Remote work and learning
Amazon Web Services solutions for remote employees and students

Courtney Waugh – Solutions Architect AWS
cmwaugh@amazon.com
09 November 2021
Agenda

• Workforce transformation overview
• Introduction to Amazon Virtual Apps & Desktops as a Service
• Amazon WorkSpaces
• Amazon AppStream 2.0
• Demo
The way we work is changing

→ The globalization of the economy has driven the need to work from anywhere, with anyone at any time.

→ You can no longer assume that all your work gets done within the confines of the traditional office.

→ Organizations are increasingly looking for options for employees to work securely from any location.
Remote Worker Program
Business Challenges

How do I maintain business productivity now that my users are working from home?

How do I quickly provision remote access to user’s key applications without shipping expensive laptops?

How do I still maintain control over sensitive company data and help prevent data leakage?
Remote work and learning solutions

Cloud desktops, applications, content collaboration

- **WorkSpaces**: Access your desktop anywhere, anytime, from any device
- **AppStream 2.0**: Securely deliver desktop applications to any computer
- **WorkDocs**: Secure content collaboration, simplified

Remote communication and collaboration

- **Chime**: Working together, simplified

Secure remote network access

- **Client VPN**: Securely access any resources from anywhere

© 2021, Amazon Web Services, Inc. or its Affiliates. All rights reserved. Amazon Confidential
Amazon Virtual Apps & Desktops as a Service

- **Persistent desktops**
- **Non-persistent apps & desktops**
- Virtualized Windows or Linux apps & desktops
- Fully-managed cloud services
- Delivery at scale
- High reliability
- High security & control

© 2021, Amazon Web Services, Inc. or its Affiliates. All rights reserved. Amazon Confidential
<table>
<thead>
<tr>
<th>Amazon Virtual Apps &amp; Desktops as a Service</th>
<th>Other cloud VDI</th>
<th>On-premises VDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image management</td>
<td>Image management</td>
<td>Image management</td>
</tr>
<tr>
<td>Directory services &amp; policies</td>
<td>Directory services &amp; policies</td>
<td>Directory services &amp; policies</td>
</tr>
<tr>
<td>VDI control plane install &amp; admin</td>
<td>VDI control plane install &amp; admin</td>
<td>VDI control plane install &amp; admin</td>
</tr>
<tr>
<td>Host admin</td>
<td>Host admin</td>
<td>Host admin</td>
</tr>
<tr>
<td>Storage admin</td>
<td>Storage admin</td>
<td>Storage admin</td>
</tr>
<tr>
<td>Load balancers install &amp; admin</td>
<td>Load balancers install &amp; admin</td>
<td>Load balancers install &amp; admin</td>
</tr>
<tr>
<td>Hypervisor install &amp; admin</td>
<td>Hypervisor install &amp; admin</td>
<td>Hypervisor install &amp; admin</td>
</tr>
<tr>
<td>Physical security</td>
<td>Physical security</td>
<td>Physical security</td>
</tr>
<tr>
<td>Power, HVAC</td>
<td>Power, HVAC</td>
<td>Power, HVAC</td>
</tr>
<tr>
<td>Rack and stack</td>
<td>Rack and stack</td>
<td>Rack and stack</td>
</tr>
</tbody>
</table>
Amazon WorkSpaces

Amazon WorkSpaces is a managed and secure Desktop-as-a-Service (DaaS) solution that helps mobile and remote employees access the applications from anywhere by delivering a full cloud desktop.
A cost-effective, managed cloud desktop for flexible work styles

- Secure access to the business desktop: Applications, documents, and corporate resources
- Available on wide range of personal devices including iPads, Android tablets, Macs, PCs, laptops, and Chromebooks
- Cloud economics: Scale at your pace and only pay for what you use
- Integrates well with on-premises tools and network: Microsoft Active Directory, MFA, certificate authority
Amazon WorkSpaces

Secure cloud desktops for remote employees and students

- Simplify desktop delivery
- Keep your data secure
- Scale and consistent performance
- Reduce cost
Control IT costs

- Cost optimization monitoring
- Pay as you go pricing—hourly or monthly
- Auto stop, on-demand
- Self-service end user support
Customer case studies

“At Amazon, we were able to burst scale our Amazon WorkSpaces environment - in 1.5 weeks - from a steady-state of 25k running instances to a maximum capacity of near 300k running instances across 8 regions; this ensures that every Amazon employee has a dedicated, remotely-accessible corporate computer.”

Andrew Blackard,
Manager, Client Engineering, Amazon

“With Amazon WorkSpaces, we can provide new workers with a Windows desktop and the applications they need within hours instead of days. Because Amazon WorkSpaces is cost effective and requires no upfront payment, we have been able to save 30 percent of our desktop operations costs and 70 percent on capital expenditure.”

