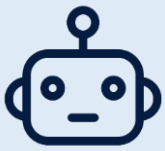

2018

Contents

	 RoboMaker	 Transfer Family	 Transit Gateway

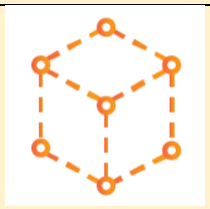
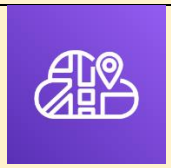
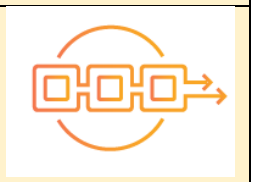
Announced on the 27th Nov 2018:

 Elemental MediaConnect	 Ground Station	 Outposts	 SageMaker GroundTruth

Announced on Wednesday 28th Nov 2018

"Wacky Wednesday"

On the day, the creator of Spongebob, Stephen Hillenburg, passes away.

 AppMesh	 Cloud Map	 Control Tower	 DeepRacer
 Elastic Inference	 Forecast	 FSx for Lustre	 FSx for Windows File Server
 Inferentia	 Lake Formation	 License Manager	 Managed BlockChain

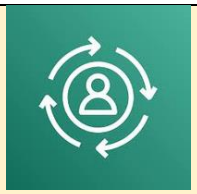
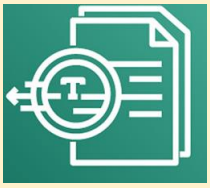
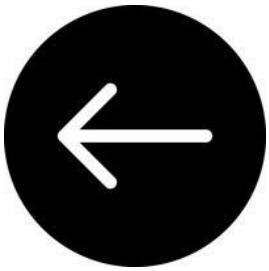
 Apache Kafka	 Personalize	 Amazon Quantum Ledger Database	Amazon RDS on VMWare
 Security Hub	 Textract	 Timestream	
Announced in December			
 Resource Access Manager			

Image credits

The initial cover image shows the gloved hand of Prince Harry and the hand of Meghan Markle. Their wedding took place on Saturday, May 19th 2018. The photograph is of when the pair rode in an open carriage. Markle grew up in Los Angeles, the most populous city in the US state called *California*.

This specific image shows the hand of Prince Harry waving and a ring on Markle's finger is visible. The photograph was used in an article in *The Sun* on May 19th 2019. It was entitled "Sealed with a kiss: Royal Wedding anniversary – Top seven moments to remember when Prince Harry married Meghan Markle". In that article, credit is given to Rex Features, an agency which supplies photographs.

AWS Auto Scaling



Straightaway, I need to emphasise that this entry is entitled *AWS* Auto Scaling. It is a general product, and not specifically concerned with the scaling of EC2 instances. Auto Scaling (probably now always named *EC2* Auto Scaling, to distinguish it from this 2018 release) has been around since 2009.

Let's take a look at the initial announcement, from 2018. It explains that this general AWS Auto Scaling concerns not just EC2 instances but also tasks running on Elastic Container Service, DynamoDB tables and Aurora Replicas:

> AWS Auto Scaling monitors your applications and automatically adjusts capacity to maintain steady, predictable performance at the lowest possible cost. Using AWS Auto Scaling, you can setup scaling for multiple resources across multiple services in minutes. AWS Auto Scaling provides a simple, powerful user interface that lets you build scaling plans for Amazon EC2 instances and Spot Fleets, Amazon ECS tasks, Amazon DynamoDB tables, and Amazon Aurora Replicas.
>
> AWS Auto Scaling makes scaling simple with recommendations that allow you to optimize performance, costs, or balance between them. If you're already using Amazon EC2 Auto Scaling, you can now combine it with AWS Auto Scaling to scale additional resources for other AWS services. With AWS Auto Scaling, your applications always have the right resources at the right time.
>
> [AWS 2018]

There is no additional charge for AWS Auto Scaling. There is, after all, no extra substance you have. So, it is more a *way of using* certain resources on AWS. If you use AWS resources, they scale autonomously.

Here is an extract from Corey Quinn:

> **Corey:** Something we saw during the pandemic in many shops that prided themselves on auto scaling, for example, saw 80% drop off and user traffic, but their bill remained largely intact at a flat line or doing what AWS bills always doing, and so increasing with time, because data doesn't delete itself. Great. Auto scaling is more of an aspirational thing in some cases, and people use the term elasticity in cloud to mean, "Oh, I can scale up." And you need to scale up because if not, you're dropping customer traffic on the ground. Scaling down has never really been a primary area of focus for companies.
>
> **Corey:** Because at that point, it's just extra money, which I know sounds like it's for steal, but it's not really. Losing customers and disappointing them is way more important than, "We spent a little bit too much on our infrastructure." So people don't emphasize the scale-down part of the story. Now, as we wind up seeing the whole serverless approach, there are benefits to procurement done right. Simon Worldly framed at once is tracing the flow of capital through your organization. For a long time, it was hard to find expensive Lambda bills. There was a blog post somewhat recently on the AWS Management and Governance blog on July 22nd, How The Washington Post's Arc XP uses CloudWatch Metrics Explorer to reduce costs.
>
> [Quinn 2021]

Bibliography

I. Official

[AWS 2018a]

Introducing AWS Auto Scaling. [Announcement]. Jan 16th 2018. Available at: <https://aws.amazon.com/about-aws/whats-new/2018/01/introducing-aws-auto-scaling/>

[AWS 2018b]

Announcing Enhancements to AWS Auto Scaling. [Announcement]. Apr 24th 2018. Available at: <https://aws.amazon.com/about-aws/whats-new/2018/04/announcing-enhancements-to-aws-auto-scaling/>

II. Unofficial

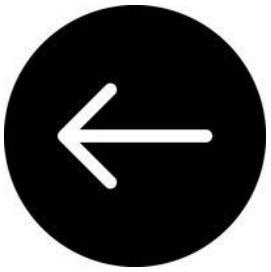
[Quinn 2021]

Quinn, Corey (2021). Serverless Chats. Episode #108: Mulling over Multi-Cloud with Corey Quinn. Available at: <https://www.serverlesschats.com/108/>

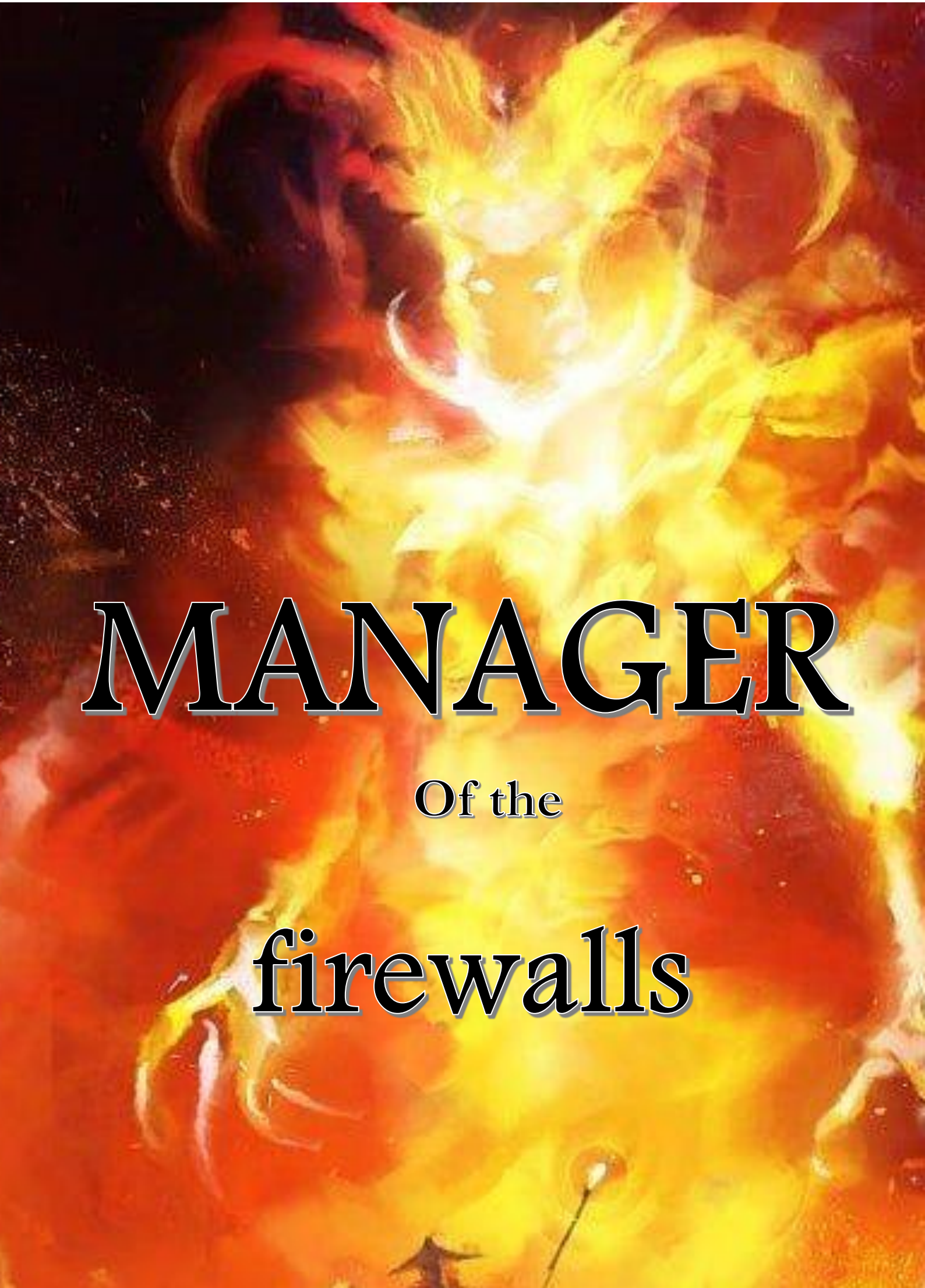
III. Critical

IV. General

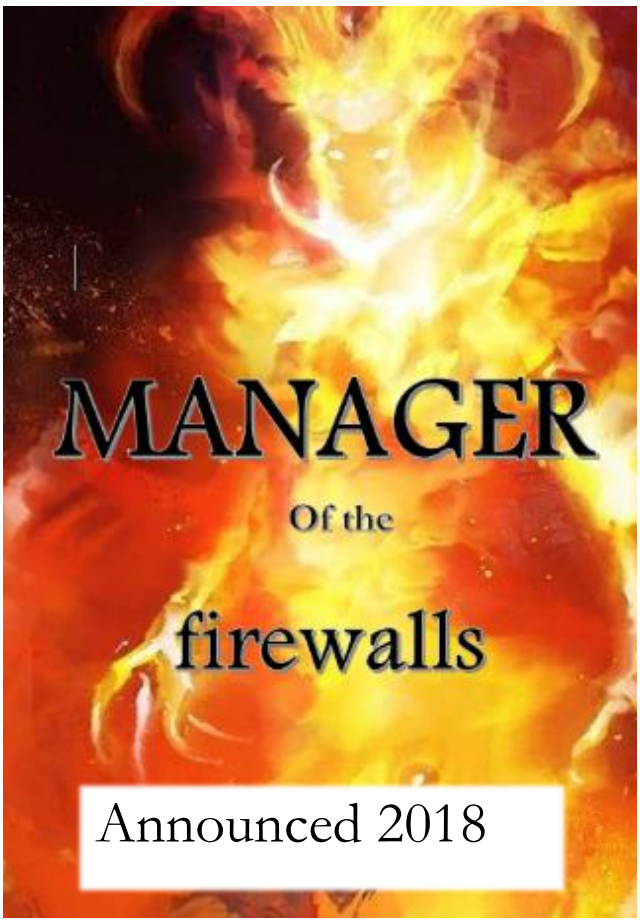
AWS Firewall Manager



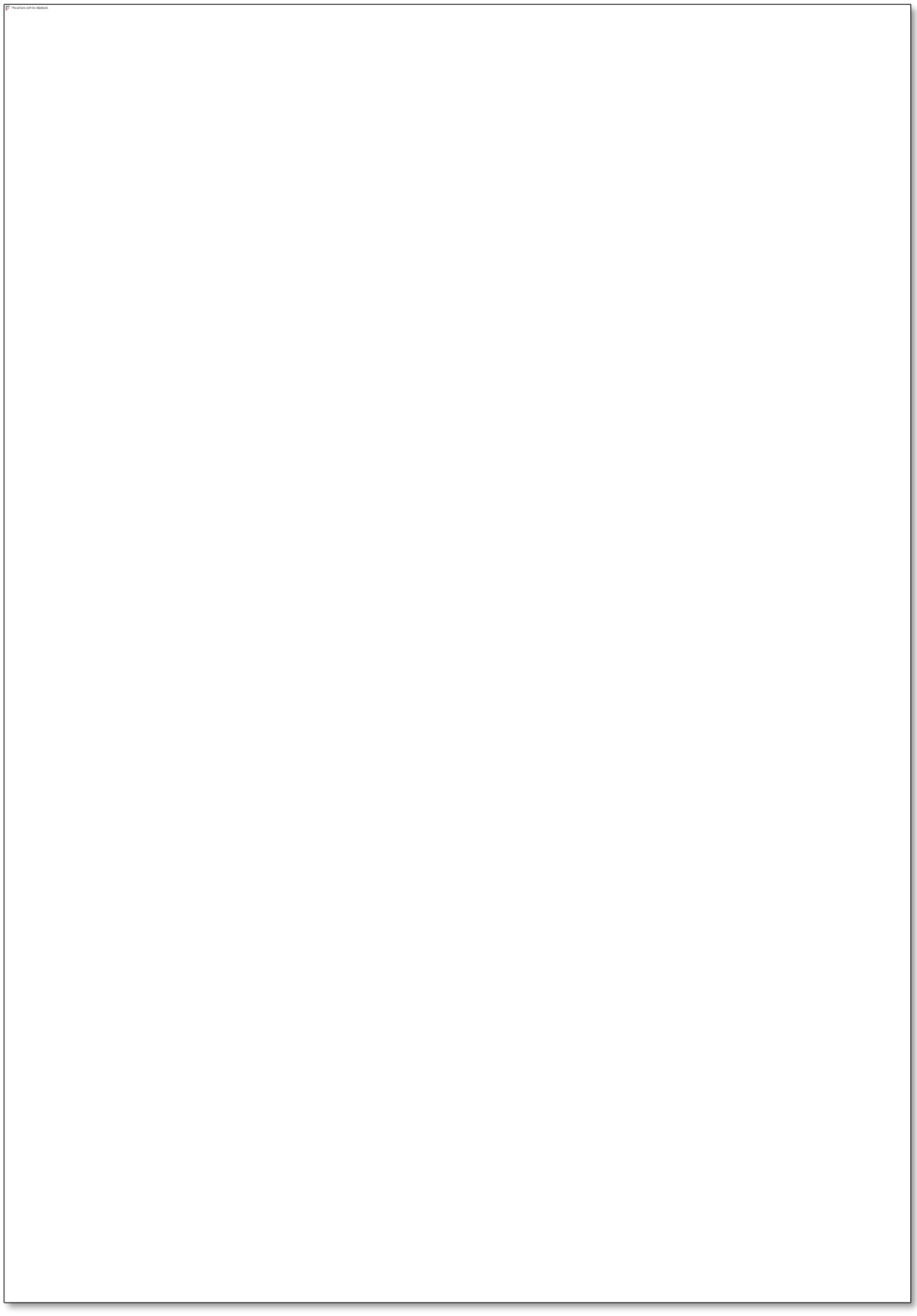
This service is effectively *AWS Config for firewalls*. If you are not aware, AWS Config is a service which monitor the configuration of your AWS resources. The configuration of resources is the way that are arranged, consisting of the relationships which hold amongst them. For example, we might ask whether there is an association between an EC2 instance and a Security Group. In this case, the two resources are the EC2 instance and the Security Group, while the relationship amongst them is that of association. AWS Config can also take remedial action. That is, it does not only *tell you* about the way things are but can make changes to how things are. AWS Firewall Manager is similar to AWS Config because it tells you about how various resources are configured, and can also take remedial action. Firewalls on AWS, with which AWS Firewall Manager is concerned, include Security Groups, Network Access Control Lists (NACLs) and Network Firewalls.


MANAGER
Of the
firewalls

We now have to be careful to keep separate the following three services:



AWS even have a guide which looks at all three together


This picture can't be displayed.

Bibliography

I. Official

[Bihani 2018]

Bihani, Nihar and Jeffrey Lyon (2018). *Reinvent 2018* [Conference]. Orchestrate Perimeter Security Across Distributed Applications. Available at: https://www.youtube.com/watch?v=ELIiF-jE0y8&ab_channel=AmazonWebServices

[Fuller 2018]

Fuller, Abby and Nihar Bihani (2018). *AWS Launchpad* [Video series]. Uploaded Apr 10th 2018. YouTube Channel: Amazon Web Services. Available at: <https://www.youtube.com/watch?v=qUoyTumxcjk&ab_channel=AmazonWebServices>

[Vogels 2018]

Vogels, Werner (2018). Announcing AWS Firewall Manager. *AWS San Francisco* [Conference]. April 2018. YouTube Channel: Amazon Web Services. Available at: <https://www.youtube.com/watch?v=KtwCYxIvink&ab_channel=AmazonWebServices>

[AWS 2018a]

Introducing AWS Firewall Manager. [Announcement]. Apr 4th 2018. Available at: <https://aws.amazon.com/about-aws/whats-new/2018/04/introducing-aws-firewall-manager/>

[AWS 2018b]

New AWS Services Enable Multi-account Capabilities Through AWS Organizations. [Announcement]. Apr 9th 2018. Available at: <https://aws.amazon.com/about-aws/whats-new/2018/04/new-aws-services-enable-multi-account-capabilities-through-aws-organizations/>

[AWS 2018c]

AWS Firewall Manager Now Available in the Europe (Ireland) Region. [Announcement]. June 19th 2018. Available at: <https://aws.amazon.com/about-aws/whats-new/2018/06/aws-firewall-manager-now-available-in-europe-ireland-region/>

[AWS 2018d]

AWS Firewall Manager Supports Scoping Policy By Accounts. [Announcement]. Sept 12th 2018. Available at: https://aws.amazon.com/about-aws/whats-new/2018/09/aws-firewall-manager-supports-scoping-policy-by-accounts/

[AWS 2018e]

AWS Firewall Manager Now Supports Multiple AWS WAF Rule Groups. [Announcement]. Oct 29th 2018. Available at: <https://aws.amazon.com/about-aws/whats-new/2018/10/firewall-manager-now-supports-multiple-aws-waf-rulegroups-per-policy/>

[Bihani 2018]

Bihani, Nihar (2018). Orchestrate Perimeter Security Across Distributed Applications. YouTube Channel: Amazon Web Services. Available at: https://www.youtube.com/watch?v=ELIiF-jE0y8&ab_channel=AmazonWebServices

Unofficial

[Fuller 2021]

Fuller, Matt (2021). AWS Accounts as Security Boundaries. Available at: <https://matthewdf10.medium.com/aws-accounts-as-security-boundaries-97-ways-data-can-be-shared-across-accounts-b933ce9c837e>

[Quinn 2020]

RSA thinks AWS Firewall Manager is a Job Title. *AWS Morning Brief*. Available at: <https://www.lastweekinaws.com/podcast/aws-morning-brief/rsa-thinks-aws-firewall-manager-is-a-job-title/>

II. Critical

III. General

[AWS 2019]

AWS Security Hub integrates with AWS Firewall Manager. [Announcement]. Dec 18th 2019. Available at: <https://aws.amazon.com/about-aws/whats-new/2019/12/aws-security-hub-integrates-with-aws-firewall-manager/>

[AWS 2022]

AWS Firewall Manager now supports AWS Shield Advanced automatic application layer DDoS mitigation. [Announcement]. Jan 7th 2022. Available at: <https://aws.amazon.com/about-aws/whats-new/2022/01/aws-firewall-manager-shield-advanced-application-layer-ddos-mitigation/>

Does it rotate automatically?

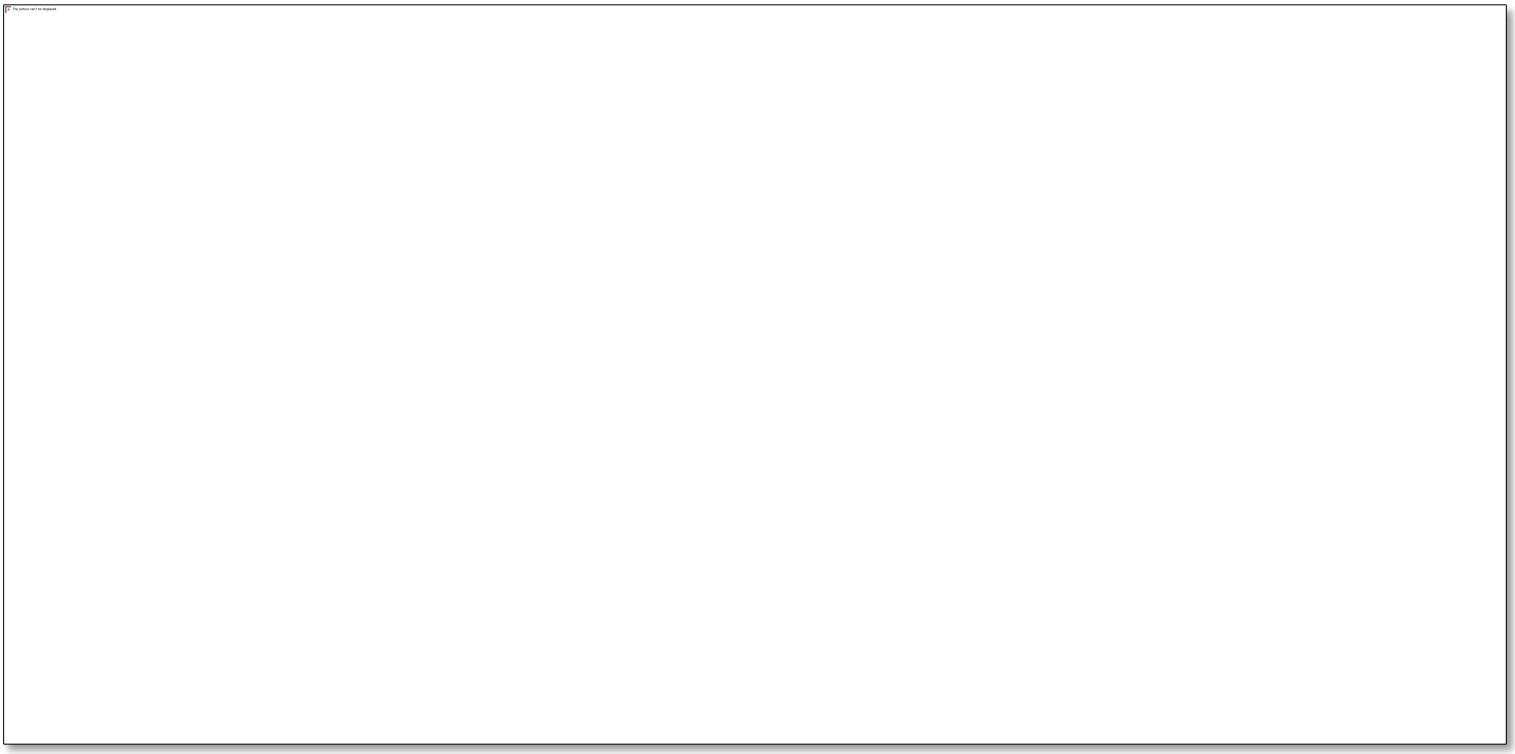
AWS Secrets Manager and Parameter Store are two very similar services. There has therefore been interest, amongst fans of AWS, in clarifying the points on which the two services differ. One concrete point of difference is that only one service, Secrets Manager, will rotate secrets automatically. Parameter Store cannot rotate secrets automatically. There is a classic AWS Certification exam question which tests your knowledge of this point ("classic" because I have encountered it on mock exams online and in real exams). For a while, I was aware that only one service could rotate secrets automatically but could not remember which. How might we remember which service (Secrets Manager or Parameter Store) can rotate secrets automatically?

