
AWS
re:Invent
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EUC204

Creating remote work environments that optimize security and productivity

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Today’s agenda

Why hybrid/remote work?

Challenges of supporting hybrid work models

AWS end user computing services

- Improve IT agility
- How Capital One went remote with Amazon WorkSpaces
- Enhance security
- Optimize spending

Key takeaways

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Hybrid working shifts priorities

Employee experience



- Work/life balance
- Retain top talent
- Short-term work (contract)

Global reach



- Increase talent pool
- Workforce diversity
- Nomadic gig workers

Cost savings



- Reduced need for real estate
- Support for BYOD

70% of G2000 organizations will deploy remote or hybrid-first work models by 2023*

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*Preparing for the Certainty of Uncertainty with Hybrid-First Ways of Working, IDC, 2021

Hybrid work is proven and here to stay

Preferred employee work locations for remote-capable jobs

Work location	Pre-pandemic 2019	February 2022	June 2022	Expected future location in 2022 and beyond	Preferred location
Exclusively remote	8%	39%	29%	22%	34%
Hybrid (>10% to <100% remote)	32%	42%	49%	55%	60%
Fully onsite	60%	19%	22%	23%	6%

Source: Gallup, https://bit.ly/3ELqH66

Third-party report has not been independently verified by Amazon.

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Challenges of supporting a hybrid workforce



Global shift to hybrid and remote work models



Importance of data security



IT talent shortage



Logistical challenges

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WorkSpaces family of services

	WorkSpaces (persistent session) **Amazon AppStream 2.0** (non-persistent session) All-inclusive virtual desktop services	**Amazon WorkSpaces Core** Virtual desktop infrastructure APIs for customers' third-party VDI software	**Amazon WorkSpaces Web** Secure browser service for access to internal websites and SaaS apps
Managed infrastructure	Secure		
	Reliable		
	Scalable/pay as you go		
User and management interface	AWS console and client	Third-party VDI software	Secure, browser-only
Configurability	CPU, memory, storage, GPU-accelerated config options		>300 enterprise policies

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EUC solutions for all worker types

WorkSpaces

All-inclusive persistent desktop experience

Knowledge workers
Contingent workforce
Software developers and test

Visualization
High performance computing
Media and entertainment rendering

Personal devices
Bring-your-own-device (BYOD)

AppStream 2.0

All-inclusive non-persistent access to streaming applications or fresh desktop at login

Task workers
Contact center agents
Business process outsourced (BPO) work

Design and engineering
Graphics designer
CAD/CAM

Communal devices
Frontline workers
Bastion hosts

Students
Lab environment
Virtual classroom



WorkSpaces Web

Secure browser service for access to internal websites and SaaS apps

SaaS/web-only workers
Contingent task workers
Students

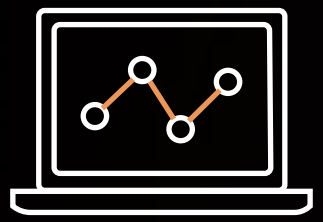
Internal website access (intranet)
Salespeople

Lightweight BYOD
Workers who require internal website access

Developers
Remote code repository access

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Benefits of moving to cloud for hybrid work



