AZURE SMART

YOUR INTRO TO AZURE

Microsoft Azure is an exceptionally powerful cloud-hosting platform, which has a huge range of features. This document gives you the eagle-eye view of what's available on Azure. Have a flick through to see everything that's on offer.

Azure is a widely trusted platform, serving many of the world's biggest organisations – from Coca-Cola to BMW, and from Samsung to Bank of America. It has the widest compliance portfolio in the industry, serves more global regions than any competitor, and offers built-in security that is trusted by the Pentagon.

That's just a top-level overview. Once you get into the features and service options, you start to find the really exciting stuff. Whether it's migration support, disaster recovery, threat protection, DevOps, scalable storage or real-time analytics, there's a lot to love.

HOW TO USE THIS DOCUMENT

On the next page you'll see the Azure Smart interactive tool. Pathways have been designed to help you navigate around eight migration triggers, which may come up in conversations with your customers.

Azure Smart carves a path from each migration trigger to deeper technical information relating to specific Azure services. As you become more familiar with Azure you may prefer to simply click on the appropriate section.

IF THIS WHETS YOUR APPETITE
We have a team of experts ready to help with all your Azure needs. Get in touch by emailing azure@westcoastcloud.co.uk.

WESTCOAST CLOUD

CLICK A MIGRATION TRIGGER TO BEGIN

WESTCOAST CLOUD
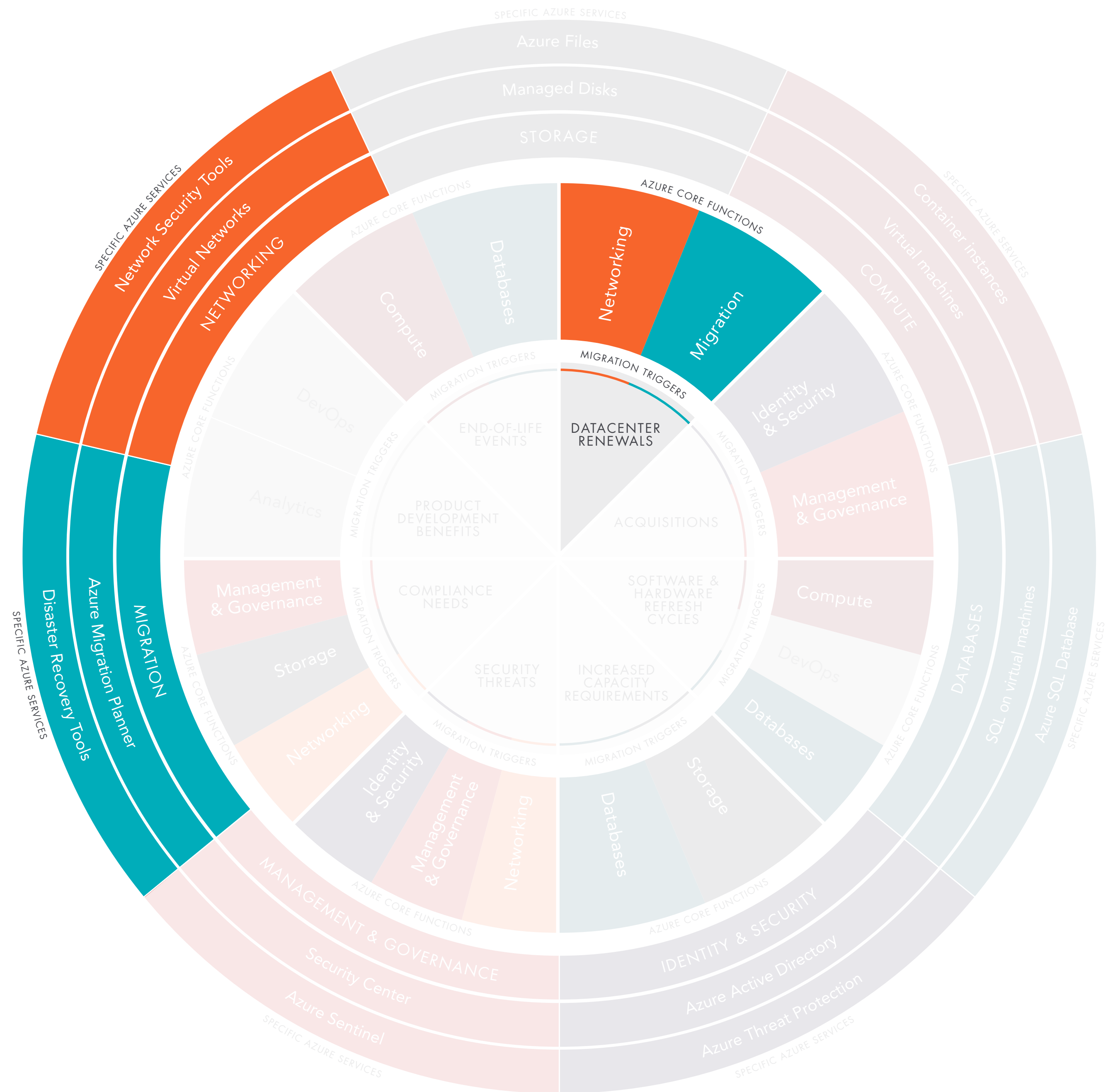
DATACENTER RENEWALS

Many hosted solutions for a business will use a private datacenter with fixed-term contracts. At the end of the contract there is an opportunity to move to a more flexible, secure, and capable cloud hosting platform.

