

**Hewlett Packard  
Enterprise**

# **Navigating Hybrid Desktop Solutions: VDI and AVD with Azure Stack HCI**

Transforming your legacy VDI environment

Speaker name and title

Month DD, 20YY

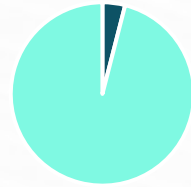
# Hybrid workplace, a Digital Employee eXperience

No longer just an employee perk, but rather an employee expectation



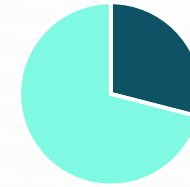
**39%**

of global knowledge workers will work hybrid by the end of 2023 and beyond<sup>1</sup>



**96%**

of Fortune 100 best companies provide remote and hybrid work options<sup>2</sup>



**71%**

of line managers see flexible working as a performance-enhancing tool<sup>3</sup>

“The rapid increase in remote and hybrid work, as well as the need for business continuity, has made **client virtualization a major priority for organizations.**”

Market Guide for Desktop as-a-Service, Gartner, March 2023



1 – Gartner.com, March 2023 – Press Release; Knowledge employees, hybrid, fully remote and on-site work styles, worldwide  
2 - Fortune.com, April 2023 – How the 100 best companies to work for reflect the ever-changing working world  
3 - Fortune.com, February 2023 – The key to hybrid work productivity? Getting the ROI of your commute right

# Sustainability

Reducing the carbon footprint with client virtualization

Extends refresh period and enables repurposing of corporate client devices



“More than 272 million\* new laptops are manufactured every year, making **the IT industry responsible for as much greenhouse gas pollution as the entire airline industry.**”<sup>1</sup>

“The average **estimated carbon footprint of a laptop is around 422.5 kg of greenhouse gasses** in first four years of use.”<sup>1</sup>

Allows more efficient resource allocation reducing energy consumption and waste



\* According to Statista projections indicate a small decline for the PC industry in 2022, but sales should be back to 270 million laptops or so by 2025

<sup>1</sup> “What is the carbon footprint of a laptop?”, Circular Computing 2021

# Growing concern of existing client virtualization stacks

## Cost

Does the cost of VMware / Citrix products change?  
How much impact?

## Upgrade roadmap

Whether the upgrade path of existing technologies are maintained or not.

## Technology

Whether technologies currently used have a long-term lifespan. Do the technology stacks have performance/feature benefits in the future

## GPU Virtualization

Innovations in GPU virtualization allow VDIs to efficiently deliver graphics-intensive applications and demanding workloads

## License

Whether licensing model will continue, change, or terminate. Perpetual license change is already announced, and the impact needs to be assessed.

## Channel relation

The ability to evaluate ideas and opportunities objectively and efficiently; to observe and experiment

## Security and Compliance

With the rise of remote work, concerns surrounding data security and compliance took center stage.

## Support

Given the changing landscape in terms of vendor selection, are we capable of supporting operationally, our current and future platforms.

# Questions your organization may be asking

- How can we **optimize TCO** for client virtualization system and **reduce complexity** of operating the whole VDI solution stack?
- Can we **address growing security and compliance** requirements?
- How are we going to provide **reliable client virtualization service** to our company's business organizations?
- Is there a way to have a **scalable** client virtualization solution that allows us flexibility to respond to the company business needs?
- How should I **weigh cost efficiency against security concerns** when choosing between on-premise and cloud-based infrastructure?