Improve IT agility



Enhance security



Optimize spending

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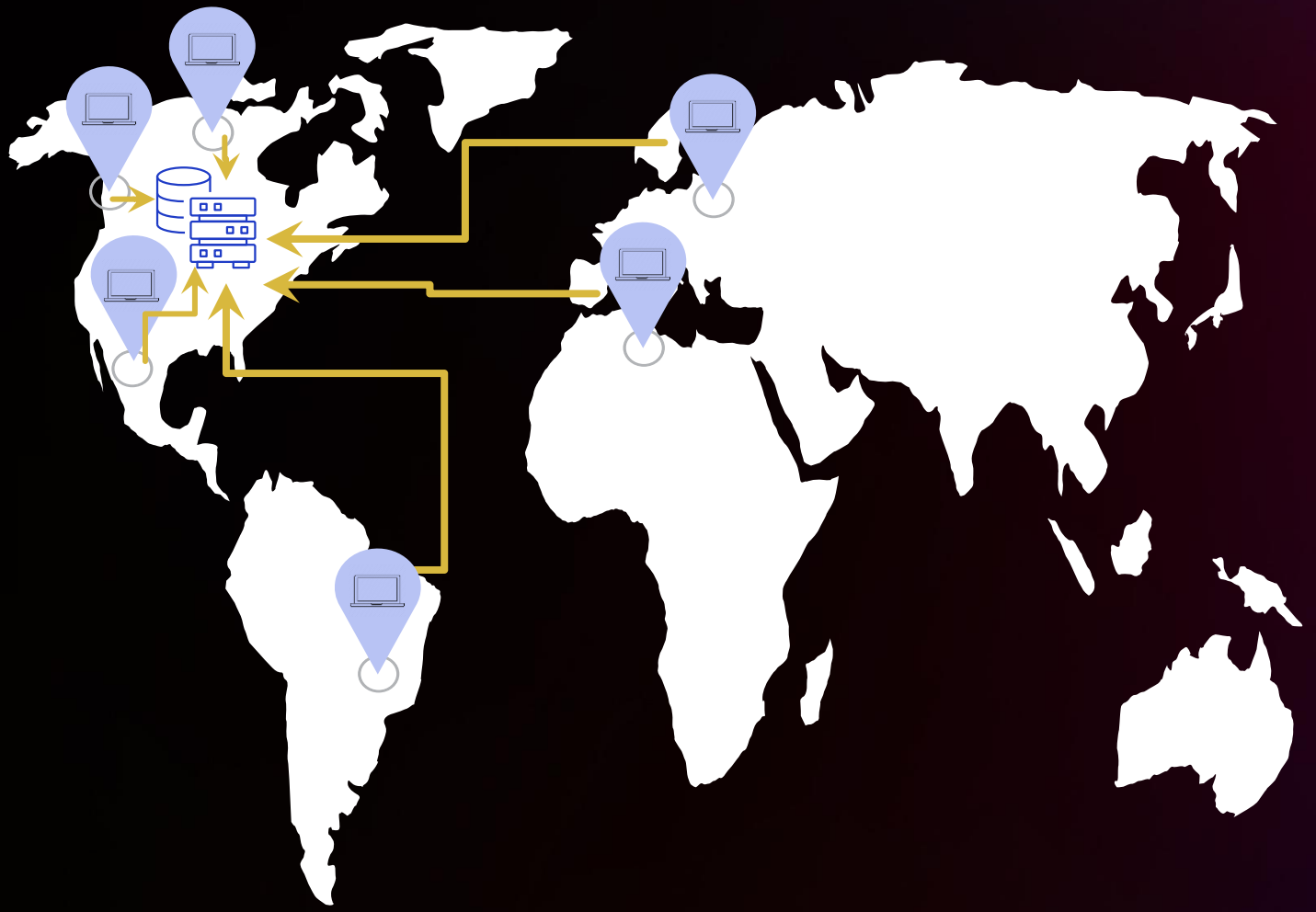
Improve agility

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IT agility – Work happens everywhere

WHY SHOULD EVERYONE CONNECT TO THE SAME DATA CENTER?



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IT agility – Work happens everywhere

WHEN THEY CAN CONNECT LOCALLY



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Remote developers use case

Agility



Curated library of developer desktops

Support BYOD preferences

Build, test, or deploy in multiple environments

Developer productivity



Access to high-performance machines

Familiar operating systems and tool sets

Access machine from any location

Security and compliance



No source code on endpoint

Data encrypted in transit and at rest

Meet regulatory/compliance requirements

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Virtual contact center use case

Agility



Support for centralized and decentralized agents

Support hybrid workers with multiple device types

Scale up or down based on customer demand

Agent productivity



Empower your agents to delight your customers

Set up in minutes, not weeks

Improve employee satisfaction

Security and compliance



Safeguard data against leakage from the endpoint

Collaboration without compromises

Meet regulatory/compliance requirements

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IT agility for SaaS/web apps – WorkSpaces Web

Rapid deployment
On demand, automatically provisioned and updated

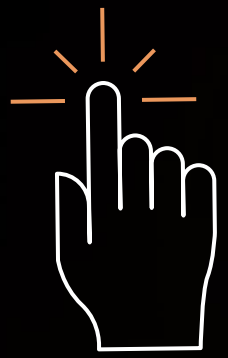
Simple, safe web browsing
Company data never resides on remote devices and nothing is cached in the cloud

No VPN required
Access internal web pages (intranet) without the requirement of VPN



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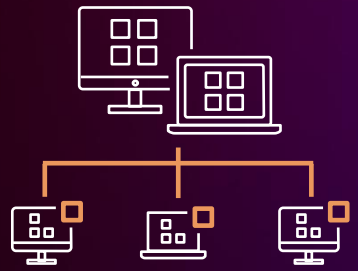
Bringing IT agility to ISVs – AppStream 2.0