One of the many strengths of hosting in Microsoft's Azure platform is that you can bring your existing licensing with you, reducing resource consumption costs.

Discover Azure Hybrid Benefit

CORE SUBJECTS TO LEARN
- Networking
- Migration

WESTCOAST CLOUD

NETWORKING

Having your resources within an Azure network puts state-of-the-art technology and connectivity methods at your fingertips. You have access to the tools and services required to make your cloud environment as secure as possible.

Being on an Azure network also means that your resources can make use of the Microsoft Backbone – one of the world's largest and most secure datacenter networks.

WESTCOAST CLOUD

Virtual Networks

Networking within Azure offers all the possibilities of a traditional network. The capabilities and features of the platform can be used in combination, or on their own, to facilitate any solution.

Services available within Azure networking include:

- **Virtual Network**
- **ExpressRoute**
- **VPN Gateway**
- **Azure DNS**
- **Azure Bastion**

Primarily, each solution will need some form of network connectivity, whether it's public facing for a service, or private for data access. Once you understand the limitations and requirements for connectivity, you can start building a strategy for effective security.

Further reading:

Intro to Azure networking

Azure Virtual Network (VNet)

WESTCOAST CLOUD

NETWORKING
Network Security Tools

Due to the architecture of public cloud, a different approach to network security is required: the single point of entry to a network needs to be configured and managed correctly to exist. Services such as the Azure Firewall or Azure Application Gateways can provide security to specific areas of the environment. Meanwhile, Network Security Groups provide rule-based traffic routing between resources deep within the network.

To be able to effectively secure an environment in Azure, it is necessary to understand which parts of your network are vulnerable. Following that, you need to identify the right tools to provide the required security.

Further reading:

Network Security Groups

Azure Firewalls

Application Gateways

WESTCOAST CLOUD

MIGRATION

At some point in the journey to cloud services there will be a form of migration. Whether a business is moving their virtual machines or relocating their applications, some data will need to move.

To facilitate this, Azure has its own built-in migration tool, as well as a migration and analysis project management service.

Some migration projects, when relatively small, can also benefit from Azure's disaster recovery tools to permanently failover their resources in one swift action.

These tools require additional manual resources and experience in order to implement. However, if you and your team require assistance, an alternative to this native service is to make use of the resources of Westcoast Cloud and our attached vendors.

WESTCOAST CLOUD

Azure Migration Center

The Azure Migration Center offers end-to-end migration assistance for everything, from the smallest to the largest projects. It covers environment assessment, migration strategies, cost optimisation, enhanced security, and much more.

The Migration Center allows you to jump in at any stage of your migration to benefit most from the experience and knowledge of the Microsoft service.

Often it is best to first understand what services and functions the existing environment provides. Then, rather than mirror it in Azure, you can explore how cloud services in Azure can replace older technology and create more efficient and cost-effective solutions.

Further reading:

Intro to Azure Migration Center

Deploying a migration infrastructure

WESTCOAST CLOUD

Disaster recovery tools

Azure Site Recovery (ASR) allows businesses to replicate workloads running on virtual machines, both in Azure and on-premises. When an outage occurs, it provides failover functionality to a remote site, enabling business continuity. The Azure Backup service means your data is safe and accessible for as long as is required, keeping multiple copies within the secure, maintained vaults of Microsoft's datacenters.

Both ASR and Backup are available for on-premises and Azure environments, and can restore data and functionality to Azure or an off-site location at any point.

Just as data integrity and security are critical to any business, providing high availability of services can be equally important. It's vital to consider common disaster recovery scenarios that affect businesses worldwide each day, and develop mitigation plans for the most relevant ones.