“Investment in Desktop as-a-Service (DaaS) is rising as clients seek to provide secure solutions that are less prone to cyberthreats. **Fifty-five percent (55%)** of clients told Gartner that they **plan to increase spending in DaaS through 2024.**”

Gartner.com, March 2023 – Market Guide for Desktop as-a-Service



# Challenges your organization may be facing with VDI integration/migration

- Complexity of planning and design
- Designing and migration to a hybrid platform and prioritizing security measures
- Managing and operating VDI in public cloud; like Azure Virtual Desktop (AVD)
- Automation of operational procedures
- End-user experience proactive monitoring
- Skills to manage and operate the platform
- Developing a scalable infrastructure – scale resources on demand

**User experience and operational efficiency drive design decisions.** Right mix of sourcing options and technologies requires **skilled resources** for planning design and migration



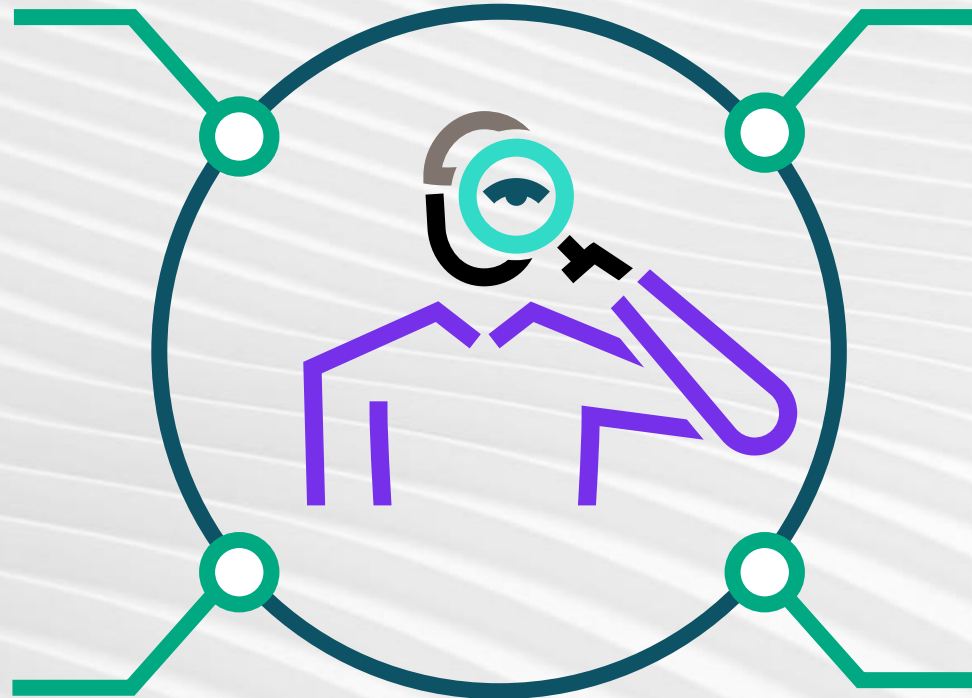
# Challenges to alternative stacks

## Total cost of ownership

Total cost of ownership including the initial implementation cost needs to be lower than legacy VMware/Citrix stacks

## Downtime

Downtime needs to be minimized during the transition to a new alternative stack



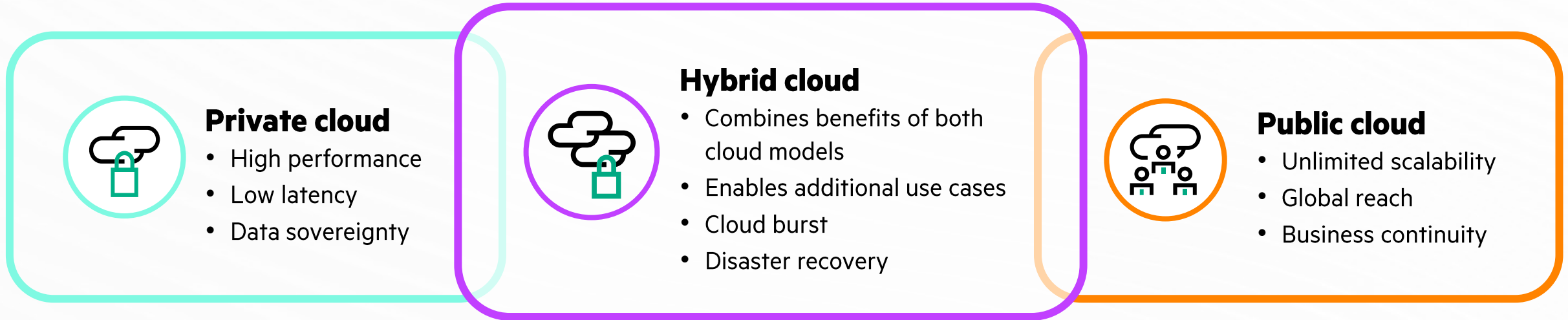
## Operation service level

Same level of operation service level/functionality needs to be provided on an alternative stack

