the government, education and nonprofit competencies, the AWS GovCloud (US) skill, and AWS solution provider programs.
- Simplify cloud procurement strategy and build your portfolio: Set the stage to win business and contracts in public sector with dedicated support from the public sector bid and proposal team. Develop core go-to-market assets to highlight your expertise on AWS AI and ML and earn trust with customers.

**Resources:** [Website](#)

## AWS Mainframe Migration Competency

### **What is it?**

Recognizing the complexity of a mainframe migration, our customers seek proven methodologies, tools, and best practices to empower successful migrations. The AWS Partner Network (APN) plays a critical role in these efforts by providing proven technology products and services for customers' mainframe migrations.

We are excited to pre-announce the launch of the AWS Mainframe Migration category within the AWS Migration Competency. These validations give customers confidence in choosing AWS Partner solutions.

### **AWS Partner solutions:**

- The AWS Mainframe Migration Technology Partners category recognizes AWS Partners with proven technology and customer success, migrating both mainframe applications and data to AWS.
- The AWS Mainframe Migration Consulting Partners category recognizes AWS Partners with mature practices and a track record of successful mainframe workload migrations.

**Resources:** [Blog](#)

## AWS Energy Competency

### **What is it?**

AWS Partners play a vital role in these efforts by supporting our customers worldwide and building, implementing, and integrating technology to enable the transformation of complex business and operational systems. This helps energy companies drive cost reduction and efficiency, and deliver step change innovations that position operators for success as energy portfolios transition to a lower carbon world.

We are excited to pre-announce the AWS Energy Competency Program, which will formally launch in 2021 and introduce AWS Technology and Consulting Partners who have achieved this high-bar designation.

**Resources:** [Blog](#)

## AWS ISV Accelerate Program

### **What is it?**

The AWS ISV Accelerate Program is a co-sell program for AWS Partners who provide software solutions that run on or integrate with AWS. The program helps you drive new business and accelerate sales cycles by connecting the participating Independent Software Vendors (ISVs) with the AWS Sales organization.

The AWS ISV Accelerate Program provides you with co-sell support and benefits to easily gain access to millions of active AWS customers with AWS field sellers globally. Co-selling provides better customer outcomes and assures mutual commitment from AWS and Partners.

### **Partner Benefits:**

- Drive visibility with AWS Sales: Your solutions will be included in an AWS Account Manager facing solution library with links to your solution collateral (e.g. sales and solution briefs). Additionally, you are eligible to participate in activities that help you drive awareness with the AWS Sales teams.
- Focused co-sell support and resources: You will gain prioritized access to the AWS co-sell support team, which is aligned with AWS Account Managers working closely with AWS customers to drive adoption of ISV solutions. You will have access to webinars that provide guidance on how to successfully work with the AWS Sales organization.
- Reduced AWS Marketplace listing fees: AWS Marketplace is a digital catalog with thousands of software listings from ISVs that make it easy for customers to find, buy, deploy, and manage software that run on AWS. You are eligible for reduced listing fees for selling your solutions on the AWS Marketplace.

Resources: [Website](#)

## Updates to Authority to Operate (ATO) on AWS Program

### **What is it?**

The Authority to Operate (ATO) on AWS is an Amazon Web Services (AWS) Partner Network (APN) program which provides resources to solution providers running on AWS who need assistance in their pursuit of a compliance authorization. In addition to FedRAMP, ATO on AWS Program now supports 1) Financial: PCI-DSS, 2) Health: HIPAA/HITRUST, 3) Public safety & tax: CJIS, IRS 1075, 4) International: IRAP, Protection-B, GDPR, and 5) Defense: DoD IL4 / IL5 / IL6, CMMC.

### **Partner Benefits:**

- Accelerates security & compliance authorization process
- Reduces cost & time (Average 18-24 months) – FedRAMP
- Provides reusable artifacts including guidance, templates, tools, and pre-built templates for APN Solutions
- Builds and Optimizes DevOps, SecOps, Continuous Integration/Continuous Delivery (CI/CD), Continuous Risk Treatment (CRT) strategies
- Develops proven Techniques using AWS Security Automation and Orchestration (SAO) methodology

Resources: [Website](#)

## AWS Outposts Partners

### **What is it?**

AWS Outposts Ready Partners offer products that integrate with AWS Outposts deployments. Customers can discover products on this page that are tested on AWS Outposts and follow AWS security and architecture best practices. AWS Competency Partners are ready to help AWS customers migrate and deploy their applications to AWS Outposts.

### **Customer benefits:**

- The AWS Service Ready Program helps AWS customers find AWS Technology Partner products that integrate with specific AWS services. These AWS Partners have demonstrated experience and success helping AWS customers evaluate and use their technology productively, at scale with varying levels of complexity.
- The AWS Partner Competency Program has validated that the partners below have demonstrated they can help enterprise customers migrate applications and legacy infrastructure to AWS.

Resources: [External Website](#)

## AWS Travel and Hospitality Competency

### **What is it?**

AWS Travel and Hospitality Competency Technology and Consulting Partners provide technology products and services to accelerate the industry's modernization and innovation journey from behind-the-scenes operational efficiencies to guest-facing customer experiences. These include a 360-degree view of customer and operational data, digital engagement with customers, connected experiences with smart assets, and modernized core travel and hospitality applications. These AWS Partners are validated for technical proficiency and customers' success to help travel and hospitality organizations build a resilient business and accelerate innovation.

### **Availability**

The [AWS Travel and Hospitality Competency](#) is now open to AWS Partners who provide specialized industry solutions. The AWS T&H Competency Validation Checklists for [ISV](#) and [Consulting](#) Partners provide the criteria necessary to achieve the AWS Travel and Hospitality Competency designation.

### **Benefits**

- Introducing the AWS Travel and Hospitality Competency will help support customers in building industry resilience for the long run
- This Competency takes on the heavy lifting of identifying and validating the most experienced AWS Partners who can help industry customers succeed—specifically at times of disruption

Resources: [Blog](#)

## **RDS Service Delivery Program**

### **What is it?**

The Amazon RDS Service Delivery Program validates SI Partners for following best practices with Amazon RDS, demonstrating technical proficiency and proven customer success by specific database engine type. Amazon RDS Service Delivery Partners have proven success helping customers with database monitoring, security, and performance using Amazon RDS database engines (Aurora MySQL, Aurora PostgreSQL, RDS for PostgreSQL, RDS for MySQL, RDS for MariaDB, RDS for Oracle, and RDS for SQL Server). Amazon RDS Service Delivery Partners are vetted through a rigorous technical validation by individual database engine type that verifies they have successfully implemented Amazon RDS for customers and followed AWS best practices for the service.

### **Customer Benefits:**

- Customers and database service teams now have the ability to identify Partners validated for specific RDS database engine proficiency (e.g. Aurora MySQL, RDS for Oracle).

**Resources:** [Website](#) | [Blog](#) | [PSF](#)