Azure offers a wide array of services to support cloud-based applications and solutions. These services are categorized into core groups based on their purpose and functionality.

Azure's core services provide a comprehensive platform for building, deploying, and managing modern applications and workloads, catering to businesses of all sizes and industries.

Here's an overview of the **Core Azure Services**:

**1. Compute Services**

Azure provides compute resources for running applications and workloads.

* **Azure Virtual Machines**: Provision Windows or Linux VMs on demand.
* **Azure App Service**: Platform-as-a-Service (PaaS) for hosting web apps, APIs, and mobile backends.
* **Azure Kubernetes Service (AKS)**: Managed Kubernetes for containerized applications.
* **Azure Functions**: Serverless compute service for event-driven code execution.
* **Azure Batch**: Large-scale parallel and batch compute jobs.
* **Azure Virtual Desktop**: Virtualized desktops and apps in the cloud.

**2. Storage Services**

Azure offers scalable, durable, and secure storage solutions.

* **Azure Blob Storage**: Object storage for unstructured data such as images, videos, and backups.
* **Azure File Storage**: Managed file shares for cloud or on-premises use.
* **Azure Disk Storage**: High-performance managed disks for VMs.
* **Azure Queue Storage**: Messaging queue for asynchronous communication between components.
* **Azure Data Lake Storage**: Big data storage for analytics workloads.

**3. Networking Services**

Services to connect and secure your infrastructure.

* **Azure Virtual Network (VNet)**: Create private networks within Azure.
* **Azure Load Balancer**: Distribute traffic across multiple resources.
* **Azure Application Gateway**: Layer 7 load balancing for web traffic.
* **Azure Traffic Manager**: DNS-based traffic routing for high availability.
* **Azure VPN Gateway**: Securely connect on-premises networks to Azure.
* **Azure ExpressRoute**: Private, high-speed connectivity to Azure from on-premises.

**4. Database Services**

Azure provides managed databases for relational and non-relational data.

* **Azure SQL Database**: Fully managed relational database as a service.
* **Azure Cosmos DB**: Globally distributed, multi-model database.
* **Azure Database for MySQL/PostgreSQL/MariaDB**: Managed open-source databases.
* **Azure Synapse Analytics**: Unified analytics service for big data and data warehousing.
* **Azure Cache for Redis**: In-memory data storage for fast data access.

**5. AI and Machine Learning**

Services to build and deploy AI-powered applications.

* **Azure Machine Learning**: Develop, train, and deploy machine learning models.
* **Azure Cognitive Services**: Pre-built AI APIs for vision, speech, language, and decision-making tasks.
* **Azure Bot Service**: Build conversational agents and bots.

**6. Analytics Services**

Services to analyze data and gain insights.

* **Azure Data Factory**: Orchestrate data movement and transformation.
* **Azure Stream Analytics**: Real-time analytics on streaming data.
* **Azure Databricks**: Collaborative data and AI platform for big data analytics.
* **Azure Monitor**: Full-stack monitoring for applications and infrastructure.

**7. Security and Identity**

Secure your Azure environment and manage identities.

* **Azure Active Directory (Azure AD)**: Identity and access management for users and applications.
* **Azure Key Vault**: Securely store and manage secrets, keys, and certificates.
* **Azure Security Center**: Unified security management and threat protection.
* **Azure Defender**: Advanced threat detection for Azure and hybrid environments.

**8. Development Tools**

Enhance developer productivity and collaboration.

* **Azure DevOps**: Tools for CI/CD pipelines, version control, and agile project management.
* **Azure GitHub Actions**: Automate software development workflows.
* **Azure API Management**: Securely expose and manage APIs.

**9. IoT (Internet of Things)**

Build and manage IoT applications and devices.

* **Azure IoT Hub**: Central hub for connecting IoT devices.
* **Azure IoT Central**: Simplified IoT app development platform.
* **Azure Digital Twins**: Model and analyze IoT-enabled environments.

**10. Migration and Management Tools**

Streamline cloud adoption and resource management.

* **Azure Migrate**: Assess and migrate on-premises workloads to Azure.
* **Azure Cost Management**: Monitor and optimize Azure spending.
* **Azure Resource Manager (ARM)**: Centralized management of Azure resources.
* **Azure Arc**: Extend Azure services to hybrid and multi-cloud environments.

**11. Hybrid and Multicloud Solutions**

Enable seamless integration between on-premises, Azure, and other clouds.

* **Azure Stack**: Bring Azure capabilities to your datacenter.
* **Azure Arc**: Manage resources across hybrid and multicloud environments.

**12. Developer Tools**

Azure supports developers with integrations and IDEs.

* **Azure DevTest Labs**: Create development and test environments.
* **Visual Studio and Visual Studio Code**: Integrated development environments for Azure.

**Why Use Core Azure Services?**

* **Scalability**: Instantly scale resources up or down based on demand.
* **Global Reach**: Operate in data centers worldwide.
* **Cost-Efficiency**: Pay-as-you-go pricing to optimize costs.
* **Security**: Built-in compliance and security features.