## People and technology

Gap of operation and management skill of people with technologies used on an alternative stack

# Our point of view on hybrid VDI deployment



Together with our technology partners, **we help you build and manage a cloud client virtualization solution that responds to your organization's business needs** and helps you **realize your workplace digitization strategy**

vmware®

citrix™

Microsoft

nVIDIA®

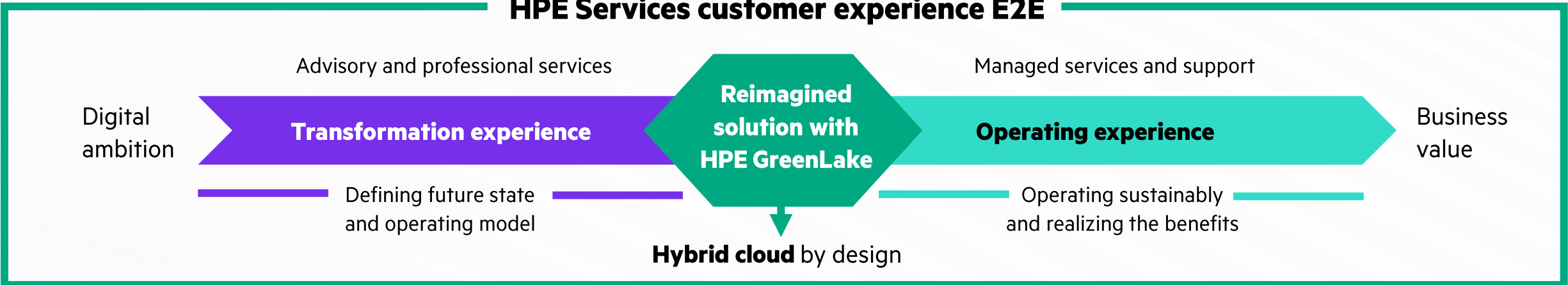
HPE GreenLake



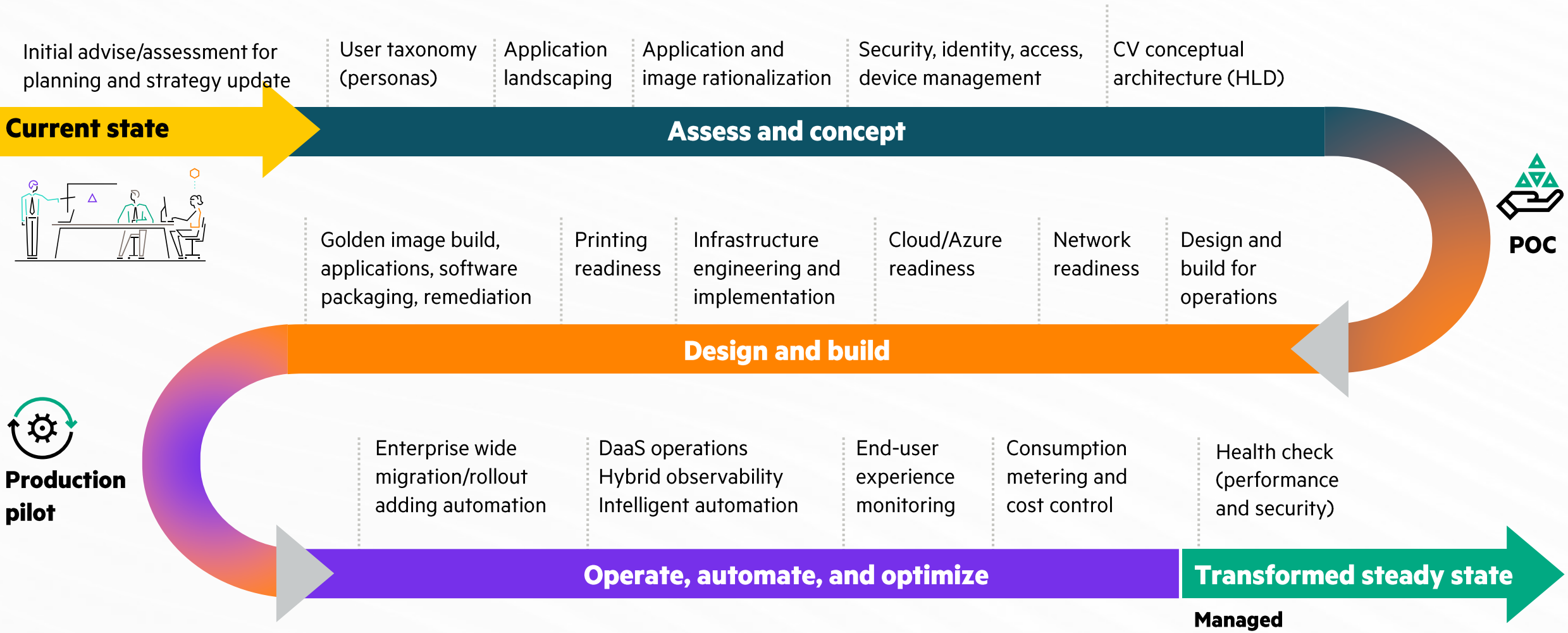
# HPE Services for VDI and Azure Virtual Desktop on Azure Stack HCI value proposition

<p><b>Transformation services</b></p> <p>A&amp;PS consultative approach and multivendor skills to transform legacy VDI to Modern Workplace VDI/AVD on a HPE platform</p>	<p><b>Global reach</b></p> <p>HPE can provide local, near and offshore services to optimize implementation, migration and operation of any VDI solution - Citrix/VMWare/AVD etc.</p>	<p><b>Certified HCI systems</b></p> <p>Hardware, software, and managed services solution delivered as-a-service and with a pay-as-you-go model</p>	<p><b>Packaged services</b></p> <p>Simple to add, focused and packaged A&amp;PS value-add services</p>	<p><b>Monthly bill</b></p> <p>Billing can include all charges—Greenlake VDI, Azure Stack HCI, Azure services (AVD, backup etc.) and transformation with HPE as the CSP under a HPE Greenlake sale</p>
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## HPE Services customer experience E2E



# Hybrid client virtualization lifecycle



# HPE Edge Services – Client Virtualization Transformation

Flexible choice of services and work packages adjusted to your needs






Advise	Assess and concept (PoC)	Design, build, and migrate	Operate	Automate and optimize
