

AZURE AND GENERATIVE AI

❖ INTRODUCTION

Speaker Introduction

Overview of today's session

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Visual: Speaker image and session overview flowchart.

Introduction to Speaker

Speaker introduction, highlighting expertise in cloud and AI technologies.

Overview of today's session

This session will cover Azure Cloud, Generative AI, real-world applications, and leadership strategies for driving digital transformation.

Promoting innovation, particularly for underrepresented groups in tech. We will explore how AI and cloud computing are central to shaping industries and fostering new opportunities.

SPEAKER INTRODUCTION

R. Antoine Victor

Over 20 Years in IT

- Specialized in AI, Agile, CI/CD, DevOps, and Microsoft Technologies

ProDataMan Founder and Principal

- Leading training initiatives, technical content development, and consulting

Skilled in Content Creation

- Published author and hands-on lab developer in DevOps and Agile frameworks

Experienced with Leading Enterprises

- Collaborated with clients like Microsoft, NASA, and Honda North America

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Background

Over 20 Years in IT

- Antoine has more than 15 years of experience working with cloud and AI technologies, leading large-scale projects involving Azure and AI solutions.
- With focus in AI, Agile, CI/CD, DevOps, and Microsoft Technologies

ProDataMan Founder and Principal

- Leading training initiatives, technical content development, and consulting

Skilled in Content Creation

- Published author and hands-on lab developer in DevOps and Agile frameworks

Notable Projects

- AWS and Azure implementations, Prompt Engineering, AI model development, and scaling AI for Fortune 500 companies.

Experienced with Leading Enterprises

- Collaborated with clients like Microsoft, NASA, and Honda North America

Focus:

- Committed to fostering diversity in the technology space, empowering underrepresented groups and promoting inclusion in AI model training.

AGENDA

Introduction

Cloud Computing Basics

Azure Cloud Platform

Demo: Azure Virtual Desktop

Generative AI

Demo: ChatGPT for basic data processing

AI in Business Applications

Demo: Azure Open AI

Ethics, Security, and Culture

Demo: Azure Vision and Facial Recognition

Q&A and Wrap-Up

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Visual: Simple list showing all section names to give attendees a roadmap of the session.

This agenda outlines what we will cover today. We'll start with an introduction, move into cloud computing basics, explore Azure and Generative AI, then shift to AI in business applications. Demos will be interspersed throughout, followed by ethics, security discussions, and a Q&A wrap-up.

❖ CLOUD COMPUTING BASICS

The Cloud Revolution

Key Cloud Components

Types of Cloud Deployments

Cloud Adoption: A Leadership Perspective

Security and Compliance in Cloud

Cost Efficiency and Scalability

Hybrid and Multi-Cloud Strategies

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In this section, we'll explore the core elements of cloud computing relevant to Bank of America's technology leaders. Cloud computing has transformed industries by providing scalable resources and cost efficiencies. We'll discuss the types of cloud deployments, essential aspects of adopting cloud technology from a leadership perspective, and the importance of security and compliance in a financial context. Additionally, we'll cover strategies like hybrid and multi-cloud models, which provide flexibility for integrating cloud with on-premises resources.

The Cloud Revolution

Cloud computing is reshaping the way organizations manage IT infrastructure by offering on-demand access to computing resources. This shift allows businesses to scale quickly and reduce the need for physical hardware, making it ideal for rapid growth and innovation in sectors like finance.

Types of Cloud Deployments

Different deployment models provide various levels of control, security, and cost-efficiency. Public, private, and hybrid clouds each offer distinct advantages, enabling organizations to choose the approach that aligns best with their operational and compliance needs.

Cloud Adoption: A Leadership Perspective

Adopting cloud technology requires strategic planning, particularly in a large financial institution. Leadership must align cloud initiatives with business objectives, ensuring that cloud resources are used efficiently and in ways that add value to the organization.

Security and Compliance in Cloud

For financial services, security and regulatory compliance are paramount. Using cloud services means adopting strict data protection measures and meeting regulatory requirements like GDPR and ISO 27001. Security frameworks and compliance certifications are essential for managing sensitive financial data in the cloud.

Cost Efficiency and Scalability

One of the significant benefits of cloud technology is the cost-saving potential. With pay-as-you-go models and auto-scaling capabilities, organizations only pay for the resources they use. This is especially beneficial in finance, where operational costs and scalability can directly impact profitability.

Hybrid and Multi-Cloud Strategies

Hybrid and multi-cloud approaches provide flexibility, enabling organizations to blend on-premises and cloud resources. This strategy is valuable for organizations in highly regulated industries, allowing them to keep sensitive data on-premises while leveraging cloud resources for other workloads.

THE CLOUD REVOLUTION

Defining cloud computing

- Cloud computing provides access to computing resources over the internet, enabling businesses to scale without physical infrastructure.

Benefits of cloud technology

- Scalability, flexibility, cost savings, and access to a vast array of services.

Key components

- Compute, storage, networking.

Business continuity and disaster recovery

- Ensures data resilience and high availability, which are critical in maintaining operational integrity.

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Cloud computing has fundamentally transformed the way modern enterprises operate, particularly in how they handle resources, scale, and innovation. By leveraging the cloud, organizations like Bank of America can benefit from highly adaptable and cost-efficient computing models that support rapid scaling and on-demand service access.

Defining cloud computing

Cloud computing involves providing on-demand access to a range of computing resources—including servers, storage, databases, and applications—over the internet. Unlike traditional setups that require extensive physical infrastructure, cloud resources are provisioned and scaled as needed. This flexibility allows businesses to respond swiftly to changing demands without costly hardware investments.

Benefits of cloud technology

The key benefits include:

- **Scalability:** Organizations can scale their resources up or down based on real-time needs, optimizing usage and costs.
- **Flexibility:** Cloud solutions allow for diverse applications and data management strategies, supporting a range of business processes and workflows.

- Cost Savings:** With a pay-as-you-go model, businesses avoid significant capital expenses, paying only for the resources they actively use.

- Access to Services:** The cloud provides immediate access to advanced tools and services, such as AI, data analytics, and machine learning, empowering organizations to innovate faster.

Key components

Cloud platforms like Azure are built on foundational components:

- Compute:** The processing power to run applications, manage data, and execute complex calculations.

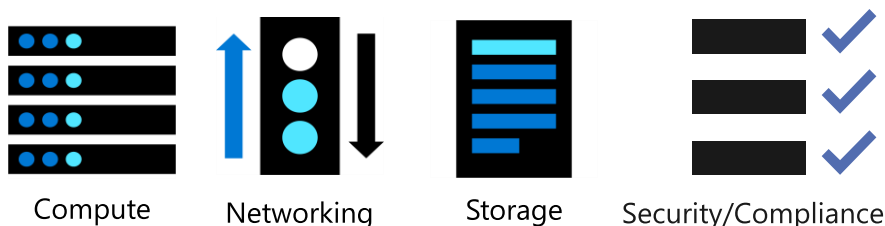
- Storage:** Solutions to store data securely and access it quickly, which is critical for handling large volumes of transactional and financial data.

- Networking:** Enables secure, reliable communication between cloud resources and on-premises systems, ensuring seamless data flow and connectivity.

This foundation allows organizations like Bank of America to operate with heightened efficiency, improve their capacity to handle large-scale transactions, and support continuous innovation while adhering to security and regulatory standards.

KEY CLOUD COMPONENTS

Cloud Computing: The delivery of computing services over the internet, enabling faster innovation, flexible resources, and economies of scale.



Essential components of cloud computing, each playing a foundational role in enabling reliable, scalable, and secure cloud environments.

Compute

Compute resources are the core processing capabilities within the cloud, allowing organizations to run applications, process transactions, and manage workloads at scale. Through virtual machines and containers, cloud providers like Azure offer elastic computing power, adapting to fluctuations in demand without the need for physical infrastructure changes.

Storage

Storage solutions in the cloud provide scalable, secure, and accessible options for data preservation. Azure offers various storage types, such as Blob storage for unstructured data and SQL databases for structured data, ensuring data durability and accessibility while meeting enterprise needs for speed and cost-efficiency.

Networking

Networking is integral to cloud infrastructure, ensuring that applications, resources, and services can communicate securely and reliably across the internet or internal networks. Azure provides virtual networks, load balancing, and content delivery networks (CDNs) to support seamless global access and distribution.

Security and Compliance

Security in the cloud is paramount, particularly for industries like finance. Azure

includes built-in security features like encryption, firewalls, and identity management to safeguard data and applications. Additionally, Azure meets regulatory compliance standards such as GDPR, HIPAA, and ISO 27001, ensuring that organizations remain compliant with international regulations and industry-specific requirements.

<https://docs.microsoft.com/learn/modules/describe-cloud-compute/3-what-cloud-compute>

Definitions found at:

NIST definition - <https://csrc.nist.gov/publications/detail/sp/800-145/final>

TYPES OF CLOUD DEPLOYMENTS

Public Cloud

- Shared infrastructure accessible over the internet, owned by a cloud provider.

Private Cloud

- Dedicated infrastructure for a single organization, providing greater control over resources.

Hybrid Cloud

- Combines both public and private cloud elements, allowing businesses to run workloads on-premises and in the cloud.

Multi-Cloud Strategy

- Integration across multiple providers for resilience and choice.



