



AWS EUC INNOVATION DAY 2022

Picking the right AWS EUC service for your needs

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Agenda

Dive deep to understanding use cases

Identify key service features

Learn how to decide on your AWS EUC solution

Amazon WorkSpaces family of services

Fully managed, secure, reliable, scalable virtual services for every workload

AppStream 2.0

Desktop or application streaming for SaaSification of legacy applications

WorkSpaces

Persistent all-inclusive virtual desktops for every worker

WorkSpaces Core

Infrastructure-only solution for customers' third-party persistent VDI management software

WorkSpaces Web

Secure browser access to internal websites and SaaS apps

Managed Infrastructure

Secure

Reliable

Scalable / Pay-as-you-go

User Interface

Application | Desktop

Desktop: WorkSpaces

Desktop: 3rd party

Secure browser

Configurability

CPU, memory, OS, GPU

>300 enterprise policies



Use Case Requirements: Technical Deep Dive

Well Architected Principles



<https://wa.aws.amazon.com/>

Operational Excellence

- *Requirements for use cases' operating system?*
 - What is current state?
 - Change to desired state?
- *Deployment model for the use case?*
 - Ability to reuse existing tooling?
 - Requirement to introduce new practices for efficiency and flexibility?
 - Access to applications from new devices and ways of working?
 - Maintenance window period length
- *What monitoring services are required for the use case?*
 - Need to quantify user experience
 - Requirement to readily support issue troubleshooting



Operational Excellence

Requirement	AppStream 2.0	WorkSpaces	WorkSpaces Core	WorkSpaces Web
Operating System	<ul style="list-style-type: none"> Windows Server 2012R2 Windows 2016 Windows 2019 Amazon Linux 2 	<ul style="list-style-type: none"> Windows Server 2016 Windows Server 2019 Amazon Linux 2 Windows 10 (BYOL) Ubuntu 	<ul style="list-style-type: none"> Windows 10 (BYOL) 	<ul style="list-style-type: none"> Amazon Linux 2
Deployment Model	<ul style="list-style-type: none"> Does not require desktop management tools Simplifies delivery of complex applications Full image life cycle automation allowing rapid update cycles Fleet image updates in minutes 	<ul style="list-style-type: none"> Needs WorkSpaces Client Can use Custom Bundles Integrates with existing tooling and methods Full image life cycle automation allowing rapid update cycles Phased rebuilds Each WorkSpace ~20 minutes to deploy 	<ul style="list-style-type: none"> Reuse existing remote client deployments Can use Custom Bundles Integrates with existing tooling and methods Full image life cycle automation allowing rapid update cycles Phased rebuilds Each WorkSpace ~20 minutes to deploy 	<ul style="list-style-type: none"> Simplifies delivery of web based services Does not require desktop management tools
Monitoring Services	<ul style="list-style-type: none"> Non-persistent environment requires centralised logging Usage logging can be enabled 	<ul style="list-style-type: none"> CloudWatch metrics Usage using Cost Optimiser for Amazon WorkSpaces 	<ul style="list-style-type: none"> CloudWatch metrics Usage using Cost Optimiser for Amazon WorkSpaces 	<ul style="list-style-type: none"> Non-persistent environment requires centralised logging

Security

- Methods of authentication for the use case?
 - Requirement for Microsoft Active Directory integration?
 - Requirement to integrate with external identity providers ?
 - Requirement to validate end point?
- Requirement for encryption of data?
 - In-transit
 - At rest
- Integration with Identity and Access Management Profiles?
 - Acceptance of security principles held in the session?



Security

Requirement	AppStream 2.0	WorkSpaces	WorkSpaces Core	WorkSpaces Web
Authentication	<ul style="list-style-type: none"> • Use User Pools • Non-Domain Joined • Can integrate with SAML IdP • Can be Active Directory Domain Joined (with SAML) 	<ul style="list-style-type: none"> • Requires Active Directory • MFA using RADIUS or SAML • Authentication can extend to device inspection 	<ul style="list-style-type: none"> • Requires Active Directory • MFA using remote client • Authentication can extend to device inspection 	<ul style="list-style-type: none"> • Non-Domain Joined • Can integrate with SAML IdP
Encryption	<ul style="list-style-type: none"> • NICE DCV protocol support encryption of data in-transit • OS storage is non-persistent 	<ul style="list-style-type: none"> • PCoIP and WSP protocols support encryption of data in transit • Disk encryption can be enabled for both system and user disks 	<ul style="list-style-type: none"> • Use existing, validated protocol • Disk encryption can be enabled for both system and user disks 	<ul style="list-style-type: none"> • NICE DCV protocol support encryption of data in-transit • OS storage is non-persistent
Identity and Access Management (IAM) Profile	<ul style="list-style-type: none"> • IAM Profiles to manage AppStream access • You can apply an IAM role to an AppStream 2.0 streaming instance 	<ul style="list-style-type: none"> • IAM Profiles to manage WorkSpaces access 	<ul style="list-style-type: none"> • IAM Profiles to manage WorkSpaces access 	<ul style="list-style-type: none"> • IAM Profiles to manage WorkSpaces access

Reliability

- Autonomy of users for use case?
 - To focus setup to shorten time to value?
 - Recovery time from change failure?
 - Flexibility required for the use case?
- End user network latency constraints?
 - Network bandwidth requirements for end users?
 - Distance from users to AWS Region hosting EUC services?
- Requirements as part of Disaster Recovery/Business Continuity?
 - Speed of provision?
 - Level of equality to live?
 - Management of DR/BC environment?