<p><b>CIC demo capabilities</b> Geneva: Azure AVD/Azure Stack HCI, Citrix DaaS/VMware on-premises</p>	<p><b>AVD/Azure Stack HCI PoC</b> PoC Service for AVD in Azure or Azure Stack HCI</p>	<p><b>AVD design and build</b> Edge to Edge Azure Virtual Desktop OR Azure Stack HCI design and build</p>	<p><b>Rollout</b> Support VDI user rollout and IT training</p>	<p><b>Optimize VDI</b> Re-assess and optimize infrastructure and support/operations processes based on HPE best practices</p>
<p><b>Immersion Workshop</b> Support customer during VDI planning phase with best practices and recommendations for most suitable solution stack and optimal implementation and use cases</p> <p><b>VDI Assessment Service</b> Detailed discovery and analysis of existing VDI environment and recommendation of most suitable platform to support a Modern Workplace solution</p>	<p><b>PoC Service Hybrid</b> PoC Service for AVD, Citrix DaaS Hybrid Cloud or VMware Horizon as a hybrid solution</p>	<p><b>VDI Hybrid Cloud design and build</b> Combining technologies like Citrix DaaS and Azure</p>	<p><b>Operations optimization</b> Support Processes review and optimization OR HPE Operations Services User Training</p>	<p><b>VDI security</b> VDI security review and optimization Identity (SSO, MFA)</p>
	<p><b>vPoC Service Private Cloud VDI</b> PoC Service for Greenlake VDI, Citrix or VMware on-premise</p>	<p><b>VDI design and build</b> Build on-premises or hybrid cloud VDI / DaaS solutions including network segmentation</p>	<p><b>Application and image lifecycle</b> Application lifecycle management DaaS (Image management)</p>	<p><b>Automate</b> Optimize operations by leveraging automation tools</p>
	<p><b>Application Assessment</b> Discovery and assessment of your current application landscape</p>	<p><b>Migration services</b> Migration services from legacy VDI platforms such as Citrix/VMware to Modern Workplace technologies such as Microsoft AVD on Azure Stack HCI</p>	<p><b>GL-VDI Startup Service</b> Implementation services for HPE GreenLake for VDI</p>	<p><b>AVD monitor and manage</b> Azure Virtual Desktop monitoring and management</p>



