



# AWS End User Computing services

Virtual desktop, application SaaS conversion,  
and application streaming services

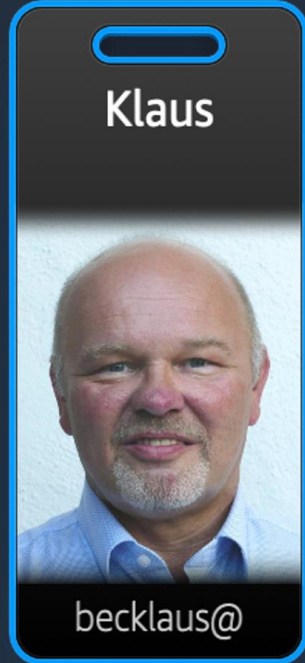
Malcolm Clark / Klaus Becker

Specialised Sales / Solutions Architects – EUC EMEA

# AWS End User Computing – EMEA Specialist Team



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# Agenda - Morning

9.00AM	9.15AM	Welcome & Introduction to EUC Customer Day 2023
9.15AM	10.15AM	Introduction to Amazon End-User Computing (+ Workspaces demo) - Malcolm Clark / Klaus Becker
10.15AM	10.30AM	Break
10.30AM	11.00AM	Optimise your Cloud Desktop Services with AppStream2.0 & WorkspacesWeb (+ AppStream2.0/WorkspacesWeb demo/s) - Malcolm Clark / Klaus Becker
11.00AM	11.10AM	Introduction AWS SSA Partner team & Eco-System - Moonsamy, Ushal (Partner Development Lead)
11.10AM	12.00NOON	Why iOCO partner with AWS in End-User Computing? - Paul Spagnoletti (iOCO AWS Alliance Lead)
12.00NOON	13.00PM	Lunch

CSAT Survey Link: <https://immersionday.com/csat>

Please ask questions!!



# Agenda (PM) – Breakout Session A (Technical)

	Breakout Session A (Technical) Lead by Klaus Becker Supported by Jason Nicholls
13:00PM – 13:30PM	1. Amazon Workspaces - An introduction & overview (30mins)
13:30PM – 14:00PM	2. Amazon AppStream 2.0 - An introduction & overview (30mins)
14:00PM – 14:30PM	3. Workspaces Demo (30mins)
14.30PM – 14.45PM	Break
14:45PM – 16.15PM	4. Workspaces Lab (90mins) & AppStream2.0 Demo
16:15PM – 16:30PM	5. Introduction to AppStream Labs (& Extra-Circular Activity)
16.30PM – 17.00PM	Q&A and Wrap-Up
17.00PM – 19.00PM	Happy Hour/s & Networking

Please ask questions!!



# Agenda (PM) – Breakout Session B (Business Value)

	Breakout Session B (Business Value) Lead by Malcolm Clark Supported by Milan Naran
13:00PM – 13:45PM	1. End-User Computing (EUC) Migration & Modernisation Strategies with Paul Spagnoletti
13:45PM – 15.00PM	2. Modernising your Developer Desktop Experience (Incl. Ubuntu Desktops)
15.00PM – 15.15PM	Break
15.15PM – 15.30PM	3. SaaSify your Windows Desktop Applications without re-write (AS2 in ISV)
15.30PM – 16.00PM	4. The Future of Contact Centres with Roark Raman (Amazon Connect Lead SA)
16.00PM – 16:30PM	5. Achieving your Digital Workplace Sustainability Goals
16.30PM – 17.00PM	Q&A and Wrap-Up
17.00PM – 19.00PM	Happy Hour/s & Networking

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Please ask questions!!



**End-User Computing is like gravity, it's EVERYWHERE!!!**





# **Introduction to AWS End-User Computing (EUC)**

## **What is EUC from AWS?**

# Modern workforce

## Broad range of job functions



## Distributed workforce is here to stay

*"83% of employers now say the shift to remote work has been successful for their company" – PwC study, January 2021*

### % US executives planning investment





# IT challenge

## Sustained enablement of the modern distributed workforce

### Agility



- Dynamic resource demands
- End-user config and environment variability
- End-user workload variability

