

Two voices, one future End User Computing (EUC) trends for 2024 and beyond



**Dr. Benny Tritsch** Managing Director at Dr. Tritsch IT Consulting





**Ruben Spruijt** Field CTO at Dizzion

DIZZI😚 N





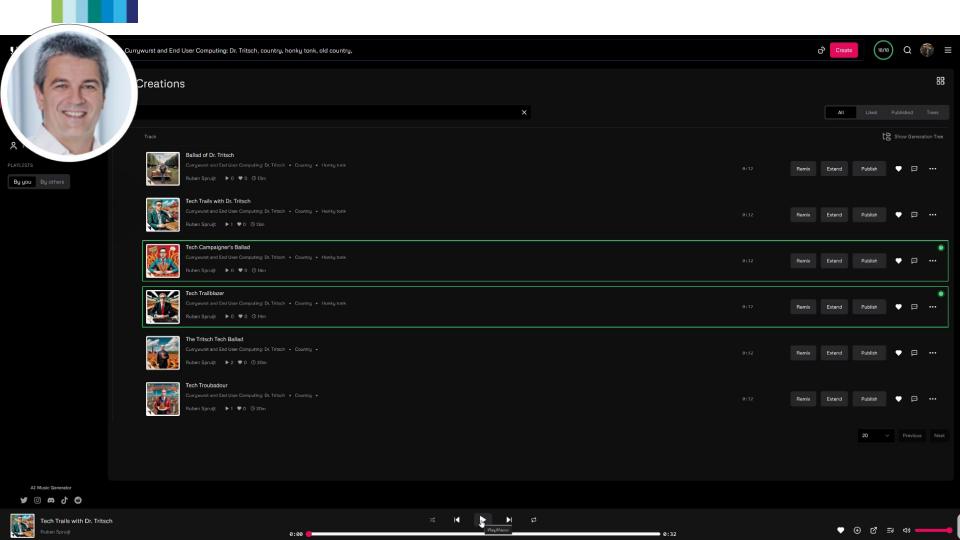














**Dr. Benny Tritsch** Managing Director at Dr. Tritsch IT Consulting





**Ruben Spruijt** Field CTO at Dizzion

DIZZI😚 N















#### Agenda

What the Hex is happening in EUC?

Shift from FUC infrastructure to DFX













# What the Hex is happening in End User Computing?!

Al w/ new Applications and Services

Simplification - Standardization

Software – as a Service – MSP

Blending Physical and Virtual

Mergers & Acquisitions

Digital Employee Experience

Monoculture & Silo Thinking



## End User Computing: A Complex Ecosystem

It's not a single product or vendor, and it's not like a turn-key solution.

#### End User Computing: A Complex Ecosystem

Just use a single product or vendor, and you will get a turn-key solution.....

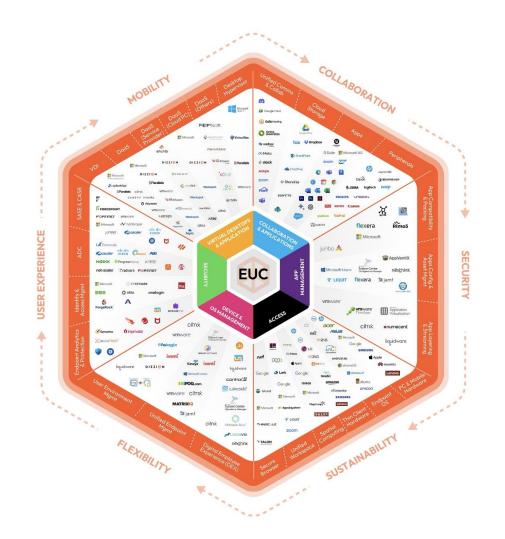


PROS	CONS
Increased productivity and efficiency	Pests Management
Specialized Production	Higher Pesticides Use
Yields Maximization	Soil Degradation And Fertility Loss
Easier To Manage	Higher Use Of Fertilizers
<u>Higher Revenues</u>	Higher Water Use
	Decrease In Biodiversity
	Impact On Pollinators
	Economic Risks
	Environmental Impacts Of Monoculture



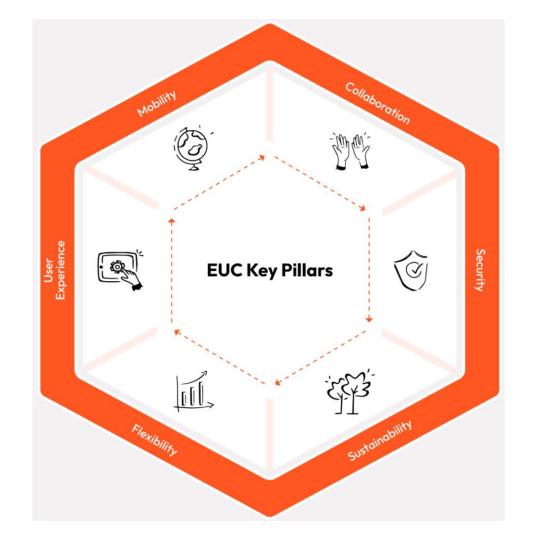
### Introducing **EUC Hexagrid**





#### EUC HEXAGRID

# 6 MAJOR EUC CATEGORIES 24 SUB-CATEGORIES 220+ EUC VENDORS



#### Why **EUC** Matters

User Productivity

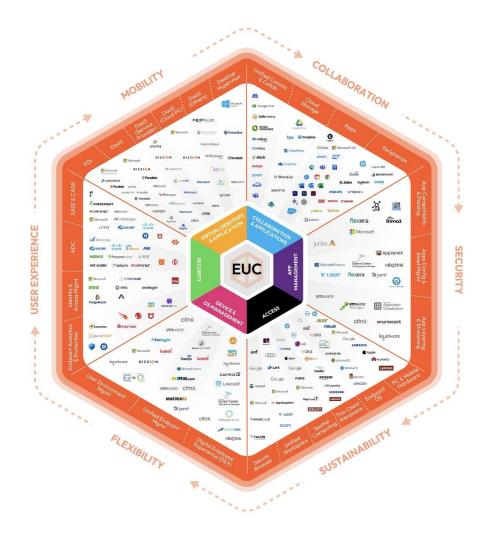
EUC empowers the end user by providing tools tailored to an individual's specific workflow, allowing significant productivity improvements.