Organizations have several cloud deployment options, each offering distinct benefits aligned with specific business needs, security requirements, and scalability goals. Public, private, hybrid, and multi-cloud deployments represent different approaches that allow enterprises to optimize resources, ensure security, and maximize flexibility. Each approach is designed to meet unique operational demands, enabling organizations to choose a model that fits their strategic vision and technical requirements.

Public Cloud

Public cloud refers to cloud services provided over the internet by third-party providers, such as Azure. The infrastructure is shared across multiple organizations, offering the advantage of scalability on demand and reducing the burden of infrastructure management. Public cloud is suitable for dynamic workloads or applications where cost-efficiency and elasticity are key.

Private Cloud

Private cloud infrastructure is dedicated to a single organization, either hosted on-premises or managed by a provider. This deployment offers a high level of control, customization, and enhanced security, meeting stringent compliance needs. Private clouds are often preferred by enterprises handling sensitive data or requiring adherence to regulatory standards, such as financial institutions like

Bank of America.

Hybrid Cloud

Hybrid cloud combines elements of both public and private clouds, allowing organizations to keep certain workloads on private infrastructure for security, while utilizing the public cloud for scalability. This blend of environments provides flexibility and cost savings while ensuring sensitive operations remain isolated and secure.

Multi-Cloud Strategy

A multi-cloud strategy involves using multiple cloud services across different providers to prevent vendor lock-in and increase operational resilience. By integrating platforms, organizations gain access to a diverse suite of tools and services, enhancing flexibility and business continuity. This strategy allows technology leaders to select best-in-class services across providers and build resilient architectures that mitigate potential risks associated with relying on a single vendor.

PRIVATE CLOUD

- **Dedicated Infrastructure**

- Exclusive resources for a single organization.

- **Enhanced Security**

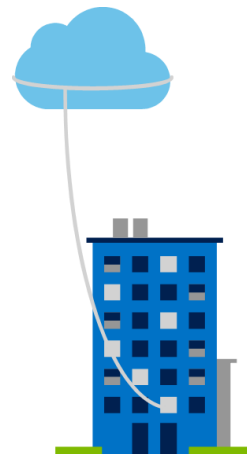
- Tight access controls and data protection.

- **Compliance and Control**

- Customizable to meet regulatory standards.

- **On-Premises or Hosted**

- Flexible deployment options based on organizational needs.



A private cloud provides an isolated environment exclusively dedicated to one organization, offering enhanced control, security, and customization capabilities. This deployment model is favored by companies that handle sensitive data or operate in regulated industries where data sovereignty and strict compliance are paramount. Private clouds can be deployed on-premises within a company's own data center or hosted by a third-party provider, depending on the organization's infrastructure and strategic preferences.

Dedicated Infrastructure

A private cloud involves dedicated resources, allowing companies to operate with exclusive access to hardware, storage, and networking infrastructure. This exclusive setup prevents shared tenancy, increasing resource reliability and performance predictability for critical applications.

Enhanced Security

Private clouds deliver robust security, as organizations have complete control over access, authentication, and data protection. With granular security configurations, private clouds meet the stringent requirements of industries like finance, providing secure environments for processing and storing sensitive information.

Compliance and Control

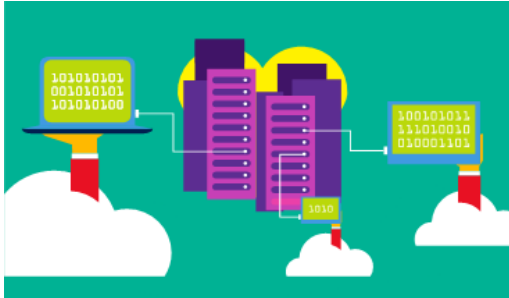
Private cloud solutions allow organizations to tailor configurations to meet regulatory compliance requirements. By customizing storage, networking, and access controls, companies can ensure that their cloud environment adheres to industry standards, such as those mandated for financial services, healthcare, and government entities.

On-Premises or Hosted

Organizations can implement private clouds either on their own premises or with a third-party provider offering hosted solutions. On-premises deployment grants full control over physical infrastructure, while hosted private clouds reduce maintenance burdens while still providing the benefits of exclusivity and control. This flexibility allows organizations to choose the deployment model that best aligns with their technical and operational goals.

<https://docs.microsoft.com/learn/modules/describe-cloud-compute/5-define-cloud-models>

PUBLIC CLOUD



•Shared Infrastructure

- Resources hosted and maintained by cloud providers.

•Cost Efficiency

- Lower costs with pay-as-you-go pricing.

•High Scalability

- Rapidly expand or reduce resources based on demand.

•Managed Services

- Comprehensive support and maintenance by providers.

The public cloud model is built on a shared infrastructure, where cloud providers manage and allocate resources to multiple clients, offering a scalable, cost-effective solution. This model benefits organizations seeking flexible, on-demand access to compute, storage, and networking without the need to maintain hardware or manage physical infrastructure. As a result, the public cloud is a preferred choice for businesses aiming to scale quickly or optimize costs.

Shared Infrastructure

In a public cloud, resources such as servers, storage, and networking are hosted in a shared environment. Cloud providers like Microsoft, Amazon, and Google handle all aspects of infrastructure management, allowing businesses to focus on application and service delivery without the responsibility of managing physical assets.

Cost Efficiency

One of the main advantages of public cloud solutions is cost savings. The pay-as-you-go pricing model allows organizations to pay only for the resources they consume, reducing the upfront capital expenditures typically associated with traditional IT infrastructure. This approach is particularly advantageous for businesses with variable workloads.

High Scalability

Public cloud solutions offer high scalability, enabling organizations to quickly expand resources to meet increased demand or scale down during lower usage periods. This flexibility allows companies to adapt to changing business needs without the delays and costs associated with physical infrastructure changes.

Managed Services

Public cloud providers deliver a suite of managed services, including regular software updates, security patching, and 24/7 technical support. These managed services free organizations from day-to-day maintenance, allowing IT teams to focus on more strategic initiatives and innovation rather than operational tasks.

<https://docs.microsoft.com/learn/modules/describe-cloud-compute/5-define-cloud-models>

HYBRID CLOUD

•Mixed Deployment

- Combines on-premises, private, and public cloud resources.

•Flexibility and Control

- Allows data and workloads to reside in optimal environments.

•Enhanced Security Options

- Secure, compliant solutions by integrating private data centers.

•Seamless Data Flow

- Ensures data consistency and smooth operations across environments.



Hybrid cloud solutions offer a flexible approach by integrating on-premises, private cloud, and public cloud resources. This model provides the best of both worlds, allowing organizations to maintain sensitive data on private infrastructure while taking advantage of the scalability and cost benefits of the public cloud. For technology leaders, a hybrid approach offers enhanced control, security, and compliance, particularly valuable in industries such as finance where data management and regulatory requirements are critical.

Mixed Deployment

The hybrid cloud combines various deployment types—on-premises, private cloud, and public cloud—into a single integrated infrastructure. This setup allows organizations to keep some workloads on-premises or within private clouds for security or compliance reasons while moving less sensitive workloads to the public cloud for scalability and efficiency.

Flexibility and Control

Hybrid cloud offers unmatched flexibility, allowing organizations to place workloads in the most suitable environment based on performance, security, or regulatory needs. This control enables companies to balance public cloud scalability with the dedicated performance of private or on-premises resources.

Enhanced Security Options

Hybrid cloud solutions are particularly beneficial for industries with stringent security and compliance requirements. Sensitive data can remain within private data centers or private cloud environments, while non-critical applications can leverage the scalability of public cloud infrastructure. This approach allows businesses to maintain compliance with industry regulations while accessing the agility of cloud services.

Seamless Data Flow

One of the main advantages of hybrid cloud is the seamless flow of data across environments. Consistent data management practices and integration tools allow hybrid environments to operate efficiently, ensuring that data can move smoothly between private and public components as needed.

<https://docs.microsoft.com/learn/modules/describe-cloud-compute/5-define-cloud-models>

CLOUD ADOPTION: A LEADERSHIP PERSPECTIVE

Developing a cloud adoption strategy

- Leadership should prioritize initial workloads, balancing cost-effectiveness with operational needs and aligning them with business goals.

Aligning cloud initiatives with business goals

- Cloud adoption should support objectives such as cost optimization, customer experience improvement, and innovation.

Overcoming challenges

- Leaders must address concerns like security risks and internal resistance by fostering open communication, offering training, and setting clear objectives.

Ensuring a phased approach

- A phased implementation can help mitigate risks, allowing for testing, adjustments, and improvements in manageable stages.



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Integrating cloud technology requires a strategic approach, particularly in industries like finance, where security and compliance are paramount. This section will cover essential steps to facilitate successful cloud adoption from a leadership standpoint, aligning initiatives with business objectives and overcoming typical challenges.

Developing a cloud adoption strategy

To begin, leaders need a clear adoption strategy that prioritizes which workloads to migrate based on the organization's unique needs and goals. This step is critical in balancing immediate gains with long-term business objectives.

Aligning cloud initiatives with business goals

Cloud adoption must align with larger business goals, such as enhancing customer experience, improving operational efficiency, and fostering innovation. Leaders should define how cloud capabilities directly contribute to these objectives to maximize value.

Overcoming challenges

Challenges like security concerns and organizational resistance can arise. Leaders can overcome these by implementing robust security measures, conducting regular compliance audits, and fostering a culture of transparency and training.

Ensuring a phased approach

Implementing cloud technology in phases allows leaders to test, gather feedback, and make iterative improvements. This structured approach reduces risk and provides time for technical adjustments, ensuring smoother cloud adoption.