### Productivity



- End-user demands
- IT-ops demands
- Tools and processes
- App performance

### Security



- IP and data protection
- Compliance posture
- BYOD enablement

### Reliability



- System uptime
- Resiliency
- Business continuity
- SLAs and guarantees

### Cost



- Infrastructure expense
- Resource utilization
- Expense predictability

# AWS End User Computing (EUC) guiding principles



- ✓ **Flexibility**
- ✓ **Choice**
- ✓ **Customer experience**

# AWS (Amazon.com) named a Leader by IDC MarketScape

IDC MarketScape: Worldwide Desktop-as-a-Service 2022-2023 Vendor Assessment

## AWS End User Computing recognized for:

- ✓ Cost-effective, highly configurable services
- ✓ Automation and management tools
- ✓ Integration with adjacent AWS services
- ✓ Optimizations for Linux developer community

*"Amazon's Workspace Family provides a highly configurable set of solutions with an emphasis on using endpoint tools for management and infrastructure as code to deliver desktops when and where needed."*<sup>1</sup>



[bit.ly/3kTLzAE](https://bit.ly/3kTLzAE)



IDC MarketScape vendor analysis model is designed to provide an overview of the competitive fitness of ICT suppliers in a given market. The research methodology utilizes a rigorous scoring methodology based on both qualitative and quantitative criteria that results in a single graphical illustration of each vendor's position within a given market. The Capabilities score measures vendor product, go-to-market and business execution in the short-term. The Strategy score measures alignment of vendor strategies with customer requirements in a 3-5-year timeframe. Vendor market share is represented by the size of the icons.

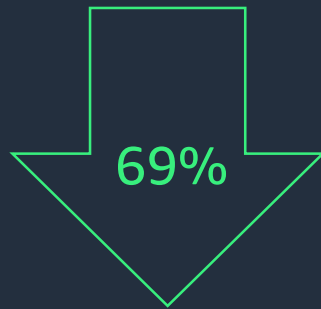
# Why AWS End User Computing?