Organizational Agility EUC helps organizations stay creative and agile because it lets employees use new tools and technologies easily, helping companies keep up with changes and try new ways of doing things. By making it easier for people to work together and share ideas, EUC helps everyone innovate better. This flexibility is critical for staying ahead in today's fast-moving world, as it allows companies to adjust to new situations and opportunities quickly.

Data and Endpoint Security Keeping company data safe is harder as more people work from home and use their own devices. EUC solutions help by managing all devices and apps from one place, ensuring security access rules are the same everywhere in the company. This way, it's easier to follow laws about data protection, control who has access to what, and keep track of data use, which lowers the chance of data leaks and keeps critical information safe.

#### **EUC Hexagrid**



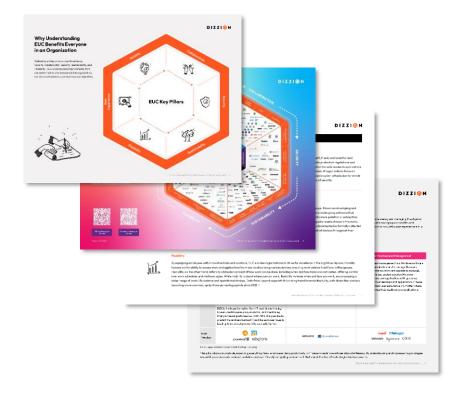




#### **Exclusive Whitepaper**

#### What the Hex is EUC?

A Detailed Overview of the End-User Computing Ecosystem



#### Follow Along!





Whitepaper



Infographic

#### Explore the Future of EUC Pillar 1: Access

Subpillar	PC & Mobile Hardware	Endpoint OS	Thin Client Hardware
Purposes & Benefits	PC and mobile hardware refers to physical devices like desktop computers, laptops, smartphones, and tablets that end-users use for work and personal tasks. These devices are essential for accessing local and remote applications, data, and services, enabling users to <i>get work done</i> . The hardware choice depends on the user's needs, whether for more powerful processing, portability, or convenient access on the go, reflecting the diverse ways technology supports our daily activities.	Endpoint operating system (OS) is the software that runs on and manages the hardware of a PC, mobile, Thin Client, and spatial computer. It acts as a bridge between the physical device and the applications you use, allowing those apps to run and perform tasks. Endpoint OS ensures smooth execution of applications and computing tasks with intuitive user interfaces, seamless integration with productivity apps, and platform-agnostic capabilities, enhancing user experience, security, and management.	Thin Client hardware provides a stripped-down computing environment that reduces hardware maintenance and enhances data security through centralized resource management. It is a lightweight computer that is designed to connect to a 'virtual desktops and application' solution and run Software as a Service and web applications using a locally installed browser. Thin clients often are cost-effective, energy-efficient, and easier to manage than traditional PCs.
Main Vendors	Lenovo Google Apple	Apple IGEL UNICON  Microsoft OchromeOS	Lenovo (1-) LG

Note: Logo placements do not reflect rankings in any way

Note: Logo placements do not reflect rankings in any way

#### Explore the Future of EUC Pillar 1: Access

Subpillar	Spatial Computing (AR/VR/MR)	Unified Workspace	Enterprise Browser
Purposes & Benefits	Spatial computing includes augmented-, virtual-, and mixed realities and offers immersive experiences to end-users and revolutionizes access beyond screens, transforming access in the virtual world. Spatial computing transforms how we work, learn, collaborate, and interact with other people, applications and information, making it more immersive and intuitive.	A unified workspace aggregates and integrates information, services, and applications into a single easy to use interface.  This allows end-users to access everything they need to work effectively from any device, anywhere. It simplifies the user experience, enhances productivity, and supports flexibility by providing a single point of access to all work resources, making it easier to manage and switch between tasks.	An enterprise browser is a web browser running on the endpoint PC designed specifically for business use, with enhanced security features to protect sensitive information and provide secure and controlled access to Web, SaaS, and virtual applications and desktops. It helps companies safely access the internet and cloud applications by managing user access, blocking malicious websites, and ensuring data privacy. This type of browser is built to comply with corporate security policies and provides tools for monitoring and controlling usage, making it a safer choice for accessing work-related resources online.
Main Vendors	Meta	AppsAnywhere T LIQUIT CITTIX. Google Microsoft vmware	■ Island TILON  Google ■ Microsoft

Explore the Future of EUC

#### Pillar 1 : Access

#### Question:

#### What are developments in Access?

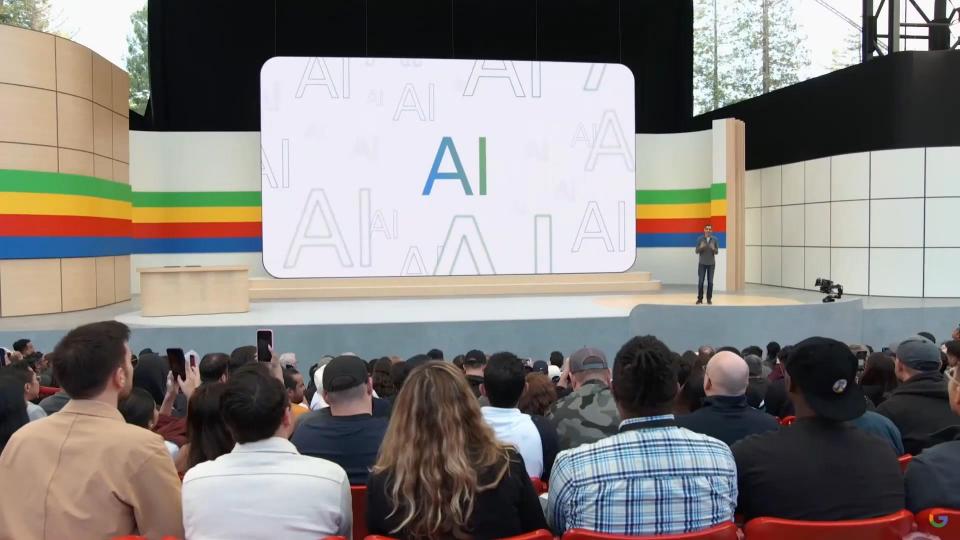
- Al as a companion (CPU/NPU/GPU)
- Private AI & inferencing at the edge
- ThinClient & Chrome OS SaaS, Digital signage, Factory
- Spatial Computing
- Unified Workspace
- Secure (local) Enterprise Browser Remote Browser Isolation is VDI/DaaS

Talking about AI ...