❖ AZURE VIRTUAL DESKTOP

Key Features

What is it

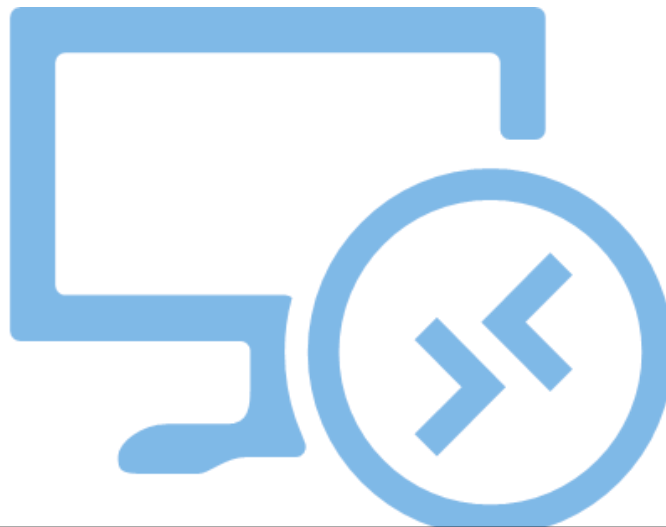
The Value of Multisession

Use Cases

Minimum Requirements

Supported OS's

AVD Walkthrough



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Azure Virtual Desktop (AVD) delivers a comprehensive desktop and app virtualization solution within Azure. As a flexible and scalable resource, AVD is particularly well-suited for enabling remote work, enhancing app compatibility, and supporting fluctuating workloads. This section introduces Bank of America's technology leadership to the key aspects of AVD and how it can drive operational efficiency while meeting security and compliance needs.

Key Features: Azure Virtual Desktop offers scalability, built-in security, accessibility across devices, and cost-efficient infrastructure. These features make AVD an adaptable choice for companies needing flexible virtual environments.

Understanding Azure Virtual Desktop: AVD is a virtualized Windows desktop and app service provided by Azure, allowing secure, remote access to corporate resources, which is especially beneficial in remote and hybrid work scenarios.

The Value of Multi-Session: Multi-session functionality in AVD allows multiple users to share the same virtual machine resources efficiently, reducing the cost of per-employee infrastructure while maintaining personalized workspaces.

Common Use Cases: AVD is advantageous in scenarios such as remote work, supporting legacy or specialized applications, and scaling desktops for seasonal workforce demands.

Minimum Requirements: Deploying AVD requires an Azure subscription linked with Azure AD, a configured virtual network, domain connectivity, and user profile storage. Proper permissions and file-sharing solutions like FSLogix for user profiles are also needed.

Supported Operating Systems: AVD supports Windows 10 and 11 (single and multi-session), Windows Server 2019, and Windows Server 2022, ensuring a flexible environment compatible with diverse device needs.

AVD Walkthrough: This demonstration showcases setting up AVD, configuring resources, and using multi-session capabilities to provide a practical guide for optimizing workforce productivity.

KEY FEATURES

Scalable Infrastructure

- Easily adjusts to organizational needs with cloud flexibility.

Enhanced Security

- Built-in Azure security for secure, remote access.

Multi-Session Capability

- Supports multiple users per virtual machine, reducing cost.

Optimized Cost-Management

- Pay-as-you-go model and multi-session to maximize resources.

Seamless Access Across Devices

- Accessibility from any device, including desktops, tablets, and smartphones.

Azure Virtual Desktop (AVD) is designed to address the modern needs of secure, remote work and resource management through its robust features. As Bank of America's technology leaders consider cloud solutions, AVD's key features provide insight into how it supports both operational efficiency and cost-effectiveness.

Scalable Infrastructure: One of AVD's core benefits is its scalability. With cloud-native infrastructure, it allows organizations to adjust resources based on current demands, making it a flexible solution for handling both everyday and peak workloads.

Enhanced Security: AVD leverages Azure's advanced security measures, including identity protection, encryption, and compliance controls, to ensure secure, remote access to critical applications and data without compromising on security standards.

Multi-Session Capability: By enabling multiple users to operate on a single virtual machine, AVD's multi-session feature lowers the cost-per-user, making it a highly efficient solution for shared resources while still maintaining a dedicated user experience.

Optimized Cost-Management: With Azure's pay-as-you-go model, AVD ensures that organizations only pay for what they use. Coupled with multi-session

capability, this approach maximizes resource allocation, keeping operational costs manageable even with fluctuating demands.

Seamless Access Across Devices: AVD supports access from a wide array of devices, including desktops, tablets, and smartphones, enabling employees to work from virtually anywhere while maintaining productivity and ensuring consistent access to resources.

WHAT IS AZURE VIRTUAL DESKTOP?

Cloud-Based Desktop Virtualization

- Offers virtual desktops and applications through the Azure cloud.

Secure Remote Access

- Provides a secure environment for remote and hybrid work.

Integration with Microsoft 365

- Optimized for Microsoft applications, enhancing productivity.

Flexible Deployment Options

- Can be deployed across multiple devices and operating systems.

Centralized Management

- Simplifies management and monitoring of virtual desktops.

Azure Virtual Desktop (AVD) provides a comprehensive, cloud-based solution for virtualizing desktops and applications, designed to address the needs of modern, remote, and hybrid workplaces. AVD is tailored to meet the demands of organizations that require secure, flexible, and centrally managed virtual desktop environments.

Cloud-Based Desktop Virtualization: AVD delivers virtual desktops and applications via the Azure cloud. This approach eliminates the need for on-premises infrastructure, reducing capital expenses and making remote work highly scalable and manageable.

Secure Remote Access: With an architecture built on Azure's security framework, AVD offers a secure access point for remote and hybrid workforces. Security features include identity management, encryption, and compliance with regulatory standards, providing peace of mind that sensitive data remains protected.

Integration with Microsoft 365: AVD is optimized for Microsoft 365 applications like Word, Excel, and Teams, enabling smooth, high-performance access to familiar tools. This integration supports productivity by ensuring users have the resources they need in a seamless cloud environment.

Flexible Deployment Options: AVD supports a range of deployment options,

allowing access from different devices (PCs, tablets, smartphones) and operating systems (Windows, macOS, iOS, Android). This flexibility ensures that employees can access their virtual desktops regardless of their physical location or device.

Centralized Management: With AVD, administrators can centrally manage and monitor all virtual desktops, reducing the complexity of desktop management. This feature includes simplified provisioning, scaling, and maintenance, ensuring a cohesive virtual environment that is easy to oversee.

THE VALUE OF MULTISESSION

- **Cost Efficiency**
 - Reduces infrastructure costs by hosting multiple sessions on a single virtual machine.
- **Scalability for Large Teams**
 - Supports a larger number of users without needing a corresponding increase in hardware resources.
- **Optimized Resource Utilization**
 - Maximizes hardware utilization by balancing user demand and resource allocation.
- **Simplified Management**
 - Reduces complexity by allowing IT to manage fewer virtual machines.
- **Enhanced Performance for Microsoft 365 Apps**
 - Allows multiple users to work seamlessly with Microsoft 365 apps, even in high-demand environments.

Pooled Compared to Personal Deployment



How many fish tanks do you want to pay to maintain?



Think about per VM infrastructure including security stack, log collection, OS resources

Fewer VMs can significantly reduce cost

Multi-session functionality in Azure Virtual Desktop (AVD) is a key feature that enables multiple users to operate on a single virtual machine (VM) instance, enhancing cost efficiency, scalability, and resource optimization. This slide explores how multi-session capability adds value, especially for large enterprises like Bank of America, by supporting a scalable and efficient virtual desktop environment.

Cost Efficiency: Multi-session architecture allows organizations to reduce costs by hosting multiple user sessions on a single VM. This eliminates the need to allocate individual VMs per user, significantly reducing both hardware and operational costs.

Scalability for Large Teams: Multi-session functionality is ideal for organizations with large teams, as it allows more users to be supported with minimal infrastructure changes. AVD's multi-session capacity provides scalability, accommodating a growing workforce without requiring extensive hardware scaling.

Optimized Resource Utilization: AVD's multi-session feature optimally utilizes hardware resources by balancing the load across users. This means that resources are allocated dynamically, allowing for efficient handling of varying user demands and ensuring high system availability.

Simplified Management: Managing fewer VMs while still supporting multiple users streamlines IT operations. IT administrators can reduce the time and effort spent on managing individual VMs for each user, simplifying maintenance, updates, and overall management.

Enhanced Performance for Microsoft 365 Apps: AVD's multi-session environment is designed to handle the demands of Microsoft 365 applications. Multiple users can work concurrently with minimal impact on performance, ensuring that essential applications like Excel, Word, and Teams function smoothly, even in high-demand settings.

By leveraging multi-session capabilities, Bank of America's technology leaders can optimize resource usage, reduce operational costs, and improve scalability, making AVD an effective solution for enterprise-wide virtual desktop management.

USE CASES

Remote Work and Flexibility

- Supports remote employees with secure access to company resources from anywhere.

Temporary Workforce Solutions

- Ideal for onboarding temporary staff or contractors without requiring extensive hardware investment.

Disaster Recovery and Continuity

- Provides access to critical applications during disruptions, ensuring business continuity.

Development and Testing Environments

- Enables isolated environments for developers to test and deploy software without affecting production.