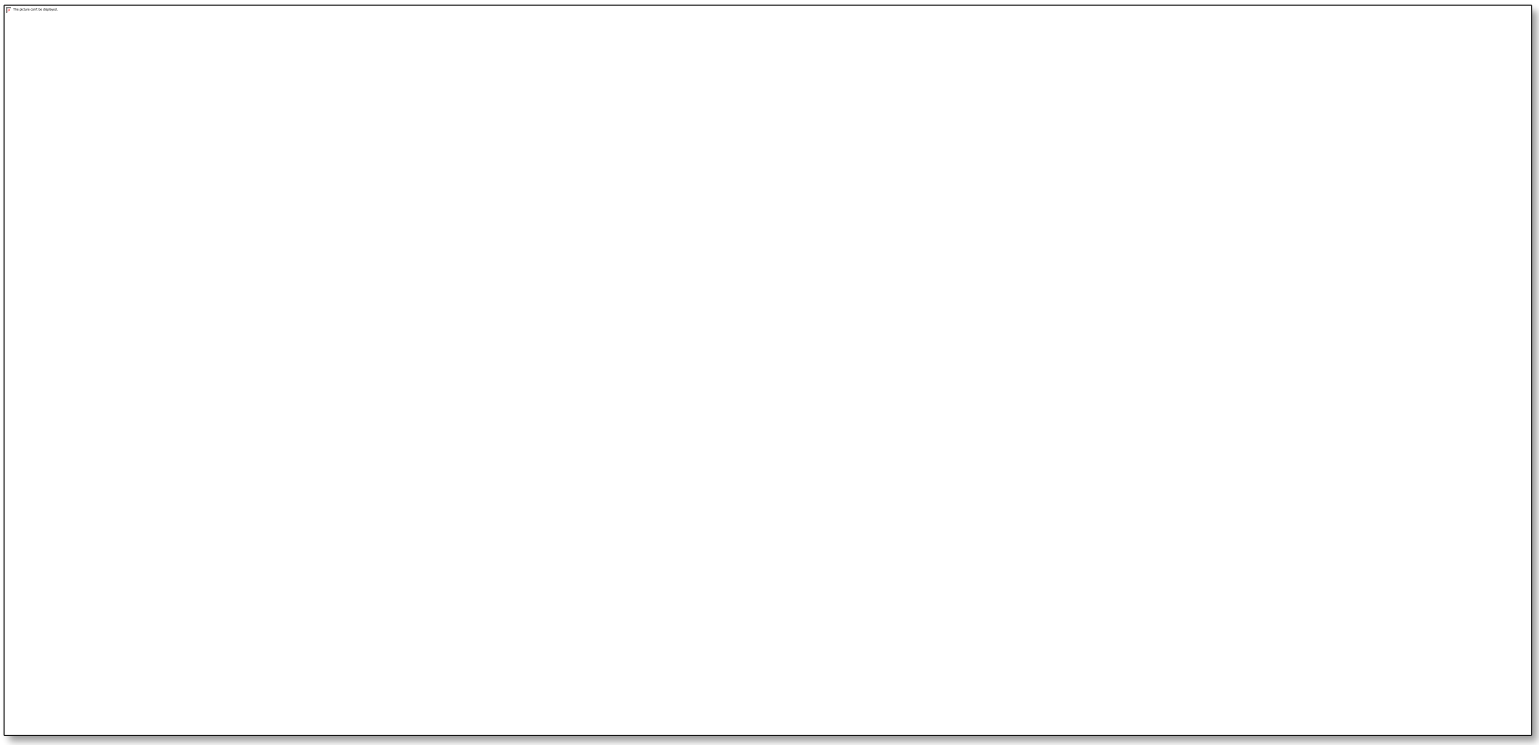
The solution I employ involves focussing on the names as my starting point. "Secret" seems almost theatrical. The word carries not the blandness of "confidential" or "sensitive" – no, you have a secret, something which a toddler might whisper in your ear. I think of the secret password which Professor McGonagle must utter in order to gain access to Dumbledore's office in the *Harry Potter* series. Once the secret password is uttered out loud, a lift, constructed of ornate gold, begins to rotate automatically. So, "secrets manager" brings this scene involving automatic rotation to mind, in a way that the stagnant and static-sounding "parameter store" simply cannot do.

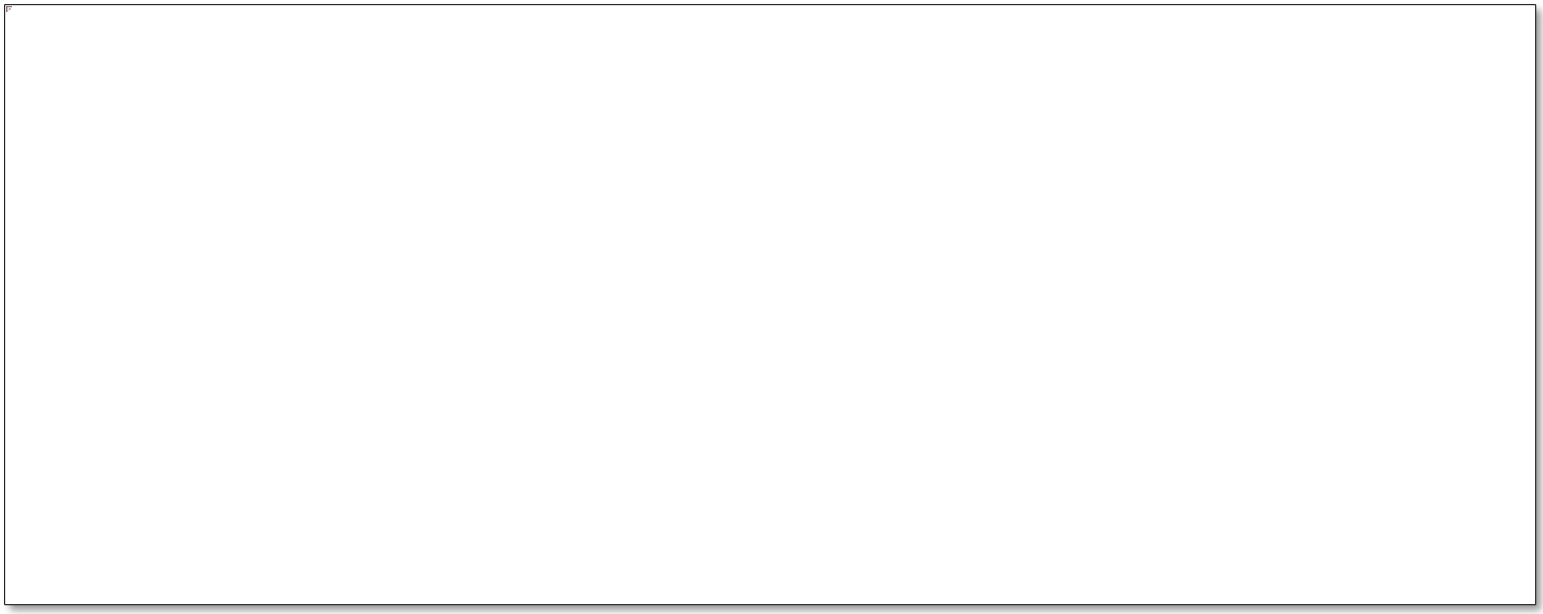
The exam question below is taken from a course by Neal Davis, preparing people for the security engineering certification.

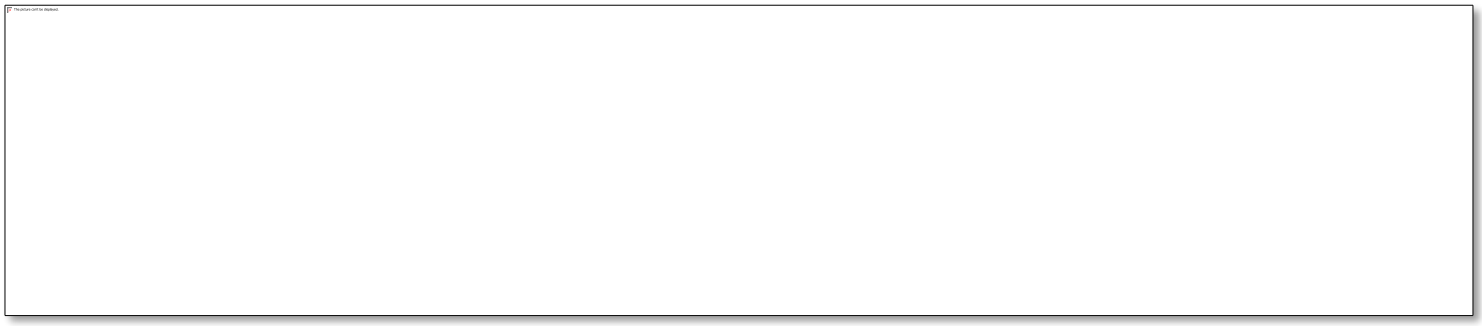
“For small amounts of data under **4 KB**, **Systems Manager Parameter store** would be cheaper when using standard parameters”

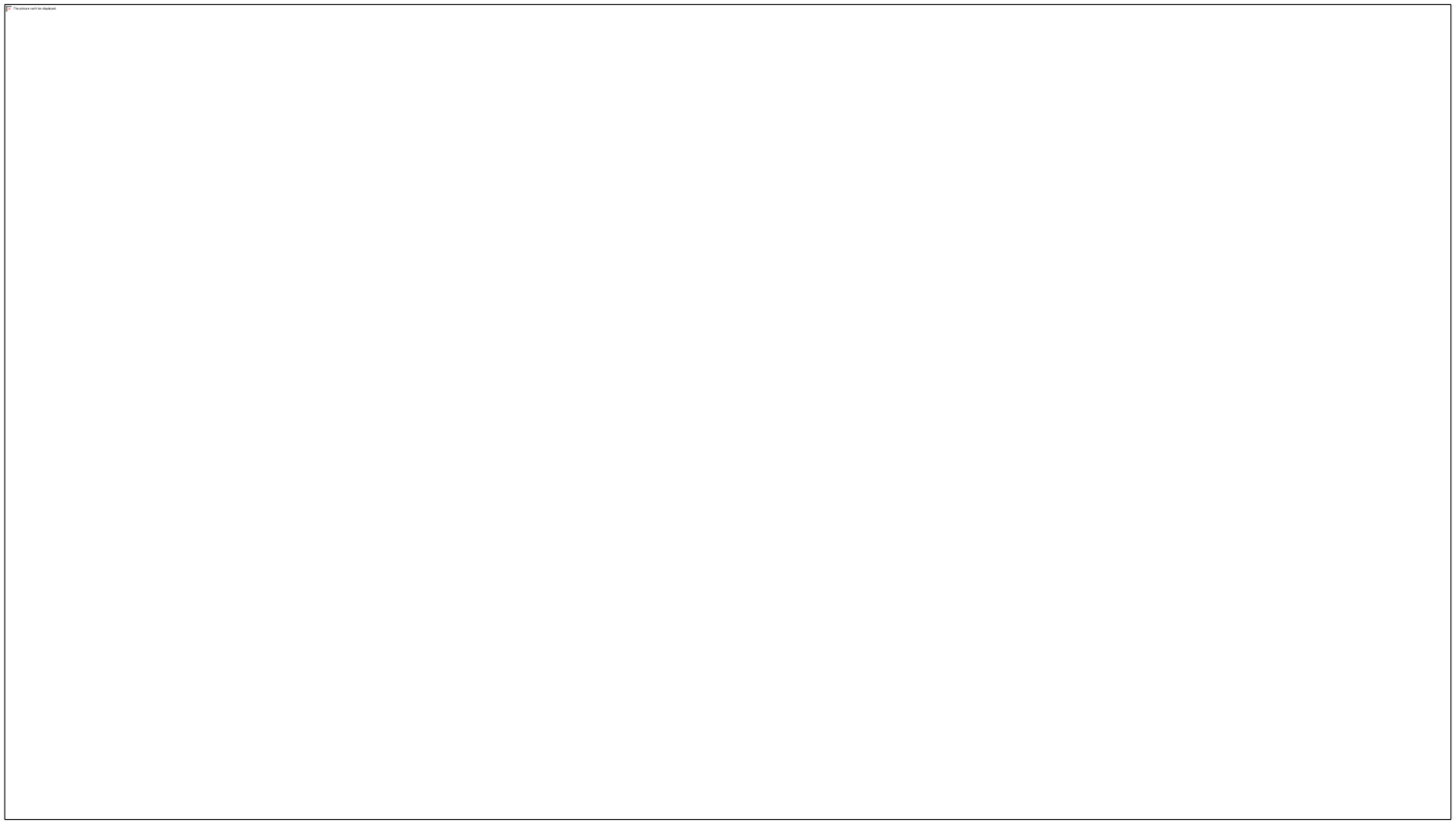
The picture can't be displayed.

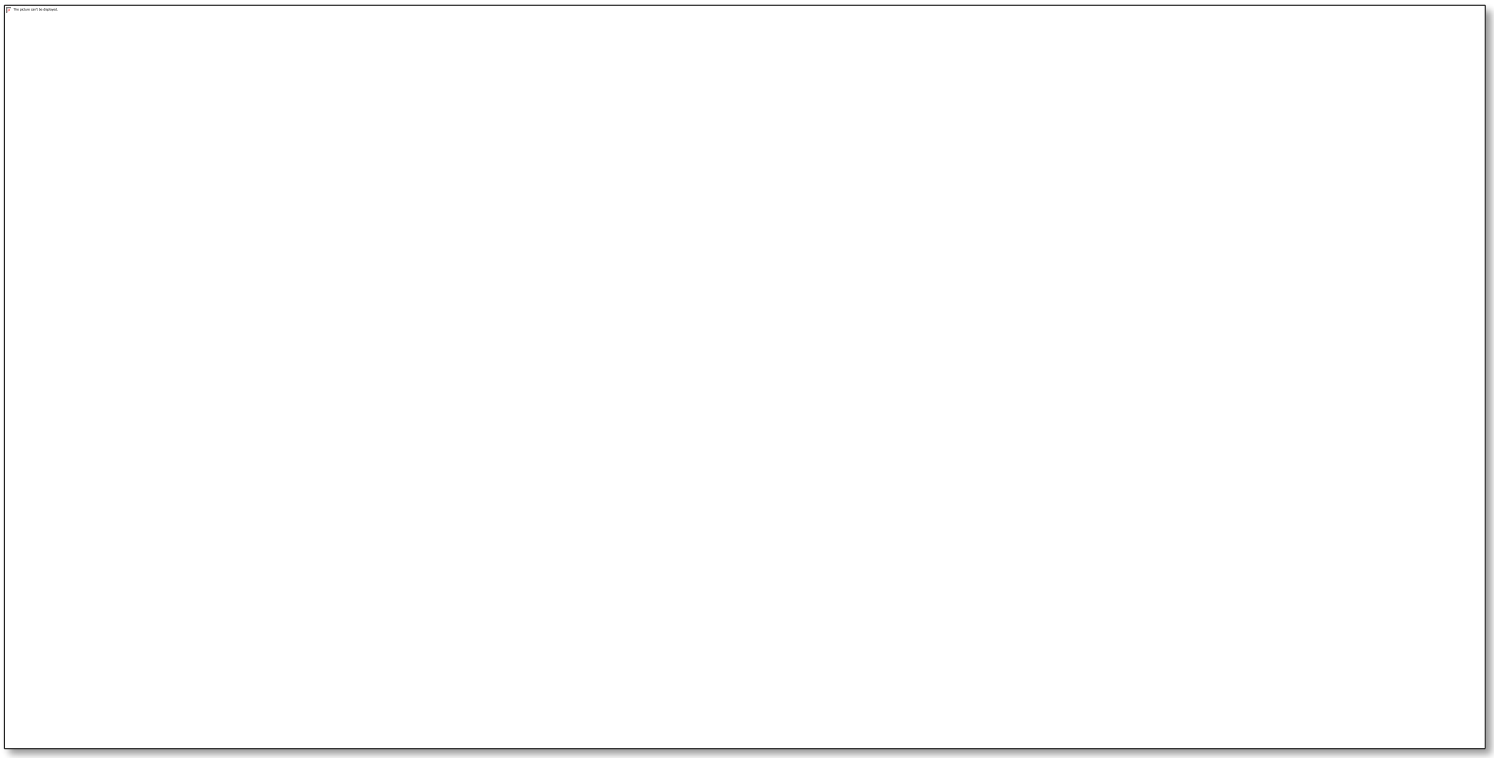











This picture can't be displayed.

Correct

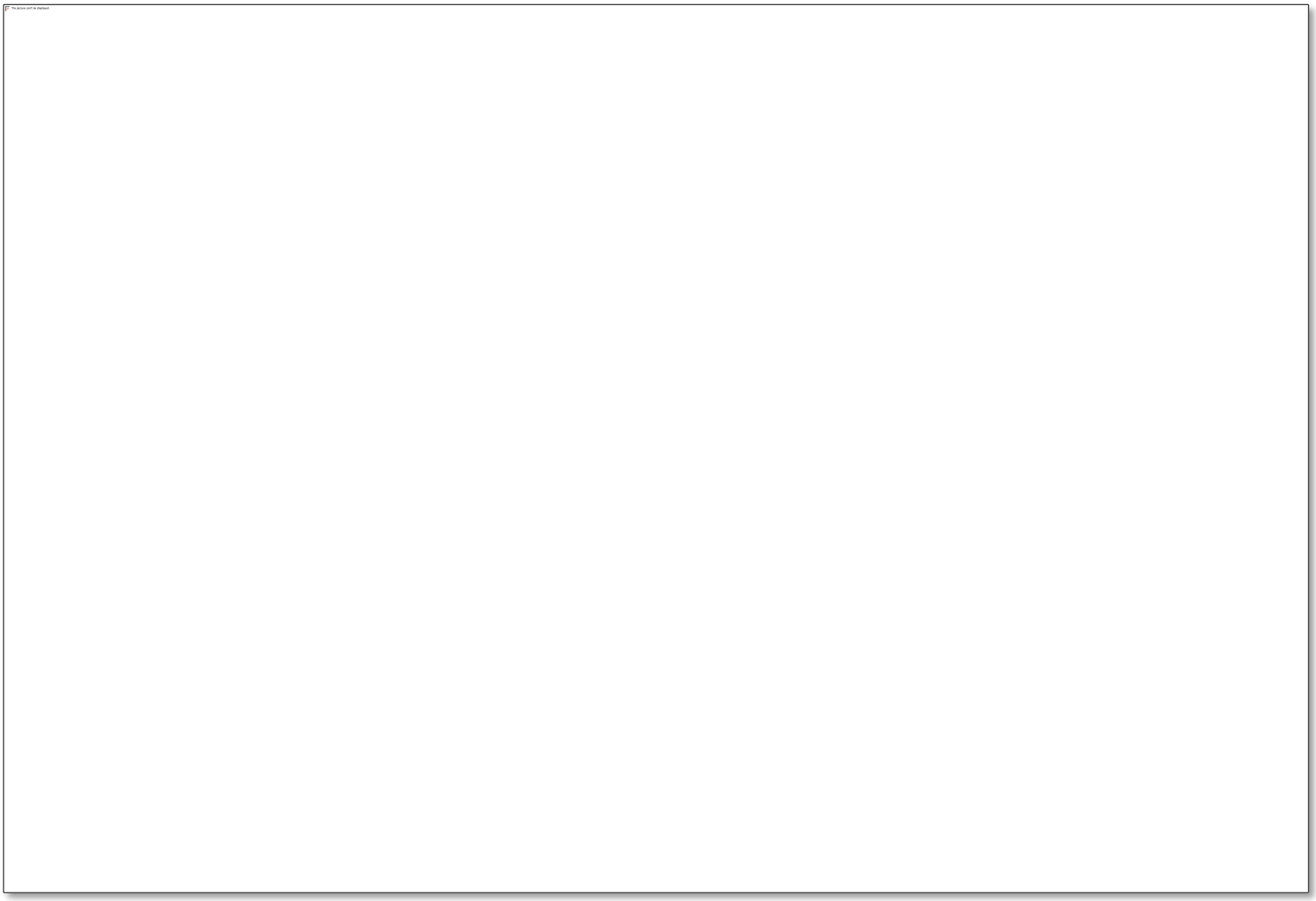
Explanation:

AWS Secrets Manager can be used to store secrets, and this includes SSH key pairs. The Secrets Manager API can be used programmatically to rotate secrets using an AWS Lambda function. The Lambda function can be configured to rotate the secrets every 90 days and then deliver them to the EC2 instances.

Secrets Manager API calls can also be logged for auditing purposes by creating an AWS CloudTrail trail. The trail can be configured to store the log files in an Amazon S3 bucket where they can be viewed at any point in time.