# Client virtualization services

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# VDI advisory capabilities for client virtualization

	Advise
	Assess and concept
	Design and build
	Operate
	Automate and optimize

## What HPE can do for you






- Demonstrate industry solutions at our Customer Innovation Centers
- Conduct a VDI immersion workshop
- Advise on VDI deployment and sourcing models
- Assess your application landscape

## Outcomes you will achieve

- Updated VDI and workplace strategy
- Shared vision among stakeholders
- Considerations for VDI planning
- Understanding of risks and challenges
- Recommendations for moving forward
- Understanding the impact to user experience



# VDI advisory services

 Advise
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## Activities

### Conduct demonstration

- Discuss your requirements for a modern virtual desktop workplace strategy
- Define stakeholders
- Use HPE Innovation Center to demonstrate VDI use cases
- Discuss corporate sustainability goals

### Immersion workshop

- Analyze current workplace strategy and use case requirements with focus on client virtualization
- Identify current state VDI infrastructure, hardware, applications and processes
- Discuss desired future mode of operations including sourcing and operational models
- Capture virtual desktop requirements

## Deliverables

### Demonstration deliverables

Summary report of the following findings, recommendations, and next steps:






- Business strategy recommendations for client virtualization
- Use case requirements

### Immersion workshop deliverables

- Summary of current CV infrastructure
- CV maturity level assessment and benchmark
- Summary of use case requirements and recommended sourcing and operational model
- Risks, quick wins as well as high-level financial and environmental impacts

**Provide VDI planning phase with recommendations and best practices via an interactive workshop**

# VDI assess and concept capabilities for client virtualization

	Advise
	<b>Assess and concept</b>
	Design and build
	Operate
	Automate and optimize

## What HPE can do for you






- Map business needs to solution requirements
- Create hybrid cloud workload strategy with appropriate solution
- Analyze your VDI maturity level and align with your strategy
- Detailed assessment with high-level design recommendations
- Deliver hybrid or Azure virtual desktop proof-of-concept
- Application discovery

## Outcomes you will achieve

- Understanding of existing gaps and recommendations for a full deployment
- Enhanced operations recommendations
- Advise and recommendations for as-a-Service operations
- Recommended sourcing model for use cases
- Increased confidence and experience from using our PoC service to validate the solution



# VDI assess and concept services

 Advise
 <b>Assess and concept</b>
 Design and build
 Operate
 Automate and optimize

## Activities

### HPE Platform Assessment

- Detailed Assessment of existing VDI infrastructure
- Detailed Requirements gathering
- Strategy analysis

### Proof-of-concept (PoC)

- Build HW test infrastructure or run in public cloud
- Design and configure AVD control stack
- Adapt a customer client OS image to be used for testing
- Execute user acceptance testing
- Optimize infrastructure for best user experience

### Application assessment

- Discovery and assessment of your current application landscape
- Application rationalization recommendation
- Application analysis and packaging recommendation