Compliance and Security Needs

- Ensures secure access with compliance-aligned infrastructure, essential for highly regulated industries like finance.



Azure Virtual Desktop (AVD) is adaptable for multiple use cases, making it a valuable asset in various operational scenarios. This slide covers key use cases relevant to Bank of America, highlighting how AVD supports remote work, disaster recovery, and other critical functions. By leveraging AVD, technology leaders can offer flexible, secure solutions to meet dynamic workforce needs.

Remote Work and Flexibility: AVD is ideal for remote work scenarios, giving employees secure access to company resources from any location with internet connectivity. This flexibility aligns well with modern work practices, enabling employees to remain productive outside traditional office settings.

Temporary Workforce Solutions: For organizations with seasonal employees or contractors, AVD enables quick deployment of virtual desktops without significant hardware investments. IT can provide temporary workers with the necessary access and revoke it easily after their term, maintaining operational efficiency and security.

Disaster Recovery and Continuity: AVD supports business continuity by providing access to essential applications and data during unexpected events or system failures. In the event of a disaster, employees can connect to their virtual desktops from any safe location, ensuring continuity of operations.

Development and Testing Environments: AVD allows IT departments and

developers to create isolated virtual environments for development and testing. This separation ensures that testing activities do not impact the production environment, reducing risk and improving deployment readiness.

Compliance and Security Needs: Azure's compliance-aligned infrastructure helps meet the stringent requirements of highly regulated industries. AVD can be configured to restrict access and monitor usage, supporting the security and compliance mandates often required by finance institutions like Bank of America.

By understanding these use cases, Bank of America's technology leaders can better align AVD's capabilities with organizational needs, enhancing flexibility, continuity, and security across various business scenarios.

AZURE VIRTUAL DESKTOP MINIMUM REQUIREMENTS



Azure Subscription and AD Connection

- Ensure Azure subscription is linked to Azure AD Tenant and accessible by a GA account for deployment.

AD Domain & Sync Requirements

- Active Directory domain with AD Connect syncing users to Azure AD.
- Domain Admin or user with rights for domain join.

Network Configuration

- VNET(s) set up, with VPN or Express Route as needed for on-prem access.
- Domain Controller line-of-sight: ideally located in Azure near AVD Hosts; on-prem options introduce latency.

File Share for User Profiles

- SMB File Share for FSLogix: Use S2D Cluster, Azure Files, or ANF.

Licensing Compliance

- Confirm eligibility of Windows and Microsoft 365 licenses for AVD access.

MFA and Conditional Access

- Recommended for enhanced security (though not mandatory).

Setting up Azure Virtual Desktop (AVD) requires fulfilling specific technical requirements to ensure seamless operation and efficient deployment. This slide outlines the critical path components, from Azure AD integration to network configuration and licensing compliance. These elements are essential to enabling AVD with the necessary resources, security, and accessibility for your organization.

Azure Subscription and AD Connection

A valid Azure subscription must be connected to an Azure AD Tenant, with access granted to a Global Administrator account for deploying AVD resources. This account enables the foundational setup and configuration tasks necessary to initiate AVD deployment.

AD Domain & Sync Requirements

Ensure your Active Directory (AD) domain is configured with AD Connect to synchronize user identities to the Azure AD Tenant. A domain admin or another user with computer join rights is required for joining virtual machines to the domain, which allows seamless user access.

Network Configuration

Configure VNETs within Azure to support AVD connections. If access to on-premises resources is needed, establish VPN or Express Route connectivity with

defined routes. For optimal user experience, maintain a line-of-sight to a Domain Controller (DC); deploying a DC close to AVD hosts within Azure minimizes login latency. Alternatively, an on-prem DC can be used but may introduce slower logins due to latency.

File Share for User Profiles

User profile data must be stored in a file share compatible with FSLogix. Options include a Storage Spaces Direct (S2D) Cluster, Azure Files, or Azure NetApp Files (ANF). This setup ensures that users have access to their personalized settings and data across sessions.

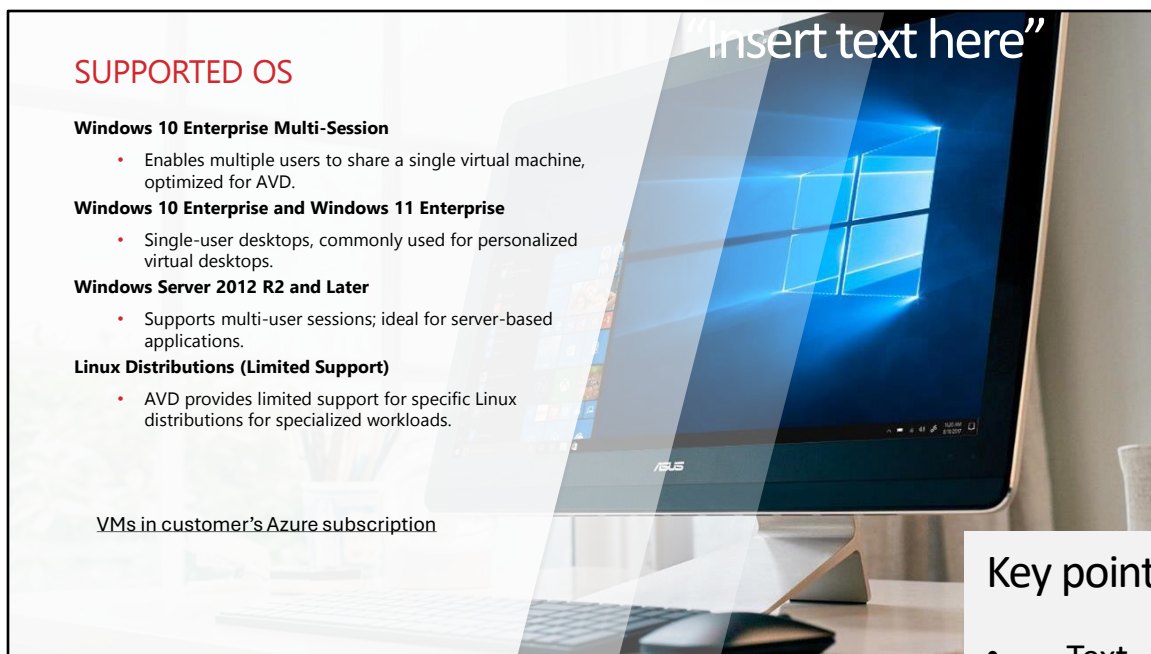
Licensing Compliance

Verify that Windows and Microsoft 365 licenses meet the requirements for AVD access. Eligibility depends on having licenses that allow multi-session functionality and are compliant with AVD licensing policies.

MFA and Conditional Access

While not mandatory, implementing Multi-Factor Authentication (MFA) and Conditional Access policies is highly recommended for enhancing security. These measures provide additional layers of protection, especially in remote access scenarios.

Meeting these requirements is essential for establishing a stable and secure AVD environment, aligning with best practices and reducing potential deployment issues.



SUPPORTED OS

Windows 10 Enterprise Multi-Session

- Enables multiple users to share a single virtual machine, optimized for AVD.

Windows 10 Enterprise and Windows 11 Enterprise

- Single-user desktops, commonly used for personalized virtual desktops.

Windows Server 2012 R2 and Later

- Supports multi-user sessions; ideal for server-based applications.

Linux Distributions (Limited Support)

- AVD provides limited support for specific Linux distributions for specialized workloads.

VMS in customer's Azure subscription

Key points to land

- Text
- Text
- Text

Azure Virtual Desktop (AVD) supports a range of operating systems to accommodate various user needs, from shared multi-session environments to single-user, personalized desktops. This slide outlines the compatible operating systems and highlights the specific use cases and capabilities associated with each, allowing organizations to make the best choice for their virtual desktop deployments.

Windows 10 Enterprise Multi-Session

Windows 10 Enterprise Multi-Session is a unique offering designed specifically for AVD. It allows multiple users to share a single virtual machine while maintaining the familiar Windows 10 experience. This configuration is cost-effective and enables high user density, making it ideal for task-based and team-based workloads.

Windows 10 Enterprise and Windows 11 Enterprise

These are single-user desktop options, suitable for users who need a secure and personalized virtual desktop experience. Each user has access to their own virtual machine, which provides them with a tailored workspace and the flexibility to install applications or save personal settings. This option is ideal for roles that require consistent access to specific configurations.

Windows Server 2012 R2 and Later

For multi-user environments, AVD supports Windows Server versions from 2012 R2 onwards. This option is especially useful for organizations that need to host applications centrally or provide multiple users access to server-based resources. Windows Server OS is a more traditional approach for Remote Desktop Services, commonly used for shared applications.

Linux Distributions (Limited Support)

Azure Virtual Desktop has extended limited support for specific Linux distributions to accommodate specialized workloads. While not as robust as Windows OS support, this option allows teams running Linux-based applications to leverage AVD in a limited capacity. This can be beneficial for development or operational roles that require Linux environments in a cloud-based setup. By offering these options, Azure Virtual Desktop ensures flexibility, allowing organizations to select the operating systems that best align with their user requirements and workload demands.

AVD: USER EXPERIENCE WALKTHROUGH



Step 1: Sign in to Azure Portal

1. Open a web browser and navigate to <https://portal.azure.com>.
2. Sign in with your Azure account credentials that have permissions to create resources and manage Azure Active Directory (AD).