CORRECT: "Use AWS Secrets Manager to store the SSH key pairs. Create an AWS Lambda function that rotates the SSH keys every 90 days. Create an AWS CloudTrail trail that logs to an S3 bucket" is the correct answer (as explained above.)


This picture can't be displayed.


The picture can't be displayed.

Bibliography

I. Official

[Sridhar 2018]

Sridhar, Divya (2018). How to connect to AWS Secrets Manager service within a Virtual Private Cloud. *AWS Security Blog*. July 12th 2018. Available at: <https://aws.amazon.com/blogs/security/how-to-connect-to-aws-secrets-manager-service-within-a-virtual-private-cloud/>

II. Unofficial

III. Critical

IV. General

[Guo 2023]

Guo, Tiexin (2023). How to Handle Secrets with Azure Key Vault. Available at: <https://medium.com/gitguardian/how-to-handle-secrets-with-azure-key-vault-60f1ffec002c>

[Awasthi 2018a]

Awasthi, Apurv (2018). Understanding AWS Secrets Manager. YouTube Channel: AWS Online Tech Talks. June 26th 2018. Available at: <https://www.youtube.com/watch?v=Y3Gn_iP3FlE&ab_channel=AWSOnlineTechTalks>

[Shah 2018]

Shah, Namrata (2018). AWS Tutorial: AWS Secrets Manager: Create, Store, and Retrieve a Secret. YouTube Channel: NamrataHShah. Available at: <https://www.youtube.com/watch?v=jgQaGhx_YaQ&ab_channel=NamrataHShah>

[Daniel 2022]

AWS Secrets Manager Service Overview with Demo. Available at: <https://www.youtube.com/watch?v=GwVWWn2ZKj0&ab_channel=BeABetterDev>

[Deman 2018]

Deman, Quint van and Abby Fuller (2018). AWS Secrets Manager. Available at: <https://www.youtube.com/watch?v=HiY2oxR1Jd0&ab_channel=AmazonWebServices>

[Schmidt 2018]

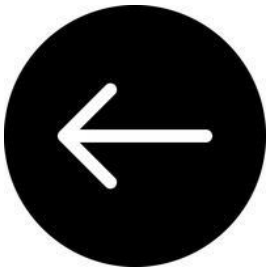
Schmidt, Stephen (2018). Leadership Session: AWS Security. *Reinvent 2018* [Conference]. <https://www.youtube.com/watch?v=MdlFuFhetug&ab_channel=AmazonWebServices>

[Awasthi 2018b]

Awasthi, Apurv (2018). Rotate Amazon RDS database credentials automatically with AWS Secrets Manager. *AWS Security Blog*. Available at: <https://aws.amazon.com/blogs/security/rotate-amazon-rds-database-credentials-automatically-with-aws-secrets-manager/>

[Awasthi 2018c]

Awasthi, Apurv (2018). How to access secrets across AWS accounts by attaching resource-based policies. *AWS Security Blog*. June 27th 2018. Available at: <https://aws.amazon.com/blogs/security/how-to-access-secrets-across-aws-accounts-by-attaching-resource-based-policies/>



Bibliography

Announcing AWS IoT Analytics. [Announcement]. Nov 29th 2017. Available at: https://aws.amazon.com/about-aws/whats-new/2017/11/announcing-aws-iot-analytics/

Announcing the General Availability of AWS IoT Analytics. [Announcement]. Apr 24th 2018. Available at: https://aws.amazon.com/about-aws/whats-new/2018/04/announcing-the-general-availability-of-aws-iot-analytics/

[Pillutla 2018]

Pillutla, Raghu and Jeff Maynard (2018). AWS IoT Analytics Oil and Gas Use Case. *The Internet of Things on AWS* [Blog]. Available at: https://aws.amazon.com/blogs/iot/aws-iot-analytics-oil-and-gas-customer-use-case/

[Panghal 2018a]

Panghal, Vikas (2018). Real-time metrics with AWS IoT Analytics and Amazon CloudWatch. *The Internet of Tings on AWS* [Blog]. Available at: <https://aws.amazon.com/blogs/iot/real-time-metrics-with-aws-iot-analytics-and-amazon-cloudwatch/>

[Panghal 2018b]

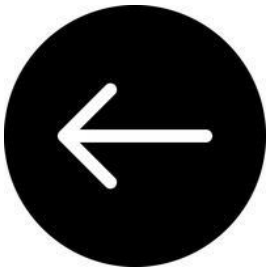
Panghal, Vikas and Dominique Fortier (2018). Operationalizing Your Analysis with AWS IoT Analytics. *Reinvent 2018* [Conference]. Available at: <https://www.youtube.com/watch?v=I-tynkaNg9Y&ab_channel=AmazonWebServices>

YouTube Channel: Steve on IoT. Apr 9th 2019. Available at: <https://www.youtube.com/watch?v=probVqX_tqI&ab_channel=SteveonIoT>

Burke, Ryan (2019). Introducing AWS CloudFormation Support for AWS IoT Analytics. *The Internet of Things* [Blog]. Jan 11th 2019. Available at: <https://aws.amazon.com/blogs/iot/introducing-aws-cloudformation-support-for-aws-iot-analytics/>

Using AWS IoT Anlytics to Prepare Data for QuickSight Time-Series Visualizations. *The Internet of Things on AWS* [Blog]. Available at: https://aws.amazon.com/blogs/iot/using-aws-iot-analytics-to-prepare-data-for-quicksight-time-series-visualizations/

AWS IoT Anlytics – How it Works. Available at: <https://www.youtube.com/watch?v=cYD0OU8Jdws&t=162s&ab_channel=AmazonWebServices>



Bibliography

Introducing Amazon Corretto (Preview). [Announcement]. Nov 14th 2018. Available at: https://aws.amazon.com/about-aws/whats-new/2018/11/introducing-amazon-corretto/

Amazon Corretto is Now Generally Available. [Announcement]. Jan 31st 2019. Available at: <https://aws.amazon.com/about-aws/whats-new/2019/01/amazon-corretto-is-now-generally-available/>

Amazon Keynote by James Gosling. Nov 14th 2018. YouTube Channel: Devoxx. Available at: https://www.youtube.com/watch?v=WuZk23O76Zk&ab_channel=Devoxx

Introducing Amazon Corretto By Yishai Galatzer. YouTube Channel: JFokus. Available at: <https://www.youtube.com/watch?v=oZxX180hjMc&ab_channel=Jfokus>

[Gupta 2018]

Gupta, Arun and Yishai Galatzer (2018). Introducing Amazon Corretto. Available at: https://www.youtube.com/watch?v=RLKC5nsiZXU&ab_channel=Devoxx

Thaker, Neelay (2019). Running Java applications on Amazon EC2 A1 instances with Amazon Corretto. *AWS Compute Blog*. Oct 24th 2019. Available at: https://aws.amazon.com/blogs/compute/running-java-applications-on-amazon-ec2-a1-instances-with-amazon-corretto/

Beswick, James (2021). Announcing migration of the Java 8 runtime in AWS Lambda to Amazon Corretto. *AWS Compute Blog*. Available at: https://aws.amazon.com/blogs/compute/announcing-migration-of-the-java-8-runtime-in-aws-lambda-to-amazon-corretto/

Johnson, Eric (2022). Reducing Java cold starts on AWS Lambda functions with SnapStart. *AWS Compute Blog*. Nov 29th 2022. Available at: https://aws.amazon.com/blogs/compute/reducing-java-cold-starts-on-aws-lambda-functions-with-snapstart/

AWS RoboMaker

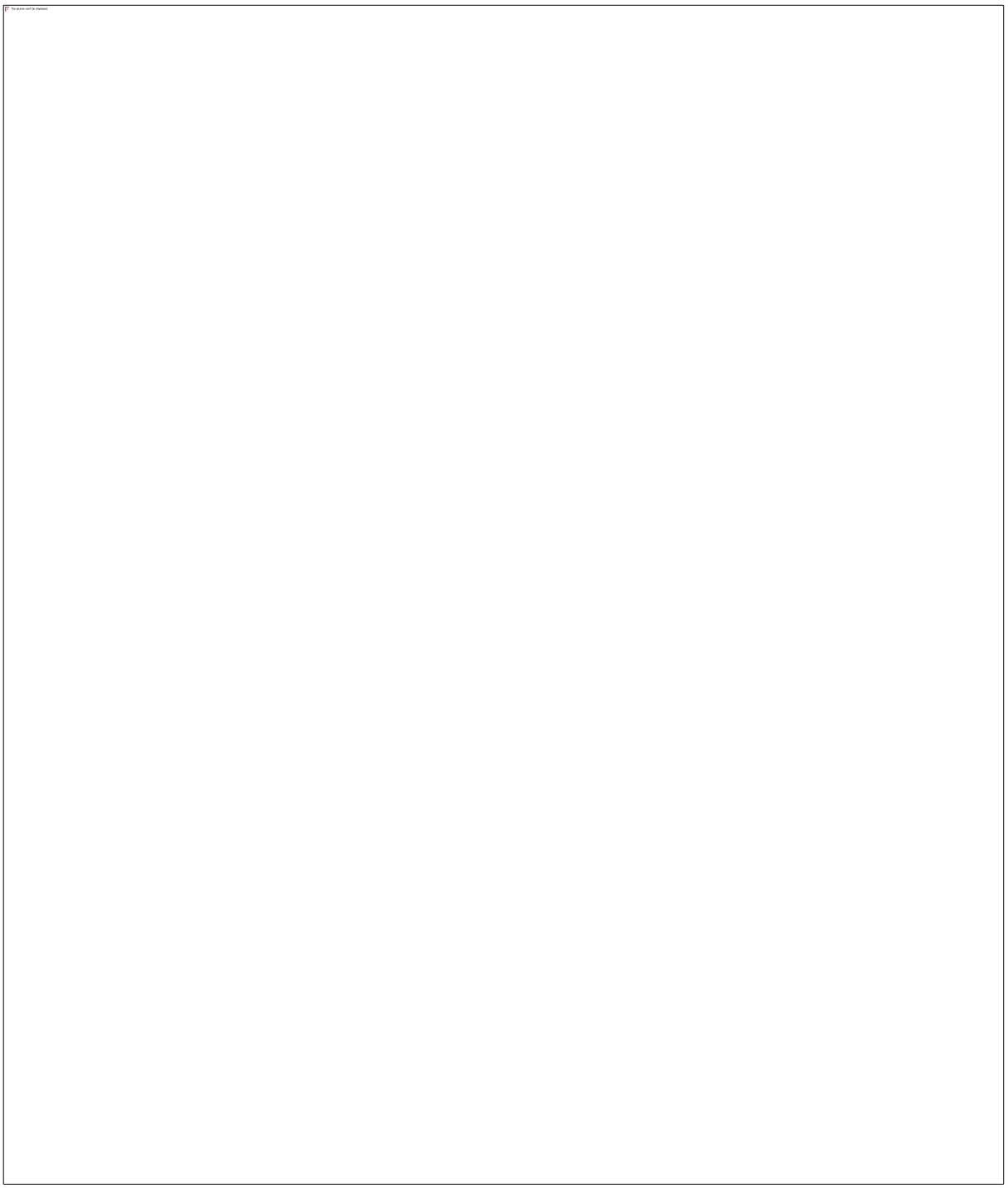
Roger Barga announcing AWS RoboMaker at the Reinvent conference in 2018.

Announcing AWS RoboMaker: A New Cloud Robotics Service

Posted On: Nov 26, 2018

AWS RoboMaker is a service that makes it easy to develop, simulate, and deploy intelligent robotics applications at scale. RoboMaker extends the most widely used open-source robotics software framework, Robot Operating System (ROS), with connectivity to cloud services. This includes AWS machine learning services, monitoring services, and analytics services that enable a robot to stream data, navigate, communicate, comprehend, and learn. RoboMaker provides a robotics development environment for application development, a robotics simulation service to accelerate application testing, and a robotics fleet management service for remote application deployment, update, and management.

AWS RoboMaker removes the heavy lifting from each step of robotics development so you can focus on creating innovative robotics applications. Learn more here.



Bibliography

I. Official
II. Unofficial
III. Critical
IV. General

Announcing AWS RoboMaker: A new Cloud Robotics Service. [Announcement]. Available at: <https://aws.amazon.com/about-aws/whats-new/2018/11/announcing-aws-robomaker-a-new-cloud-robotics-service/>

AWS Reinvent 2018 – Announcing AWS RoboMaker. YouTube Channel: Amazon Web Services. Available at: <https://www.youtube.com/watch?v=sjxZAdm1utM&ab_channel=AmazonWebServices>

How iRobot uses AWS RoboMaker to Build and Test Millions of High Quality Robots. YouTube Channel: Amazon Web Services. Jan 25th 2021. Available at: <https://www.youtube.com/watch?v=YwVy64UaKZ8&ab_channel=AmazonWebServices>

Hansen, Matthew (2020). Build a better robot faster with AWS and ROS. *Reinvent 2020* [Conference]. Available at: https://www.youtube.com/watch?v=6R_CImH8DYs&ab_channel=AWSEvents

Zhu, Ray (2020). Reinforcement learning and robotics. Available at: https://www.youtube.com/watch?v=awmMhZdS70s&ab_channel=AWSEvents

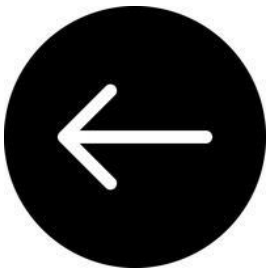
Sadigh, Dorsa (2022). State of Robotics. Available at: <https://www.youtube.com/watch?v=hVsR9DdR3qE&ab_channel=StanfordOnline>

Khatib, Oussama (2008). Lecture 1 – Introduction to Robotics. Available at: <https://www.youtube.com/watch?v=0yD3uBshJB0&ab_channel=Stanford>

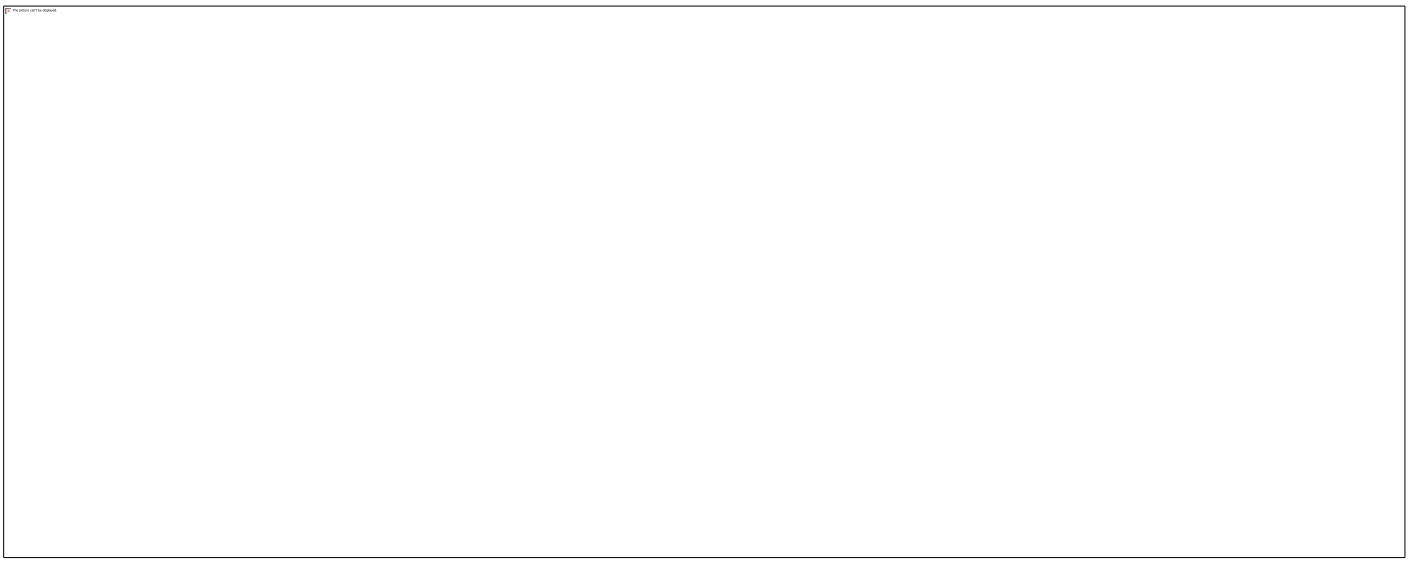
Inside Amazon's Smart Robot Warehouses. May 11th 2021. Available at: <https://www.youtube.com/watch?v=Jh27vjAhE-c&ab_channel=FutureNow>

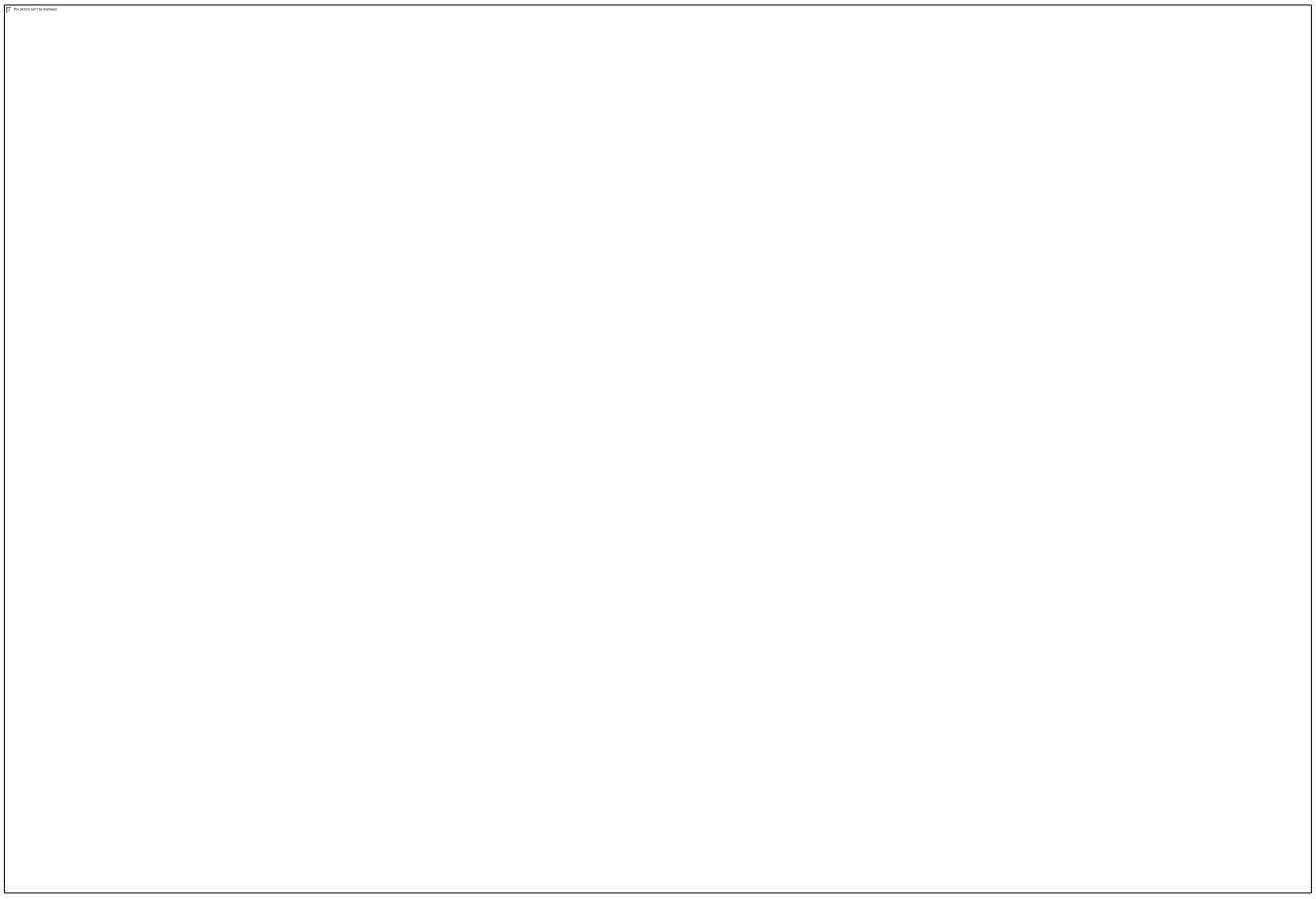
AWS RoboMaker: A CheatSheet. Available at: <https://www.techrepublic.com/article/aws-robomaker-a-cheat-sheet/>

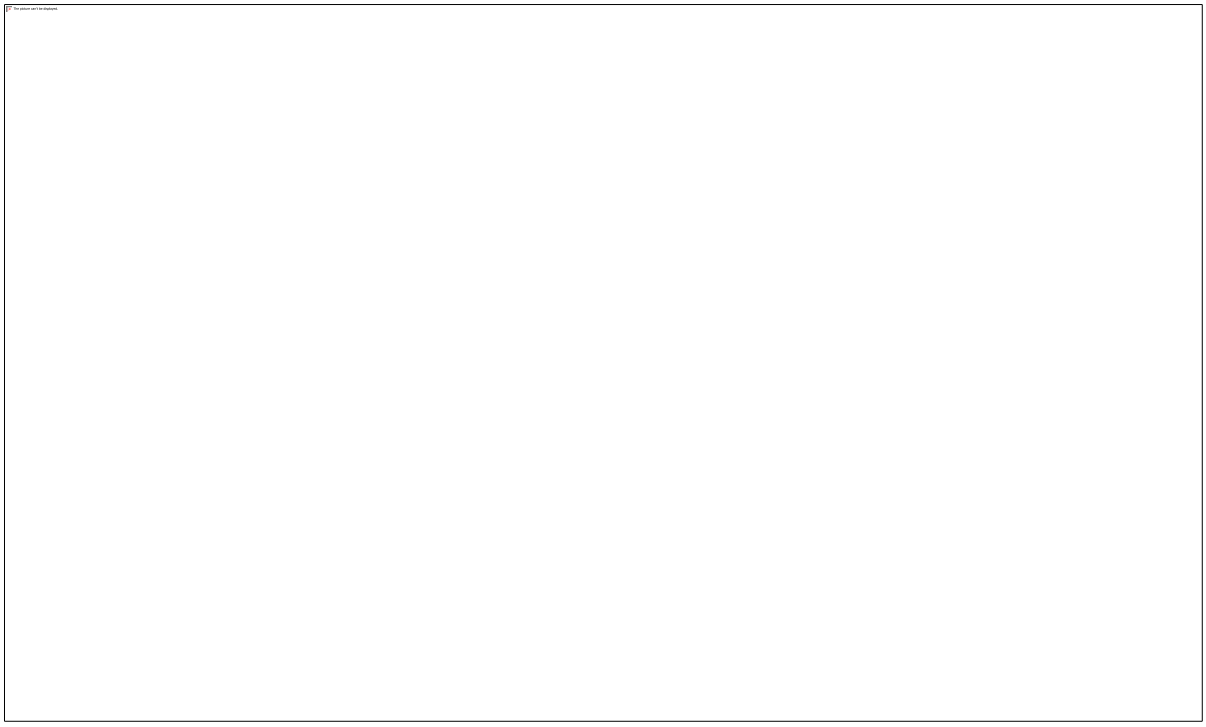
Global Accelerator



Global Accelerator







If you are not familiar with AWS Global Accelerator, here is a quick primer on the service offering. In short, it is a pay-as-you-go service delivered by AWS that improves the availability and performance of your AWS-hosted application for global users. To understand how AWS does this, let me provide some context on how the cloud connectivity architecture (how users around the globe access cloud workloads) of AWS works.