Proven expertise enabling customer success

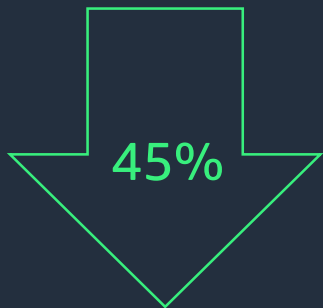
## Migrating from on premises to AWS



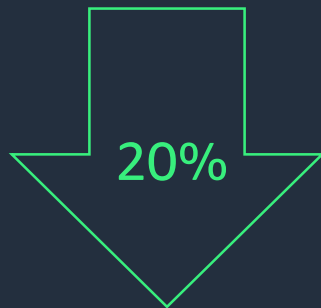
Admin productivity



Unplanned downtime



Security-related incidents



Infrastructure costs

## Empowering end users with AWS

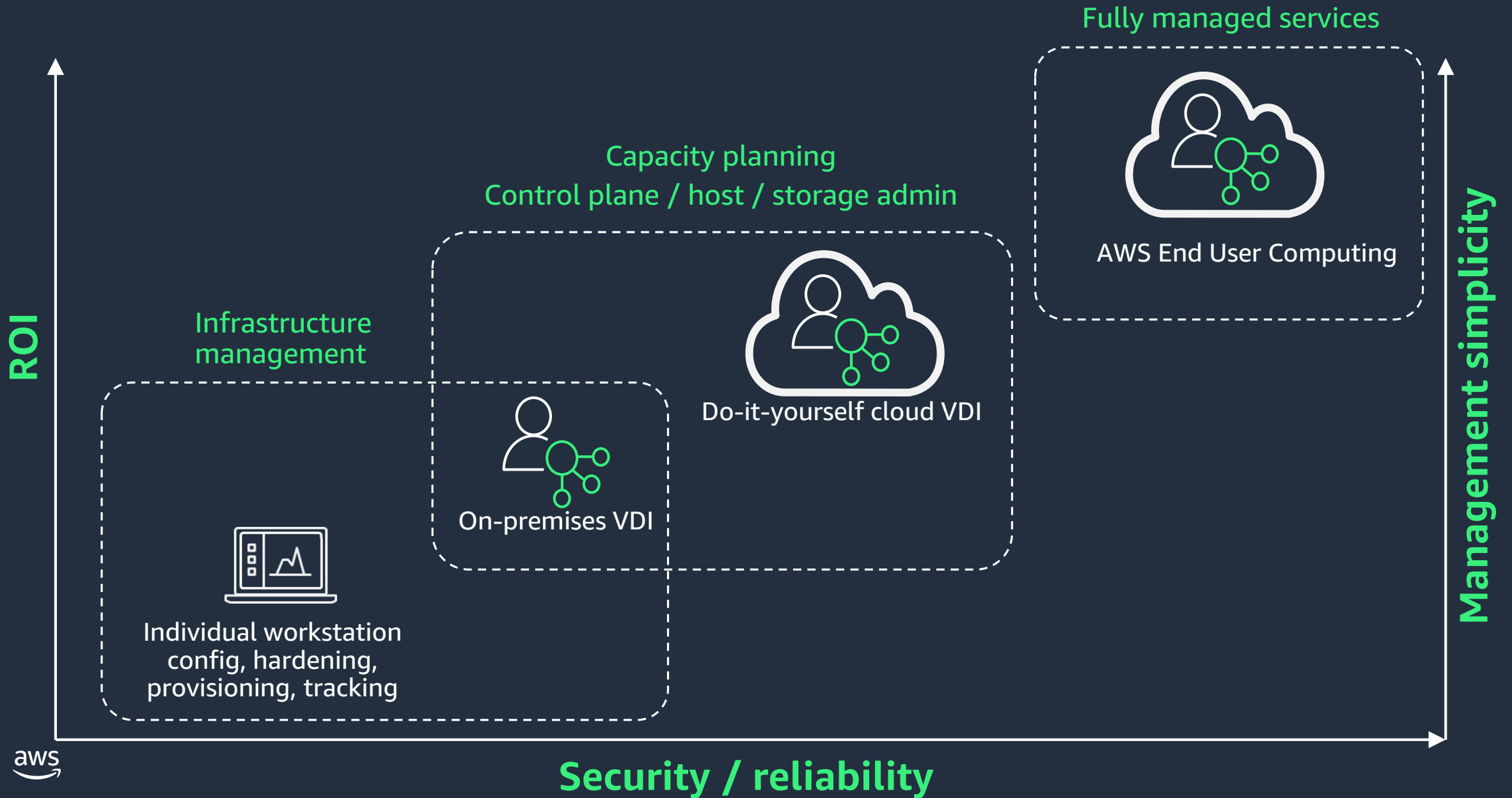
*“Key results include increased staff **productivity** after shifting from on-premises to cloud VDI, as well as newfound business **agility and EUC flexibility**.”*

*Interviewed decision-makers’ found that AWS’s solutions allowed them to experiment with bring-your-own-device (**BYOD**) policies and better meet employee EUC needs.”*

– “The total economic impact of AWS End User Computing”–Forrester, Dec 2021



# Evolution of workforce enablement



# AWS End User Computing services



## Virtual desktop services

**Amazon WorkSpaces**  
(fully persistent)

**Amazon AppStream 2.0**  
(selective persistence)

All-inclusive virtual desktop services

**Amazon WorkSpaces Core**

Virtual desktop infrastructure APIs for third-party VDI software

**Amazon WorkSpaces Web**

Secure, low-cost browser service for accessing internal websites and SaaS apps

## Application streaming/ SaaS conversion service

**Amazon AppStream 2.0**

Secure, reliable, and scalable access to applications from any location



## WorkSpaces Streaming Protocol (WSP) and DCV protocol

High-performance remote display protocols for any application

# AWS virtual desktop services

**WorkSpaces** (fully persistent desktops)

**AppStream 2.0** (selective persistence)

All-inclusive virtual desktop services

**WorkSpaces Core**

Virtual desktop infrastructure APIs for third-party VDI software

**WorkSpaces Web**

Secure browser service for access to internal websites and SaaS apps

## Managed infrastructure

Secure

Reliable

Scalable / Pay-as-you-go

## User & management interface

AWS console and client

Third-party VDI software

Secure browser-only

## Configurability

CPU, memory, storage, GPU-accelerated config options

>300 enterprise policies



# Amazon WorkSpaces

Fully managed, fully persistent, all-inclusive virtual desktop solutions



Everything you need to enable a broad range of remote users—with flexible configurations and support for **Ubuntu Desktop**, **Amazon Linux**, and **Microsoft Windows**