Step 2: Create a Resource Group

1. In the Azure portal, go to **Resource Groups** and click on **Create**.
2. Configure the following settings:
 1. **Subscription:** Choose the appropriate subscription.
 2. **Resource Group:** Enter a unique name for your resource group (e.g., AVD-Demo-RG).
 3. **Region:** Choose a region that is closest to your users or organization data center (e.g., **East US**).
3. Click **Review + Create** and then **Create**.

Step 3: Set Up Azure Active Directory (AD) and Virtual Network

1. Azure AD Tenant Connection:

1. Ensure you have an **Azure AD Tenant** linked to your Azure subscription.
2. Confirm that your users are synced to Azure AD (via **AD Connect** or another synchronization tool).

2. Create Virtual Network:

1. Go to **Virtual networks** and click on **Create**.
2. Configure the network settings:
 1. **Name**: Enter a name (e.g., AVD-Demo-VNet).
 2. **Address range**: Define an address range (e.g., 10.0.0.0/16).
 3. **Subnet**: Add a subnet for AVD (e.g., 10.0.1.0/24).
 4. **Region**: Match the region of your resource group.
3. Click **Review + Create** and then **Create**.

Step 4: Deploy Azure Virtual Desktop Host Pool

1. In the search bar, type **Azure Virtual Desktop** and select **Host pools** under Services.
2. Click on **Create** and configure the following:
 1. **Resource Group**: Select the resource group you created earlier.
 2. **Host Pool Name**: Enter a unique name (e.g., AVD-Demo-HostPool).
 3. **Location**: Select the same region as your resource group.
 4. **Host Pool Type**: Select **Pooled** (for shared desktops) or **Personal** (for dedicated desktops).
 5. **Max session limit**: Define the maximum number of concurrent users (e.g., 5).

3. Click **Next: Virtual Machines**.

Step 5: Configure Session Hosts (Virtual Machines)

1. Choose **Add virtual machines** and configure the following:
 1. **Virtual machine size**: Choose a VM size based on user needs (e.g., Standard D2s_v3 for a balanced configuration).
 2. **Number of VMs**: Enter the number of VMs you need (e.g., 2 for a small-scale demo).
 3. **Image**: Choose the **Windows 10 Enterprise multi-session** image.
 4. **Network**: Select the virtual network created in Step 3.
2. **Domain to Join**: Join the VMs to an **Active Directory** domain:
 1. **Domain Name**: Enter your AD domain (e.g., corp.contoso.com).
 2. **OU Path**: Optional - specify an organizational unit if required.
 3. **Domain Admin Account**: Enter credentials to join the domain.

3. Configure **User Profile** using FSLogix:

1. **Enable FSLogix Profile Container** and provide a storage account or SMB file path for storing user profiles.

4. Click **Next: Workspace**.

Step 6: Register with Azure Virtual Desktop Workspace

1. In the **Workspace** section, choose **Yes** to register the host pool with a workspace.
2. Select an existing workspace or create a new one:
 1. **Workspace Name**: Enter a name for the workspace (e.g., AVD-Demo-Workspace).

3. Click **Review + Create**, review the settings, and then click **Create**.

Step 7: Configure User Access

1. Go to the **Azure Virtual Desktop** page and select the **Applications** section under the workspace.

2. Assign Application Groups:

1. Choose the application group associated with your host pool.
2. Under **Assignments**, select **Add** and assign the necessary users or groups (e.g., add BankofAmericaUserGroup).

3. Multi-Factor Authentication (Optional):

1. For additional security, configure MFA for users accessing AVD.

Step 8: Test and Access Azure Virtual Desktop

1. Go to the **Azure Virtual Desktop** client at <https://rdweb.wvd.microsoft.com/webclient>.
2. Sign in with a user account assigned to the host pool.
3. Launch the desktop or applications to verify access.

PREDICTIVE ANALYTICS



Azure Machine Learning

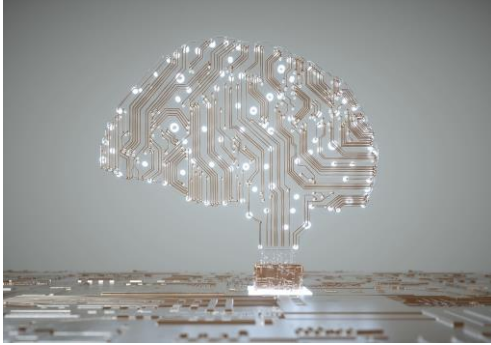
- Azure Machine Learning is a cloud-based service that enables you to build and deploy machine learning models at scale. It provides a range of tools and services for developing, testing, and deploying predictive models.

Predictive Models

- Predictive models are machine learning models that can make accurate forecasts and predictions based on historical data. They can help businesses and organizations make informed decisions about the future.

Azure Machine Learning enables you to build and deploy machine learning models at scale. We will explore how you can use Azure Machine Learning to build predictive models that can help you make accurate forecasts and informed decisions.

ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING



Azure Cognitive Services

- Azure Cognitive Services provide pre-built APIs for computer vision, natural language processing, and speech recognition, allowing you to easily add AI capabilities to your applications.

Azure Machine Learning

- Azure Machine Learning is a cloud-based platform that lets you easily build, deploy, and manage machine learning models at scale.

Azure provides a comprehensive suite of AI and machine learning services. We will explore how you can use Azure services such as Azure Cognitive Services and Azure Machine Learning to build intelligent applications and automate business processes.

DEMO: CHATGPT PROCESS CLIENT DATA

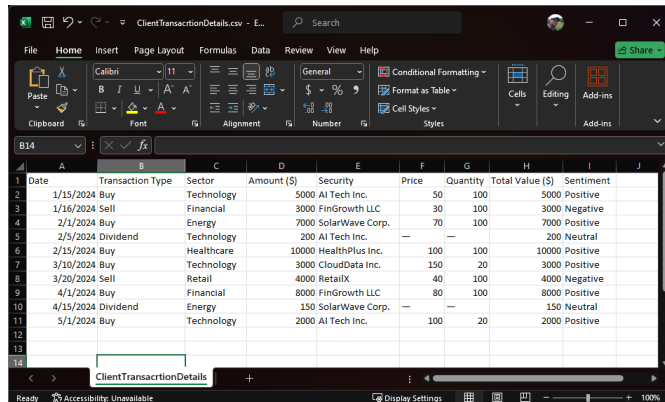
Step 1: Prepare Mock Transaction Data

Step 2: Feed Data into a Generative AI Model

Step 3: Expected AI-Generated Output

Step 4: Display Output in a Dashboard Format

Step 5: Extend with an Interactive Q&A



Date	Transaction Type	Sector	Amount (\$)	Security	Price	Quantity	Total Value (\$)	Sentiment
1/15/2024	Buy	Technology	5000	AI Tech Inc.	50	100	5000	Positive
1/16/2024	Sell	Financial	3000	FinGrowth LLC	30	100	3000	Negative
2/1/2024	Buy	Energy	7000	SolarWave Corp.	70	100	7000	Positive
2/5/2024	Dividend	Technology	200	AI Tech Inc.	—	—	200	Neutral
2/15/2024	Buy	Healthcare	10000	HealthPlus Inc.	100	100	10000	Positive
3/10/2024	Buy	Technology	3000	CloudData Inc.	150	20	3000	Positive
3/20/2024	Sell	Retail	4000	RetailX	40	100	4000	Negative
4/1/2024	Buy	Financial	8000	FinGrowth LLC	80	100	8000	Positive
4/15/2024	Dividend	Energy	150	SolarWave Corp.	—	—	150	Neutral
5/1/2024	Buy	Technology	2000	AI Tech Inc.	100	20	2000	Positive

Step 1: Prepare Mock Transaction Data

Sample dataset with transaction details for a hypothetical client's portfolio.

Example Dataset: ClientTransactionDetails.csv

Step 2: Feed Data into a Generative AI Model

Use the dataset to input into a generative AI model (such as GPT) and prompt it to generate a summary of insights based on the data provided.

Prompt Example:

"Analyze the above transaction data. Summarize key trends in sector performance, identify any patterns in buying or selling behavior, and provide an overall sentiment analysis for the client's portfolio."

Step 3: Expected AI-Generated Output

Example Output:

Client Portfolio Summary – Q1 2024

•Sector Performance:

- *Technology*: The portfolio saw significant activity in the technology sector with notable buys in AI and cloud technologies, indicating a positive sentiment toward tech growth, especially in AI-driven companies.
- *Energy*: Solar investments demonstrated a growing interest in

renewable energy with SolarWave Corp. contributing positively to portfolio diversification.

•**Transaction Patterns:**

- *Buying Trends:* Majority of purchases are in Technology, Financial, and Energy sectors, showcasing a balanced approach between growth and stability.
- *Selling Trends:* Sells mainly occurred in Financial and Retail sectors, which may suggest divestment in less promising areas.

•**Sentiment Analysis:**

- Positive sentiment across Technology and Healthcare investments indicates strong confidence in these areas, particularly AI, cloud services, and healthcare technology.
- The portfolio sentiment appears generally positive, aligned with growth-oriented sectors, suggesting a strategic focus on long-term, high-value industries.

Step 4: Display Output in a Dashboard Format

Use a simple dashboard or visual display to showcase key findings, with sections for **Sector Performance**, **Transaction Patterns**, and **Sentiment Analysis**.

For the demo, you can either:

- Use a presentation slide with highlighted insights, graphs, or charts based on the AI-generated summaries.
- Use a Jupyter notebook or similar tool to dynamically display the summarized text and graphs.