Leon Backbier,
IT Manager - Edemol Shine Nederland
Amazon AppStream 2.0

Amazon AppStream 2.0 is a fully managed application and desktop streaming service. It allows your remote workers or students access to the applications they need on any computer, whether they're in the classroom, the library, a cafe, or at home.
AppStream Benefits

- Managed Service
- Secure By Default
- Scales on Demand
- Pay as You Go Pricing
- Integration with your IT
- Simplified App Management
User & Admin features

- Persist app profiles
- Control data movement
- Multi-monitor & USB Support
- Apply your branding
- Manage by APIs
- Automatically scale
Connect your storage

Links to cloud and network storage

- Home Folders (Amazon S3)
- Amazon WorkDocs
- Microsoft OneDrive for Business
- Google Drive (G Suite)
- Network file shares
Instance performance matching users / apps

**Standard**
- 2 – 4 vCPU cores
- 4 – 8 GiB memory
- Starts at $0.10/hr

**Compute**
- 2 – 32 vCPU cores
- 4 – 60 GiB memory
- Starts at $0.25/hr

**Memory**
- 2 – 32 vCPU cores
- 15 – 244 GiB memory
- Starts at $0.25/hr

**Memory Z1D**
- 2 – 48 vCPU cores
- 12 – 271 GiB memory
- Starts at $0.45/hr

**Graphics Design**
- NVIDIA T4 GPU
- 4 – 64 vCPU cores
- 16 – 256 GiB memory
- 16 GiB GPU
- Starts at $1/hr

**Graphics G4DN**
- AMD FirePro virtualized GPU
- 2 – 16 vCPU cores
- 7.5 – 61 GiB memory
- 1 – 8 GiB GPU
- Starts at $0.25/hr

**Graphics Pro**
- NVIDIA Tesla M60 GPU
- 16 – 64 vCPU cores
- 122 – 488 GiB memory
- 8 – 32 GiB GPU
- Starts at $2/hr

© 2021, Amazon Web Services, Inc. or its Affiliates. All rights reserved. Amazon Confidential
Pricing: Instance charges and user fees

Always On Fleet

Instant connection
Uses running instance fleet
Pay streaming fees

On Demand Fleet

1 – 2 minute launch time
Uses stopped instance fleet
Pay streaming fees when connected + small hourly fee for standby instances

Monthly user fee per user that streamed
($4.19/user license included, $0.44/EDU user, No charge for BYOL
AppStream for Education
Why Move Computer Labs to the Cloud?

**Students**
- Learn with real-world applications
- Use on my own device
- Bring my own files
- Access any time, anywhere

**Educators**
- Respond to market forces and directives
- Compete for students, on campus or at a distance
- Make effective use of real estate
- Spend time teaching, not providing technical support

**Administrators**
- Keep up with changing application and hardware requirements
- Manage infrastructure capacity and lab schedules
- Ensure security, privacy, and compliance
University of Virginia finds flexibility in app virtualization with Amazon AppStream 2.0

Problem
The university's existing computer labs facilities had reached capacity from real estate and financial resource perspectives. As student and programs continued to grow, meeting computer lab demand was paramount for university and student success.

Solution
Rapidly scaled its computer lab environment to expand computer lab availability by deploying AppStream 2.0 that could be accessed remotely, anytime, without students having to come into a physical lab.

Benefits
• Reduce classroom real estate and physical PC equipment and maintenance costs.  
• Enable flexible computer lab access for students. 
• Meet University growth plans with new academic program roll-outs.

We looked at several virtual desktop solutions and found AWS’s scalability and unique pricing model most attractive with its pay-as-you-go model where we are only pay for AppStream based on student usage.

Eric Rzeszut, Associate Director of Client Services, University of Virginia

Organization: University of Virginia  
McIntire School of Commerce  
Industry: Higher Education  
Country: United States  
Employees: 175  
Students: 1,100  
Website: https://www.virginia.edu/

About University of Virginia
The university is an iconic public institution of higher education boasting nationally ranked schools and programs, distinguished faculty, and renowned research

Video Case Study
Get Started…

Visit https://aws.amazon.com/appstream2/

- Try AppStream demo experience
- Follow the simple getting started guide
- Learn to deploy Solidworks, SAP GUI, Mathworks, Matlab, ESRI ArcGIS, Siemens NX
- Learn about best practices and new features – Follow our blog!

Engage a partner
Next steps

Explore AWS End User Computing services
• Free Tier—WorkSpaces
• Free Tier—AppStream 2.0

Learn more about WorkSpaces and AppStream
• WorkSpaces videos & whitepapers
• AppStream videos & whitepapers
• Amazon WorkSpaces Cost Optimizer

Schedule a deep dive on a use case

Get started with a Proof of Concept
Thank you!

Courtney Waugh – Solutions Architect AWS

cmwaugh@amazon.com