45 Azure Services in 45 Minutes

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Seriously?

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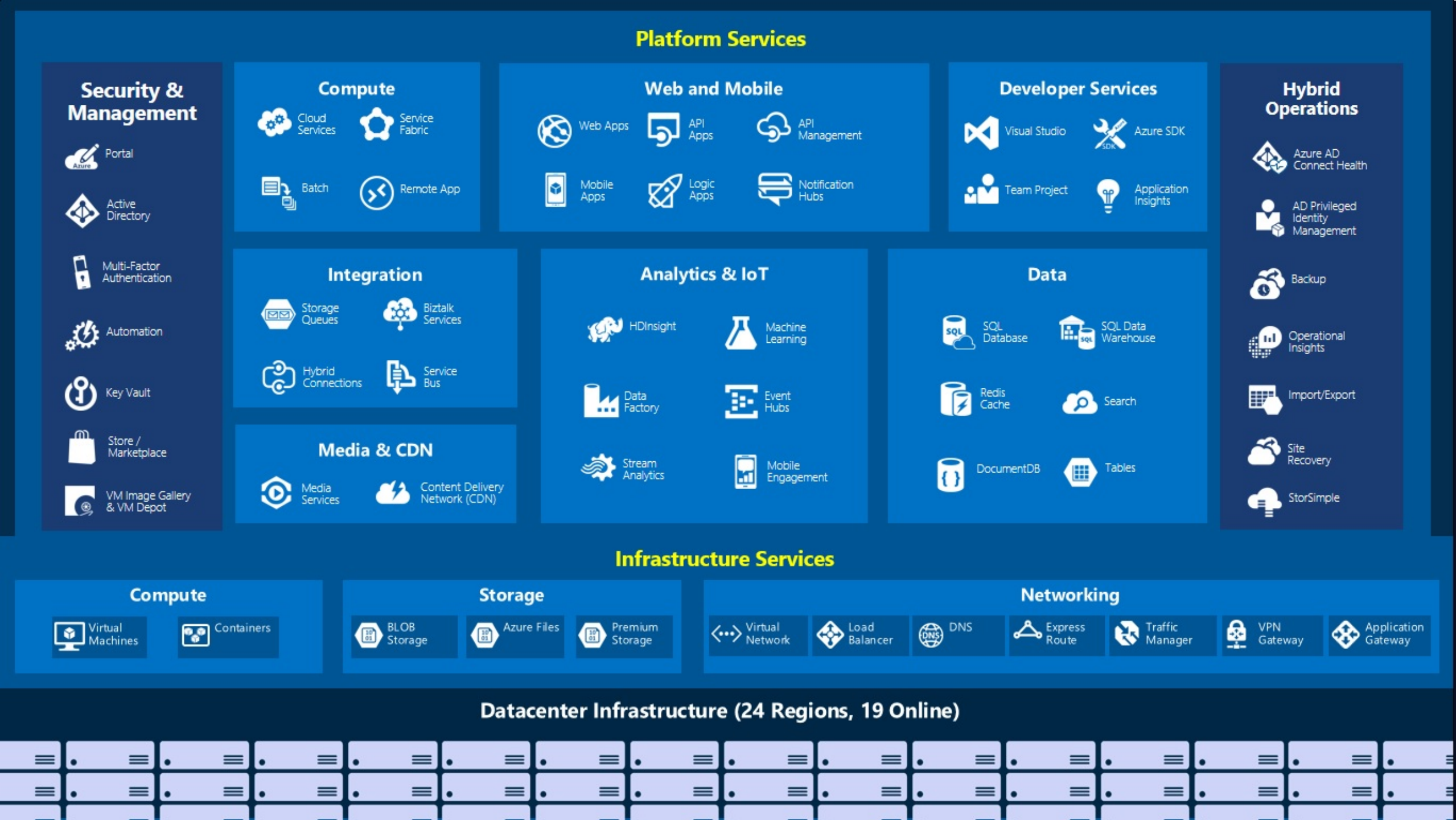
Platform Services
Security & Management
Portal
Active Directory
Multi-Factor Authentication
Automation
Key Vault
Store / Marketplace
VM Image Gallery & VM Depot
Compute
Cloud Services
Service Fabric
Batch
Remote App
Web and Mobile
Web Apps
API Apps
API Management
Mobile Apps
Logic Apps
Notification Hubs
Developer Services
Visual Studio
Azure SDK
Team Project
Application Insights
Hybrid Operations
Azure AD Connect Health
AD Privileged Identity Management
Backup
Operational Insights
Import/Export
Site Recovery
StorSimple
Integration
Storage Queues
Biztalk Services
Hybrid Connections
Service Bus
Media & CDN
Media Services
Content Delivery Network (CDN)
Analytics & IoT
HDInsight
Machine Learning
Data Factory
Event Hubs
Stream Analytics
Mobile Engagement
Data
SQL Database
SQL Data Warehouse
Redis Cache
Search
DocumentDB
Tables
Infrastructure Services
Compute
Virtual Machines
Containers
Storage
BLOB Storage
Azure Files
Premium Storage
Networking
Virtual Network
Load Balancer
DNS
Express Route
Traffic Manager
VPN Gateway
Application Gateway
Datacenter Infrastructure (24 Regions, 19 Online)