By default, traffic destined to AWS-hosted services, irrespective of the region, traverses through the public Internet, only to enter the AWS backbone closest to the region. The reason traffic hot-potatoes is because AWS does not anycast public IP addresses associated with each of their regions from their global edge locations.

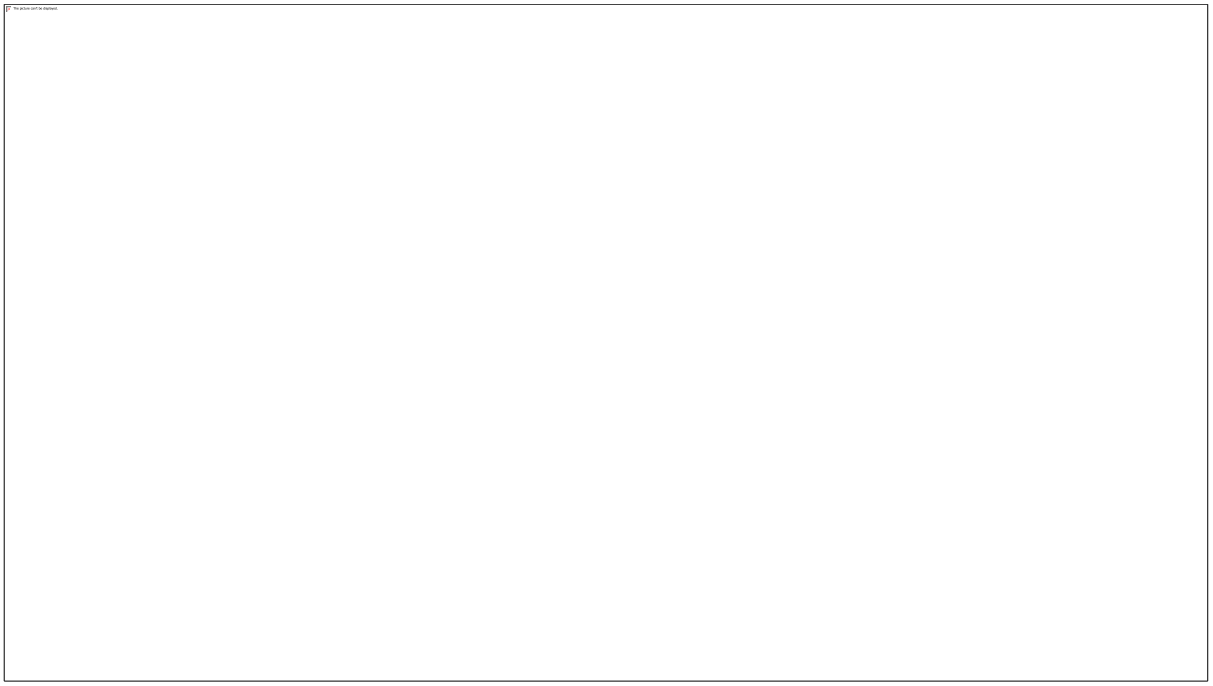


Figure 1: Connectivity path when using AWS Global Accelerator

Let's see what this looks like in ThousandEyes. Figure 2 below shows the end-to-end network path from user vantage points, deployed in Tier 2 and Tier 3 ISPs, on the left to a service hosted in AWS' us-east-1 region on the right. The path visualization shown below breaks down the connectivity to a hop-by-hop layer 3 view, geolocating every hop along the way. As seen in Figure 2, without Global Accelerator, traffic from the user, irrespective of the user's location, enters AWS' backbone closest to the region where the service is hosted.

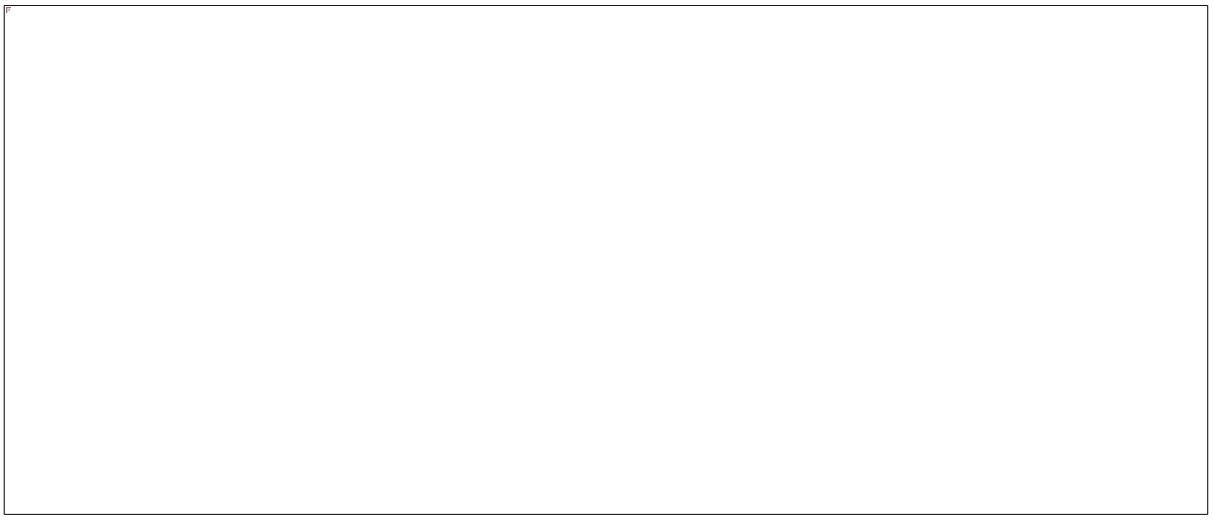
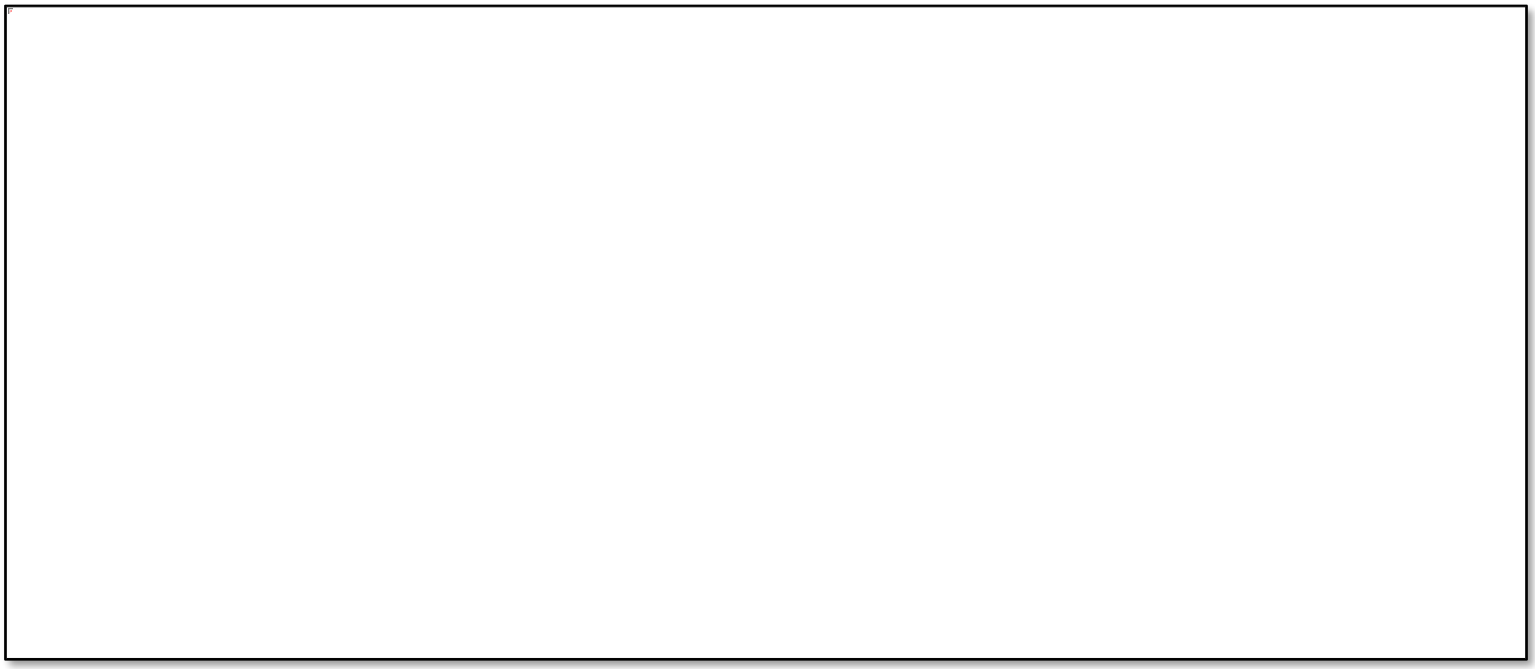


Figure 2: How users connect to AWS-hosted services by default, without AWS Global Accelerator

Introducing AWS Global Accelerator

AWS Global Accelerator is a solution that alters this default behavior. It is a commercially available service that enterprises can pay for to leverage the benefits of AWS densely-connected backbone network. Instead of using the Internet to carry user traffic, AWS Global Accelerator directs traffic to optimal endpoints on the AWS edge network by anycasting static IP addresses designated for your service. You can find the complete list of AWS edge locations here. This results in traffic entering the AWS network closest to the user and making its way to the destination service region through the AWS private backbone, as seen in Figure 3 below.



Glossary

Anycast

Bibliography

I. Official
II. Unofficial
III. Critical
IV. General

Introducing AWS Global Accelerator. [Announcement]. Nov 26th 2018. Available at: https://aws.amazon.com/about-aws/whats-new/2018/11/introducing-aws-global-accelerator/

[Sreekumar 2018]

Sreekumar, Divya and Hardeep Uppal (2018). Introduction to AWS Global Accelerator. YouTube Channel: Amazon Web Services. Available at: https://www.youtube.com/watch?v=kRtUcdwK0pw&ab_channel=AmazonWebServices

[Marinus 2020]

Marinus, Dennis (2020). How AWS Global Accelerator improves performance. Available at: <https://www.youtube.com/watch?v=daJ2bmw_css&ab_channel=AWSEvents>

[Kesavan 2020]

Kesavan, Archana (2020). ThousandEyes. AWS Optimizes the Performance of Global Accelerator. May 6th 2020. Available at: https://www.thousandeyes.com/blog/aws-optimizes-performance-global-accelerator

[Toonk 2019]

Andree, Toonk (2019). Building A Smarter AWS Global Accelerator. Dec 1st 2019. Available at: https://toonk.io/building-a-smarter-aws-global-accelerator/index.html

[Forum 2022]

CloudFlare Tunnel and Argo vs AWS Global Accelerator. Available at: <https://community.cloudflare.com/t/cloudflare-tunnel-and-argo-vs-aws-global-accelerator/377550>

[Rajagopal 2022]

Rajagopal, Ananda (2022). Improve performance and availability with AWS Global Accelerator. YouTube Channel: AWS Events. Available at: https://www.youtube.com/watch?v=s5sjsdDC0Lg&ab_channel=AWSEvents

[Wittig 2019]

Wittig, Andreas, and Michael Wittig (2019). Review: AWS Global Accelerator [Podcast episode]. *Cloudonaut*. Available at: https://podcast.cloudonaut.io/8-review-aws-global-accelerator

[Miller 2018]

Miller, Ron (2018). AWS Global Accelerator helps customers manage traffic across zones. *TechCrunch*. Available at: <https://techcrunch.com/2018/11/26/aws-global-accelerators-helps-customers-manage-traffic-across-zones/>

[Donegan 2019]

Donegan, Martiin van (2019). Building a global app with AWS Global Accelerator. Available at: https://xebia.com/blog/building-a-global-app-with-aws-global-accelerator/

[Agrawal 2021]

Agrawal, Yogesh (2021). AWS Global Accelerator. Dec 17th 2021. Available at: <https://cloudtechsavvy.com/2021/12/17/aws-global-accelerator/>

AWS Shield Adds Advanced DDoS Protection for AWS Global Accelerator. Dec 14th 2018. Available at: <https://aws.amazon.com/about-aws/whats-new/2018/12/aws-shield-adds-advanced-ddos-protection-for-aws-global-accelerator/>

AWS Shield Increases Default Resource Limits for Advanced Protection [Announcement]. Feb 21st 2019. Available at: <https://aws.amazon.com/about-aws/whats-new/2019/02/aws-shield-advanced-increases-default-resource-limits/>

AWS Global Accelerator is Now Available in Six Additional Regions. [Announcement]. Apr 24th 2019. Available at: https://aws.amazon.com/about-aws/whats-new/2019/04/aws-global-accelerator-is-now-available-in-six-additional-regions/

AWS Global Accelerator Now Supports Client IP Address Preservation for Application Load Balancer Endpoints. Aug 28th 2019. Available at: https://aws.amazon.com/about-aws/whats-new/2019/08/aws-global-accelerator-now-supports-client-ip-address-preservation-for-application-load-balancer-endpoints/

AWS Global Accelerator Now Supports EC2 Instance Endpoints. Oct 29th 2019. Available at: https://aws.amazon.com/about-aws/whats-new/2019/10/aws-global-accelerator-supports-ec2-instance-endpoints/

Application Load Balancer simplifies deployments with support for weighted target groups. [Announcement]. Nov 19th 2019. Available at: https://aws.amazon.com/about-aws/whats-new/2019/11/application-load-balancer-simplifies-deployments-support-for-weighted-target-groups/

Announcing Accelerated Site-to-Site VPN for Improved VPN Performance. [Announcement]. Dec 3rd 2019. Available at: https://aws.amazon.com/about-aws/whats-new/2019/12/announcing-accelerated-site-to-site-vpn-for-improved-vpn-performance/

Attach multiple Elastic Inference accelerators to a single EC2 instance. Dec 12th 2019. Available at: https://aws.amazon.com/about-aws/whats-new/2019/12/attach-multiple-elastic-inference-accelerators-to-single-ec2-instance/

AWS Global Accelerator now supports Amazon CloudWatch metrics. [Announcement]. Dec 20th 2019. Available at: <https://aws.amazon.com/about-aws/whats-new/2019/12/aws-global-accelerator-supports-amazon-cloudwatch-metrics/>

Announcing 15 Free Digital Training Courses on New AWS Services launched at Reinvent 2018. [Announcement]. Dec 19th 2018. Available at: <https://aws.amazon.com/about-aws/whats-new/2018/12/announcing-15-free-digital-training-courses-on-new-aws-services-launched-at-re-invent-2018/>

AWS Global Accelerator now supports endpoints in the Asia Pacific (Jakarta) Region. [Announcement] June 15th 2023. Available at: <https://aws.amazon.com/about-aws/whats-new/2023/06/aws-global-accelerator-endpoints-jakarta-region/>

AWS Global Accelerator announces IPv6 support [Announcement]. July 28th 2022. Available at: https://aws.amazon.com/about-aws/whats-new/2022/07/aws-global-accelerator-announces-ipv6-support/

AWS Global Accelerator now supports Bring Your Own IP Addresses and Resource Tagging. [Announcement] Feb 27th 2020. Available at: https://aws.amazon.com/about-aws/whats-new/2020/02/aws-global-accelerator-now-supports-bring-your-own-ip-addresses/

AWS Global Accelerator launches TCP Termination at the Edge. Mar 23rd 2020. Available at: https://aws.amazon.com/about-aws/whats-new/2020/03/aws-global-accelerator-launches-tcp-termination-at-the-edge/

AWS Global Accelerator now supports AWS CloudFormation. [Announcement] May 14th 2020. Available at: https://aws.amazon.com/about-aws/whats-new/2020/05/aws-global-accelerator-supports-aws-cloudformation/

AWS Global Accelerator launches port overrides. Oct 21st 2020. Available at: https://aws.amazon.com/about-aws/whats-new/2020/10/aws-global-accelerator-launches-port-overrides/

AWS Global Accelerator launches a new Edge location in Thailand. Nov 17th 2020. Available at: <https://aws.amazon.com/about-aws/whats-new/2020/11/aws-global-accelerator-launches-new-edge-location-thailand/>

AWS Global Accelerator launches custom routing. [Announcement]. Dec 9th 2020. Available at: <https://aws.amazon.com/about-aws/whats-new/2020/12/aws-global-accelerator-launches-custom-routing/>

AWS Shield now provides global and per-account event summaries to all AWS customers. Oct 26th 2020. Available at: <https://aws.amazon.com/about-aws/whats-new/2020/10/aws-shield-provides-global-and-per-account-event-summaries-to-all-aws-customers/>

AWS Global Accelerator adds support for two new Amazon CloudWatch metrics. [Announcement] Oct 28th 2021. Available at: <https://aws.amazon.com/about-aws/whats-new/2021/10/aws-global-accelerator-support-new-amazon-cloudwatch-metrics/>

AWS Config now supports 20 new resource types. [Announcement]. Aug 15th 2022. Available at: <https://aws.amazon.com/about-aws/whats-new/2022/08/aws-config-supports-20-new-resource-types/>

AWS Global Accelerator extends TCP termination to IPv6 traffic. [Announcement]. Available at: <https://aws.amazon.com/about-aws/whats-new/2023/05/aws-global-accelerator-extends-tcp-termination-ipv6-traffic/>

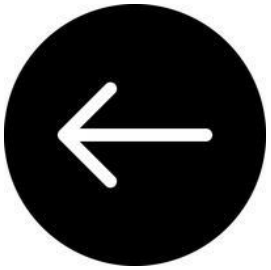
AWS Global Accelerator announces AddEndpoints and RemoveEndpoints APIs. [Announcement]. Oct 21st 2022. Available at: <https://aws.amazon.com/about-aws/whats-new/2022/10/aws-global-accelerator-announces-addendpoints-removeendpoints-apis/>

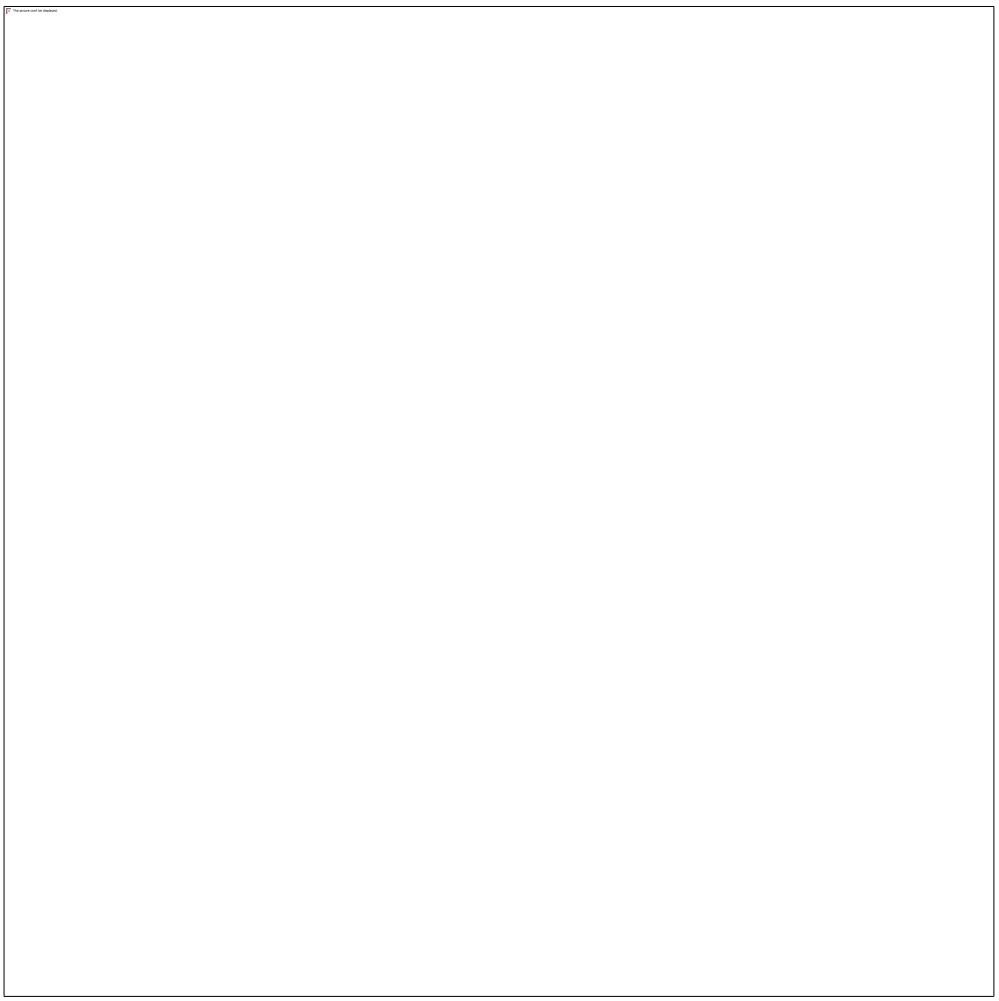
AWS Global Accelerator now supports endpoints in two additional AWS Regions. May 23rd 2023. Available at: <https://aws.amazon.com/about-aws/whats-new/2023/05/aws-global-accelerator-endpoints-additional-regions/>

[Huides 2023]

Huides, Alexandra and Ankit Chadha (2023). Configuring client IP address preservation with a Network Load Balancer in AWS Global Accelerator. *Networking and Content Delivery* [Blog]. Aug 22nd 2023. Available at: <https://aws.amazon.com/blogs/networking-and-content-delivery/configuring-client-ip-address-preservation-with-a-network-load-balancer-in-aws-global-accelerator/?ck_subscriber_id=1560524742>

Transit Gateway





Bibliography

I. Official

II. Unofficial
III. Critical
IV. General

Seymour, Steve and Thomas Spendley (2018). Introducing AWS Transit Gateway. *Reinvent 2018* [Conference]. Available at: <https://www.youtube.com/watch?v=yQGxPEGt_-w&ab_channel=AmazonWebServices>

Matthews, Nick (2018). Transit Gateway and Transit VPCs: Reference Architectures for Many VPCs. *Reinvent 2018* [Conference]. Available at: <https://www.youtube.com/watch?v=ar6sLmJ45xs&ab_channel=AmazonWebServices>

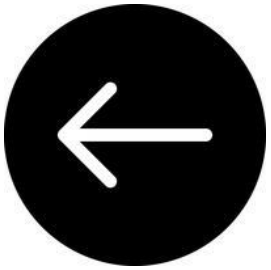
Extending Data Centers to the Cloud: Connectivity Options and Best Practices. *Reinvent 2018* [Conference]. Available at: https://www.youtube.com/watch?v=LNYY3bMSiHM&ab_channel=AmazonWebServices

Lehwess, Matt (2018). Advanced VPC Design and New Capabilities for Amazon VPC. *Reinvent 2018* [Conference]Available at: <https://www.youtube.com/watch?v=fnxXNZdf6ew&ab_channel=AmazonWebServices>

Image credits

Goldilocks and the Three Bears by Margaret Tarrant

Transfer Family



Questions I have:

1. Why is it called Transfer *Family*? Family of what?

2. What is being transferred?
3. What problem does AWS Transfer Family solve?
4. What are the products with which AWS Transfer Family is most likely to be confused?
5. What solution can we put in place in order to avoid such confusions?
6. What are the situations in which AWS Transfer Family might be considered appropriate, but which are in fact not appropriate?
7. What is the greatest advantage of AWS Transfer Family?
8. Why was AWS Transfer Family announced in 2018 as opposed to any other year?
9. What are some of the disadvantages of AWS Transfer Family?
10. How might AWS Transfer Family be improved?