Provide a zero-install trial and training experience



SaaSify your app with no rewrite



Enable your customers' cloud migrations

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Increase agility: Simple third-party integrations

Built-in services

Pre-configured instances

Auto scaling policy control

Usage and performance monitoring

Automation APIs

Third-party integrations



Systems/app management
(SCCM, AppLocker)



Automation tools
(Liquidware)



ITSM/self-service
(ServiceNow)



Microsoft
(AD/GPO/Roaming Profiles)

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Increase agility: Global footprint

	WorkSpaces	AppStream 2.0
Northern Virginia	X	X
Oregon	X	X
Ohio		X
GovCloud (US-West)	X	X
Canada (central)	X	X
London	X	X
Ireland	X	X
Frankfurt	X	X
Singapore	X	X
Tokyo	X	X
Sydney	X	X
Seoul	X	X
Sao Paolo	X	
Asia Pacific (Mumbai)	X	X
Africa (Cape Town)	X	



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Supporting hybrid work with Amazon WorkSpaces

Joshua Hartwig
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Capital One

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About Capital One

Fortune 100 company, founded in 1994

Top 10 US bank, serving more than 100 million customers

Data and technology pioneer in the financial services industry

All-in on the cloud in 2020 – a 5-year journey to the cloud

AWS provides the foundation for our digital transformation



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Our landscape before WorkSpaces



“Pay upfront” model
All capacity needed to be purchased for an entire year in advance. Scaling capacity was a challenge



Limited API
An API existed, but it had limited capabilities and poor documentation



Request backlog
An average of 3 days backlog for a new VDI. 100+ requests in backlog at any time



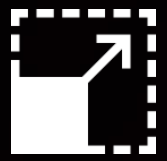
Labor intensive
The process to manage the solution and build new VMs was labor-intensive

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Grounding our requirements



Automation
Customers should not need to wait for a request



Scalability
Our solution should scale without intervention



Pay as you go
We should be able to be agile in our requests and change based on business demand



Ease of use
The overall solution should be lightweight and easy to administer



Cost
The solution should be cost-effective

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Our plan moving forward

With our requirements vetted we started looking at solutions



Competitive review with renewed focus on automation and interoperability

Proofs of concept with vendors

Shortlisted WorkSpaces based on our key requirements

POCs and trials in our Sandbox environment

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Building our solution

With our plan in place, we kicked off the build project.

Project Kickoff
Internal governance reviews, architecture designs, cybersecurity approvals

Proof Of Concept
Teams developed various proofs of concept for various business units

Automation Development
Teams worked with ServiceNow and others to build automation capabilities

User Acceptance
WorkSpaces pilot with multiple Lines of Business completing UAT testing



WorkSpaces Launch
Production rollout

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Impact

"After migrating users from our legacy platform to Amazon WorkSpaces, we went from a three-day manual provisioning turnaround to fully automated zero-touch Amazon WorkSpaces provisioning process. By automating the Amazon WorkSpaces provisioning process, what used to take days now takes less than an hour."

Nasir Baig
Operations Manager

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What is our landscape now?



30% increase in growth
We have seen a 30% increase in usage of VDI



Self-service
Provision, restart, rebuild all automated



Better agility
We have the ability to scale with customer needs

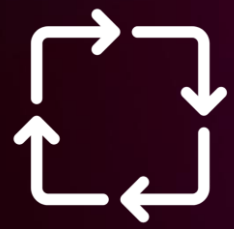


Reduced support costs
Reduced provisioning time

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Where are we going?

Solutions at the “perimeter”
We want our business partners and customers to be able to connect securely to our services over the internet



Bring your own
The team is investigating ways we can leverage WorkSpaces to enable a bring-your-own-device policy



Support for thinner solutions
Using WorkSpaces supports our want to leverage thinner solutions such as Chromebooks and tablets



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Key takeaways



Ground your requirements



Measure twice cut once



Partner closely with cybersecurity and understand IAM



Understand the pros and cons of BYOL



Ensure support staff is fully trained



Engage pro services as needed

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Enhance security

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Security challenges with a hybrid workforce



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Increase security with AWS EUC services