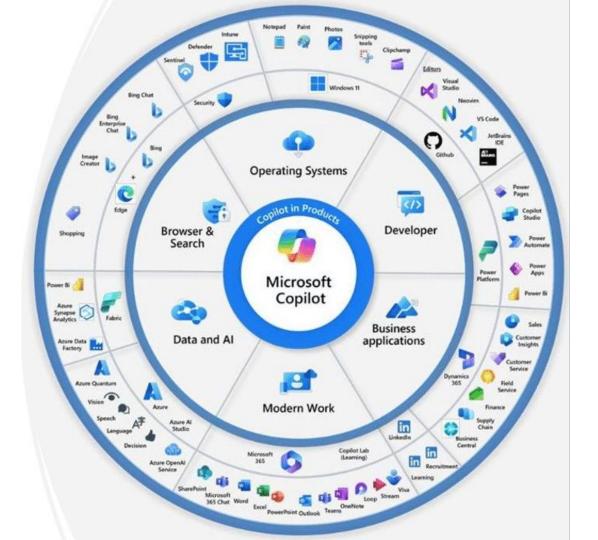
# Google **I**/●



#### Microsoft BUILD 2024 summarized

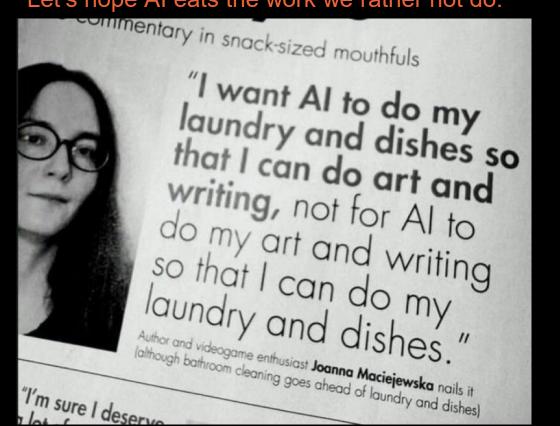
#### Microsoft BUILD 2024 summarized





#### Software ate the world.

Let's hope AI eats the work we rather not do.



"I'm sure I deserve



WITH GREAT
POWER
COMES GREAT
RESPONSIBILITY

#### Explore the Future of EUC

#### **Pillar 2: Virtual Desktop and Applications**

	1 1 1		
Subpillar	<b>VDI</b> (Virtual Desktop Infrastructure)	<b>DaaS</b> (Desktop as a Service)	<b>DaaS</b> (Service Provider)
Purposes & Benefits	Virtual desktop infrastructure (VDI) is a software that is designed, installed, configured, and managed by IT departments or a managed services provider and provides end-users access to (mostly) remote Windows desktops and applications. These desktops and applications are running within virtual machines, mostly running in a datacenter or datacenters. The remoting protocol 'streams' pixels to end-user endpoint devices, so users can use virtual desktops and applications from anywhere and on any device, provided there is a decent network connection.	Desktop as a Service (DaaS) is a service that provides end-users access to remote virtual desktops and applications via virtual machines running in the cloud, on-premises, or both, accessed through a remote display protocol. This means users can access their virtual desktops and applications from any device, anywhere, without being tied to a single physical computer.  DaaS is a public cloud service that is architected, developed, and operated as a service. Organizations can use DaaS either as a ready-to-use service or use the 'DaaS control plane' as a platform, requiring client-led setup, configuration, and management of the workload virtual machines. The workload VMs can run in the cloud, on-premises, or both depend on the DaaS provider. The pricing model for DaaS typically involves subscription or pay-per-use schemes.	A DaaS service provider is a company that offers Desktop-as-a-Service solutions, handling the back-end responsibilities associated with data storage, backup, security, and upgrades. Outsourcing to a DaaS provider allows businesses to offload technical burdens, reduce internal IT workloads, and focus on core business activities.
			.00

DIZZION CİTIX. aws

Microsoft vmware Workspot.

anunta ATSG Workspot.

DIZZION SEVOLVE IP

Note: Loao placements do not reflect rankinas in anv wav

Microsoft vmware

| Parallels citrix

Main

**Vendors** 

#### Explore the Future of EUC

#### **Pillar 2: Virtual Desktop and Applications**

	<u> </u>		
Subpillar	DaaS (Cloud PC)	<b>DααS</b> (Others)	Desktop Hypervisor
Purposes & Benefits	Cloud PC refers to a modern approach where the personal computer experience is delivered from the cloud, accessible from multiple devices. Cloud PC solutions provide a flexible aand efficient computing environment that supports a remote and mobile workforce with consistent access to their desktops.	DaaS (Others) are software tools or platforms that enable the automation, orchestration, deployment, management, and optimization of Desktop a Service solutions. These tools simplify IT management, allowing administrators to configure, manage, monitor and run Desktop as a Service. Often, DaaS tools fill gaps in the DaaS solution.	A desktop hypervisor is a software that allows multiple desktop operating systems to run on a single machine (the host) by creating and managing virtual machines. This enables developers, testers, and power users to run multiple operating systems or versions concurrently, aiding in testing and development scenarios.
Main Vendors	Microsoft CİTTIX.  Workspot. DIZZI⊗N	WorkSpaces Core leostream Produces Parlame Parlament Par	Microsoft vmware ORACLE    Parallels