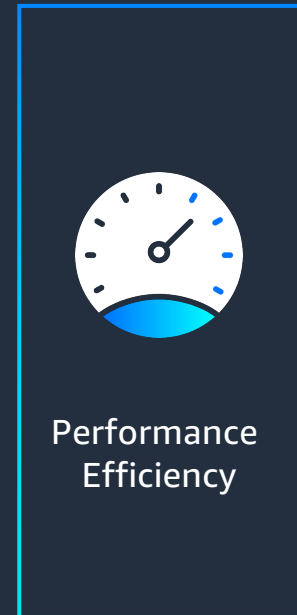


Reliability

Requirement	AppStream 2.0	WorkSpaces	WorkSpaces Core	WorkSpaces Web
Autonomy	<ul style="list-style-type: none"> • New instance on session start • Instance hardware is pre-defined • User provided preconfigured environment • New session ~ 2 minutes 	<ul style="list-style-type: none"> • User Configuration persist • WorkSpace can be customised for applications • Rebuild/Restore ~20+ minutes 	<ul style="list-style-type: none"> • User Configuration persist • WorkSpace can be customised for applications • Rebuild/Restore ~20+ minutes 	<ul style="list-style-type: none"> • New instance on session start • Instance hardware is pre-defined • User provided preconfigured environment
End User Network Latency	<ul style="list-style-type: none"> • Line of business apps <ul style="list-style-type: none"> • 2Mbps / user, <150 ms RTT • Graphics <ul style="list-style-type: none"> • 5Mbps, <100ms RTT • High Fidelity <ul style="list-style-type: none"> • 10 Mbps, <50ms RTT • Streaming traffic via VPC Endpoints 	<ul style="list-style-type: none"> • Line of business apps <ul style="list-style-type: none"> • PCoIP 300kbps-1Mbps, <250ms RTT • WSP <400ms RTT • Graphics <ul style="list-style-type: none"> • PCoIP only - 3Mbps, <100ms RTT 	<ul style="list-style-type: none"> • Bring your own protocol – you do you 	<ul style="list-style-type: none"> • Line of business apps <ul style="list-style-type: none"> • 2Mbps / user, <150 ms RTT
Disaster Recovery/Business Continuity	<ul style="list-style-type: none"> • Image defined • Scale fleet as demand requires • Non-persistent server OS images 	<ul style="list-style-type: none"> • Image defined • Pre-create images or build images on demand • Persistent Server, Linux, Win10 images 	<ul style="list-style-type: none"> • Image defined • Pre-create images or build images on demand • Persistent Win10 images 	<ul style="list-style-type: none"> • Browser configuration defined

Performance Efficiency

- End user device integration requirements
 - Requirement for local ..
 - Storage access?
 - Printer support?
 - Drawing tablet support?
 - Web Camera support?
 - Card Reader support?
- Application hardware requirements
 - Memory?
 - GPU?
 - CPU?
- How to use the global scale of Amazon End User Computing
 - Region support?



Performance Efficiency

Requirement	AppStream 2.0	WorkSpaces	WorkSpaces Core	WorkSpaces Web
End user device integration	<ul style="list-style-type: none"> • Cut/Paste • Upload/download files using browser • With AppStream Windows Client <ul style="list-style-type: none"> • Local storage device • USB pass through • Drawing tablet support • Local printer redirection 	<ul style="list-style-type: none"> • Cut/Paste • Local printer redirection • Free 50GB WorkDocs use • With WSP <ul style="list-style-type: none"> • Card Reader Support • Web Cam Support 	<ul style="list-style-type: none"> • Cut/Paste • Local printer redirection • Free 50GB WorkDocs use • Use deployed devices and client configuration 	<ul style="list-style-type: none"> • Access through the Amazon WorkSpaces Web endpoint
Application Hardware Requirements	<ul style="list-style-type: none"> • 30+ instance types • Range GPU instance types, including G4 • Large Memory instances • Compute Instances 	<ul style="list-style-type: none"> • 9 instance types • Graphics and Graphics Pro • G4DN, GF4DN Pro 	<ul style="list-style-type: none"> • 7 instance types • G4DN, GF4DN Pro 	<ul style="list-style-type: none"> • No requirement for instance selection
Use AWS Global Scale	<ul style="list-style-type: none"> • 13 Regions - Oregon, N.Virgina, Ohio, Mumbai, Seoul, Singapore, Sydney, Tokyo, Canada, Ireland, Frankfurt, London, GovCloud (West) 	<ul style="list-style-type: none"> • 15 Regions - Oregon, N.Virgina, Cape Town, Mumbai, Seoul, Singapore, Sydney, Tokyo, Ireland, Canada, Frankfurt, London, Sao Paulo, China, GovCloud (West) 	<ul style="list-style-type: none"> • 12 Regions - Oregon, N.Virgina, Mumbai, Seoul, Singapore, Sydney, Tokyo, Canada, Ireland, Frankfurt, London, Sao Paulo 	<ul style="list-style-type: none"> • 10 Regions - Oregon, N.Virgina, Mumbai, Seoul, Singapore, Sydney, Ireland, Tokyo, Canada, Frankfurt