## Deliverables

### HPE Platform Assessment deliverables

- Future platform strategy document

### PoC deliverables

- Documentation of Test environment and use cases
- User Acceptance Test Report with recommended optimizations
- High-level design for production environment
- Budgetary quoting



### Application assessment deliverables

- Report showing application lifecycle management decisions
- Applications rationalizations recommendation report
- Packaging recommendations report

**Get confidence in your future platform with HPE Platform Assessment and proof-of-concept services**



# VDI Assess and concept services

 Advise
 <b>Assess and concept</b>
 Design and build
 Operate
 Automate and optimize

## Activities

### Define use case requirements

- Gather requirements from stakeholders, including IT administrators, end-users, and business leaders
- Determine the number of users, their locations, types of applications they use, performance expectations, and security requirements

### Evaluate performance requirements

- Assess the performance needs of your VDI environment, including CPU, memory, storage, and network requirements
- Consider factors such as user concurrency, application workload, and desktop customization

### Consider scalability needs


- Determine the scalability requirements of your VDI deployment, including the ability to scale up or out based on user demand
- Evaluate how easily the hypervisor can add or remove virtual desktops and adjust resources dynamically

### Assess management capabilities

- Evaluate management features of each hypervisor, such as centralized management consoles, automation capabilities, and monitoring tools
- Consider ease of deployment, provisioning, and maintenance tasks

**Get confidence in your future platform with HPE Platform Assessment Service**

# VDI Assess and concept services

 Advise
 <b>Assess and concept</b>
 Design and build
 Operate
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## Activities

### Review cost considerations

- Compare the licensing costs of different hypervisors, including upfront costs, ongoing support fees, and any additional features or add-ons
- Consider the total cost of ownership (TCO) over the lifespan of the VDI deployment

### Evaluate integration with existing infrastructure

- Assess how each hypervisor integrates with existing IT infrastructure, including network, storage, directory services, and security solutions
- Consider compatibility with management tools and existing workflows

### Review security and compliance requirements


- Evaluate the security features of each hypervisor, including isolation mechanisms, encryption capabilities, and compliance certifications
- Consider any industry-specific compliance requirements that need to be met

### Consider vendor support and ecosystem

- Evaluate the level of support provided by hypervisor vendors, including availability of documentation, technical support, and community forums
- Consider the ecosystem of third-party integrations and solutions available for each hypervisor

**Get confidence in your future platform with HPE Platform Assessment Service**

# VDI Assess and concept services

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## Activities

### Perform Proof-of-Concept (POC) testing






- Select and compare hypervisors that meet your requirements and use case and perform POC testing
- Set up a small-scale VDI environment and evaluate the performance, management capabilities, and user experience
- Gather feedback from IT administrators and end-users during the POC phase

### Final decision and implementation:

- Based on the assessment results and feedback from POC testing, make a final decision on the hypervisor for your VDI deployment
- Plan the implementation, including hardware procurement, network configuration, and migration strategy if applicable
- Implement the chosen hypervisor for VDI delivery and monitor the environment closely during the initial rollout

**Validate hypervisor selection based on a customer's specific requirements**

# VDI design, build, and migration capabilities

	Advise
	Assess and concept
	<b>Design and build</b>
	Operate
	Automate and optimize

## What HPE can do for you






- Develop migration strategy
- Develop detailed design and migration plans following HPE reference architecture and best practices
- Implementation services for on-premises, hybrid or public cloud deployment
- Deploy end-to-end VDI monitoring tools
- Assess applications and review client virtualization readiness
- Design and build persistent and non-persistent images
- Acceptance and User Acceptance Test (UAT) procedures
- Readiness for handover to HPE managed services operations teams
- HPE GreenLake VDI deployment services

## Outcomes you will achieve

- Security focused VDI architecture based on HPE best practices and reference architectures
- Enhanced workplace security and data protection capabilities
- Faster time-to-value
- Improved user experience by providing consistency across devices