## Hybrid workforce

Enable remote, office, and call center workers with fully functional desktops and fast onboarding / offboarding



## BYOD users

Keep sensitive data off BYOD devices, take advantage of cost savings and flexibility associated with personally owned devices



## Developers

Give Developers the choice of tools they need to quickly build / test / deploy code across multiple environments within AWS



## Compute-intensive

Provide data CPU / GPU accelerated desktops on demand—only paying for what you need



## Remote learning

Build flexible virtual learning environments for students and educators





# “Managed” makes a difference

## AWS End User Computing services

Solution stack	On-premises VDI	DIY cloud VDI	Amazon WorkSpaces Core	Amazon WorkSpaces, AppStream 2.0, WorkSpaces Web
Image management	○	○	○	*
Directory services and policies	○	○	○	○
VDI control plane install and admin	○	○	Customer or partner	✓
Host admin	○	○	✓	✓
Storage admin	○	○	✓	✓
Load balancers install and admin	○	✓	✓	✓
Hypervisor install and admin	○	✓	✓	✓
Physical security	○	✓	✓	✓
Power / HVAC	○	✓	✓	✓
Rack and stack	○	✓	✓	✓

- Customer or partner managed
- ✓ AWS managed

\* No image management required for WorkSpaces Web



# Benefits

## Agility



- Rapidly scale with changing business needs
- Choose the service and config that meets the needs of each end user

## Productivity



- Centralized / consistent toolset streamlines fleet management
- AWS scale puts resources close to end user, maximizing performance

## Security



- Apps / data reside in the AWS Cloud, not on end-user devices
- Desktop streaming is encrypted

## Reliability



- Fully managed services with 99.9% uptime SLA

## Cost



- Fixed rate pricing with no upfront costs or hidden charges
- Pay-as-you-go billing
- Auto-scaling prevents over provisioning

# Global footprint

	WorkSpaces	WorkSpaces Core	WorkSpaces Web	AppStream 2.0
N. Virginia	✓	✓	✓	✓
Ohio				✓
Oregon	✓	✓	✓	✓
GovCloud (US-West)	✓	✓		✓
GovCloud (US-East)	✓	✓		✓
Canada (Central)	✓	✓	✓	✓
London	✓	✓	✓	✓
Ireland	✓	✓	✓	✓
Frankfurt	✓	✓	✓	✓
Singapore	✓	✓	✓	✓
Tokyo	✓	✓	✓	✓
Sydney	✓	✓	✓	✓
Seoul	✓	✓		✓
São Paulo	✓	✓		✓
Mumbai	✓	✓	✓	✓
China (Ningxia)	✓	✓		
Cape Town	✓			





# Amazon Workspaces Demo

**Klaus Becker**



**Break – 15mins**

# Fully persistent vs selective persistence

## Fully persistent

(Amazon WorkSpaces, WorkSpaces Core)

## Selective persistence

(Amazon AppStream 2.0)



IT Admin

One-to-one instance management at named-user level

One-to-many instance management via golden image



User desktop

Application state, browser sessions, open files persist between sessions

User gets fresh desktop at every logon



User settings

All settings persist between sessions

Settings on IT-curated applications and storage connections persist between sessions