Cost Optimization

- *End device (re) utilisation vs migration*
 - Device re-use
 - Device migration
 - Enable BYOD/CYOD/Home or Remote Working
- *Concurrency of use*
 - User usage profile – shift working, education, training, remote working, desktop replacement?
- *Use case usage profile*
 - Hours of use?
 - Need for instant access?



Cost Optimization

Requirement	AppStream 2.0	WorkSpaces	WorkSpaces Core	WorkSpaces Web
Concurrency of use	<ul style="list-style-type: none"> Fleet will scale in/out on scaling policy from a minimum to a maximum 	<ul style="list-style-type: none"> WorkSpaces deployed for users to access 	<ul style="list-style-type: none"> WorkSpaces deployed for users to access 	<ul style="list-style-type: none"> Fleet will scale in/out on scaling policy from a minimum to a maximum
End device utilisation/migration	<ul style="list-style-type: none"> Access via HTML5 web browsers Windows Client is available 	<ul style="list-style-type: none"> PCoIP supports Zero Clients, Android, iOS, Chromebook, Windows, MacOS, Linux and WebAccess WSP support for Windows and Web. 	<ul style="list-style-type: none"> Integrates with existing remote protocols Use existing client devices 	<ul style="list-style-type: none"> Access through the Amazon WorkSpaces Web endpoint
Usage Profile	<ul style="list-style-type: none"> Supports <i>On-Demand</i> or <i>Always On</i> Fleet scales up for demand using scaling policies Buffer instances are required to allow scaling 	<ul style="list-style-type: none"> Supports <i>Always On</i> or <i>AutoStop</i> WorkSpace compute type self-service WorkSpaces must be deployed prior to access. 	<ul style="list-style-type: none"> Supports <i>Always On</i> or <i>AutoStop</i> WorkSpace compute type self-service WorkSpaces must be deployed prior to access 	<ul style="list-style-type: none"> Support workers that only need access to internal and SaaS web applications Fleet automatically scales as part of the service

Combine Services

Every customer is unique in how they address use cases. We see overlap between WorkSpaces and AppStream 2.0 Desktop View. Understand the experience the customer wants to deliver in order to position the right solution – which can be both



WorkSpaces

WorkSpaces Core

AppStream 2.0

WorkSpaces Web



**VDI
Replacement/deployment**



**On-Demand Access to Graphics
Applications**



Secure Web Browsing

Additional resources

BUILD WITH WELL ARCHITECTED FOUNDATIONS AND EMBRACE EXPERIMENTATION

Experiment More, Fail Less

<https://aws.amazon.com/blogs/enterprise-strategy/experiment-more-fail-less/>

Failing & Creating a Culture of Learning

<https://aws.amazon.com/blogs/enterprise-strategy/failing-creating-a-culture-of-learning/>

Best Practices for Amazon WorkSpaces Images and Bundles

<https://docs.aws.amazon.com/whitepapers/latest/WorkSpaces-linux-best-practices/best-practices-for-amazon-WorkSpaces-images-and-bundles.html>

Best Practices for Deploying Amazon Workspaces

<https://docs.aws.amazon.com/whitepapers/latest/best-practices-deploying-amazon-workspaces/best-practices-deploying-amazon-workspaces.html>

Best Practices for Deploying Amazon Workspaces

https://d1.awsstatic.com/whitepapers/WorkSpaces/Best_Practices_for_Deploying_Amazon_WorkSpaces.pdf

It's Time to Evolve: End User Windows Application Delivery In the 2020s

<https://docs.aws.amazon.com/whitepapers/latest/its-time-to-evolve-end-user-windows-application-delivery-in-the-2020s/applying-the-taxonomy-to-aws-euc-services.html>

AWS Well-Architected Framework

<https://docs.aws.amazon.com/wellarchitected/latest/framework/welcome.html>





Give us your feedback

Take the survey



Technical deep dive with Gekai Zou: <https://eventbox.dev/survey/4AQY72I>



Thank you!

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