Introducing the AWS Transfer Family with fully managed support for SFTP, FTPS, and FTP

Posted On: Apr 23, 2020

The AWS Transfer Family announces AWS Transfer for FTPS and AWS Transfer for FTP, which makes it easy to migrate File Transfer Protocol over SSL (FTPS) and FTP workloads to AWS.

With the launch of AWS Transfer for SFTP in November 2018, this expands support to three of the most commonly used data transfer protocols. Now, with support for transfers over SFTP, FTPS, and FTP in and out of Amazon S3, AWS customers can easily integrate their file transfer workflows with data lakes, customer relationship management (CRM), enterprise resource planning (ERP), and other business applications in AWS.

The AWS Transfer Family simplifies migration of file transfer based workflows to AWS, without needing to modify end user credentials, scripts, network configurations, or manage servers. Using the AWS Transfer Family console (formerly known as the AWS Transfer for SFTP console) or APIs/SDKs/CLI, you can choose which protocols you want to enable access to your server's endpoint, configure Amazon S3 buckets to store the transferred data, and set up end user authentication by integrating an existing identity provider such as Microsoft Active Directory or Okta. End users continue to transfer files over the selected protocols, while the files are stored as objects in your Amazon S3 bucket.

The new protocols are available in all AWS Regions where the AWS Transfer Family is available. To learn more, read the AWS News launch blog, visit the AWS Transfer Family product page, or get started in the AWS Console.

AWS Transfer Family announces structured JSON log format

Posted On: Jun 22, 2023

AWS Transfer Family now delivers logs in a structured JSON format across all resources – including servers, connectors, and workflows – and all protocols – including SFTP, FTPS, FTP, and AS2. The new format allows you to easily parse and query your logs using CloudWatch Log Insights, which automatically discovers JSON formatted fields. You'll also benefit from improved monitoring with support for CloudWatch Contributor Insights, which requires a structured log format to track top users, total number of unique users, and their ongoing usage.

In addition to the new log format, you're now able to combine log streams from multiple AWS Transfer Family servers into a single CloudWatch log group of your choosing. This allows you to create consolidated log metrics and visualizations, which can be added to CloudWatch dashboards for tracking server usage and performance.

The structured JSON log format is supported in all AWS Regions where the Transfer Family service is available, while the previous log format will continue to be supported. To learn more about how to configure your logging preferences, visit our documentation.

Bibliography

IV. General

Introducing AWS Transfer for SFTP, a Fully Managed SFTP Service for Amazon S3. [Announcement]. Nov 25th 2018. Available at: https://aws.amazon.com/about-aws/whats-new/2018/11/aws-transfer-for-sftp-fully-managed-sftp-for-s3/

AWS Transfer for SFTP now supports AWS PrivateLink. [Announcement]. Mar 27th 2019. Available at: https://aws.amazon.com/about-aws/whats-new/2019/03/aws-transfer-for-sftp-now-supports-aws-privatelink/

AWS Transfer for SFTP now supports AWS CloudFormation and host key import. [Announcement]. May 24th 2019. Available at: https://aws.amazon.com/about-aws/whats-new/2019/05/aws-transfer-sftp-now-supports-aws-cloudformation-host-key-import/

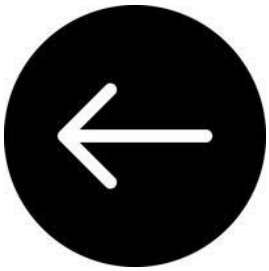
AWS Transfer for SFTP now supports logical directories for Amazon S3. [Announcement]. Sept 10th 2019. Available at: <https://aws.amazon.com/about-aws/whats-new/2019/09/aws-transfer-for-sftp-now-supports-logical-directories-for-amazon-s3/>

AWS Transfer for SFTP supports VPC Security Groups and Elastic IP addresses. [Announcement]. Jan 10th 2020. Available at: <https://aws.amazon.com/about-aws/whats-new/2020/01/aws-transfer-for-sftp-supports-vpc-security-groups-and-elastic-ip-addresses/>

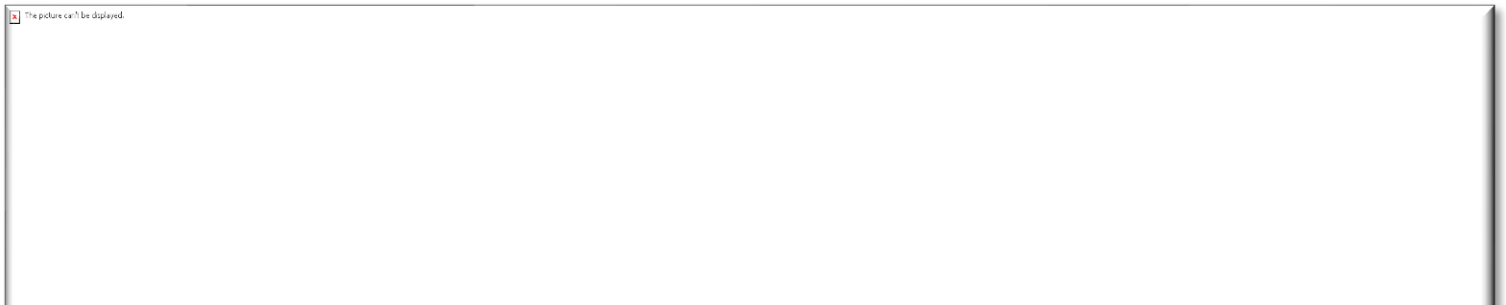
Introducing the AWS Transfer Family with fully managed support for SFTP, FTPS, and FTPS. [Announcement]. Apr 23rd 2020. Available at: https://aws.amazon.com/about-aws/whats-new/2020/04/introducing-aws-transfer-family/

AWS Transfer Family enables Source IP as a factor for authorization. [Announcement]. June 10th 2020. Available at: https://aws.amazon.com/about-aws/whats-new/2020/06/aws-transfer-family-enables-source-ip-as-a-factor-for-authorization/

AWS Transfer Family adds pre-defined security policies to choose cryptographic algorithms. [Announcement]. Aug 13th 2020. Available at: <https://aws.amazon.com/about-aws/whats-new/2020/08/aws-transfer-family-adds-pre-defined-security-policies-cryptographic-algorithms/>



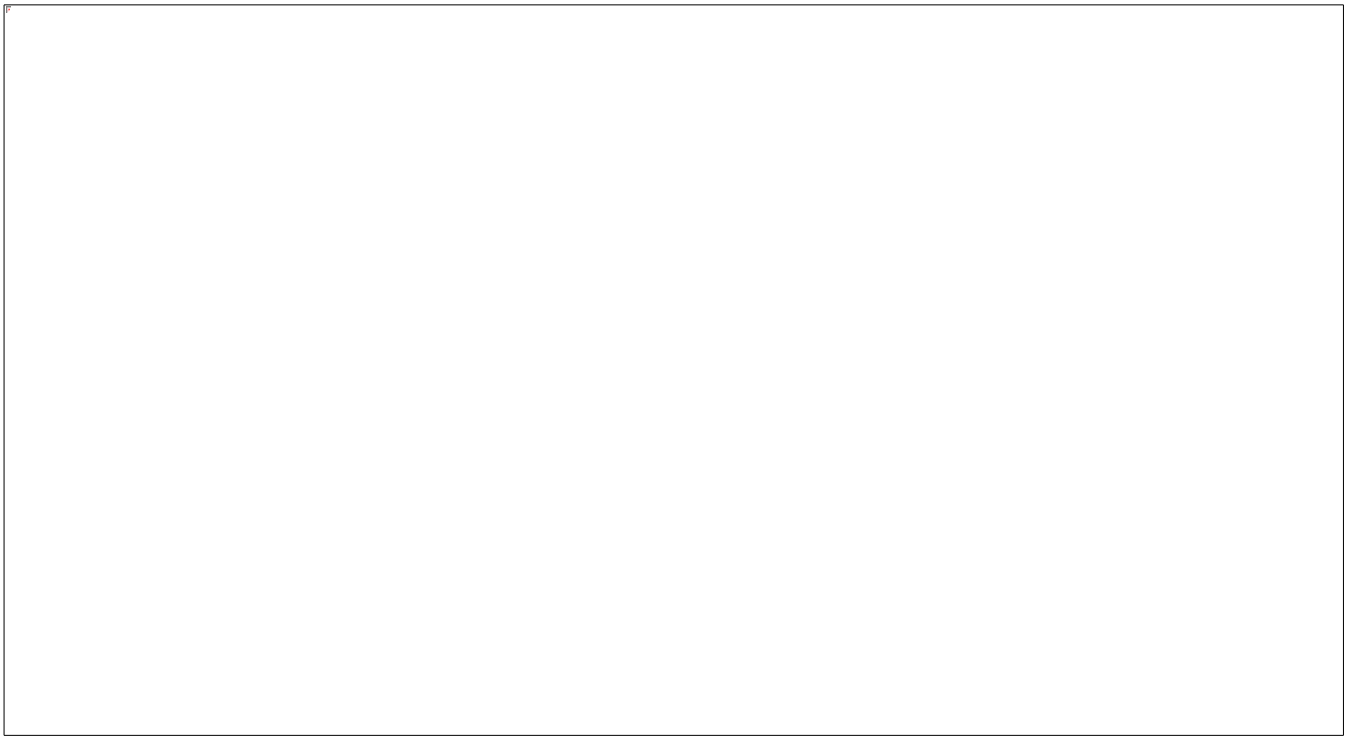
What on earth is SMB?



Barry Feigenbaum

“*S*omeone *M*ention *B*arry?”

This picture can't be displayed.



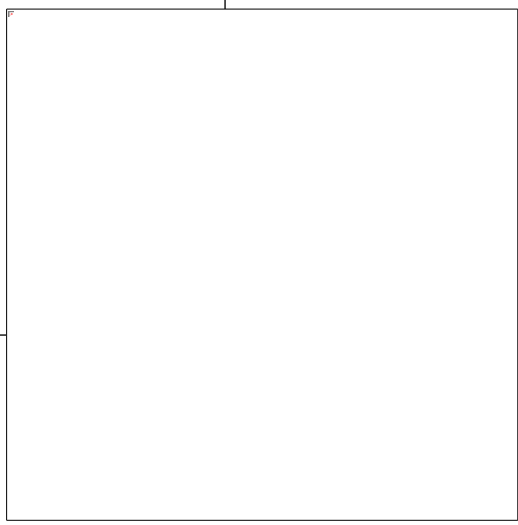
This picture can't be displayed.


The picture can't be displayed.

Thirsty for love?

Don’t date a sink.

Try



There's a new

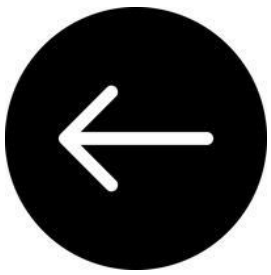
D

And fall in love with S3.

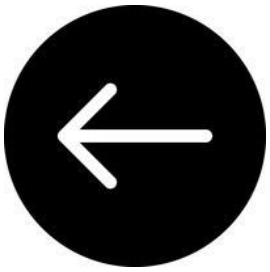
DataSync

For when you HAVE to play the S3 Game

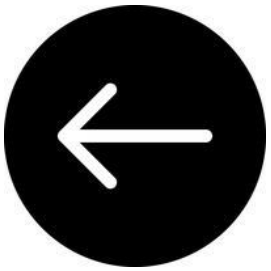
AWS IoT SiteWise



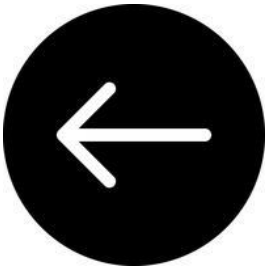
AWS Ground Station



SageMaker GroundTruth



AWS Elemental MediaConnect



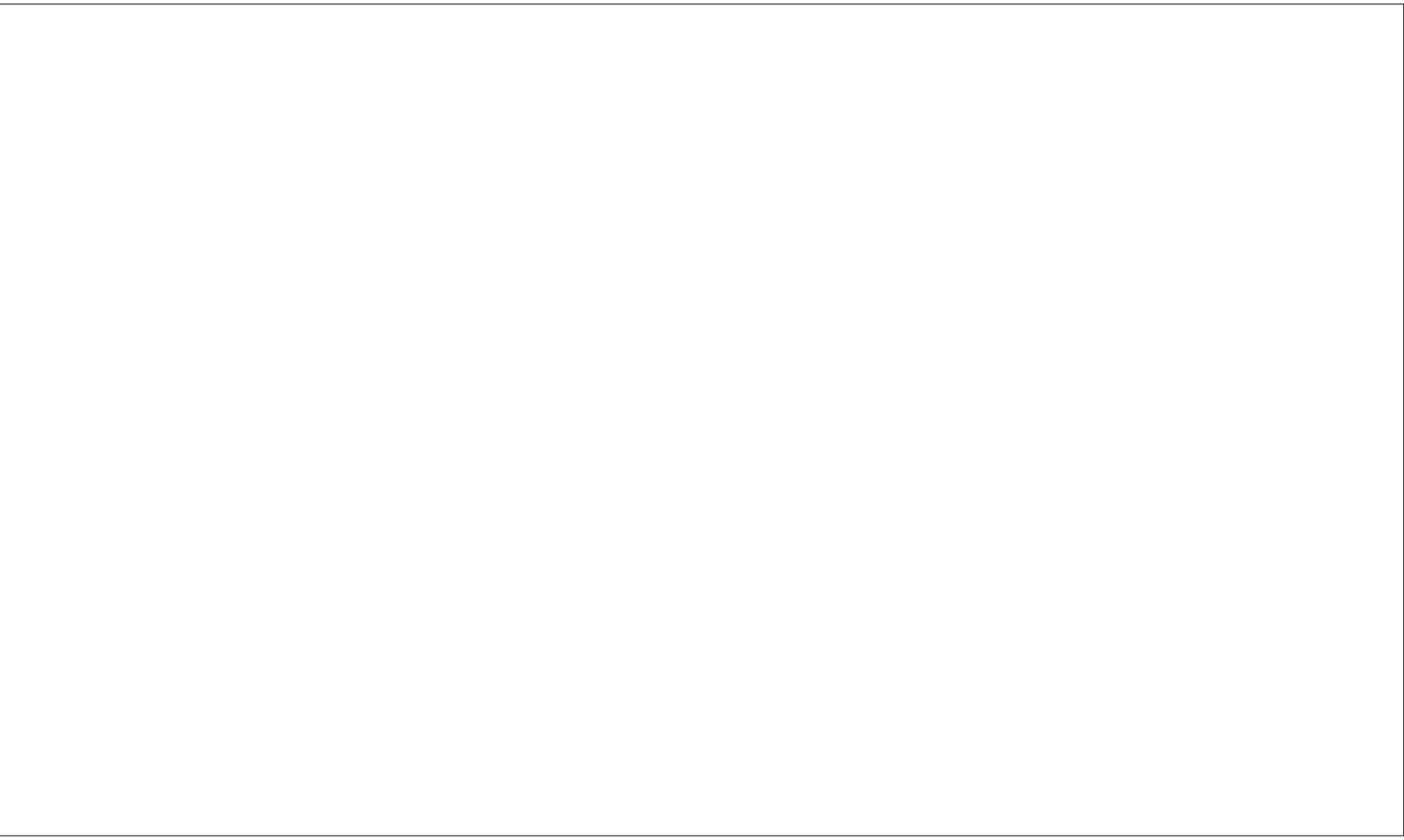
Introducing AWS Elemental MediaConnect

Posted On: Nov 27, 2018

Today we announced the general availability of AWS Elemental MediaConnect, a reliable, secure, and flexible transport service for live video. Using MediaConnect, broadcasters and content owners can cost-effectively send high-value live content into the cloud, securely transmit it to partners for distribution, and replicate it to multiple destinations around the globe. Build mission-critical live video transport workflows in a fraction of the time and cost of satellite or fiber, with broadcast-grade monitoring to maintain confidence that your video is delivered. MediaConnect combines reliable video transport, highly secure stream sharing, and real-time network traffic and video monitoring that allow you to focus on your content, not your transport infrastructure. To learn more, please visit https://aws.amazon.com/mediaconnect/.

AWS Elemental MediaConnect is available in the US East (N. Virginia), US West (N. California), US West (Oregon), Asia Pacific (Singapore), Asia Pacific (Sydney), Asia Pacific (Tokyo), EU (Frankfurt), and EU (Ireland) regions.

The service functions independently or as part of AWS Elemental Media Services, a family of services that form the foundation of cloud-based workflows and offer you the capabilities needed to transport, create, package, store, monetize, and deliver video.



Alex Dunlap explaining how MediaConnect works in 2018.

David Griggs explaining AWS Elemental MediaConnect

Bibliography

Introducing AWS Elemental MediaConnect. [Announcement]. Nov 27th 2018. Available at: https://aws.amazon.com/about-aws/whats-new/2018/11/introducing-aws-elemental-mediaconnect/

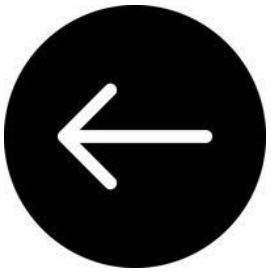
AWS Elemental MediaConnect is Now Available in Six Additional Regions. [Announcement]. Mar 14th 2019. Available at: https://aws.amazon.com/about-aws/whats-new/2019/03/aws-elemental-mediaconnect-is-now-available-in-six-additional-regions/

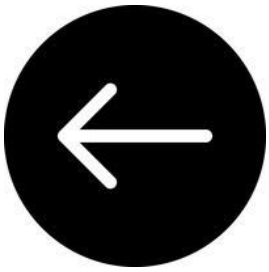
AWS Elemental MediaConnect Now Supports SPEKE for Conditional Access. [Announcement]. June 28th 2019. Available at: https://aws.amazon.com/about-aws/whats-new/2019/06/aws-elemental-mediaconnect-now-supports-speke-for-conditional-access/

AWS Elemental MediaConnect Now Supports Zixi Pull. [Announcement]. July 18th 2019. Available at: <https://aws.amazon.com/about-aws/whats-new/2019/07/aws-elemental-mediaconnect-now-supports-zixi-pull/>

AWS Elemental MediaConnect Now Supports RIST Protocol. Sept 12th 2019. Available at: <https://aws.amazon.com/about-aws/whats-new/2019/09/aws-elemental-mediaconnect-now-supports-rist-protocol/>

AWS Outposts





Apache Kafka

Bibliography

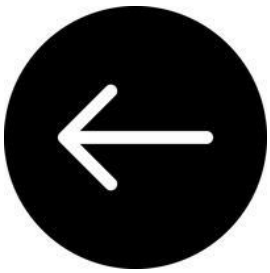
I. Official

II. Unofficial

III. Critical

IV. General

AWS Inferentia



Announcing AWS Inferentia: Machine Learning Inference Chip

Posted On: Nov 28, 2018

AWS Inferentia is a machine learning inference chip, custom designed by AWS to deliver high throughput, low latency inference performance at an extremely low cost. AWS Inferentia will support the TensorFlow, Apache MXNet, and PyTorch deep learning frameworks, as well as models that use the ONNX format.

AWS Inferentia provides hundreds of TOPS (tera operations per second) of inference throughput to allow complex models to make fast predictions. For even more performance, multiple AWS Inferentia chips can be used together to drive thousands of TOPS of throughput.

AWS Inferentia will be available for use with Amazon SageMaker, Amazon EC2, and Amazon Elastic Inference. For more information about AWS Inferentia, see the web page.