User storage

Any application, file, data saved by user persist between sessions

Files saved in home folder persistent between sessions



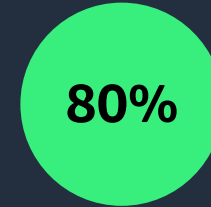
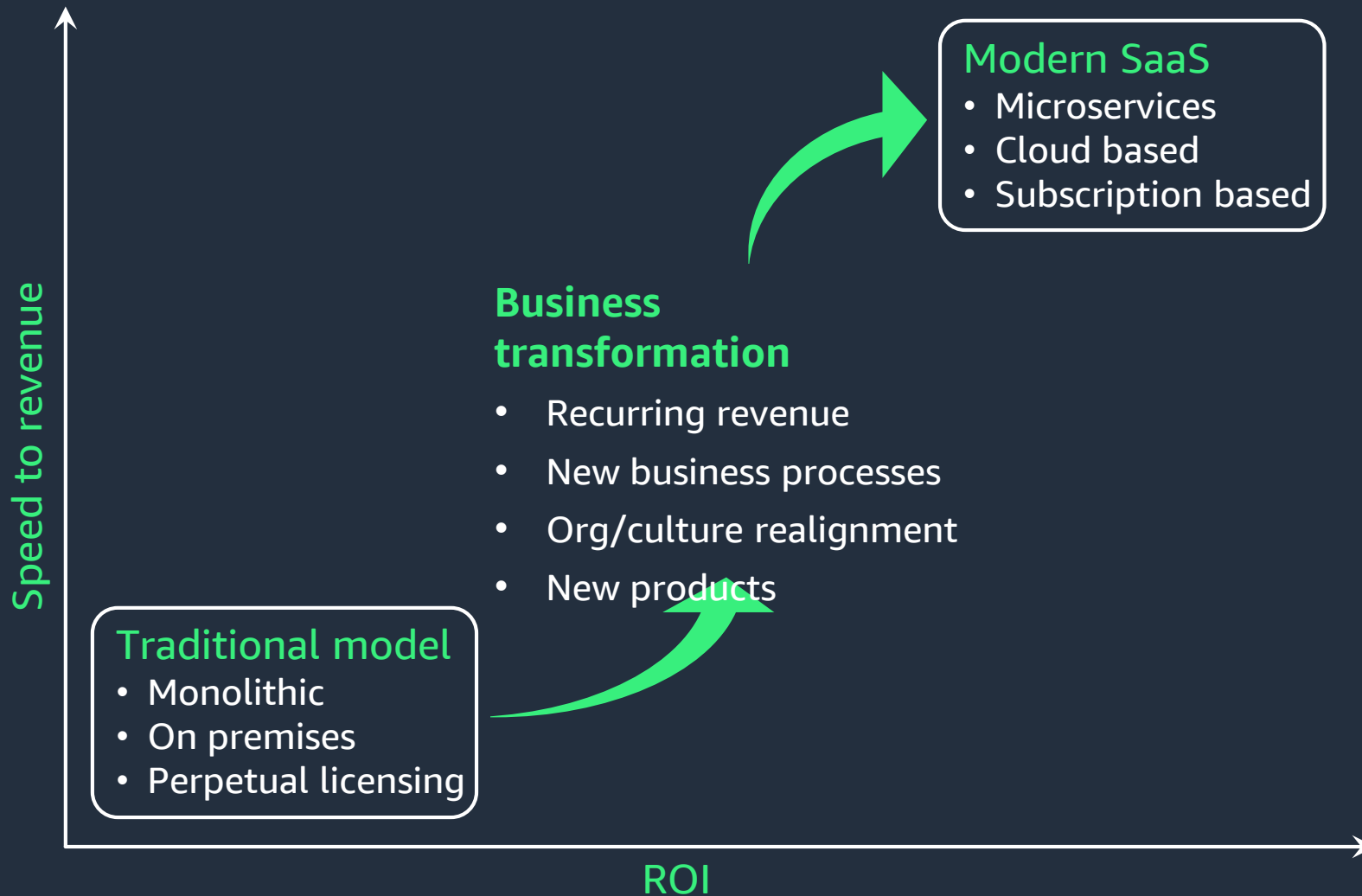
# **Optimise your Cloud Desktop Services with AppStream2.0, Workspaces Core & Workspaces Web**

# Amazon AppStream2.0

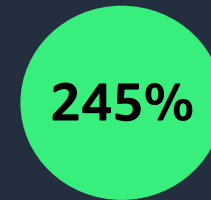




# SaaS trends



Customers looking to adopt SaaS version of their applications



Growth in SaaS and cloud software revenue 2021–2026

# Challenges for IT to meet the Software needs of end users



**Costly on-prem infrastructure**



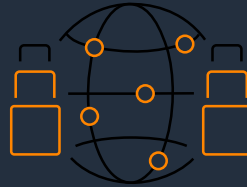
**Complicated app delivery**



**Improve user experience**



**Deliver GPU on commodity HW**



**Scale globally**

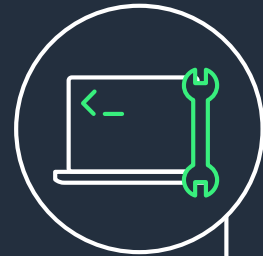


**Improve security**

# Amazon AppStream 2.0 overview

## End-user experience

- Application streaming
- Virtual desktops with selective persistence ⓘ
- Adjusts streaming to network conditions