Note: Logo placements do not reflect rankings in any way



#### Pillar 2: Virtual Desktop and Applications

#### Question:

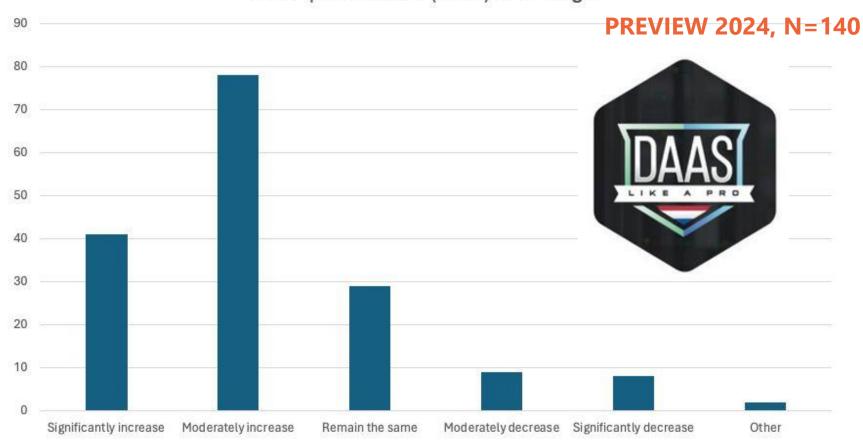
What are developments in

#### **Virtual Desktop and Applications?**

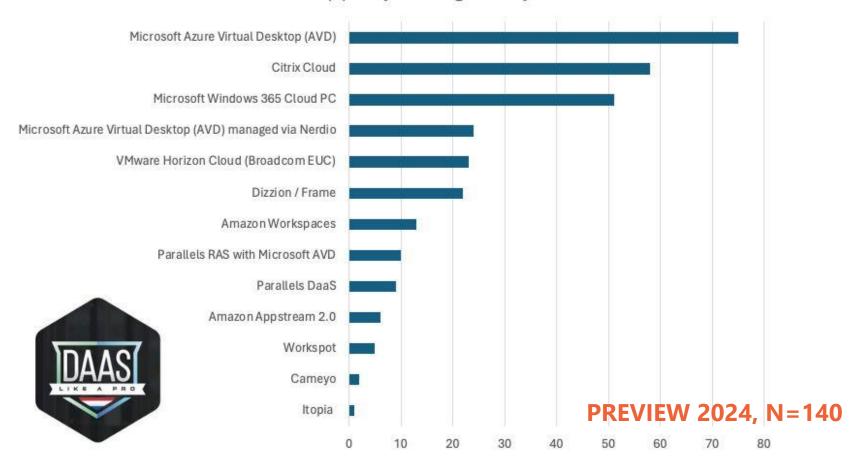
- Citrix, Broadcom/VMware, Omnissa
- VDI > DaaS 'vendor assembled/managed'
- Complexity <> Services & MSP
- Desktop <> App
- DaaS Tools



#### Over the next 1 to 3 years, how do you anticipate your organization's **usage** of Desktop as a Service (**DaaS**) will **change**?



#### Which **DaaS solution**(s) are you using or will you introduce?





## www.DaaSLikeaPro.com

Survey close = June 10th

## **#DAASLIKEAPRO**

Passionate about End User Computing, VDI, DaaS and Cloud PC

2024-2025 SURVEY NOW OPEN!

### **Pillar 3 : Device and Operation System Management**

Subpillar	Digital Employee Experience (DEX)	Unified Endpoint Management	User Environment Management
Purposes & Benefits	Digital employee experience provides insights on how end-users perceive application and workspace performance. A good digital employee experience helps employees be more productive and satisfied with their jobs, as it minimizes frustrations related to technology and enables them to focus more on their actual work tasks.  DEX monitors and provides operation insights to IT on how users interact and use the applications, physical and virtual environments, network, infrastructure, and cloud services.  DEX is the transformation from IT-centric monitoring to user-centric measuring, analytics, and monitoring their perceived performance. With DEX, it is possible to predict the problem before IT (and the end-user) sees it, leading to increased productivity and satisfaction.	Unified endpoint management is software or service that IT teams use to manage endpoints from a single platform and interface. This makes it easier to deploy software, enforce security policies, and update systems. It reduces the complexity and costs of managing various devices, including PCs & mobile devices, spatial computing, and Internet of Things (IoT), while enhancing its security posture with the ability to remotely wipe data from lost or stolen devices and enforce security policies, like password protection and encryption.	User environment management is a Windows software that allows IT administrators to manage the users Workspace. These solutions are capable to manage, secure, containerize, and personalize Windows operating systems and application settings across physical and virtual desktops and applications. It helps deliver a consistent user experience, no matter where or how they access their desktops and applications.
Main Vendors	<b>&amp; □</b> control₩ nexthink	<b>vm</b> ware <sup>·</sup> ■ Microsoft Intune	ivanti #fslogix: vmware liquidware CİTIX.



### **Pillar 3: Device and Operation System Management**

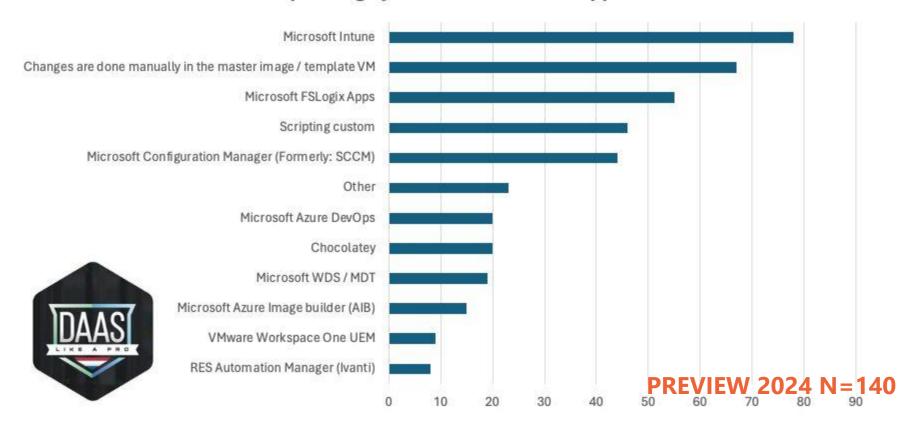
#### Question:

What are developments in **Device and Operation System & User Management?** 

- DEX is on fire
- Unified Endpoint Management
- Unified Environment Management



# In your organization, what tools do you use to **install** and **manage** the Windows **Operating System** and associated **applications**?