Compute

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Virtual Machines

- Persistent, dedicated resources
- Full control over your installed apps and OS
- Power and flexibility
  - At the cost of high maintenance
- Difficult to scale automatically

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Cloud Services

- Transient, dedicated resources
- Run a custom .NET app you provide on startup
- Azure will restart the app if it fails
- Easily scalable to multiple instances
- Still quite low level – you write everything you need in your .NET code

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Azure Containers

- Docker containers as a service
- Existing tooling
- Handles replication, scaling, isolation, deployment

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Service Fabric

- Microservice development services and hosting
- In place deployments, auto scaling, health monitoring, service healing
  - Failover, leader election, state management
- APIs that support many of the cross cutting concerns relevant to building microservices

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Batch

- Programmatically define large scale batch jobs
- Ideal for highly parallel tasks e.g. media encoding, image processing, modelling and data analysis
- Handles scheduling, scaling and reducing

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Azure Functions

- Event driven compute
- Write code that runs on events in any Azure service and a variety of third party services by connecting to existing messaging systems
- Bash, PowerShell, Javascript, C#, Python, PHP…

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Web and Mobile

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App Services - Web Apps

- IIS as a service
- Deployments and rollbacks
- Autoscaling on a variety of metrics
- Deployment slots
- Redundancy
- Multiple programming languages

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API Apps

- Swagger metadata
- Access control via Azure AD, social authentication
- Trigger APIs called from logic apps to look for a workflow trigger e.g. search data found
- Action APIs, perform actions in response to logic app triggers e.g. send notification

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Logic Apps

- Integrate disparate data sources
- Design workflows that execute triggers and then a series of steps
- Composable SaaS
- Use a gallery of existing APIs or make an API app

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Mobile Apps

- Authentication SDKs for mobile apps
- Data access via OData linked to SQL Server, NoSQL, Table Storage, DocumentDB, SaaS APIs
- Offline Sync SDK
- Push notifications via WNS, APNS, GCM, Notification Hubs

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Notification Hubs

- Managed mobile push notifications
- Abstracts away the provider notification systems
- Target individuals or segments with millions of users

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API Management

- Full API gateway
- Signup, login flows for developers using your APIs
- Rate limiting, key management, authentication, documentation

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Data

SQL Database

- Managed relational database
- High functional compatibility with SQL Server
- Elastic pools of DTUs
- Point in time restore
- Row level security
- Transparent encryption / always encrypted

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Blob Storage

- Storage for any text or binary data (object storage)
- Can directly serve out files to users
- Storage layer behind majority of Azure services

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Azure Files

- File shares backed by blob storage using SMB
- Access via Cloud Services and Virtual Machines
- Designed for existing applications built without awareness of blob storage APIs

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Table Storage

- Structured NoSQL data
- Partition / row key for lookups
- Low cost, simple and extremely high performance for some scenarios
- Up to the developer to design applications efficiently

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DocumentDB

- NoSQL database engine
- Natively supports JSON
- Automatically indexes documents
- Uses an SQL language
- JavaScript functions
- Higher cost for equivalent table storage performance

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Data Lake

- Store any size or type of data in a single place
- Dynamically scalable
- Explore patterns
- Reuse existing technology like U-SQL, Apache Spark, Hive, Hbase, Storm
- Azure AD
- Analytics

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SQL Data Warehouse

- Different kind of central repository for data
- Highly transformed and structured data
- Loaded into the warehouse once a use is defined
- Dynamically scalable
- Highly optimised query performance via T-SQL

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Search

- Search as a service
- Add search to your apps using a REST API or a .NET SDK
- Lucene query syntax
- Natural language support
- Drill down filters
- Crawlers, PDF, Word indexing, scoring, paging