## Architecture

- Selective persistence
- Integrates existing IT, storage, and identity
- Encrypted pixel stream (AES 256 encryption)



## Admin experience

- Centrally manage apps
- Admin defines end-user experience
- Deliver app updates seamlessly like a web app



## Approach

- Fully managed service
- Deploy at scale globally
- Pay-as-you-go pricing



amazon  
AppStream 2.0

# AppStream 2.0 - Fully managed service

Solution stack	On-premises VDI	DIY cloud VDI	Amazon AppStream 2.0
Image management	○	○	○
Directory services and policies	○	○	○
VDI control plane install and admin	○	○	✓
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- Customer or partner managed
- ✓ AWS managed

# AppStream 2.0 use cases

## Enterprise customers



- Deliver non-persistent desktops or apps to remote workers
- Provide on-demand access to graphics apps
- Migrate Windows application to AWS
- Deploy Bastion host for secure resource access
- Enable secure device access to unsecure resources

## Education customers



- Virtualize labs & classrooms
- Enable remote learning

## ISV customers



- Deliver online trials, demos, & training
- SaaSify your Windows app with no rewrite
- Enable your customer's cloud migrations

All customers – on premise VDI migration to cloud native solution

# Benefits



## No refactoring

*Launch SaaS offering without rewriting application*



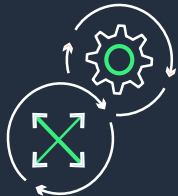
## Fully managed

*Provisions and manages all resources for app streaming*



## Scale on-demand

*Scale to any number of users across the globe*



## Flexible hardware types

*Standard compute, memory, and graphics instance types*



## Apply your branding

*Simply apply your logos or build a fully immersive experience*



## Pay as you go

*Pay only for what you use, when you use it*

# What you eliminate with AppStream 2.0



## Breaking your budget

Only pay for your concurrent usage



## Wasted resources

Scales on demand, no longer have to design for and pay for peak utilization



## Managing streaming infrastructure

Managed service with simplified application management capabilities



## Worry about high availability

AWS offering by default



## Poor performance for users

Each user gets dedicated instance 100% of the time

# Pay-as-you-go pricing

Based on concurrent users per hour

Amazon AppStream pricing starting at\*

\$0.075/hr

Running instances

\$0.025/hr

Stopped instances

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Monthly user fee per user that streamed  
(\$4.19/user license included, \$0.44/EDU user, No charge for BYOL)