# **Pillar 4: Security**

Subpillar	Endpoint Analytics and Protection	Identity and Access Management (IAM)
Purposes & Benefits	Endpoint analytics and protection is all about keeping business physical devices and virtual environments healthy and secure, supporting a productive, efficient, and safe digital workplace. It involves analyzing data from PC & mobile devices and virtual desktop and applications to understand how they are being used, if they are up-to-date from a software perspective, and identifying any issues that might affect user productivity and overall security risks.  It also includes software or services that focuses on securing devices from malware, viruses, and cyberattacks ensuring that devices comply with regulatory standards and internal policies by enforcing security measures and monitoring device usage.	IAM is used to manage and secure who has access to the various applications and services within an organization. It ensures that the right people (identity) can access the applications, services, and data they need (access) to do their jobs, and prevents unauthorized users from getting in.
Main Vendors	Microsoft TREND	Ping Google

Note: Logo placements do not reflect rankings in any way

# **Pillar 4: Security**

Subpillar	Application Delivery Controller (ADC)	Secure Access Service Edge (SASE) and Cloud Access Security Broker (CASB)
Purposes & Benefits	An application delivery controller (ADC) in end-user computing is a network access device that helps manage client connections to web applications and services. It is a crucial component in modern data centers and cloud computing environments. ADCs optimise web and SaaS applications' performance, security, and reliability.	Secure access service edge (SASE) brings together converged network and security services like SD-WAN, SWG, CASB, NGFW, and ZTNA, providing support for branch offices, remote workers, and on-premises needs.  SASE is a service that focuses on zero trust access, tied to device or entity identity, real-time context, as well as security and compliance policies.  Cloud access security brokers (CASBs) act as security policy enforcement points in an on-premises or cloud-based environment. They are positioned between cloud service consumers and providers to enforce enterprise security policies when cloud-based resources are accessed. CASBs combine various security policy enforcement measures.









Note: Logo placements do not reflect rankings in any way

Main

**Vendors** 

Note: Logo placements do not reflect rankings in any way

### Pillar 5: Application Readiness, Compatibility and Management

Subpillar	App Compatibility and Packaging	App Configuration and Assets Management	App Layering and Streaming
Purposes & Benefits	Application compatibility, readiness, and packaging ensure that Windows applications are not only able to run on the physical and virtual desktop and application environments, but are also secure, compliant with organizational policies, and packaged in a way that simplifies deployment and management. This is essential in EUC environments where a diverse array of devices and operating systems are in use, and where ensuring a consistent and efficient user experience across all applications is key to productivity.	Application configuration and asset management are two important solutions for optimizing the use of applications and managing the physical PC and mobile device and virtual desktops and applications within an organization.  Application configuration is setting up applications according to specific requirements and preferences to ensure they work effectively for end-users. It includes customizing OS and applications settings, defining user permissions, integrating apps with other systems, and ensuring the applications meet security standards.  Assets management refers to the process and software capable of tracking and managing all the end-user computing assets of an organization, which can include physical hardware (like PCs & mobile devices), applications (such as licenses and subscriptions), and digital assets (data, intellectual property, etc.).	Application layering, isolation, and streaming are techniques used to containerize, manage, and deliver Windows applications to a user's physical and virtual desktop and applications in a flexible, efficient manner. It involves separating Windows applications from the underlying operating system on which they run. The Windows application is packaged into a "container or layer" that can be attached or streamed on-demand to an operating system, without needing to be installed in the traditional sense.  Application layering, isolation, and streaming offer benefits in terms of flexibility, efficiency, and manageability of Windows applications within an organization, particularly in environments where there are many users with diverse application needs and configurations, such as virtual desktop infrastructures (VDI), Desktop as a Service (DaaS), or Bring Your Own Device scenarios. These solutions can help reduce IT complexity and lower costs associated with application deployment and maintenance.
Main Vendors	Microsoft flexera. Rimo3	System Center Configuration Manager T LIQUIT nexthink	#numecent Citrix.  Microsoft liquidware vmware

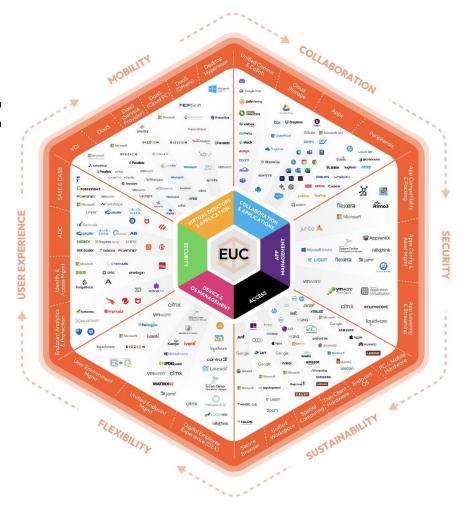
## **Pillar 6: Collaboration and Applications**

	<b></b>			
Subpillar	Cloud Storage	Apps	Peripherals	Unified Comms & Collab
Purposes & Benefits	Cloud storage provides a centralized online space where users can store, access, and share data in the cloud rather than using their local computer's hard drive or an organization's on-premises servers. This enables end-users to access their files from any device, anywhere, facilitating collaboration and remote work. Cloud storage elevates data protection through redundancy and backup capabilities, ensuring data is safe from hardware failures and is easily recoverable.	Applications are the tools, services, and software that enable end-users to work effectively, perform specific tasks and functions directly related to their roles and responsibilities within an organization.	Peripherals are external devices that connect to PCs and virtual desktop and application environments to extend their capabilities or provide additional functionalities. These can include devices like printers, smartcards, specialized keyboards, mice, and scanners for data entry.	Unified communication and collaboration solutions encompass voice and video calling, messaging, email, file sharing, real-time collaborative and unified workspaces, allowing employees to communicate and collaborate seamlessly, regardless of their location or the device they use. These solutions ensure that information flows smoothly across the organization, enabling teams to communicate and work more efficiently and effectively together.
Main Vendors	△Drive ❖ Dropbox	Adobe Office GSuite	# ZEBRA	ZOOM O NVIDIA OMNIVERSE