Bibliography

I. Official

[AWS 2019]

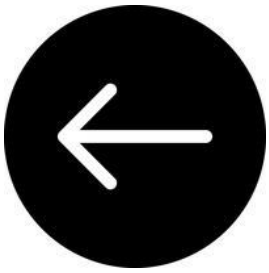
Announcing AWS Inferentia: Machine Learning Inference Chip. [Announcement]. Nov 28th 2019. Available at: <https://aws.amazon.com/about-aws/whats-new/2018/11/announcing-amazon-inferentia-machine-learning-inference-microchip/>

II. Unofficial

[Moorhead 2020]

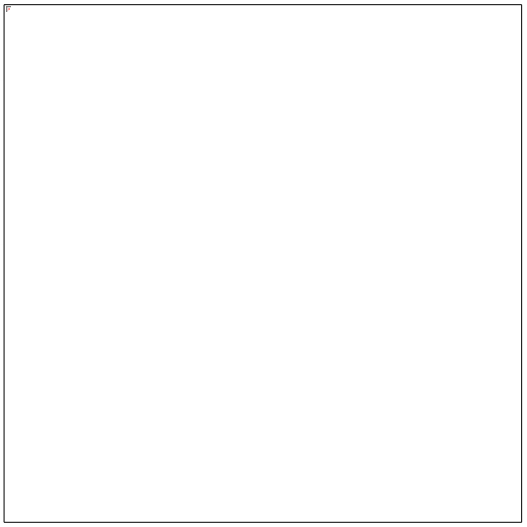
Moorhead, Patrick (2020). AWS Inferentia Gathers More Steam with Alexa, Snap, Anthem, And Conde Nast. *Forbes*. Nov 19th 2020. Available at: <https://www.forbes.com/sites/patrickmoorhead/2020/11/19/aws-inferentia-gathers-more-steam-with-alexa-snap-anthem-and-conde-nast/>

AWS Cloud Map



This picture can't be displayed.

License Manager



Spellings

I always get confused about the spelling of the word "license", so let's nip this issue in the bud. The word "license" might be used as a verb or a noun in the USA. The spelling is the same whether you are referring to a thing (using the word as a noun) or talking about an action taken (using the word as a verb). Brits spell the word differently depending on whether we are using the word as a noun or verb.

Those in Britain (the birthplace of no-nonsense empiricism) like to emphasise those situations in which they are talking about a **concrete thing**. They like to emphasise those situations in which they are using the word as a *noun* (at this point I knock on the table with my knuckles). To bring out this concreteness, they insert a "c" for "concrete". James Bond has a licence to kill.

It's never practise but practice, when referring to the concrete thing – to the act of rehearsing something. Similarly, it won't be some advise you received in the United Kingdom but some advice. It is not a license you received from the DVLA (Driver and Vehicles Licensing Agency) but a licence.

By the way, everyone—Brits and Americans—agree that the first "c" should be locked in place. There is a lock (or loc, lic) here. The disagreement over spelling conerns the second "c". Americans are too lazy to replace the second "s" with a "c"

when a noun is used. They don't care to emphasise concreteness. But the Brits practise this strange practice of emphasising concreteness.

The coordination of the British Army is managed by the Ministry of Defence while American soldiers are managed by the Department of Defense. Amazon Web Services (headquarted in the US state of Washington) announced License Manager in 2018. Americans lack the eagerness to emphasise the situations in which they are talking about concrete things. So they don't insert a "c". It is not AWS Licence Manager.

Even the noun **s**ticks with an "s":

> Most mischievous foul sin, in chiding sin;
> For thou thyself hast been a libertine,
> As sensual as the brutish sting itself;
> And all th' embossed sores and headed evils
> That thou with **license** of free foot hast caught
> Wouldst thou disgorge into the general world
>
> *As You Like It*

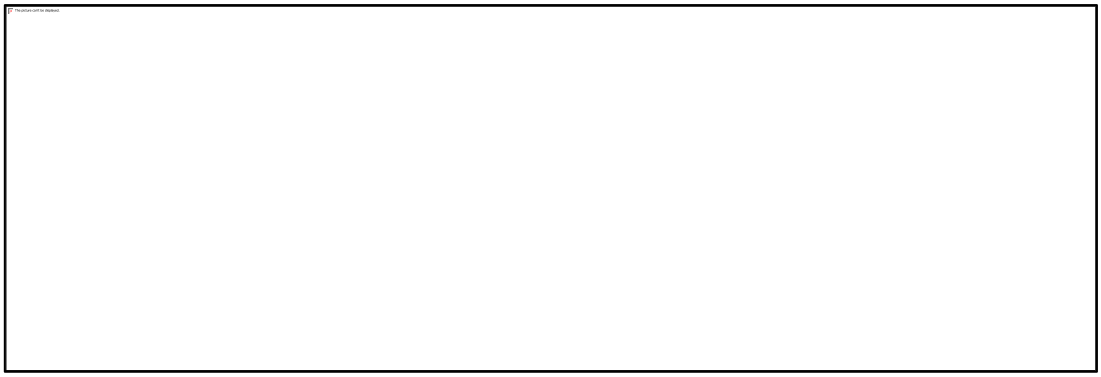
> Speak to me home, mince not the general tongue:
> Name Cleopatra as she is call'd in Rome;
> Rail thou in Fulvia's phrase; and taunt my faults
> With such full **licence** as both truth and malice
> Have power to utter. O, then we bring forth weeds,
> When our quick minds lie still; and our ills told us
> Is as our earing. Fare thee well awhile.
>
> Antony and Cleopatra

The hardest part, for some people, may be identifying the cases when a noun or verb is being used. For instance, I suspect that if AWS were British, then the product would be AWS Licence Manager, since this product helps with the management of things which are called licences. Perhaps the product in fact helps to mange the act of issuing licences. In this case, it would still be AWS License Manager in Britain.

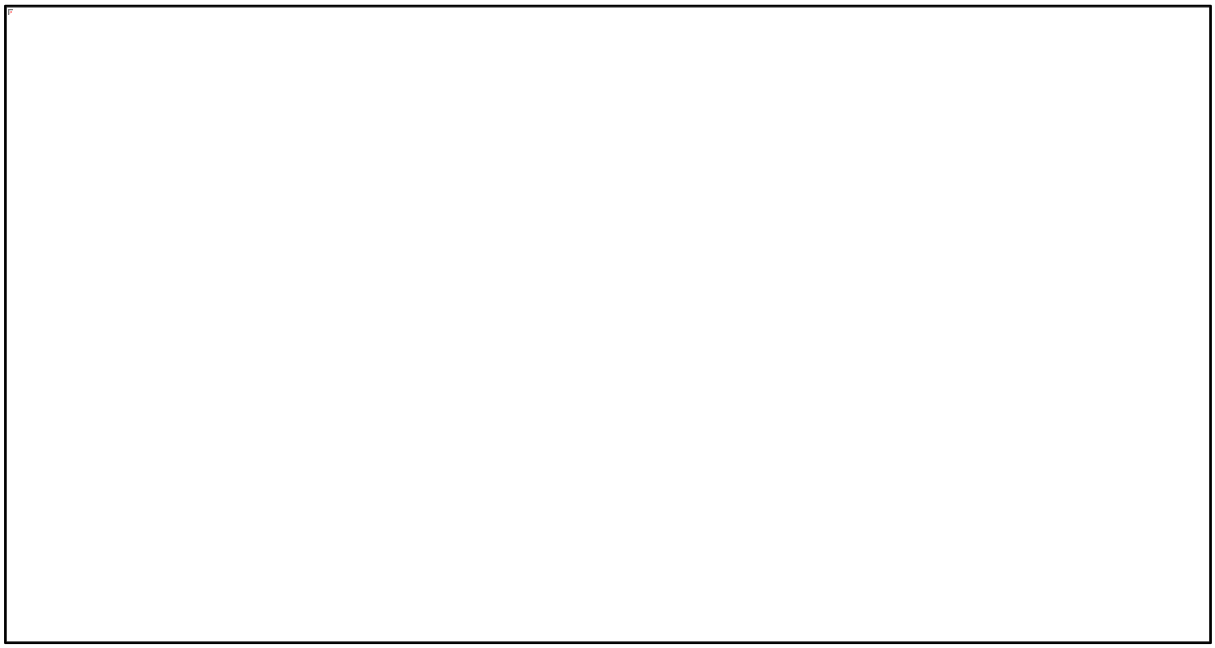
What is a software license?

> **a license is nothing more than permission given to do something that would otherwise be considered illegal absent that permission**.
>
> [Heino 2018]

Murtaza Chowdhury explaining how AWS License Manager works in a YouTube video produced by AWS. From [Chowdhury 2018b].



Email from Quinn on August 28th 2023



Bibliography

IV. General

I. Official

[Chowdhury 2018a]

Chowdhury, Murtaza and Anu Anand (2018). AWS License Manager Deep Dive. *Reinvent 2018* [Conference]. Available at: <https://www.youtube.com/watch?v=r7pdaM3OAAQ&ab_channel=AmazonWebServices>

[Chowdhury 2018b]

Inbtroduction to AWS License Manager. Available at: <https://www.youtube.com/watch?v=bmyizvdYYsQ&ab_channel=AmazonWebServices>

[AWS 2019]

Manage Software Licenses with AWS License Manager. YouTube Channel: Amazon Web Services. Available at: <https://www.youtube.com/watch?v=ikL5Axehutk&ab_channel=AmazonWebServices>

[AWS 2020]

Simplify your BYOL Experience with Dedicated Host Management Capabilities in AWS License Manager. YouTube Channel: Amazon Web Services. Available at: https://www.youtube.com/watch?v=kukiDf9Ilcc&ab_channel=AmazonWebServices

[Barot 2022]

Barot, Yogi and Sudhir Amin (2022). Deploying highly-available SQL Server on Amazon EC2 Dedicated Hosts. *AWS Cloud Operations and Migrations Blog* [Blog]. June 16th 2022. Available at: <https://aws.amazon.com/blogs/mt/deploying-highly-available-sql-server-on-amazon-ec2-dedicated-hosts/>

[Bhat 2023]

Bhat, Praveen (2023). Centrally track Oracle database licenses in AWS Organizations using AWS License Manager and AWS Systems Manager. *AWS Cloud Operations and Migrations Blog* [Blog]. Feb 23rd 2023. Available at: <https://aws.amazon.com/blogs/mt/centrally-track-oracle-database-licenses-in-aws-organizations-using-aws-license-manager-and-aws-systems-manager/>

[Chinnasamy 2022]

Chinnasamy, Shree (2022). License management using Delegated Administrator feature of AWS License Manager. *AWS Cloud Operations and Migrations Blog* [Blog]. Sep 16th 2022. Available at: <https://aws.amazon.com/blogs/mt/license-management-using-delegated-administrator-feature-of-aws-license-manager/ >

[Meruwoma 2022]

Meruwoma, Charles and Kyler Comalie (2022). How to Manage Licenses for Servers Migrating to AWS using AWS License Manager. *AWS Cloud Operations and Migrations* [Blog]. Sep 26th 2022. Available at: <https://aws.amazon.com/blogs/mt/how-to-manage-licenses-for-servers-migrating-to-aws-using-aws-license-manager/>

[Jeripotula 2020]

Jeripotula, Shashiraj (2020). Creating ServiceNow incidents for AWS License Manager notifications. *AWS Cloud Operations and Migrations Blog* [Blog]. Available at: <https://aws.amazon.com/blogs/mt/servicenow-incidents-for-license-manager/>

[Putta 2020]

Putta, Harshitha and Kalhan Vundela (2020). Track licenses across multiple AWS Regions using AWS License Manager. *AWS Cloud Operations and Migrations Blog* [Blog]. Nov 18th 2020. Available at: <https://aws.amazon.com/blogs/mt/track-licenses-across-multiple-aws-regions/>

[Chinnasamy 2020]

Chinnasamy, Shree (2020). Use AWS License Manager API operations to manage your software licenses in the cloud. *AWS Cloud Operations and Migrations Blog* [Blog]. Oct 13th 2020. Available at: <https://aws.amazon.com/blogs/mt/use-aws-license-manager-api-operations-to-manage-your-software-licenses-in-the-cloud/>

[Evilsizer 2020]

Evilsizer, Chris (2020). Tracking software usage across multiple AWS accounts using AWS License Manager. *AWS Cloud Operations and Migrations Blog* [Blog]. Feb 17th 2020. Available at: <https://aws.amazon.com/blogs/mt/tracking-software-usage-across-multiple-aws-accounts-using-aws-license-manager/>

[Harshitha 2020]

Putta, Harshitha (2020). Simplified Bring-Your-Own License experience using AWS License Manager. *AWS Cloud Operations & Migrations Blog* [Blog]. March 26th 2020. Available at: <https://aws.amazon.com/blogs/mt/simplified-byol-experience-using-aws-license-manager/>

[Putta 2020]

Putta, Harshitha (2020). Automating the discovery of licensed software using AWS License Manager. *AWS Cloud Operations and Migrations Blog* [Blog]. June 7th 2020. Available at: <https://aws.amazon.com/blogs/mt/automating-the-discovery-of-licensed-software-using-aws-license-manager/>

[Putta 2020]

Putta, Harshitha (2020). Mechanisms to govern license usage with AWS License Manager. *AWS Cloud Operations and Migrations Blog* [Blog]. Feb 26th 2020. Available at: <https://aws.amazon.com/blogs/mt/mechanisms-to-govern-license-usage-with-aws-license-manager/>

II. Unofficial

[Sage 2020]

Sage, Aled (2020). AWS: the surprise choice for your Microsoft-based applications? *Cloudsoft*. July 14th 2020. Available at: <https://cloudsoft.io/blog/aws-choice-microsoft-apps>

III. Critical

IV. General

[Classen 1996]

Classen, H Ward. Fundamentals of software Licensing. IDEA: The Journal of Law and Technology. Available at: <http://euro.ecom.cmu.edu/program/law/08-732/Transactions/Fundamentals.pdf>

[Foxen 2015]

Foxen, David (2015). Software Licensing Challenges Faced in the Cloud: How Can the Cloud Benefit You? *ITAM Review*. Nov 20th 2015. Available at: <https://itassetmanagement.net/2015/11/20/software-licensing-challenges-cloud/>

[Gjersvik 2018]

Gjersvik, Nick (2018). Software Licensing [PowerPoint slides]. Available at: <https://www.d.umn.edu/~tcolburn/cs3111/presentation/schedule/2018-spring/presentations/licensing.pdf>

[Heino 2018]

Henio, Joseph S. (2018). What is software licensing? Available at: <https://www.dkattorneys.com/wp-content/uploads/2018/01/Software_Licensing.pdf>

[Nancy]

Kim, Nancy S. The Software Licensing Dilemma. Available at: <https://core.ac.uk/download/pdf/232620237.pdf>

[Version 2020]

Top 8 Cloud Software Licensing Implications When Making the Move to the Cloud. *Version 1* [website]. Nov 2nd 2020. Available at: <https://www.version1.com/blog-sam-top-8-licensing-implications/>

[Schmutz 2021]

Schmutz, Alban (2021). The DMA must end unfair software licenses' distortion of cloud infrastructure markets. *Politico*. Available at: <https://www.politico.eu/sponsored-content/the-dma-must-end-unfair-software-licenses-distortion-of-cloud-infrastructure-markets/>

[Tackett 2015]

Tackett, Cyndi (2015). Cloud and SaaS make my software license management problems go away. Right? Available at: https://www.flexera.com/blog/it-asset-management/cloud-and-saas-make-my-software-license-management-problems-go-away-right-2/

[Trappler 2013]

Trappler, Thomas J (2013). Software licensing in the cloud. *Computerworld*. Available at: <https://www.computerworld.com/article/2496855/software-licensing-in-the-cloud.html>

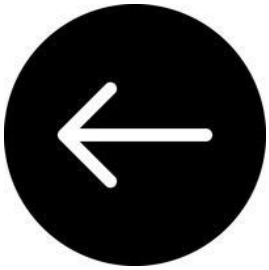
[Vaughan-Nichols 2023]

Vaughan Nichols, Steven J (2023). A license to trust: Can you rely on 'open source' companies? Available at: <https://www.theregister.com/2023/08/18/opinion_column/?td=rt-3a&ck_subscriber_id=1560524742>

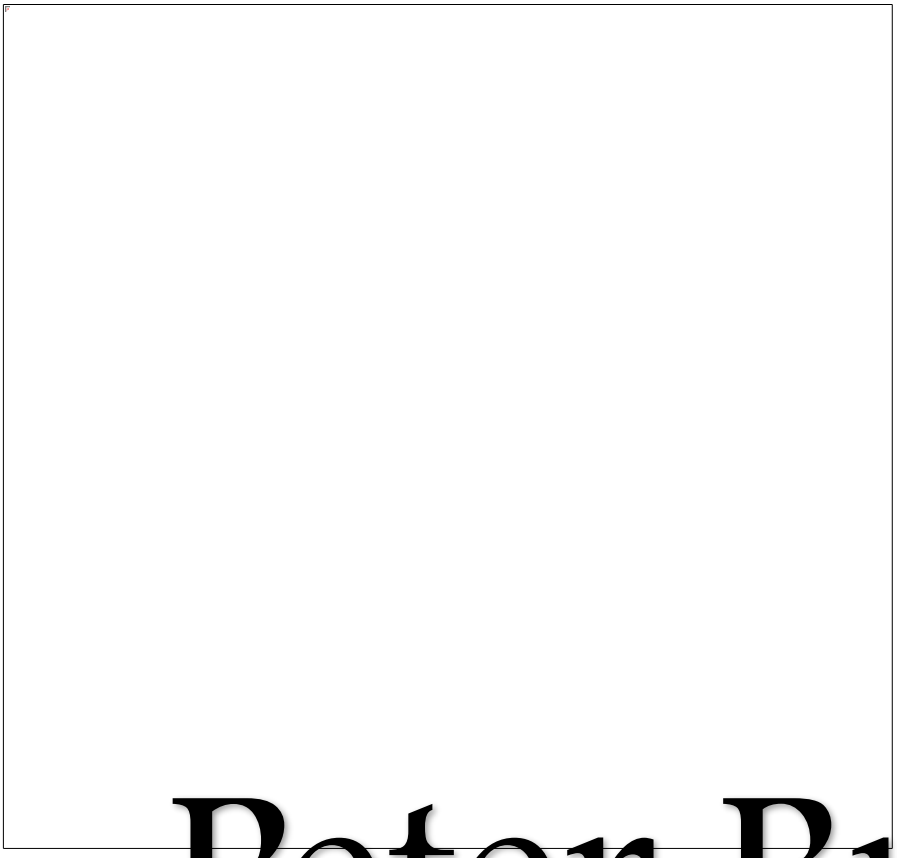
[WIPO]

World Intellectual Property Organization. Available at: <https://www.wipo.int/edocs/mdocs/mdocs/en/wipo_webinar_reg_ip_22/wipo_webinar_reg_ip_22_5.pdf>

FSx for Lustre



The picture can't be displayed.



Peter Braam


The picture can't be displayed.

Glossary

DFS

Stands for Distributed Filesystem.

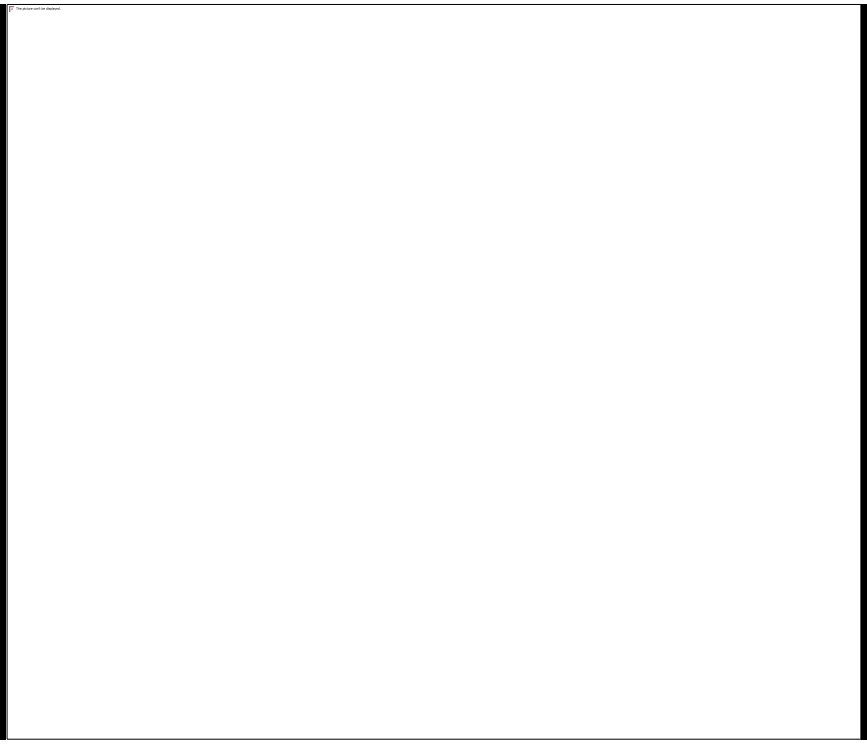
DFSR

Stands for Distributed Filesystem Replication.

Term3

Description of what term means here.

FSx for Windows File Server



Prashanth Bungale explaining how *FSx for Windows File Server* works (2021)

The picture can't be displayed.

The picture can't be displayed.

This picture can't be displayed.

AWS AppMesh

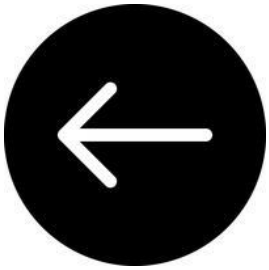
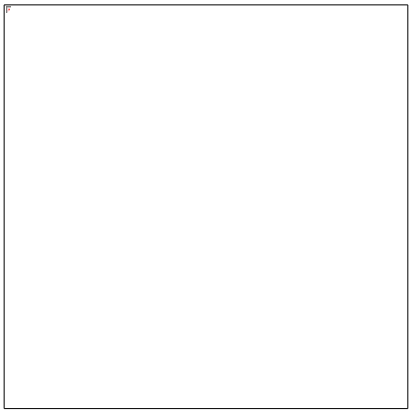


IMAGE CREDITS

From the 2006 film Lake House. Sandra Bullock plays a frustrated architect. Visible are the famous Harry Bertoia mesh chais.



Control Tower

The picture can't be displayed.

The picture can't be displayed.

We know that AWS Control Tower was announced on Wednesday 28th November 2018[1].

A control tower is a tall, windowed structure located on airport grounds. It allows control and management of air traffic, partly through visual observation. Air traffic controllers are responsible for the separation and efficient movement of aircraft and vehicles operating on the runways. A controller must carry out the job by means of the precise and effective application of **rules** and procedures. These rules might need to be **broken,** to account for varying circumstances.

The control tower allows complexity to be managed [Chui 2020]. It provides an eagle-eye view of the runways. Its employees are responsible for keeping aeroplanes **isolated** from one another to ensure security and safety. **Thousands** of planes might pass through the airport in a day.

This control tower may have managed Andy Jassy's flight, *if* he flew to Re:Ivent, in **November 2018**, to announce the new service, AWS Control Tower [Vegas 2008].