Protect company data



Meet compliance mandates

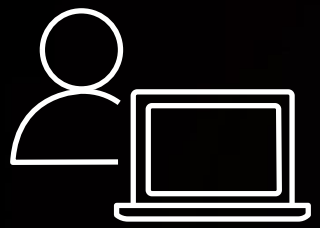


Accelerate to zero trust

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End-to-end security



No sensitive data on end users' devices



Desktop stream encrypted in transit



WorkSpaces and AppStream 2.0 data encrypted at rest

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Secure desktops in the cloud (data at rest)



Storage volume encryption



Patch management



Enterprise cybersecurity solutions

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Secure desktops in the cloud (data in transit)



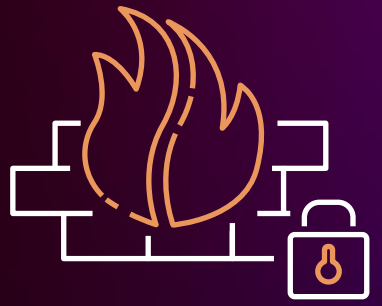
Secure gateways for access



Access control options and trusted devices



2-factor authentication



Network access

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WorkSpaces and AppStream 2.0 compliance

- SOC 1, SOC 2, SOC 3
- ISO/IEC 27001:2013, 27017:2015, 27018:2019, 27701:2019, 9001:2015, and CSA STAR CCM v3.0.1
- HIPAA-eligible with Business Associate Agreement (BAA)
- PCI DSS Level 1 compliant
- FedRAMP Moderate and High



Services in scope by compliance program

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Optimize spending

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OpEx advantages of fully managed infrastructure

CapEx – owned infrastructure	OpEx – leased infrastructure
Pay upfront/overprovisioning	Pay as you go (hourly metering)
Maintenance required	Managed service
Facilities – electric, insurance, rent, HVAC	No facilities required
Staffing required	No additional IT headcount
Locked in, depreciated over time (3–10 years)	No contracts/monthly billing
TCO includes hidden charges	No hidden charges
Troubling shooting tools/licensing	Support included

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AWS EUC services – Only pay for what you use

WorkSpaces

Monthly

- Unlimited usage
- Fixed price
- Running instance
- Instant access
- ~6 second login

Hourly

- Variable usage
- Stopped instance
- Starts on connection
- ~90 second login

AppStream 2.0

Always-On fleet

- Hourly billing
- Unlimited usage
- Instant access
- ~ 6 second login

On-Demand fleet

- Hourly billing
- Variable usage
- Stopped fee (small)
- ~90 second login

Elastic fleet

- Per-second billing with 15 minute min.

WorkSpaces Web

- Flat-rate fixed price
- $7/user/month

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Facilitating hybrid work for any organization

"Most users **gravitated to Amazon WorkSpaces** and adapted to it very quickly. And most of them prefer the AWS solution over a virtual private network client."

Paul Capizzi
SVP of Technology & East Coast CIO, Fox Corporation

"When the COVID-19 pandemic began, we scaled-up our use to **500 users in less than a week**. Now our employees access WorkSpaces through a thin client or Chromebook device we provide, or through their own device, and are as productive as when they were in the office."

Jeffrey Shaw
Executive Vice President, Chief Information Officer, EMPLOYERS

"Our remote users remote users have experienced application speeds of up to 85% faster than traditional VPN access. In many cases this has provided a boost in user productivity and satisfaction."

Damon Carrasco
Vice President of Technology, Ferrellgas

"One of our major IT strategies at Acuity is to move to the cloud. The pandemic sped this process up and we were able to move **1,800+ employees to a work from home environment using Amazon WorkSpaces**. Maintaining business service continuity to our customers was our top priority without compromising the safety of our employees."

Pushpa Krishnappa
Associate Director, Acuity Knowledge Partners

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Key takeaways

Security	Agility	Cost	Scale	Support
Device choice with no data residing on endpoint	Onboard in minutes with support for BYOD	Reduce logistics and real estate costs	Scale with business demands	Integrations with IT service management

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Learn more about AWS End User Computing