Note: Logo placements do not reflect rankings in any way

### What the **Hex** is **EUC**





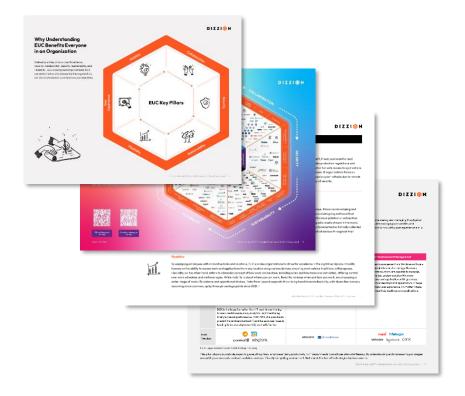




#### **Exclusive Whitepaper**

#### What the Hex is EUC?

A Detailed Overview of the End-User Computing Ecosystem



# Follow Along!





Whitepaper



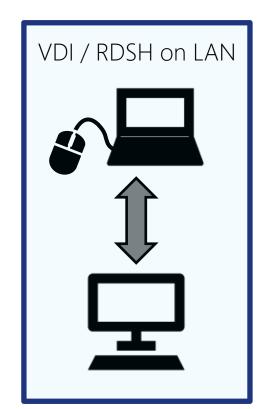
Infographic

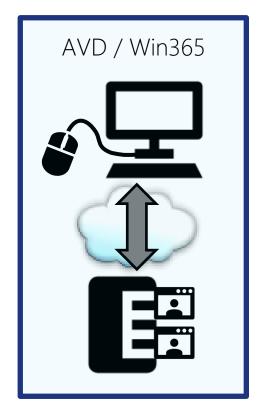
# From Infrastructure to DEX













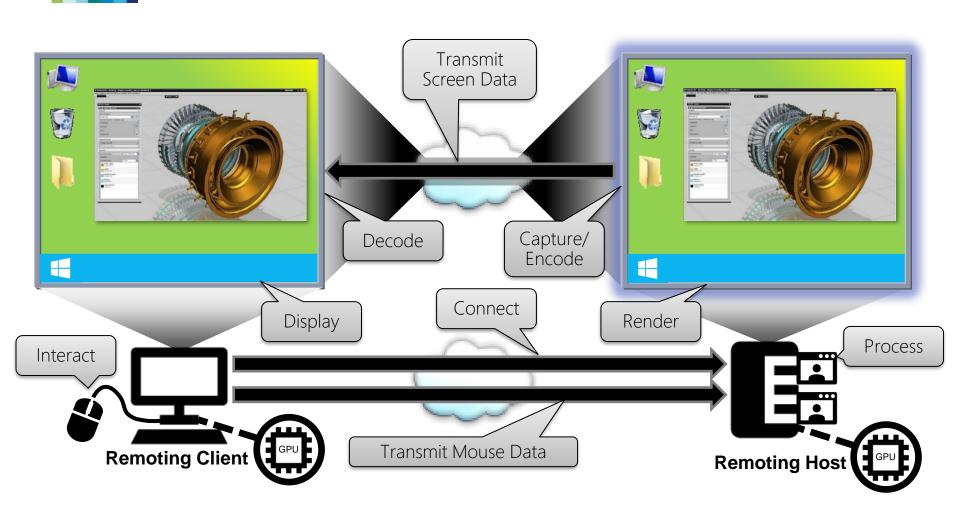


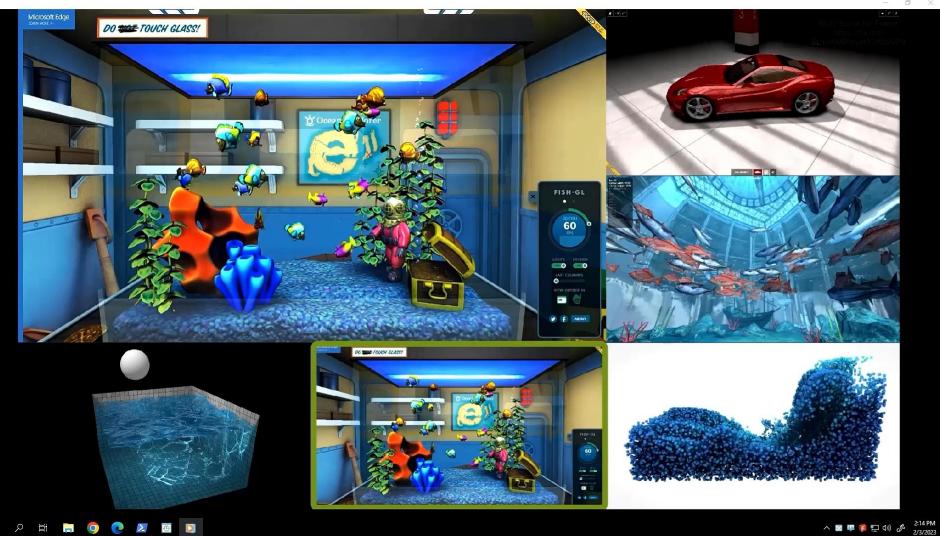


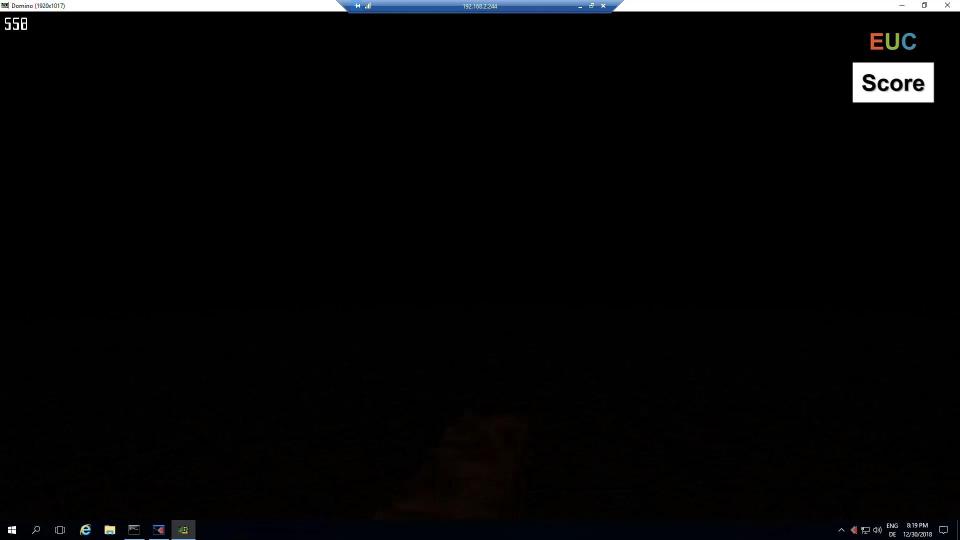






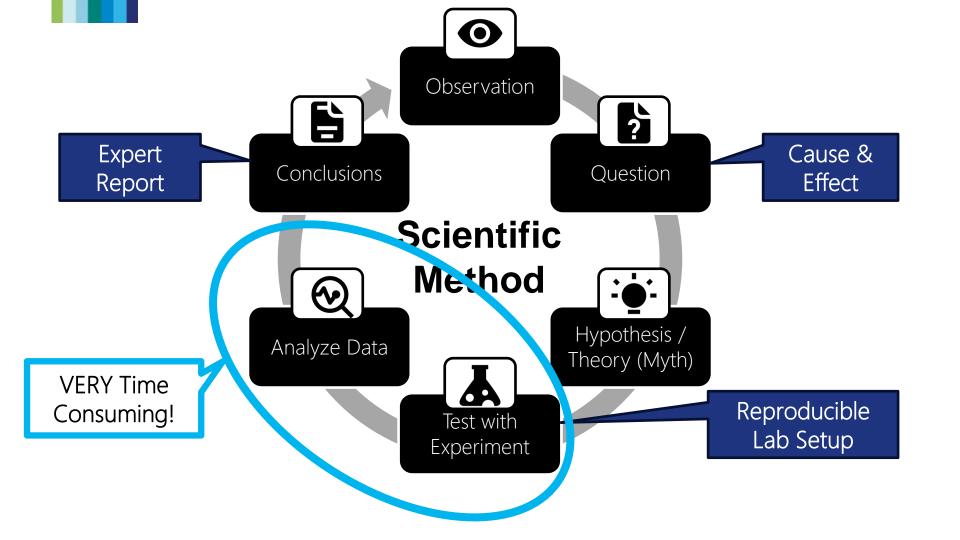






# Windows Desktop Quality Criteria

<b>₹</b>	Boot and logon duration	Measure boot time + logon time + user session load time until it is ready for user interaction. This includes identity management and authentication methods.
X	Application and content load time	Measure time from user starting an application until the content appears and the application is ready for user input, including access to the storage system.
(E)	User input delay ("Lag")	Measures responsiveness of graphical elements after user-initiated triggers = "time from mouse click to screen update" (lag, latency, system response time).
	Graphics APIs supported	Detect incompatibilities when running graphics applications using the DirectX, OpenGL, Vulkan and WebGL APIs.
<b>7</b>	Media formats supported	Detect incompatibilities when opening media files, such as MP4, MPEG, MOV, WMV or AVI.
	Distortion of media	Measure media and screen output quality. Detect image, animation, and audio/video compression and decompression artifacts and anomalies.
	Screen refresh rate	Measure the number of times per second that the desktop or application can draw consecutive images on the screen and in the host frame buffer (frames per sec = fps).
	Endpoint specs and quality	Determine the screens' number of pixels, density, and visual dimensions – frame buffer requirements grow with resolution and screen number. Detect periphery incompatibilities.
X	Application reliability and stability	Detect application hangs, freezes, crashes or unhandled exceptions. Measure consistency, dependability and robustness of applications.
	Session consistency and resilience	Check if user state is preserved across subsequent sessions. Measure session disruptions, hangs, disconnects/reconnects, availability, timeouts and redundancy.