What is AWS Control Tower?

Let's get the generic descriptions of the service out of our system. It's a necessary step. So, let's go through some:

1. AWS Control Tower provides the easiest way to set up and govern a secure, compliant, multi-account, AWS environment.

[AWS 2019]

This sentence is particularly helpful for those whose hobby is ranking the best-to-worst ways to

> [set up and govern secure, compliant, multi-account AWS environments.]

There has been fierce debate over which way is the *easiest* (my own leader board ways takes up a bedroom wall). Fortunately, this is finally laid to rest in this video.

No one who is genuinely new to Control Tower can get anything from the sentence above. Marketers seem to believe that more modifiers they stuff in (*secure*, *compliant, multi-account)* before "environment", the more ecstatic we become. Anyhow, the aim is clearly to persuade people to use the service.

Our primary aim is to *understand* the service. For us, this sentence is mainly trash. What we take away is this: Control Tower somehow helps with managing multiple accounts.

---

[1] See Theresa May answer questions about how was losing the ability to **control t**alks with the EU. See controversial scientist He Jiankui answer questions about how he controversially used human genetic engineering to **control t**wins. Australia was hit by floods. Storm Diana battered the UK; it was a stressful day for those working in airports, specifically, the **control tower**.

Now, down to business with a talk by Chandar Venkataraman (2019). At one point he asks "what is Control Tower?" and provides the answer:

> Control Tower is a new service. We just announced its general availability two days ago.
>
> It's a service that provides you with the easiest way to set up and govern your multi-account AWS environments at scale.
>
> [AWS 2019]

It seems we've discovered the Official Line. There are **three questions** which I now have:

1. What does governing multiple accounts involve?
2. What, specifically, are the difficulties associated with 'governing' multiple accounts?
3. Which features of Control Tower cause it to be the *easiest* way to govern multiple accounts?
    a. *How* do they cause this?

I'll strive to answer these questions in due course.

Confusion over names

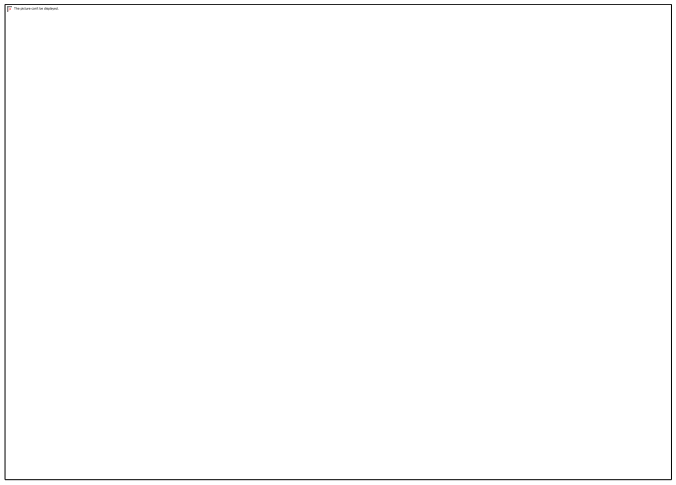
There is some terminology to get on top of. Elmalak admits, in Dec 2019 that:

> Last year, about early-to-mid year, we launched the AWS Landing Zone Solution. And it did exactly what I've described Control Tower as doing: [namely] create the log archive account, create the security account, create what was called an Account Vending Machine.
>
> And then we decided "well this is great, let's build AWS Control Tower!
>
> [Elmalak 2019c]

The audience are then shown a picture of the winding, convoluted road outside the nearby Las Vegas hotels. *The terminology became confusing.* 'I've had to define landing zone, AWS Landing Zone, AWS Organisation so many times, even to people in our own organisation' Elmalak says.

Briefly, AWS Organisations came first in 2016. It let you manage multiple accounts using things called Service Control Policies. These Service Control Policies are attached to accounts, and logical groups of accounts called Organisational Units. Then, at the beginning of 2019, AWS started offering pre-configured solutions. These were environments already set up, for common use cases. One such multi-account environment was called the Landing Zone Solution (notice the upper case letters). Finally, this worked so well that AWS decided to design a full-on **service.** This service gave you everything you got with the solution. The service is called Control Tower (announced *November* 2018) and the environment you're given is called your landing zone (with lower case letters).

What is a Guardrail?



Nivas Durairaj tells us that a **guardrail** is:

> A high-level rule that provides governance for your AWS environment on an ongoing basis.
>
> [Murphy 2019]

So, a guardrail is a *rule*. I immediately have some questions. How do these rules "provide governance"? Why are they "high-level"? What are some examples of guardrails? We're then told that guardrails "have two main behaviours, *detective* and *preventive*".

We're going to dive deeper into these two types—detective and preventive—shortly. Straightaway, we can suspect the difference.

Preventive, as in *preventive medicine*, implies maintaining good states of affairs. Nothing bad has happened. Detective, as in *police detective*, implies fact-finding, after bad things have happened.

Detective and Preventive

Detective guardrails are implemented using things called *AWS Config Rules*. AWS Config is a service that shows you in one console how all your resources on your account are related. In other words, it shows you your *configuration*. Relations include containment, attachment, and association. For example, a subnet *contains* an instance; a security group is *associated* with an instance.

Launched in 2014, AWS Config also involves Config rules, which alert you when things get out of whack (for example, an EBS volume ceased to be attached to an instance). These **AWS Config Rules** are essentially all that is being described by **detective guardrails**. AWS Config Rules *detect* things that are out of whack.

What about ***preventive* guardrails**? These are implemented using things called **Service Control Policies**. These beautiful things are **s**uper **c**apable policies and have a **s**pecial, **c**entral place in AWS

Organisations. SCPs are a form of **limit** or **boundary**. In the following passage, SCPs are described as marking out—or defining—guardrails:

> An SCP defines a guardrail, or sets limits on the actions that the account's administrator can delegate to the IAM users and roles in the affected accounts.
>
> AWS Docs

Despite being service control *policies,* they do not positively permit users to do things. The **inert** character of SCPs is described here:

> SCPs alone are not sufficient to granting permissions to the accounts in your organization. No permissions are granted by an SCP.
>
> AWS Docs

It seems that guardrails and SCPs go hand-in-hand. Basically, *guardrail* is just the noun we use for the thing-created-by-SCPs.

SCPs don't really create anything positive—they define maximums. Therefore, we say: SCPs create *guardrails*.

We have now seen how Detective Guardrails are implemented using Config rules and Preventive Guardrails use SCPs. What allows both these things to be described as guardrails? I think they are involved in establishing some limit or baseline.

Calling both of these items *guardrails* is misleading in the following way. Detective guardrails merely detect. They don't act as limits, guiding action in the way that metal guardrails do. Config rules inform you of changes. They don't prevent changes, in the way that Preventive Guardrails do.

Nivas Durairaj emphasises an important difference regarding the **scope** of the two guardrails:

> Unlike SCPs, which are applied at the account level, the AWS Config rules only apply on supported regions for Control Tower.
>
> [Murphy 2019]

So, those beautiful **S**CPs are **s**upreme—*those* are at the account level.

We can also think about guardrails in terms of permissiveness. They can be:

1. Mandatory
2. Strongly recommended
3. Elective

Durairaj gives us three examples of **mandatory guardrails**. (1) Enabling access logging for the log archive account. (2) Disallowing configuration changes to CloudTrail. (3) Disallowing changes to IAM roles set up by AWS Control Tower.

We are given one example of a **strongly recommended** guardrail. Namely, enabling MFA for the root user.

An example of an **elective guardrail** is disallowing access to IAM users without MFA.

What on earth is a *landing zone*? This is a term that AWS use. Perhaps it continues the aircraft theme (airports have control towers)[2]. Elmalak tells us that it is a:

> Configured, secure, scalable,
>
> multi-account AWS environment
>
> based on AWS best practices.
>
> [Elmalak 2019a]

So, a landing zone is a multi-account environment. This doesn't quite capture the concept though.

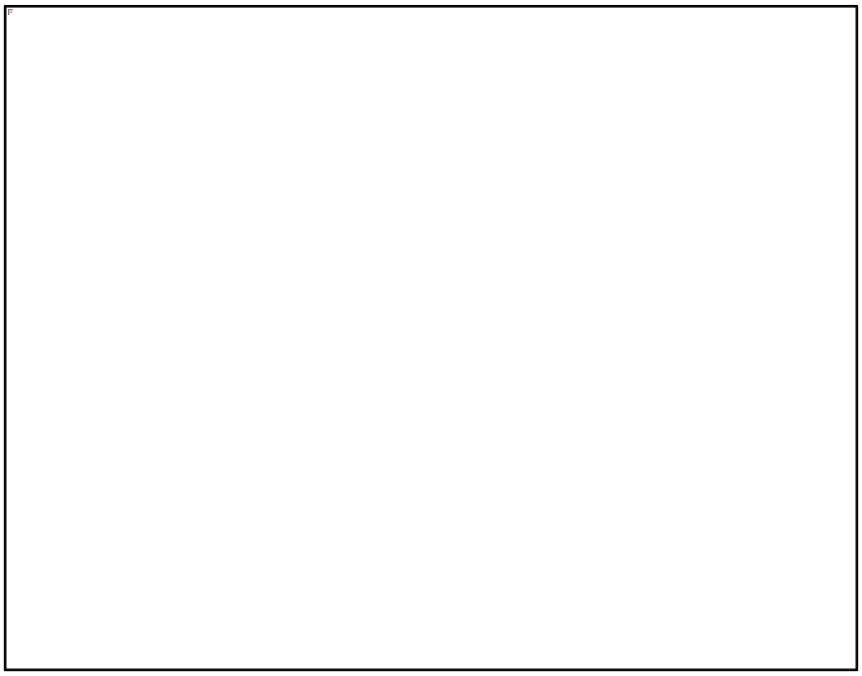
Just because you have multiple accounts, you don't necessarily have a landing zone. A landing zone is a multi-account environment *that lives up to AWS best practices*. Therefore, cashing out these best practices will be crucial to understanding what a landing zone is.

Elmalak (2019) outlines some 'baseline requirements'. Some relate to security.

- Multi-factor authentication is in place for the root user.
- CloudTrail is enabled, as well as GuardDuty.
- Cross-account security roles.

Other baseline requirements relate to the network. What services do we want to launch within the VPC? Are there endpoints for S3 or DynamoDB in my environment? Are we going to be logging VPC traffic with VPC Flow Logs?

A landing zone should not be confused with AWS Landing Zone [Elmalak 2019a]. Notice the capital letters on the latter, which is a "solution". AWS currently have a sort of library of pre-vetted solutions (at the moment, accessible at aws.amazon.com/solutions/).



[2] At Cape Canaveral Space Force Station, there is Landing Zone 1 and Landing Zone 2.

One such pre-vetted solution was known as "Landing Zone". It is clear, however, that landing zones were based on the Landing Zone solution. In landing zone, a lot of security was pre-configured for you. (1) A CloudTrail trail was created in each account, configured to send logs to an S3 bucket (2) AWS Config was enabled, sending log files to a bucket (3) Config rules were set up, to monitor the encryption of buckets and EBS volumes etc (4) GuardDuty was enabled. AWS referred to all these pre-configured items as a *Security Baseline*.

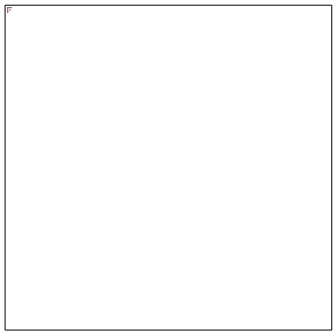
Why did they call it a landing zone?

I think it is because these environments provide easy ways to enter the cloud world. We usually talk about landing zones in military contexts, when a helicopter or plane needs to find an area of ground that is clear to land on. Landing zones in Control Tower are multi-account environments where everything is clear, controlled, and pre-vetted, just like areas of clear ground for aircrafts.

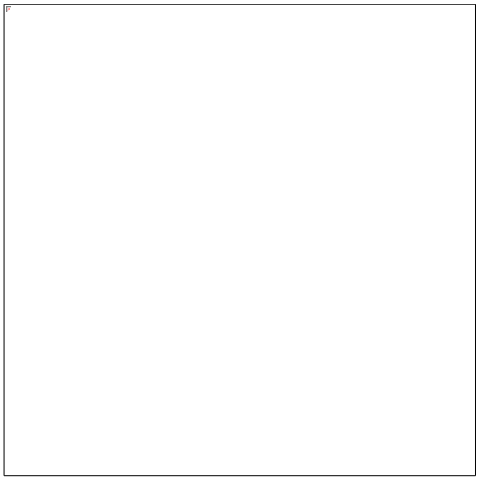
Another strange term was the Account Vending Machine (AVM). Whatever this precise nature of the AVM, we know that it ensures that when new accounts are created, they possess the Security Baseline:

> The AVM is provided as an AWS Service Catalog product, which allows customers to create new AWS accounts in Organizational Units (OUs) preconfigured with an account security baseline, and a predefined network.

Core Accounts



We can talk about **core accounts** [Elmalak 2019b]. These are 'the things that the rest of the organisation depends on' (ibid.).



The environment will have an account called the **Log Archive account** (LA account). This is an isolated area which we can send security logs to. Elmalak says "it's your single source of truth" [Elmalak 2019b]. It's your security logs, but some customers choose to put application logs to the Log Archive account. Elmalak says the golden rule is:

> Keep it so that it's only hosting your logs.

If we want to do compute on it, if we want to do analysis, we'll give read-only access to the content from somewhere else. Elmalak goes further: "in fact, if a user logs in, I would alarm on it, because that should not happen" [2019b, 2019c].

As well as the log archive account, we'll have the **Security Account.** The idea is that this account addresses your need to know what's going on in the rest of the environment. Elmalak enumerates 5 features of the Security Account:

1. Optional data centre connectivity. You might have an on-premises SIEM.
2. Security tools and audit
3. This account will be the master account for GuardDuty
4. This account will have read/write permissions across all the other accounts
5. Limited access

[Elmalak 2019b]

There's a third account called the **Shared Services account**. The purpose of this account is not so obvious. Elmalak just says "common things and tooling that I need for my organisation". There are 5 things that might go here.

1. Tools or services that help with DNS
2. LDAP or Active Directory
3. Deployment tools: golden AMIs or a pipeline
4. Scanning infrastructure
5. Monitoring

[Elmalak 2019b]

There might be a fourth account which is essentially the **Network Account**. Keep in mind that your network team is likely to be different from your central IT team. Your Direct Connect will be based here and your Transit Gateway (if you use these things). This account is the stomping ground of the network team. You might want to limit access to the network account.

Fifth, you might have some **developer accounts**. This is an innovation space, where developers can learn and figure things out. Sure, they'll be logs still going to CloudTrail, however these accounts can be isolated. They are not connected to the data centre.

How would an innovation pipeline work with a multi-account environment? It's quite simple. You'd have some developer accounts. You might have a separate proof-of-concept (POC) account. The software can then be moved into the main accounts. In the usual way, the software moves from one area to another, making its way to production.

The presentation by Sam Elmalak has been enormously helpful here. He takes the confusing diagram of the multi-account environment and breaks it down.

Five Points of Difference

Elmalak (2019b) addresses the fact that you might wonder:

> Which should I use, AWS Landing Zone or AWS Control Tower?

Recall that we are talking about Landing Zone with upper case letters, the solution provided by AWS. We are helpfully given 5 points of difference. Let's briefly go through those.

1. AWS Control Tower is a managed service, provided by AWS. You do not see the code, or know where the code is. Landing Zone, meanwhile, is not a service. It is a deployment, using CloudFormation templates.

2. With Landing Zone, you own the code. You can do whatever you want with it. With AWS Control Tower, on the other hand, there are fixed blueprints. There are fixed guardrails.

3. With Landing Zone, most regions are supported. At launch, AWS Control Tower only supported four regions.

4. You have complete flexibility with Landing Zones. Control Tower might be slightly less flexible in that you must have **two non-configurable core accounts**. There is no Shared Services account in AWS Control Tower and there is no VPC in the core accounts.

5. Landing Zone is complex and so it requires considerable expertise. With AWS Control Tower, on the other hand, you are guided. It is self-service.

[Elmalak 2019b]

Elmalak explains why *accounts* are the important entity here. An AWS Account is "the **highest level** of isolation" [Elmalak 2019b]. Let's explore this a little bit. Distinct accounts have separate billing. Distinct accounts have separate API limits. It's an important boundary for throttling as well. In fact:

> If I set up an account and you set one up,
>
> that level of isolation is the same as if you set up two separate accounts
>
> [Elmalak 2019b]

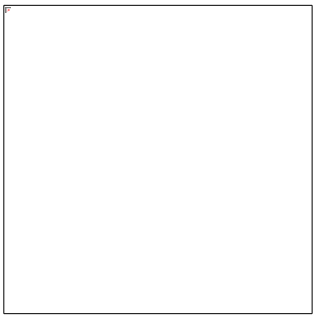
Companies usually start with one account. However, they realise the need to isolate certain things. They therefore increase the number of accounts that they have. This is where things become complicated to manage. There are several AWS customers that have **thousands** of AWS accounts [Elmalak 2019b].

In the second part of his presentation, Elmalak starts talking about the AWS Landing Zone solution, which was launched in 2018. It is clear that with this solution, you get many of the things you get with your landing zone in Control Tower.

Elmalak explains what the Account Vending Machine is. When the Account Vending Machine was incorporated into Control Tower, they began referring to it as "Account factory". The Account Vending Machine (AVM) allows new accounts to be created which are pre-configured with all that they need. Such accounts will possess the Security Baseline. The AVM is a product of the AWS Service Catalog.

Be notified by *CloudWatch Events*

Control Tower just launched the ability to have CloudWatch Events give you a notification when it is done baselining an account. So customers can take that notification and take an action.



"We recently released this" [Elmalak 2019c] and this allows Control Tower to be a serious replacement to the AWS Landing Zone Solution.

"It gives you an orchestration of multiple AWS services. This includes Organisations, SSO, Service Catalogue, Config and CloudTrail." [Durairaj 2021]

2016 Strategy

AWS's thinking has not always been the same. In 2016, AWS guidance for multiple accounts was as follows. There was no log archive account back then. The guidance was to put logs in the security account. There were not teams, there were *business units* (BUs). Elmalak explains this all in [2019b].

Origin Story

We're given a bit of an origin story about how Control Tower evolved [Elmalak 2019b]. Around 2015-16, AWS would just be giving out guidance on multi-account environments. This set of guidelines was referred to as "The Multi-Account Strategy".

Then it was stepped up. AWS wanted to provide a way to do an implementation. A professional known as a Solutions Architect (SA) would advise the customer. Alternatively, Professional Services (PS) could advise you, or even an **AWS Partner**.

Thinking then expanded to infrastructure operations. On top of this is application operations.

The Landing Zone Solution came in early 2018. This might have been based on the "Multi-Account Strategy". This is at the implementation level. So is Control Tower, the managed service announced on 27th Nov 2018.

What about Infrastructure Operations? This is about the day-to-day management of your infrastructure. Here, a customer might have their own **operations team**. And it's this team that manages Control Tower or your Landing Zone Solution. You might in fact have a Managed Service Provider (MSP) – they're probably managing they're own custom build on your behalf. Alternatively, you can use AMS (Amazon Managed Service).

Once your infrastructure is taken care of, you need to think about managing your application, which runs on the infrastructure. This could be your own operations team. Again, an MSP (managed service provider) might take charge here.

Glossary

If you want these to be even briefer, simply read the first sentence then stop.

landing zone – the multi-account environment you are provided with in Control Tower, which meets AWS best practices.

Landing Zone Solution– a solution, deployed using CloudFormation stacks, available to buy on *AWS Solutions Library*. You were given four accounts, namely:

i. An AWS Organisations account
ii. Shared Services account
iii. Log Archive account
iv. Security account

Helpful features are pre-configured. For example, each account will send notifications to a local SNS topic. There is a topic called Aggregate Security Notifications. This notifies you of (1) GuardDuty Findings (2) Config rule changes (3) CloudWatch alarms.

AWS Solutions Library – a resource launched in early 2019 that let's you buy pre-configured environments. Each environment is for a particular use case. They are pre-vetted. Available currently at aws.amazon.com/solutions/

SIEM – an acronym used generally, standing for security information and event management.

Account vending machine (AVM) – this was found in the solution called Landing Zone. The AVM generates new accounts. But it does so in such a way that they're configured with the security baseline. It provided *automated configuration*.

The AVM was offered as a product on the AWS Service Catalog.

Account factory – modern term employed by Control Tower to refer to an AVM (see AVM).

Log archive account (LA account) – an account which comes in the multi-account environment provided by Control Tower etc. An isolated area you send your security logs to. Your "single source of truth" [Elmalak 2019b, 2019c, Venkataraman 2019].

Elmalak suggests installing an alarm to alert you when this account is accessed [2019b]. It should have an S3 bucket with versioning enabled and tooling should not be running in this account [Elmalak 2019c].

Security account

This is one of the four accounts that you were given in your Landing Zone Solution (see that entry).

By Dec 2019, Elmalak starts to talk about three *types* of security account: read only, break glass, and tooling [Elmalak 2019c]. He explains that thinking had changed slightly over the past few months.

Security (*tooling)* account

one of three sorts of security accounts you might want to have set up (see Security Account). Elmalak suggests that it might be helpful to have an AWS account which you use to run AWS Security Hub, Amazon GuardDuty, and similar scanning tools [Elmalak 2019c]. No humans use this account.

Security (*break glass*) account

One of three sorts of security accounts you might want to have set up (see Security Account). This account should have extremely limited access. It should almost never be used. If somebody is using this account, they are responding to an incident.
It is named after the hammers you get on trains which require you to break the glass to use them [Elmalak 2019c].

Security (*read only*) account

one of three sorts of security account you might want to have set up (see Security Account). This account *is* used by humans. It has cross-account access, but it's read only. Use this account to view and scan resources in other accounts [Elmalak 2019c]

Shared Services account – one of the four accounts you are given within a landing zone. Shared services are presumably services used by all accounts. They include DNS services, directory services (for example, Active Directory). You might put deployment tools in this account, such as golden AMIs, or deployment pipelines. Any scanning infrastructure can go in this account.

AWS Organisations Master Account – one of the four accounts you are given, within a landing zone.

A "very powerful account" [Elmalak 2019c]. This account has minimal resources in it. It's not connected to your data centre. Owned by someone responsible, and responsible for data security in your organisation. SCPs can be applied using this account; OUs are hosted here.