AWS re:Invent

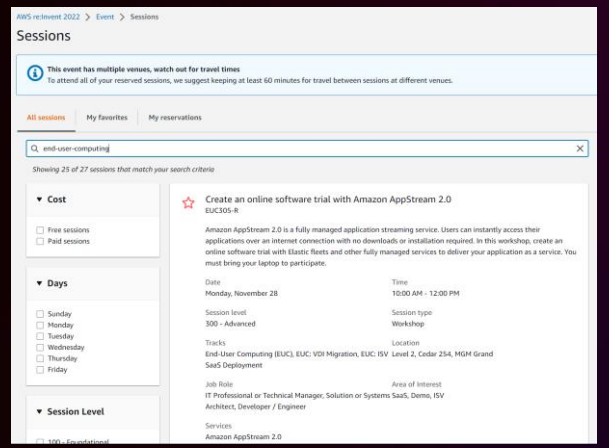
AWS End User Computing Reception

November 30, 2022 | 6:00PM - 9:00PM PST

Electra Cocktail Club, 3325 South Las Vegas Boulevard, Las Vegas, NV 89109

bit.ly/3hMzcVB

Visit the EUC re:Invent session catalog



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End user computing: other track sessions

Type	Code	Level	Day / Time	Title	Speakers
Breakouts	EUC 202	200	11/28, 5:30p – 6:30p	What's new with Amazon WorkSpaces, Amazon AppStream 2.0 & WorkSpaces Web	Hassan Ta, Rey Wang
	EUC 204	200	11/29, 2:00p – 3:00p	Creating remote work environments that optimize security and productivity	Melissa Stein
	EUC 201	200	11/29, 5:00p – 6:00p	Creating the workplace of the future with AWS end user computing	Muneer Mirza
	EUC 307	300	11/30, 8:30a – 9:30a	Accelerating SaaS conversion of legacy applications	Gurinder Raju
	EUC 203	200	11/30, 10:00a – 11:00a	Creating flexibility and choice for VDI management with Amazon WorkSpaces	Kevin Goodman
Chalk talks	EUC 205	200	11/28, 10:45a-11:45a	Managing application deployment in an Amazon WorkSpaces environment	Sam Goad
	EUC 301	300	11/28, 4:00p – 5:00p	Securely stream AWS workloads to your remote workers	Andrew Morgan, Ariel Fu
	EUC 310	300	11/29, 12:30p – 1:30p	Streamlining log-on experience for Amazon WorkSpaces and AppStream 2.0	Asriel Agronin
	EUC 205 – R1	200	11/29, 2:45p-3:45p	Managing application deployment in an Amazon WorkSpaces environment	Sam Goad
	EUC 302	300	11/29, 3:30p – 4:30p	No refactoring required: Turning legacy applications into SaaS	Dave Jaskie
	EUC 309	300	11/30, 10:00a – 11:00a	Choosing an Amazon AppStream 2.0 fleet to reduce costs & optimize experience	Manav Verma
	EUC 312	300	11/30, 2:30p – 3:30p	Securing end user computing workloads on AWS end user computing services	Michael Matts
	EUC 308	300	11/30, 5:30p – 6:30p	Best practices for migrating on-premises VDI workloads to the cloud	Phil Persson
	EUC 301 – R1	300	12/01, 11:45a – 12:45p	Securely stream AWS workloads to your remote workers	Andrew Morgan, Ariel Fu

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End user computing: other track sessions

Type	Code	Level	Day / Time	Title	Speakers
Workshops	EUC 305	300	11/28, 10:00a – 12:00p	Create an online software trial with Amazon AppStream 2.0	Jeremy Schiefer
	EUC 306	300	11/28, 1:45p – 3:45p	Getting started with Amazon WorkSpaces	Dave Jaskie
	EUC 303	300	11/29, 2:45p – 4:45p	Getting started with Amazon AppStream 2.0	Dylan Barlett
	EUC 304	300	11/30, 11:30a – 1:30p	Enable secure access to private resources with Amazon WorkSpaces Web	Spencer DeBrosse, Grant Joslyn
	EUC 306 – R1	300	11/30, 3:15p – 5:15p	Getting started with Amazon WorkSpaces	Dave Jaskie
Builders	EUC 311	300	11/28, 4:00p – 5:00p	Building a secure end user computing environment for power users	Robert Fountain
	EUC 313	300	11/29, 11:00a – 12:00p	Building streaming applications using Amazon AppStream 2.0 Elastic fleets	Don Scott
	EUC 313 – R1	300	11/30, 4:00p – 5:00p	Building streaming applications using Amazon AppStream 2.0 Elastic fleets	Don Scott
Theater	EUC 001	NA	11/30, 2:30p – 2:50p	Maximize employee experience with Amazon WorkSpaces & AppStream 2.0	Stephen Stetler
	EUC 002	NA	11/30, 3:00p – 3:20p	Modernize your virtual desktop infrastructure with Amazon WorkSpaces	Andrew Kloman

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