# VDI design, build, and migration services

 Advise
 Assess and concept
 <b>Design and build</b>
 Operate
 Automate and optimize

## Activities

### Design and build

- Detailed design for cloud, or hybrid cloud deployment model
- Deployment and documentation
- Integration into your IAM, monitoring and management tools
- UAT and Optimization
- Handover for day-two operations and “go-live” support
- Project management for successful transformation

### Client OS image build

- Analysis of current client OS images
- Define User Profile Management tools and storage requirements
- Application packaging and application attachment analysis and design
- Build and test non-persistent client OS image

## Deliverables

### Design and build deliverables






- Detailed design and build procedure documentation
- Migration concept and plan
- UAT test plan and acceptance test results
- Guiding documents for day-two operations
- Project management plan

### Client OS image deliverables

- Client OS non-persistent image design report
- Build procedures
- Testing procedures and performance report for baselining

**A team of HPE experts help you to deploy your desired CV solution**

# Operate capabilities for VDI / AVD

	Advise
	Assess and concept
	Design and build
	<b>Operate</b>
	Automate and optimize

## What HPE can do for you

- Support VDI / AVD rollout and train IT and users
- Management of change services to guide users through transition
- Elevate operations procedures following our VDI maturity model
- HPE Managed services to take over management and operations for the full VDI stack
- Full image and applications lifecycle responsibility including application packaging services for client virtualization

## Outcomes you will achieve

- Guided rollout processes provide improved user satisfaction
- Achieved business objectives and goals
- Optimized VDI / AVD operations processes
- Moved to a fully managed VDI solution or DaaS
- Simplified application management processes



# Operate services for VDI

	Advise
	Assess and concept
	Design and build
	<b>Operate</b>
	Automate and optimize

## Activities

### Rollout

- Develop a joint rollout plan and support during user onboarding
- Provide help-desk support
- Management of Change services to guide users

### Operations

- Review and optimize current processes
- Monitoring and Performance Tuning
- Backup and Recovery Procedures review

### Application and image lifecycle

- Application packaging and kiosk services
- Performance baselining of client OS image
- Application delivery and deployment and device management services

## Deliverables

### Rollout deliverables

- Rollout plan and user documentation

### Operations deliverables

- Guiding documents for process optimization
- Monitoring tool integration
- New or updated procedures for backup and recovery

### Application and image lifecycle deliverables

Based on aligned scope, the service includes:

- Application packages for multi-session deployment or app attach technologies (MSIX App Attach)
- Regularly update of packages and OS images

**Align and update your service management processes**

# Automate and optimize capabilities for VDI

- Advise
- Assess and concept
- Design and build
- Operate
- Automate and optimize**

## What HPE can do for you

- Regular optimization reviews of your managed AVD infrastructure introduce automation tools to support VDI lifecycle optimization
- Performance analysis and capacity planning
- User experience optimization
- Regular security audits to ensure compliance with security policies
- Enhance private/public cloud VDI management and monitoring services
- Infrastructure and image management automation
- User-self services add-on scripts/tools






## Outcomes you will achieve

- IT resources focused on service development and not on daily operations support services
- Optimized operation costs
- Secured and compliant VDI workplace environment





# Automate and optimization services for VDI

 Advise
 Assess and concept
 Design and build
 Operate
 <b>Automate and optimize</b>

## Activities

### Optimize VDI

- Performance analysis and capacity planning
- User experience review and optimization
- Image management automation review
- User profile optimization

### VDI security

- Regular security audits to ensure compliance with security policies

### Automate

- Review management processes and align on automation script development
- Image management automation review and alignment on script development
- Patch-and update optimization

### VDI / AVD monitor and manage

- Enhance public cloud VDI management and monitoring services

## Deliverables

### Optimize VDI deliverables

For defined scope HPE delivers

- Analysis and optimization reports
- Documented operational procedure enhancements

### VDI security deliverables

- Risk analysis and recommended security policy updates

### Automate deliverables

For defined scope HPE delivers

- Assessment report with recommended tooling and automation scripts
- On aligned activities develop automation scripts for routine tasks