Step 5: Extend with an Interactive Q&A

Allow for questions and show how the model can adapt to follow-up questions.

Examples:

- “What are the top performing sectors?”
- “Which investment has the highest return?”

❖ AZURE CLOUD PLATFORM OVERVIEW

Why Azure?

Key Services Offered by Azure

Competitive Advantages

Security and Compliance

Hybrid Cloud Capabilities

AI and Machine Learning Integration

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Visual: Simple infographic or icons representing each topic for quick visual reference.

Why Azure?

Highlight Azure's market leadership and trusted reputation among Fortune 500 companies.

Key Services Offered by Azure

Briefly touch on essential services like compute, storage, networking, and specialized AI tools.

Competitive Advantages

Emphasize Azure's unique strengths, including integration with Microsoft products and a wide array of compliance certifications.

Security and Compliance

Describe Azure's commitment to data security and meeting industry standards.

Hybrid Cloud Capabilities

Azure's hybrid services, such as Azure Arc, enable seamless management across on-premises and cloud.

AI and Machine Learning Integration

Azure's robust AI tools make it easy to incorporate machine learning models and cognitive services into applications.

WHY AZURE?

Microsoft's Leadership and Global Trust

- Trusted by top Fortune 500 companies for secure, innovative cloud solutions.

Security, Scalability, and Compliance

- Enterprise-grade security with compliance for GDPR, HIPAA, and FedRAMP.

Global Infrastructure for High Availability

- Extensive network of data centers ensures low latency and reliable service worldwide.

Hybrid Cloud and Edge Solutions

- Azure Arc and Azure Stack support seamless management across on-premises, cloud, and edge environments.

AI and Analytics for Insights

- Advanced AI tools, including Azure AI, Machine Learning, and Synapse Analytics, for deeper business insights and data-driven innovation.

Integrated Developer Ecosystem

- Supports popular DevOps tools, languages, and integrates with GitHub and Azure DevOps for efficient development and deployment.

Cost Management and Optimization

- Built-in tools for monitoring and optimizing costs to maximize budget control.

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Visual: World map with Azure data center locations highlighted.

Microsoft's Leadership and Global Trust

Emphasize Azure's reputation in the industry, trusted by leading companies worldwide, especially those with high-security and innovation demands.

Security, Scalability, and Compliance

Highlight Azure's strong compliance portfolio and enterprise-grade security measures, assuring leaders that data is protected and compliant with global standards.

Global Infrastructure for High Availability

Azure's network of data centers enables businesses to provide low-latency and highly reliable service to users worldwide, minimizing downtime.

Hybrid Cloud and Edge Solutions

Azure's hybrid capabilities make it a versatile choice for organizations with both on-premises and cloud resources, helping them bridge systems and expand to edge computing when needed.

AI and Analytics for Insights

Azure's suite of AI and analytics tools empower organizations to leverage data effectively, supporting business intelligence, predictive analytics, and decision-making.

Integrated Developer Ecosystem

Azure is developer-friendly, supporting a wide range of programming languages and DevOps integrations, enabling efficient development and continuous delivery.

Cost Management and Optimization

Azure provides tools like Cost Management and the Pricing Calculator, helping leaders monitor and optimize cloud spending in line with budget goals.

KEY SERVICES OFFERED BY AZURE

Compute

- Virtual Machines, App Services.

Storage

- Blob storage, SQL databases.

Networking

- Virtual networks, load balancers, and VPN gateways.

AI and Machine Learning

- Azure Cognitive Services, Azure Machine Learning, and AutoML.

Hybrid Cloud and Edge Solutions

- Azure Stack, Azure Arc.

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Visual: Infographic showing Azure's key services grouped by category (Compute, Storage, Networking, AI).

Compute

Azure's virtual machines allow businesses to run applications on virtualized hardware without the need for physical servers.

Storage

Azure Blob Storage handles unstructured data, while Azure SQL Databases provide secure storage for structured data.

Networking

Azure's networking services enable users to connect securely and scale their network infrastructure globally.

AI and Machine Learning

Azure offers industry-leading AI tools, such as Azure Cognitive Services and Azure Machine Learning, allowing businesses to integrate AI easily into their workflows.

Hybrid Cloud and Edge Solutions

Azure offers hybrid solutions, including Azure Stack and Azure Arc, allowing businesses to seamlessly manage on-premises, multi-cloud, and edge environments.

COMPETITIVE ADVANTAGES OF AZURE OVER OTHER CLOUD PLATFORMS

Hybrid capabilities

- Azure stands out with its hybrid cloud offerings through Azure Stack and Azure Arc, enabling seamless integration between on-premises and cloud infrastructure.

Security and compliance

- Azure has the largest portfolio of compliance certifications, including GDPR, HIPAA, and ISO 27001.

Integration with Microsoft products

- Azure integrates seamlessly with Microsoft's ecosystem (e.g., Microsoft 365, Dynamics 365).

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Visual: Comparison table of Azure vs. AWS vs. Google Cloud with Azure's advantages highlighted.

Hybrid capabilities

Azure leads the market in hybrid cloud solutions, making it easier for companies to manage both on-premises and cloud workloads.

Security and compliance

Azure has a deep focus on security, offering industry-leading compliance and privacy protections, which is a major advantage over its competitors.

Integration with Microsoft products

One of Azure's key strengths is its seamless integration with popular Microsoft products, such as Office 365, Teams, and Dynamics 365, offering users a unified experience.

THE BOTTOM LINE

•Accelerated Innovation and Prototyping

- Quickly spin up clusters of servers, process and store data, and then decommission resources as needed.
- Ideal for rapid prototyping and releasing products without major capital expenditure (CapEx).

•Cost Efficiency with Pay-as-You-Go

- Only pay for what you use, with no upfront hardware costs.
- Save costs by automatically scaling back resources when demand drops.

•Autoscaling for On-Demand Performance

- Automatically scale resources up based on current demand to maintain performance.
- Scale back resources when not needed, optimizing costs and performance dynamically.

•High Availability and Reliability

- 99.95%+ uptime SLA with regional redundancy options for business continuity.

•Integrated Security and Compliance

- Built-in security features with real-time monitoring and compliance with standards like ISO 27001 and GDPR.

•Streamlined Management and Global Reach

- Centralized control through the Azure Management Portal and access to data centers worldwide for low latency and data residency compliance.

28

•**Accelerated Innovation and Prototyping** Quickly spin up clusters of servers, process and store data, and then decommission resources as needed.

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❖ GENERATIVE AI

What Is Generative AI?

Key Tools: GPT, DALL·E, Codex

How Generative AI Works

Common Applications of Generative AI

The Impact of Generative AI on Industries

Ethical and Societal Considerations

Generative AI in Business Decision-Making

Future Directions and Innovations

Azure's Role in Advancing Generative AI

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What Is Generative AI?

Introduce the concept of Generative AI, which involves creating new data, such as text, images, and more, based on patterns in existing data.

Key Tools: GPT, DALL·E, Codex

Explain some of the popular tools developed by OpenAI that represent different applications of Generative AI: GPT for text, DALL·E for images, and Codex for code.

How Generative AI Works

Provide a basic explanation of the underlying technology, such as neural networks and deep learning models, to give attendees a foundational understanding.

Common Applications of Generative AI

Discuss practical applications across industries like customer service, content creation, healthcare, and finance to help the audience see its real-world relevance.

The Impact of Generative AI on Industries

Highlight how Generative AI is transforming various sectors, enabling efficiency, personalization, and automation at unprecedented levels.

Ethical and Societal Considerations

Address important ethical issues, such as biases in AI outputs, data privacy concerns, and the potential impact on jobs and industries.

Generative AI in Business Decision-Making

Explore how Generative AI can assist in analyzing data, creating reports, and generating insights to support quicker and more informed decision-making in business contexts.

Future Directions and Innovations

Briefly discuss upcoming advancements in Generative AI, including model interpretability, improved real-time capabilities, and potential cost reductions.

Azure's Role in Advancing Generative AI

Position Azure as a trusted platform that not only provides robust tools for AI development but also emphasizes responsible and ethical AI practices, supporting businesses in adopting Generative AI confidently and securely.

WHAT IS GENERATIVE AI?

•Defining Generative AI

- Generative AI models create new content, such as text, images, or code, based on patterns learned from existing data.

•Difference from Traditional AI

- Traditional AI primarily analyzes and classifies data, generating insights or predictions. In contrast, Generative AI produces entirely new content.

•Core Techniques

- Uses techniques like neural networks, transformers, and deep learning to recognize complex patterns in data.

•Applications of Generative AI

- Media: Automated content creation, from news articles to social media posts.
- Retail: Personalized marketing, product recommendations, and virtual shopping assistants.
- Healthcare: Synthesizing medical images for research and generating personalized treatment plans.

•Impact on Productivity

- Generative AI automates repetitive or time-intensive creative tasks, freeing up time for innovation and strategic work.

Visual: A brief graphic comparing traditional AI (analyzes and classifies) and generative AI (creates and generates).

Generative AI is a cutting-edge technology that is redefining how we interact with artificial intelligence. Unlike traditional AI, which primarily analyzes and classifies data, Generative AI has the unique capability to generate new content. Think of it as the AI moving from simply understanding patterns to creating something new—be it a piece of writing, an image, or even a piece of code. This shift from predictive analytics to content generation opens up a world of possibilities, allowing us to automate creative tasks.