# User Experience Benchmarking



### **Community Toolset**



Simulated Workloads



Telemetry Data



User **Activities** 



Screen Recording





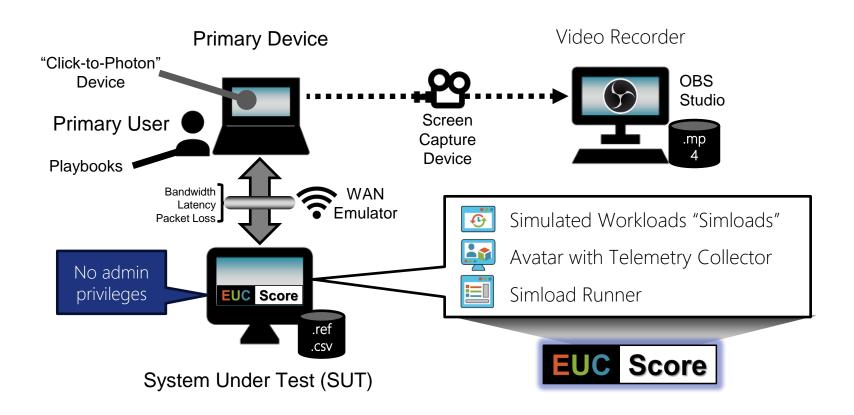




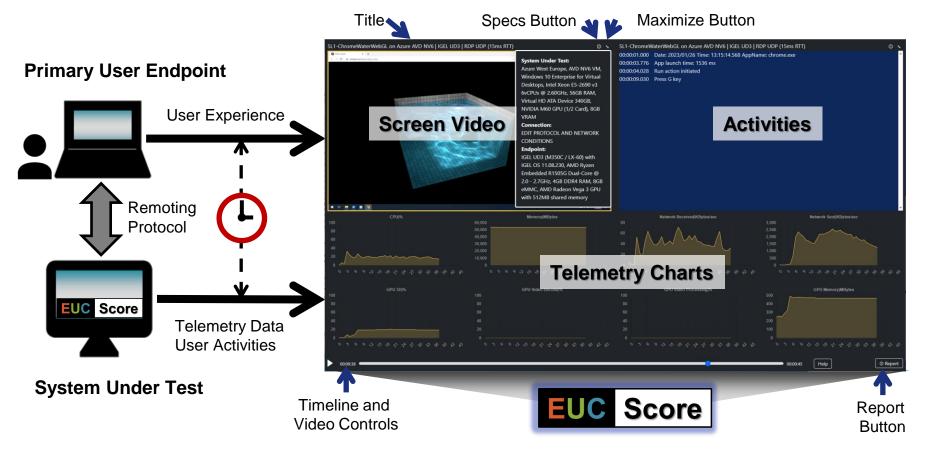




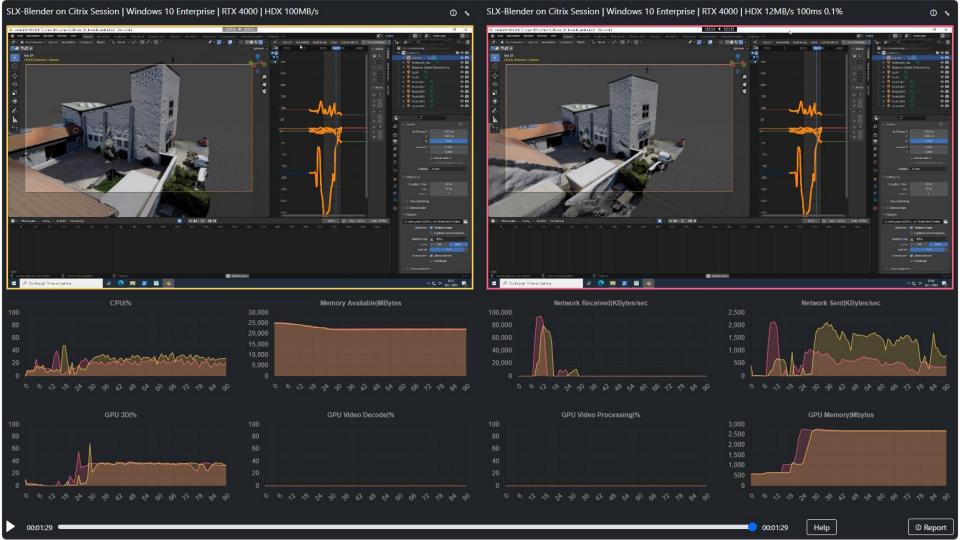




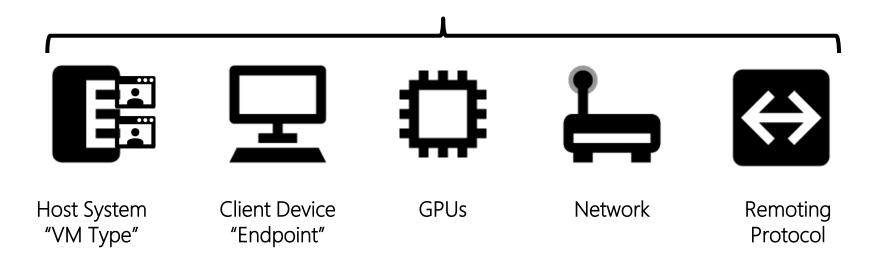
#### Visual Data Analytics – Sync Player







# User Experience Influencers



# Remoting Protocol Improvements

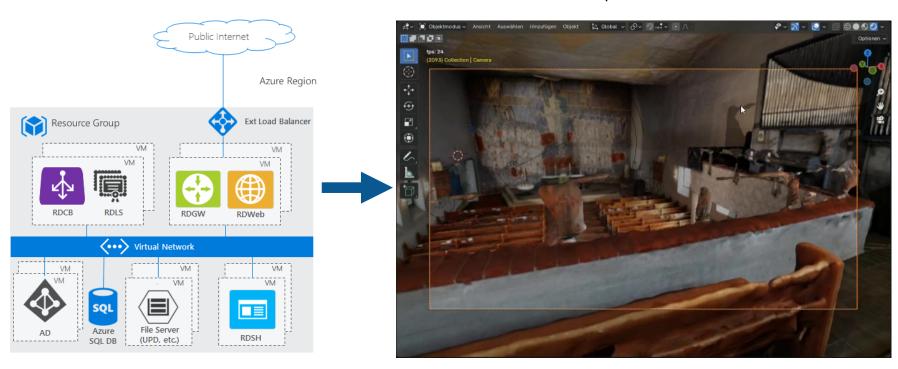
## Relevant Protocols on Azure

- Microsoft RDP
- Microsoft RDP SxS
- Citrix ICA/HDX
- Dizzion Frame FRP
- VMware Blast
- HP PCoIP

- Self-adaptive when network conditions change
- Reduced impact of latency and packet loss
- Advanced caching
- Modern video codecs
- UDP-enabled
- GPU-enabled on sender and on receiver side
- Allowing reverse connect

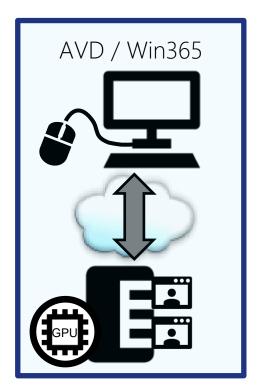
### **TREND**

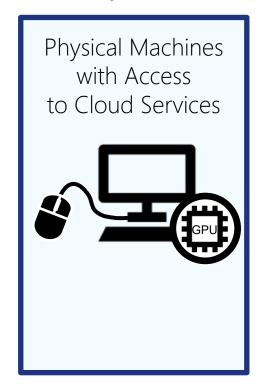
Shift from Infrastructure to Perceived User Experience (DEX4DaaS)



### POTENTIAL TREND

The Pendulum May Swing Back to Physical PCs





# **EUC Score Links**







Freeware Download

Toolset documentation: <a href="https://docs.eucscore.com">https://docs.eucscore.com</a>

Test Methodology: <a href="https://eucscore.com/methodology.html">https://eucscore.com/methodology.html</a>

Simload Gallery: <a href="https://eucscore.com/gallery.html">https://eucscore.com/gallery.html</a>

Test Results (Sync Player): <a href="https://eucscore.com/results">https://eucscore.com/results</a>

Terminology (Glossary): <a href="https://eucscore.com/terminology.html">https://eucscore.com/terminology.html</a>

Lab Equipment: <a href="https://eucscore.com/equipment.html">https://eucscore.com/equipment.html</a>

# Summary

✓ What the Hex is happening in EUC?

✓ Shift from FUC infrastructure to DFX















Dr. Benny Tritsch
Managing Director
at Dr. Tritsch IT
Consulting
benny@drtritsch.com

**EUC** Score

Ruben Spruijt

Field CTO at Dizzion Ruben@dizzion.com

DIZZION

Please evaluate this session in the App.

# THANK YOU

Are there any questions?