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Redis Cache

- PaaS version of Redis
- Azure handles scaling, persistence, performance, configuration

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Integration

Storage Queues

- Basic queue service
- Access via HTTP/S
- Messages up to 64KB/s
- No locking, maximum 7 days in queue

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Service Bus

- Feature rich elastic messaging system
- Range of protocols and APIs to access messages
- Publish/subscribe pattern
- Guaranteed message order
- Duplicate detection
- Transactions

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Hybrid Connections

- Connect Web Apps and Mobile Apps to on-premises resources behind a firewall
- Minimal TCP ports
- Limited to apps that use a static TCP port such as SQL server, APIs, custom web services

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Biztalk Services

- Out of the box, line of business integration for SAP, Oracle, SQL, PeopleSoft
- Route messages using Service Bus, SQL, Blob Storage
- Supports more complex integration scenarios
- Useful for extending on-premises systems to Azure

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Analytics, Events & IoT

HDInsight

- One of the analysis services associated with Data Lake
- Extensions for Java and .NET
- Real time stream processing
- Integrates with R for predictive modeling

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Machine Learning

- Easy build and deployment of predictive analytics
- Drag and drop based model construction
- R or Python language support for more complex cases
- Automatic provision of web services based on your model

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Data Factory

- Create data pielines
- Visualisation
- Scheduling
- Orchestration
- Health monitoring
- Variety of data sources
- Publish results to other services

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Event Hubs

- Publish subscribe service
- Log millions of events per second in near real time
- Designed for IoT – direct ingestion from a variety of devices and data sources
- Preserves event order per device
- Perform analytics or batch and store the events

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Stream Analytics

- Service that integrates with Event Hubs
- Real time analytics on data
- Real time dashboards
- Mission critical reliability and scale
- Can detect anomoloies in realtime and trigger alerts or a change in your dashboard

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Media

Media Services

- Highly scalable content encoding
- Media intelligence services
- Content protection
- Live video streaming

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CDN

- Azure's content delivery network
- Recently partered with Akamai
- Analytics
- Highly scalable
- Easy content selection
- Purging, filtering, load balancing, DDoS
- Rules based on client e.g. mobile files

Networking

Virtual Network

- Extend your on-premises network into Azure
- Use your own internal IP addresses, DNS servers, etc
- Fine grained control over your networking environment in Azure and how it connects to on-premises services

Express Route

- Highly redundant, reliable, direct private connection
- Connect your datacentres and infrastructure directly to Azure datacentres
- Partner with a provider to set it up - NextDC, Telstra, Equinix

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VPN Gateway

- Fully managed gateway on the Azure side of the virtual network
- Allows configuration of subnet, security and IP rules
- Automatically provisioned and maintained on your behalf

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Load Balancer

- Layer 4 (TCP, UDP) load balancer
- Distribute traffic to virtual machines from the internet
- Distribute traffic between virtual machines in a network
- Multiple probing types, instant reconfiguration, port forwarding, monitoring, distribution types

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Traffic Manager

- Control distribution of public user traffic
- DNS based
- Deployments, upgrades, responsiveness, availability

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Application Gateway

- HTTP based load balancing
- Cookie affinity
- SSL offload (better utilisation, streamline certificate management)
- Integration with traffic manager for region redirection, failover and maintenance scenarios

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DNS

- Host your DNS in Azure
- High availability
- Instant updates
- Global network of name servers

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Security & Management

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Active Directory

- Fully managed active directory
- SSO out of the box
- Third party provider integration
- B2C Consumer identity management
- Password reset, roles, identity management, managed security, 2FA

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Scheduler

- Simple scheduling service
- Run jobs on a schedule
- Invoke web endpoint, post messages to queues

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Automation

- Automate anything within Azure via PowerShell scripts
  - Scaling, enabling/disabling, update DSC on all nodes
- Dashboard and logging functionality
- Workflow crash handling and resumption

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Key Vault

- Secure key management as a service
- Encrypt keys and secrets using hardware security modules
- Simple but highly flexible access control to services
- Key vault can perform crypto operations without the application ever seeing the keys

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Backup

- Incremental or full backups
- Azure VMs
- On-premises VMs, SQL Server, Hyper-V, SharePoint, Exchange, etc
- Send on-premises backups to Azure for secure, cheap storage

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Site Recovery

- Protect on-premises Hyper-V, VMWare and physical servers through replication to Azure as a secondary data centre
- System Center, SQL Server AlwaysOn
- Test and automate a recovery process
- Burst to Azure in periods of high demand
- Site health monitoring

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