AWS Organisations – an AWS service first announced on 29th Nov 2016. It is a tool for managing multiple AWS accounts. Key concepts include SCPs and OUs.

AWS Control Tower – an AWS service first publicly mentioned by Andy Jassy as Reinvent, on Wednesday 28th Nov 2018.

It concerns multi-account environments. It makes

(1) their set-up automated

(2) the environment secure, with the appropriate accounts, with CloudTrail and GuardDuty etc *already* running

(3) the environment align with AWS best practices.

The term for the multi-account environment is *landing zone* (cf. Landing Zone, in the AWS Solutions Library).

Baseline requirements – Term used in [Elmalak 2019a, 2019b] to describe

Terraform – an open-source, infrastructure-as-code software tool created by HashiCorp.

Guardrail – some sort of rule concerned in some way with limits on the *possible* permissions assigned to principals within an account. Durairaj distinguishes *detective* guardrails from *preventive* guardrails.

This concept is distinct from, for example, the Principle of Least Privilege.

***Preventive* guardrail** – defined using SCPs, they set limits on the permissions which the account administrator can assign to IAM users and IAM roles within the account.

***Detective* guardrail** - a kind of guardrail that merely detects. In other words, they don't actually guide action by preventing permissions from being acscribed to some IAM user. They are implemented using Config rules.

Service Control Policy (SCP) – these policies set limits on the maximum permissions that can be assigned to an IAM entity within an account. SCPs do not positively ascribe permissions. SCPs were found in AWS Organisations right from its release.

Organizational unit (OU) – a central concept in AWS Organisations, an OU is a logical grouping of accounts in your organisation. Alternatively, "a *container* for accounts within a root".

OUs can only be created using AWS Organisations. Policies can be attached to OUs (they can also be attached to accounts themselves). One OU can contain another OU within it. This ability of OUs to be nested within one another allows you to create a hierarchical tree-structure. Note, however, that we still say that each account can be a member of exactly one OU.

Elmalak says in 2019c that Control Tower does not support nested OUs.

Bibliography

I. Official

[Arrais 2021]

Arrais, Matheus (2021). Build governance at scale with AWS Control Tower. AWS Reinvent 2020. Available at: <https://www.youtube.com/watch?v=Zxrs6YXMidk&ab_channel=AWSEvents>

[AWS 2019a]

Amazon Web Services (2019). [Marketing Trailer]. Available at: <https://www.youtube.com/watch?v=daLvEb44d5Q&ab_channel=AmazonWebServices>

[AWS 2022]

AWS (2022). 'Enforce Preventive Guardrails Using Service Control Policies'. Available at: <https://www.youtube.com/watch?v=mEO05mmbSms&ab_channel=AmazonWebServices>

[Barr 2018]

Barr, J. (2018). 'AWS Launches, Previews, and Pre-announcements at Reinvent 2018'. Available at: <https://aws.amazon.com/blogs/aws/aws-previews-and-pre-announcements-at-Reinvent-2018-andy-jassy-keynote/>

[Durairaj 2021]

Durairaj, Nivas and Remek Hetman (2021). Customizing and scaling your AWS Control Tower environment. AWS Reinvent 2021. Available at: <https://www.youtube.com/watch?v=fDtxiBW_J8I&ab_channel=AWSEvents>

[Elmalak 2019c]

Elmalak (2019). **Architecting security and governance across your landing zone**. 9th Dec. AWS Reinvent 2019. SEC325-R2. Available at: <https://www.youtube.com/watch?v=zVJnenaD3U8&ab_channel=AWSEvents>

[Elmalak 2019a]

Elmalak, Sam and Steve Morad. **What's New in AWS Landing Zone?** Tue 28th May Available at: <https://www.youtube.com/watch?v=d6mMyhgqIZE&ab_channel=AWSOnlineTechTalks>

[Elmalak 2019b]

Elmalak, Sam (2019). **Implementing your landing zone**. Re:Inforce. The Boston Convention and Exhibition Centre, MA. FND210. Wed 26th June. Available at: <https://www.youtube.com/watch?v=nNy5UjzejNc&ab_channel=AmazonWebServices>

[Getson 2022]

Getson, Tim and Galen Dunkleberger (2022). Building and governing multi-accounts using AWS Control Tower. Available at: <https://www.youtube.com/watch?v=agpyuvRv5oo&ab_channel=AWSEvents>

[Janmaat 2022]

Janmaat, Ivar and Oscar Carrascero and Efoe Boris Sassoe (2022). Simplify Cloud Governance with AWS Control Tower. Available at: <https://www.youtube.com/watch?v=j0wQ_t7jy1s&ab_channel=AWSEvents>

[Mohanty 2021]

Mohanty, Kaushik and Chuck Chemis and James St Onge (2021). 'Data residency capabilities in AWS Control Tower'. Available at: <https://www.youtube.com/watch?v=4mKpuX56kM4&ab_channel=AWSEvents>

[Murphy 2019]

Murphy, Ana Paula & Nivas Durairaj and Bryan Miller. How to Detect and Mitigate Guardrail Violations with AWS Control Tower. AWS Online Tech Talks (YouTube channel). Available at: <https://www.youtube.com/watch?v=HuVZqx8IHd4&ab_channel=AWSOnlineTechTalks>

[On Air 2022]

AWS On Air ft. AWS Control Tower. 8th June 2022. Available at: <https://www.youtube.com/watch?v=oLADS_Y3eV4&ab_channel=AWSEvents>

[Venkataraman 2019]

Venkataraman, C. (2019). Available at: <https://www.youtube.com/watch?v=2t-VkWt0rKk&ab_channel=AmazonWebServices>

[Wood 2016]

Wood, Matt (2016). 'Introducing AWS Organisations'. Available at: <https://www.youtube.com/watch?v=8VKMrkKXu2w&ab_channel=AmazonWebServices>

II. Unofficial

[Bevc 2022]

Bevc, Marko (2022). Terraforming AWS Control Tower. Available at: <https://www.youtube.com/watch?v=OZpcCDSkzSQ&ab_channel=HashiCorp>

[MOAM Industries 2020]

AWS Control Tower: What, Why & How. Available at: <https://www.youtube.com/watch?v=zITI_RWlTmk&ab_channel=MOAMindustries>

[Hammond 2019]

Hammond, Eric (2019). 15th Feb 2019. "With very little fanfare, AWS has launched an amazing resource that is probably not going to get the attention it deserves" Twitter. Available at: <https://twitter.com/esh/status/1096558272205606913>

III. Critical

IV. General

[Chui 2020]

Chui, Sam (2020). Inside Europe's Busiest Air Traffic Control – Amsterdam. 18th Jan 2020. Available at: <https://www.youtube.com/watch?v=bKp_0268BVQ&ab_channel=SamChui>

[Porritt 2021]

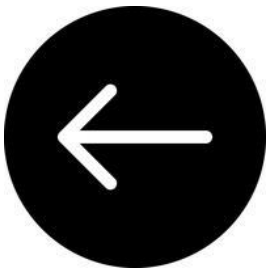
Porritt, Kirk and Brad Hankel and Albert Silva (2021). Account provisioning & customization using Terraform with AWS Control Tower. Available at: <https://www.youtube.com/watch?v=8Ot5wn7kxI0&ab_channel=AWSEvents>

[Vegas 2008]

'Las Vegas Air Traffic Control Tower'. 17th Dec 2008. YouTube. Available at: <https://www.youtube.com/watch?v=uuqwxybq87U&ab_channel=vegasatc>

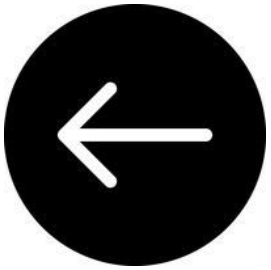
[Yang 2022]

Available at: <https://www.youtube.com/watch?v=rBtHe6Qt1Wc&ab_channel=LoiLiangYang>



Bibliography

I. Official



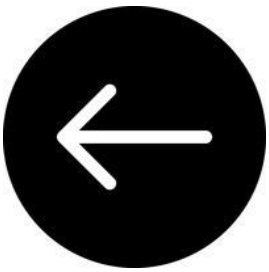
Bibliography

I. Official

II. Unofficial

III. Critical

IV. General



Bibliography

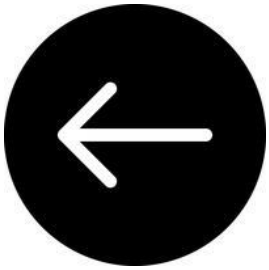
I. Official

II. Unofficial

III. Critical

IV. General

Managed Blockchain



Email from Corey Quinn [Quinn 2024]

Bibliography

I. Official

II. Unofficial

[Quinn 2024]

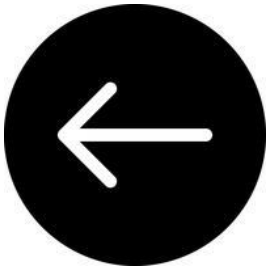
Quinn, Corey (2024). *Last Week in AWS* [Newsletter]. May 13th 2024.

III. Critical

IV. General

[Liskov 2019]

Liskov, Barbara (2019). PBFT and blockchains. Simons Institute. Available at: <https://www.youtube.com/watch?v=S2Hqd7v6Xn4&ab_channel=SimonsInstitute>



Bibliography

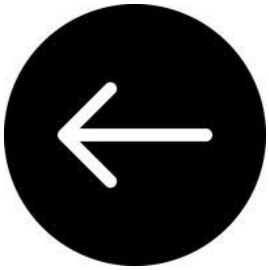
I. Official

II. Unofficial

III. Critical

IV. General

AWS Lake Formation



Announcing AWS Lake Formation

Posted On: Nov 28, 2018

AWS Lake Formation is a service that makes it easy to set up a secure data lake in days. A data lake is a centralized, curated, and secured repository that stores all your data, both in its original form and prepared for analysis. A data lake enables you to break down data silos and combine different types of analytics to gain insights and guide better business decisions.

However, setting up and managing data lakes today involves a lot of manual, complicated, and time-consuming tasks. This work includes loading data from diverse sources, monitoring those data flows, setting up partitions, turning on encryption and managing keys, defining transformation jobs and monitoring their operation, re-organizing data into a columnar format, configuring access control settings, deduplicating redundant data, matching linked records, granting access to data sets, and auditing access over time.

Creating a data lake with Lake Formation is as simple as defining where your data resides and what data access and security policies you want to apply. Lake Formation then collects and catalogs data from databases and object storage, moves the data into your new Amazon S3 data lake, cleans and classifies data using machine learning algorithms, and secures access to your sensitive data. Your users can then access a centralized catalog of data which describes available data sets and their appropriate usage. Your users then leverage these data sets with their choice of analytics and machine learning services, like Amazon EMR for Apache Spark, Amazon Redshift, Amazon Athena, Amazon Sagemaker, and Amazon QuickSight.

To learn more and sign up for the preview, visit the AWS Lake Formation web page.

To join a webinar on AWS Lake Formation on 12/10/2018 click here to register.

Bibliography

I. Official

I. Official

[AWS 2018]

Announcing AWS Lake Formation. [Announcement]. Nov 28th 2018. Available at: <https://aws.amazon.com/about-aws/whats-new/2018/11/announcing-aws-lake-formation/>

II. Unofficial

III. Critical

IV. General

Amazon Personzalize

Bibliography

I. Official

[Bindu 2018]

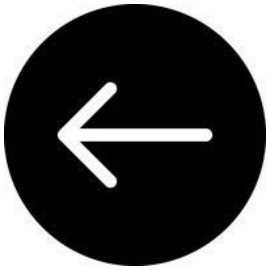
Reddy, Bindu (2018). Introducing Amazon Personalize. *Reinvent 2018* [Conference]. Available at: <https://www.youtube.com/watch?v=9sexYAHHjxE&ab_channel=AmazonWebServices>

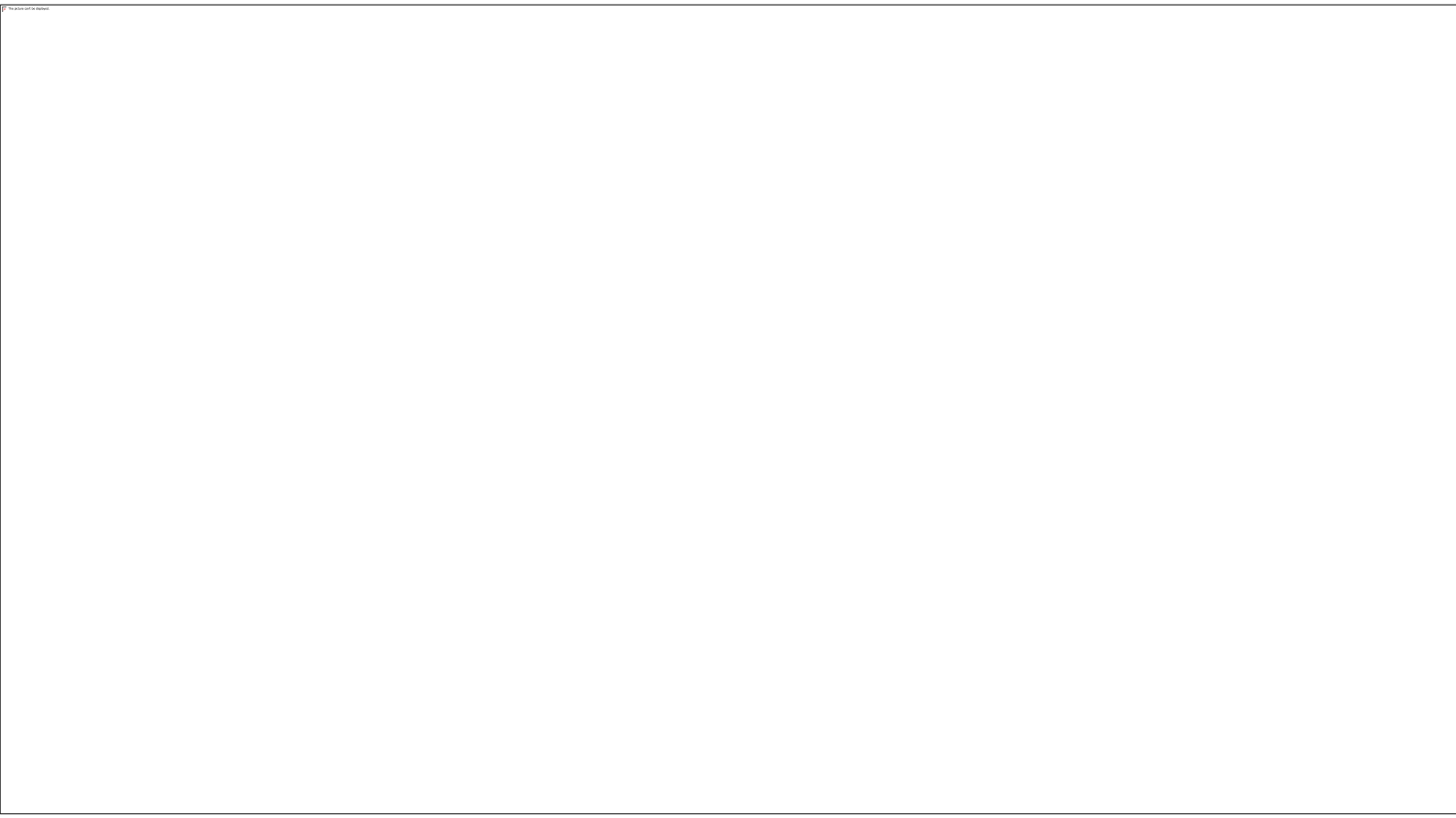
II. Unofficial

III. Critical

IV. General

Security Hub





A discussion about AWS Security Hub. From left to right: Ian Massingham (Director, AWS Evangelism); Ely Kahn (Senior Product Manager); Ryan Holland (Principal, Security);

Bibliography

Image credit

The cover image shows the NASA Mission Control Center for the ISS. Photograph taken on October 6th 2006. Available at:
<https://commons.wikimedia.org/wiki/File:ISS_Flight_Control_Room_2006.jpg >

I. Official

[AWS 2018]

Announcing AWS Security Hub. Nov 30th 2018. YouTube Channel: Amazon Web Services. Available at:
<https://www.youtube.com/watch?v=K3PPzf9ePko&ab_channel=AmazonWebServices>

[Holland 2019a]

Holland, Ryan (2019). Threat Management in the Cloud: Amazon GuardDuty & AWS Security Hub. *Reinvent 2019* [Conference]. Available at: <https://www.youtube.com/watch?v=vhYsm5gq9jE&ab_channel=AWSEvents>

[Holland 2019b]

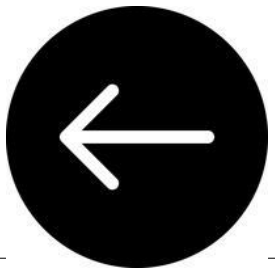
Holland, Ryan (2019). Integration, prioritization, and response with AWS Security Hub. YouTube Channel: AWS Online Tech Talks. Available at: https://www.youtube.com/watch?v=vhYsm5gq9jE&ab_channel=AWSEvents

II. Unofficial

III. Critical

IV. General

Amazon Timestream



Email from Corey Quinn on May 20th 2024

Bibliography

I. Official

[Jassy 2018]

Jassy, Andy (2018). Announcing Amazon Timestream. YouTube Channel: Amazon Web Services. Available at: <https://www.youtube.com/watch?v=oTPpIyXoE3k&ab_channel=AmazonWebServices>

[Gibbs 2020]

Gibbs, Tony. Deep Dive on Amazon Timestream. YouTube Channel: AWS Events. Available at: <https://www.youtube.com/watch?v=Vk3d30-vBj8&ab_channel=AWSEvents>

II. Unofficial

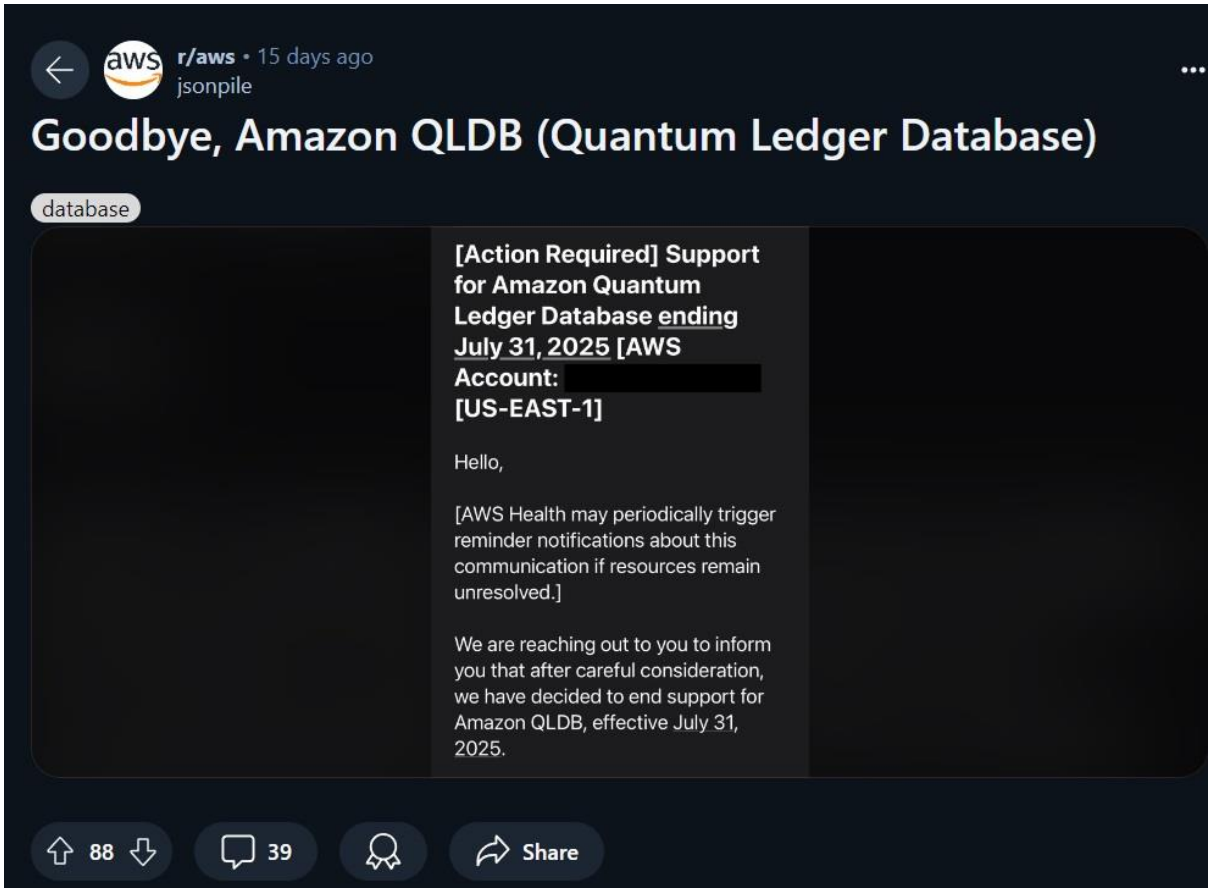
[Quinn 2024]

Quinn, Corey (2024). *Last Week in AWS* [Newsletter]. May 20th 2024.

III. Critical

IV. General

Amazon Quantum Ledger Database



Bibliography

I. Official

[Kadt 2019]

Kadt, Chris De. (2019). What is Amazon Quantum Ledger Database (QLDB). YouTube Channel: Amazon Web Services. Available at: <https://www.youtube.com/watch?v=BiEbMJ86dGQ&ab_channel=AmazonWebServices>

[Mcgaughy 2019]

Mcgaughy, Bruce (2019). Why you need a ledger database: BMW, DVLA, and Sage discuss their use cases. *Reinvent 2019* [Conference]. Available at: <https://www.youtube.com/watch?v=TMQuN0eqPck&ab_channel=AWSEvents>

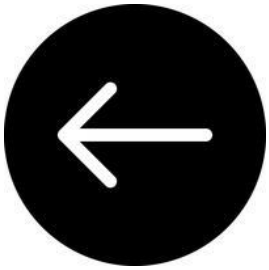
II. Unofficial

[Reddit 2024]

Goodbye, Amazon QLDB. Available at: <https://www.reddit.com/r/aws/comments/1e6nmy5/goodbye_amazon_qldb_quantum_ledger_database/?onetap_auto=true&one_tap=true>

III. Critical

IV. General



Bibliography