In the media industry, for instance, Generative AI can produce visual content for marketing campaigns. In healthcare, it can assist in generating medical imaging data to aid diagnoses. And in retail, it personalizes shopping experiences by creating unique product descriptions or even generating new product ideas. These applications streamline processes, reduce manual effort, and allow human workers to focus on more complex and strategic tasks. Generative AI's capacity to enhance productivity and foster innovation is truly transformative, and as we explore this further, we'll see how industries are evolving with this technology.

Defining Generative AI

Generative AI refers to models that generate entirely new content rather than just analyzing or classifying existing data. These models are trained on vast datasets, enabling them to produce text, images, or even code. This innovation is particularly transformative because it allows technology to replicate tasks that were once exclusive to human creativity, such as drafting emails, creating artwork, or even writing computer programs.

Difference from Traditional AI

Unlike traditional AI models that focus on analyzing or classifying data—such as determining whether a transaction is fraudulent—Generative AI creates new, data-driven outputs. This capability allows businesses to explore and use AI in more dynamic and creative ways, helping teams to automate repetitive tasks while allowing for creative problem-solving.

Applications in Finance

Generative AI holds particular promise in the finance sector. For instance, it can be used to generate detailed reports on market trends by summarizing large datasets and presenting them in an easily digestible form. It can also enhance customer service by generating realistic, AI-driven responses that feel personalized and engaging. Additionally, generative models can help predict fraud patterns by analyzing transaction data and simulating scenarios, which can support better-informed decisions around risk management.

This is especially relevant for leaders at Bank of America, where understanding and leveraging data effectively can give a significant edge. By incorporating generative AI into finance workflows, you're not only saving time but enhancing the quality and accuracy of insights.

KEY TOOLS: GPT, DALL·E, CODEX

GPT (Generative Pretrained Transformer)

- Creates human-like text based on input prompts, useful for chatbots, content generation, and summarization.

DALL·E

- Generates images from textual descriptions, allowing for the creation of unique visuals based on user inputs.

Codex

- Converts natural language into computer code, helping developers quickly write or improve code.

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Visual: Side-by-side comparison of GPT (text generation), DALL·E (image creation), and Codex (code generation).

GPT

GPT is one of the most advanced text generation models available, capable of producing human-like responses for customer service, content generation, or summarization.

DALL·E

DALL·E generates high-quality images from text descriptions, enabling users to create custom visuals for marketing, design, or media production.

Codex

Codex allows developers to input natural language prompts and receive functional code in return, making it easier to automate coding tasks and speed up development cycles.

THE IMPACT OF GENERATIVE AI ON INDUSTRIES

Media and entertainment

- Generative AI automates content creation, from writing articles to generating video scripts.

Retail and e-commerce

- AI-driven product recommendations, personalized marketing, and design automation for retail brands.

Healthcare

- Assists in medical imaging, research, and the development of AI-driven diagnostic tools.

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Visual: Industry-specific images showing applications of Generative AI in media, retail, and healthcare.

Media and entertainment

Generative AI tools can create text, audio, and video content, automating tasks that previously required human effort, making content creation more scalable.

Retail and e-commerce

Generative AI helps retailers personalize product recommendations, automate marketing campaigns, and even design custom products for customers based on their preferences.

Healthcare

Generative AI is being used to improve medical imaging, speed up research, and assist doctors in diagnosing diseases by providing AI-driven insights.

❖ AI IN BUSINESS APPLICATIONS

Generative AI Applications in Business

Generative AI in Product Design

Generative AI in Marketing

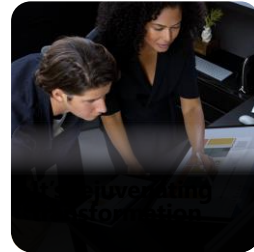
AI HAS FOREVER CHANGED WHAT SOFTWARE MAKES POSSIBLE



ChatGPT crossed 1 million users in 5 days of launch, setting the platform record.¹



The value of AI is projected to increase 13x—to \$15.7 trillion by 2030.²



87% of organizations believe AI will give them a competitive edge.³

¹OpenAI public statements

²Global Artificial Intelligence Study: Exploiting the AI Revolution, PwC

³AI Global Executive Study and Research Project, MIT Sloan and BCG

Generative AI has fundamentally changed what we can accomplish with software and changed our expectations of software.

It's driving tremendous adoption of services, it's reshaping industries, and it's prompting organizations to consider how they can use AI and what new digital products, services, and experiences they can create.

Sources:

1. <https://twitter.com/gdb/status/1599683104142430208?lang=en>
2. <https://www.pwc.com/gx/en/issues/data-and-analytics/publications/artificial-intelligence-study.html>
3. https://sloanreview.mit.edu/projects/expanding-ais-impact-with-organizational-learning/?utm_medium=pr&utm_source=release&utm_campaign=ReportBCGAI2020

DRIVE MEANINGFUL BUSINESS VALUE WITH INTELLIGENT APPS



Delight customers with next-gen AI-powered apps

Put your data to work with AI.
Create unique differentiation.
Build your own copilots.

40% decrease in customer support tickets¹



Rapidly deliver new products that deepen customer engagement

Beat competitors to market.
Increase user growth and satisfaction.
Capture incremental revenue.

1.5 months faster time-to-market for new apps²



Amplify employee capabilities and empower developers to innovate

Accelerate developer productivity.
Attract the best developer talent.
Reduce repetitive, costly work.

10% to 25% increased developer efficiency²



Scale your business and reduce risk with future-ready technology

Streamline IT operations.
Consolidate redundant systems.
Improve security posture.

Average **10% to 25%** reduced app downtime²

¹The Total Economic Impact™ of Microsoft Azure AI, a commissioned study conducted by Forrester Consulting (May 2023). Results are for a composite organization representative of interviewed customers.

²The Total Economic Impact™ of Microsoft Azure App Innovation, a commissioned study conducted by Forrester Consulting (June 2023). Results are for a composite organization representative of interviewed customers.

There are many benefits that intelligent apps can offer to your business

First, it means you can outpace competition, right by delivering, you know, innovative new applications.

You can also amplify employee capabilities and you can increase developer productivity.

You can also scale your business and future proof .

And being able to future proof is possible whether you're leveraging AI right now or not.

GENERATIVE AI APPLICATIONS IN BUSINESS

Real-world examples of AI in action

- AI is used in industries like manufacturing, retail, and customer service to streamline operations and enhance customer experiences.

AI-driven product design, marketing, and customer service

- AI tools can generate designs, automate marketing campaigns, and provide 24/7 customer service through chatbots.

Reducing time-to-market with AI

- AI accelerates product development and business processes by automating tasks that previously required human intervention.

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Visual: Infographic showing AI use cases across product design, marketing, and customer service.

Real-world examples of AI in action

Businesses across various industries are implementing AI to optimize operations. For example, manufacturers use AI to predict equipment failures, and retailers use it for inventory management.

AI-driven product design, marketing, and customer service

AI tools are transforming the way businesses approach design, customer interaction, and marketing. Chatbots provide instant support to customers, while AI algorithms personalize marketing campaigns for better engagement.

Reducing time-to-market with AI

By automating repetitive tasks like product design iterations or campaign creation, AI allows companies to bring products to market faster.

GENERATIVE AI IN PRODUCT DESIGN

How AI is revolutionizing product design

- AI can explore countless design options rapidly, optimizing products based on specific parameters like cost or material strength.

AI tools for prototyping and simulation

- Tools like Autodesk's Dreamcatcher help designers generate prototypes and simulate real-world performance.

Case study: AI in automotive design

- Automotive companies like BMW use AI to design lighter, more fuel-efficient car components without compromising safety.

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Visual: Example of AI-generated product designs from tools like Autodesk Dreamcatcher.

How AI is revolutionizing product design

AI allows companies to optimize their product designs by rapidly iterating through different configurations, saving time and improving efficiency.

AI tools for prototyping and simulation

Generative AI tools can simulate how products will perform under various conditions, which helps companies avoid costly errors before production.

Case study: AI in automotive design

AI is particularly valuable in the automotive industry, where companies like BMW use AI to design car parts that are both lighter and stronger, optimizing fuel efficiency and safety.

GENERATIVE AI IN MARKETING

Personalization at scale

- AI can create personalized marketing campaigns by analyzing customer behavior and preferences.

Generating content and creatives automatically

- AI tools like GPT-4 can generate ads, social media posts, and email campaigns based on input data.

Real-world example: AI-driven marketing for e-commerce

- E-commerce platforms like Amazon use AI to suggest personalized products, optimize pricing, and create targeted ads in real-time.

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Visual: Example of an AI-generated marketing campaign.

Personalization at scale

AI allows marketers to create customized content and campaigns for individual customers, leading to higher engagement and conversion rates.

Generating content and creatives automatically

AI tools like GPT-4 can automate the creation of marketing materials, from social media posts to email campaigns, saving time and improving consistency across platforms.

Real-world example: AI-driven marketing for e-commerce

AI enables e-commerce platforms to provide personalized product recommendations, optimize dynamic pricing, and automate the delivery of ads based on customer preferences.