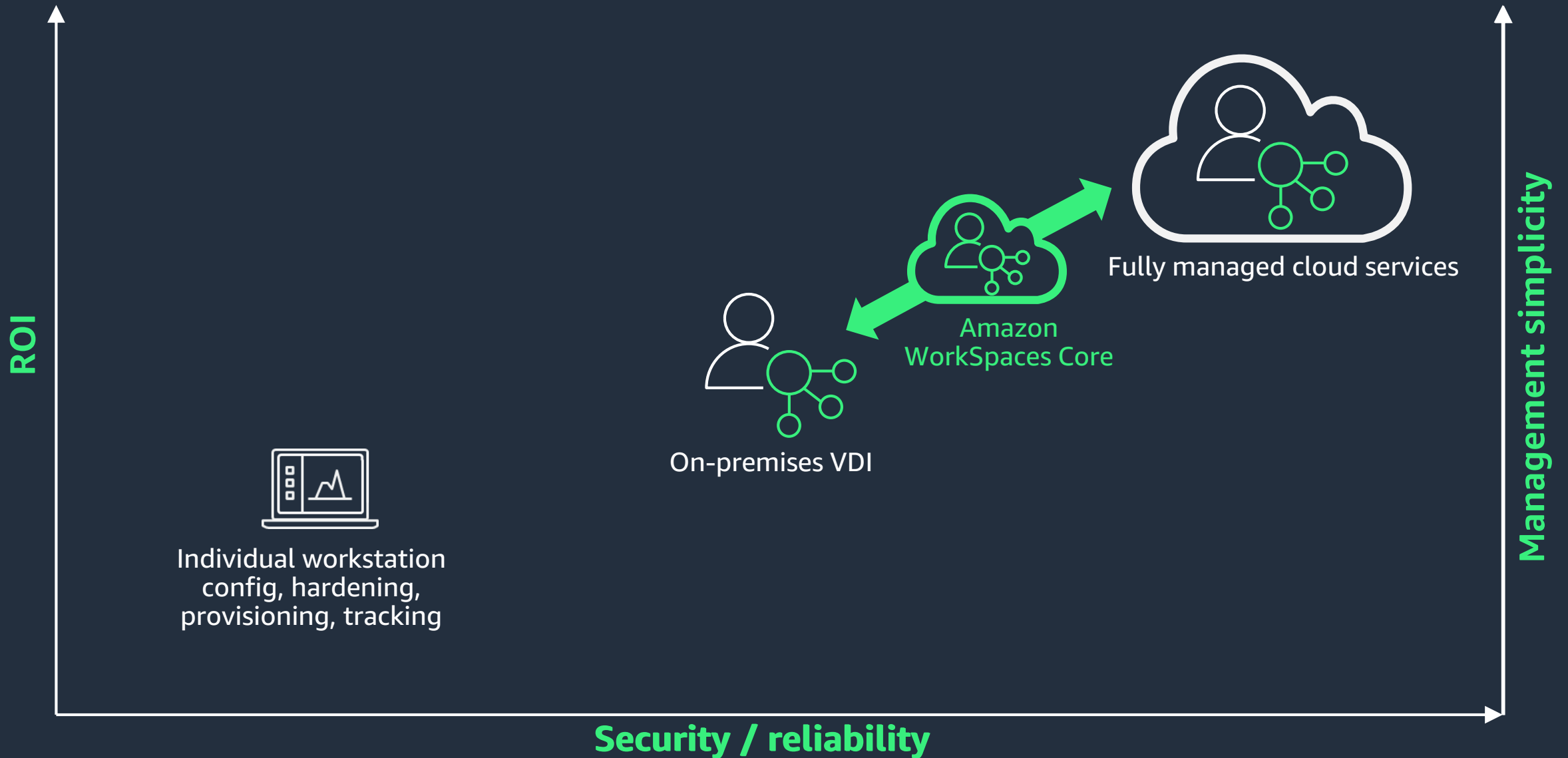
\*Prices here are in USD and apply to instances hosted in US-based regions. For other pricing go to: <https://aws.amazon.com/appstream2/pricing/?nc=sn&loc=4>



# Amazon Workspaces Core



# Agility – Meeting customers where they are



# Amazon WorkSpaces Core

Managed infrastructure designed to work with third-party VDI solutions



- Provision, monitor, and manage VDI infrastructure using familiar third-party VDI toolsets
- Leverage the security, global reliability, and cost efficiency of a fully managed AWS service



## VDI migration

Journey to the cloud at your own pace, extend the life of existing on-premises VDI solutions



## Remote work

Secure access to VDI infrastructure on AWS Cloud with third-party VDI management software



## Developers

Give developers tools they need to build / test / deploy across multiple environments



## Compute-intensive

Provide data GPU accelerated desktops on demand—only paying for what you need



## Remote learning

Build flexible virtual learning environments for students and educators



# Amazon WorkSpaces Core

Integrations with multiple leading third-party VDI solutions



vmware®

Workspot.

 leostream

**WorkSpaces Core >**

Fully managed infrastructure for  
third-party VDI solutions

# Amazon WorkSpaces Web



# Amazon WorkSpaces Web

Secure browser access to internal web sites and SaaS apps



## Secure by design

Stream web content with browser policies, user settings, and access monitoring

## Simple and fully managed

Quick to get started, delivered on demand, and automatically updates browser images

## Predictable pricing

Starting at \$7 per month, with no up-front commitments or contracts



Safe web browsing



SaaS first



Back office



Frontline workers



Factory and field



Contract workers



# Calls to Action

- Review Content and start to identify potential customer and projects
- Book an EUC exploration session – AWS and or iOCO
- Reach out to our EUC Sales Specialist team – Malcolm Clark ([malccla@](mailto:malccla@)) / EUC Specialist SA – Klaus Becker ([becklaus@](mailto:becklaus@)) or your iOCO account manager
- Complete the online Survey – To follow-up
- Join our recap session – within next month
- Ask for more details on running a POC, and how we might fund