### VDI / AVD monitor and manage deliverables

- Recommendations for optimized management and operations procedures
- Configure tooling for VDI / AVD

**Ensure a healthy service with HPE optimization activities**

# HPE GreenLake for VDI—an agile end-to end customer solution

## HPE GreenLake for VDI

Cloud-like economics and agility,  
managed on behalf of the customer

On-prem performance, compliance,  
and control

Choose from menu of  
standardized desktop options

Task  
users

Knowledge  
users

Power  
users

Engineers and  
traders users



Microsoft

vmware®

citrix

One monthly bill, based on usage

Compute | Storage | GPU | Support | Management



# Benefits of HPE Services with Azure Virtual Desktop on Azure Stack HCI

## HPE Services team

Capabilities include consulting, managed services, and support

## HPE GreenLake for Azure Stack HCI

Complete consumption-based as-a-Service offerings

## HPE Services

Application lifecycle management for full desktop as-a-Service offering

### Cloud based VDI

Simplify customer VDI deployment. No need to manage own VDI stack.

### Full control

Satisfy data locality requirements. On-prem data storage and data residency

### Windows 10/11 multi-session

Achieve high utilization and lower operations cost.

### Scale across cloud and on-premises

Single management experience over Azure and Azure Stack HCI

### Performance

Teams optimization and GPU support. Provide superior user experience by keeping workplace and data together.

### Optimize for costs

Use existing eligible Windows licenses. Saves costs with multi-session OS experience



# Microsoft Azure Stack HCI + HPE value proposition

- **Extend on-premises into Azure**, hybrid by design giving Microsoft extended footprint in market
- Provide best in class **scale and performance for virtualization**
- **Simplified management and operations** through familiar tools like Windows Server Admin Center and Azure Portal
- **CoPilot AI, additional M365 workload enhancements** additional opportunity to generate opportunities by deploying wider Microsoft portfolio
- **HPE Advisory & Professional Services** Modern Workplace solutions built on HPE experience and best practices. AVD is part of HPE's Modern Workplace of the Future vision offering an opportunity to implement and migrate to new workplace technologies including AVD on Azure Stack HCI, CoPilot AI, additional M365 workloads and Application Lifecycle Management
- **Greater financial flexibility** with pay-as-you-go pricing and unified billing options that includes hardware, software, and services
- **Simplified IT**, with implementation, monitoring, operations, support, and administration via managed infrastructure, platform, workload with CSP option
- **Unmatched security** with HPE Silicon Root of Trust



**HPE Advisory & Professional Services** provides for a faster **design, implementation, migration, and application lifecycle management** deployment, enabling customers to **accelerate ROI and deliver** new Microsoft technologies such as **CoPilot** artificial intelligence to the workplace.

**HPE are Certified Microsoft Azure Virtual Desktop Specialists**

# Take aways

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- **Market confusion:** With recent changes to vendors, licensing models there is a pressing need for customers to look at existing client virtualization platforms
- **HPE Services:** HPE offers comprehensive services to help a customer assess their current infrastructure and identify the most suitable future platform
- **HPE flexibility:** HPE offers flexible Desktop-as-a-Service consumption solutions based on all of the major vendors (MS AVD, Citrix, VMware (OmniStack) etc.)



# Thank you



# Additional Resources

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- Client Virtualization:
  - Trader desktop platform deployment: The role of service providers in VDI environments (by **Tony Nunn**)
  - How to choose the right hybrid VDI control plane vendor (by **Alfred Pargfrieder**)
- MS Copilot
  - Announcing HPE Edge Transformation Services for Copilot for Microsoft 365 (by **Tony Nunn**)
  - Mastering Data Management for Microsoft 365 Copilot (by **Bedrich Chaloupka**)
  - Mastering Data Management for Microsoft 365 Copilot – Part 2 (by **Bedrich Chaloupka**)
- The architect's evolution: Pioneering the edge with AI and user-centric design (by **Thomas Strasser**)