DEMO: PROCESSING CLIENT DATA PRIVATELY

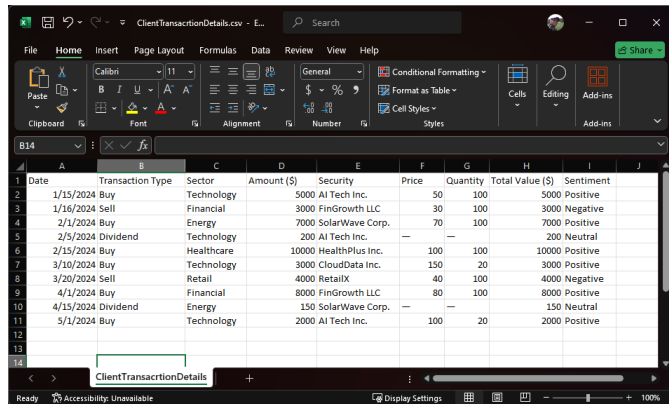
Step 1: Provision Azure OpenAI Service

Step 2: Prepare Your Data Locally

Step 3: Use Azure SDK to Call the API

Step 4: Generate and Store Insights

Step 5: Extend with an Interactive Q&A



Date	Transaction Type	Sector	Amount (\$)	Security	Price	Quantity	Total Value (\$)	Sentiment
1/15/2024	Buy	Technology	5000	AI Tech Inc.	50	100	5000	Positive
1/16/2024	Sell	Financial	3000	FinGrowth LLC	30	100	3000	Negative
2/1/2024	Buy	Energy	7000	SolarWave Corp.	70	100	7000	Positive
2/5/2024	Dividend	Technology	200	AI Tech Inc.	—	—	200	Neutral
2/15/2024	Buy	Healthcare	10000	HealthPlus Inc.	100	100	10000	Positive
3/10/2024	Buy	Technology	3000	CloudData Inc.	150	20	3000	Positive
3/20/2024	Sell	Retail	4000	RetailX	40	100	4000	Negative
4/1/2024	Buy	Financial	8000	FinGrowth LLC	80	100	8000	Positive
4/15/2024	Dividend	Energy	150	SolarWave Corp.	—	—	150	Neutral
5/1/2024	Buy	Technology	2000	AI Tech Inc.	100	20	2000	Positive

Step 1: Prepare Mock Transaction Data

Sample dataset with transaction details for a hypothetical client's portfolio.

Example Dataset: ClientTransactionDetails.csv

Step 2: Feed Data into a Generative AI Model

Use the dataset to input into a generative AI model (such as GPT) and prompt it to generate a summary of insights based on the data provided.

Prompt Example:

"Analyze the above transaction data. Summarize key trends in sector performance, identify any patterns in buying or selling behavior, and provide an overall sentiment analysis for the client's portfolio."

Step 3: Expected AI-Generated Output

Example Output:

Client Portfolio Summary – Q1 2024

•Sector Performance:

- *Technology*: The portfolio saw significant activity in the technology sector with notable buys in AI and cloud technologies, indicating a positive sentiment toward tech growth, especially in AI-driven companies.
- *Energy*: Solar investments demonstrated a growing interest in

renewable energy with SolarWave Corp. contributing positively to portfolio diversification.

•**Transaction Patterns:**

- *Buying Trends:* Majority of purchases are in Technology, Financial, and Energy sectors, showcasing a balanced approach between growth and stability.
- *Selling Trends:* Sells mainly occurred in Financial and Retail sectors, which may suggest divestment in less promising areas.

•**Sentiment Analysis:**

- Positive sentiment across Technology and Healthcare investments indicates strong confidence in these areas, particularly AI, cloud services, and healthcare technology.
- The portfolio sentiment appears generally positive, aligned with growth-oriented sectors, suggesting a strategic focus on long-term, high-value industries.

Step 4: Display Output in a Dashboard Format

Use a simple dashboard or visual display to showcase key findings, with sections for **Sector Performance**, **Transaction Patterns**, and **Sentiment Analysis**.

For the demo, you can either:

- Use a presentation slide with highlighted insights, graphs, or charts based on the AI-generated summaries.
- Use a Jupyter notebook or similar tool to dynamically display the summarized text and graphs.

Step 5: Extend with an Interactive Q&A

Allow for questions and show how the model can adapt to follow-up questions.

Examples:

- “What are the top performing sectors?”
- “Which investment has the highest return?”

COMPUTER VISION



- Azure Cognitive Services offers pre-built APIs for computer vision, enabling you to extract insights from images and videos. You can use Azure Cognitive Services to recognize faces, objects, and text in images.

Azure Cognitive Services provides pre-built APIs for computer vision, enabling you to extract insights from images and videos. We will explore how you can use Azure Cognitive Services to recognize faces, objects, and text in images.

❖ ETHICS, SECURITY, AND CULTURE

Ethics in AI

Cloud Security & Compliance

Building a Cloud-Ready Culture

ETHICS IN AI

Addressing bias in AI models

- AI models can inherit biases from the data they are trained on, which can result in unfair or unethical outcomes.

Ensuring transparency and fairness

- AI decisions should be explainable, and fairness checks should be applied to avoid discrimination.

Governance frameworks for AI use

- Organizations need governance structures to ensure AI is used ethically and complies with regulations.

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Visual: Flowchart outlining an AI governance framework and steps for addressing bias.

Addressing bias in AI models

AI models are only as good as the data they are trained on, and biased data can lead to unfair outcomes. Regular audits and diverse datasets can help mitigate this risk.

Ensuring transparency and fairness

AI decisions should be explainable to build trust. Fairness checks should be applied to avoid bias in AI outputs, ensuring ethical use.

Governance frameworks for AI use

Organizations need clear governance frameworks to guide the ethical development and deployment of AI systems, ensuring compliance with laws and industry standards.

CLOUD SECURITY & COMPLIANCE

Data encryption

- Data should be encrypted both at rest and in transit to protect sensitive information.

Azure's compliance certifications

- Azure complies with global security standards such as GDPR, HIPAA, and ISO certifications.

Security best practices

- Use multi-factor authentication (MFA), conduct regular security audits, and encrypt data to secure cloud environments.

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Visual: Azure compliance certifications and security best practices (MFA, encryption).

Data encryption

Encryption is essential for securing data, both at rest (when stored) and in transit (when being transferred), to prevent unauthorized access.

Azure's compliance certifications

Azure complies with many international security regulations, such as GDPR and HIPAA, ensuring that businesses using Azure meet legal data protection requirements.

Security best practices

Organizations should adopt best practices such as multi-factor authentication, regular audits, and encryption to strengthen their security posture in the cloud.

BUILDING A CLOUD-READY CULTURE

Fostering innovation and risk-taking

- Leaders should encourage experimentation with cloud technologies to fully leverage their benefits.

Upskilling the workforce

- Employees need training to build the necessary skills to work with AI and cloud technologies.

Overcoming resistance to change

- Communicate the benefits of cloud adoption and provide support to employees as they transition to new systems.

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Visual: A roadmap for building a cloud-ready culture with milestones for innovation, upskilling, and overcoming resistance.

Fostering innovation and risk-taking

Encouraging a culture of innovation and risk-taking will help businesses get the most out of cloud technologies. Leaders must promote experimentation.

Upskilling the workforce

Providing training and resources will ensure that employees can effectively use AI and cloud technologies, helping businesses remain competitive.

Overcoming resistance to change

Many employees may be hesitant to adopt new technologies. It is important to communicate the benefits clearly and provide support to help them adapt.

❖ WRAP-UP & KEY TAKEAWAYS

Recap of the Session

Call to Action: Start Your Cloud and AI Journey

Q&A with the Audience

RECAP OF THE SESSION

Cloud computing and AI

- We explored the basics of cloud computing, Azure, and Generative AI.

Real-world applications

- Discussed how AI and cloud technologies are transforming industries like healthcare, retail, and media.

Demos

- Showcased Azure AutoML for business insights and real-time analytics using Azure Synapse.

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Visual: Simple recap slide with bullet points summarizing the key topics discussed.

Cloud computing and AI

We covered the fundamentals of cloud computing, Azure, and Generative AI and discussed how they are becoming essential tools for modern businesses.

Real-world applications

We explored real-world applications of AI and cloud technologies, including personalized marketing, customer service enhancements, and product design optimization.

Demos

We walked through practical demos of Azure AutoML and Azure Synapse for business analytics, showcasing their real-time capabilities.

CALL TO ACTION: START YOUR CLOUD AND AI JOURNEY

Leverage Azure's AI tools

- Start experimenting with tools like AutoML, Cognitive Services, and Synapse for real-time analytics.

Explore Azure's resources

- Azure offers various resources to help you get started, from documentation to free trials.

Integrate AI into your business

- Begin adopting AI in business processes to drive innovation and improve efficiency.

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Visual: QR code linking to Azure's resources page or a relevant Azure trial/demo link.

Leverage Azure's AI tools

Encourage the audience to take their first steps into using Azure's AI tools, such as AutoML and Cognitive Services, for automating tasks and enhancing their business capabilities.

Explore Azure's resources

Point the audience to Azure's documentation, training resources, and free trial options to get started with cloud and AI tools.

Integrate AI into your business

Explain how AI adoption can drive innovation, reduce costs, and improve operational efficiency in their organizations.

Q&A WITH THE AUDIENCE

Open for questions

- Encourage participants to ask questions related to cloud computing, AI, and the demos.

Clarify key points

- Provide clarification or further explanation on any of the topics discussed during the session.

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Visual: Simple slide with a “Q&A” title, inviting the audience to ask questions.

Open for questions

Open the floor for any questions from the audience about the session’s topics, including cloud computing, AI, or the demos.

Clarify key points

Take the time to provide further explanations or answer specific questions on Azure’s tools or business applications of AI.