Further reading:

Intro to ASR

ASR: Frequently Asked Questions

About Azure recovery plans

WESTCOAST CLOUD
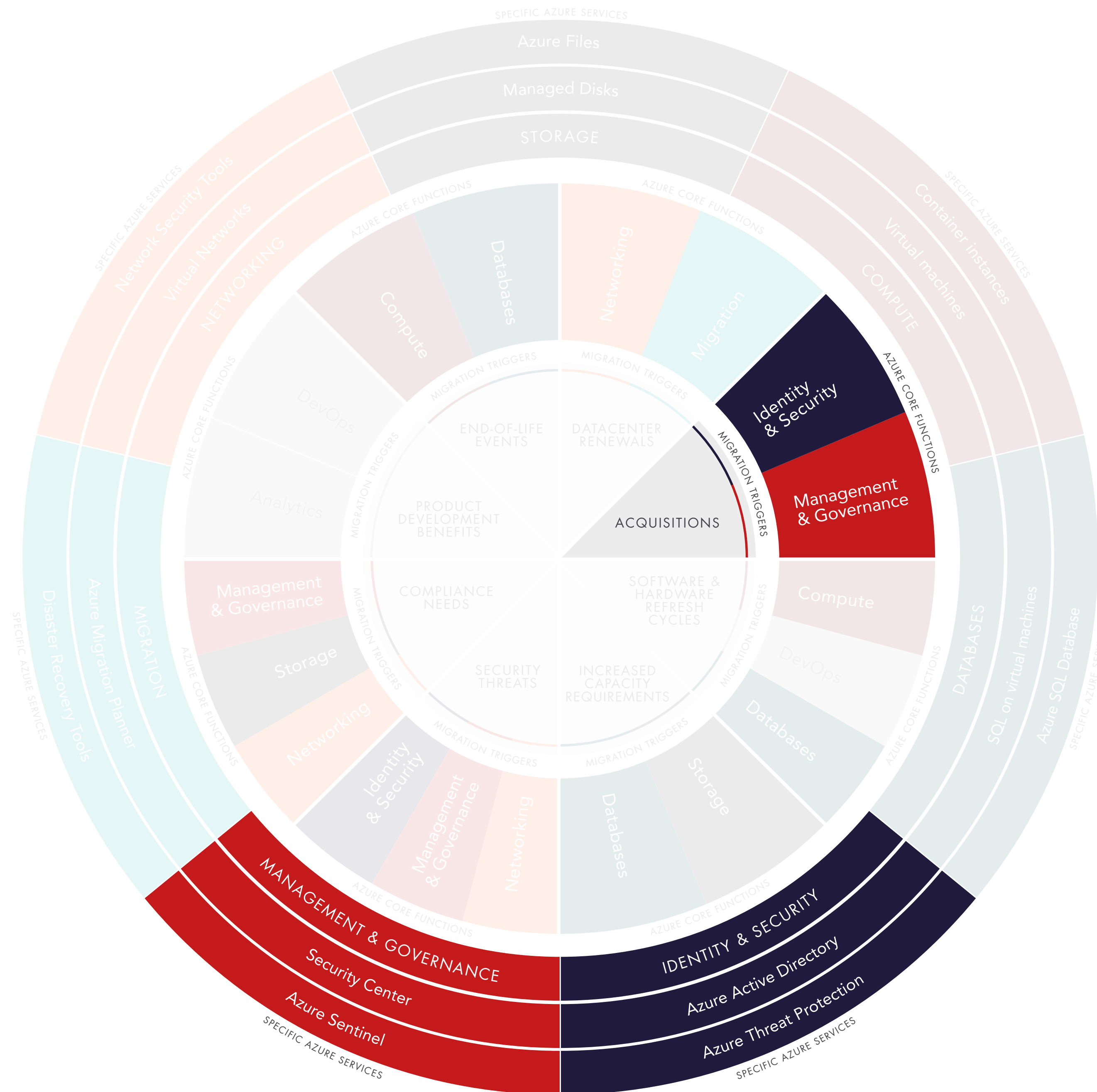
ACQUISITIONS

When one business acquires another, or two businesses merge, it may be difficult to combine their IT assets at the same time. Instead, some organisations prefer to keep the infrastructures separate while providing management tools to unlock collaboration potential and secure data sharing.

With the ability to manage and provide access for multiple federated domains, Azure Active Directory allows for proper planning of M&A scenarios.

CORE SUBJECTS TO LEARN

- Identity & Security
- Management & Governance

IDENTITY & SECURITY

Azure Active Directory is the cornerstone of all things Azure, providing a number of features and services to make work easier for both users and administrators alike. Making use of the single identity platform in Azure allows admins to manage internal and external users more easily, as well as offering robust Single Sign-On functionality for thousands of applications.

Conditional Access and Multi-Factor Authentication protocols add another level of enhanced security when it comes to identity management, reducing a company's digital attack surface.

Thanks to cutting-edge services such as Azure Advanced Threat Protection, Microsoft AI can detect anomalies and threats within your domain in real time.

- **Single Sign-On:** the ability for a user to sign in once to access all their permitted data
- **Conditional Access:** allows administrators to limit access to user accounts based on environmental conditions
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- **Free** – provides access to core features
- **Office 365** – adds Identity & Access Management for O365 apps
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Further reading:

Intro to Azure AD

Azure AD for European customers

Azure AD price comparison

WESTCOAST CLOUD

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Azure Advanced Threat Protection (ATP) is a cloud-based security solution that can protect both your Azure AD identities and resources, whether Azure-based or on-premises. Utilising a combination of Active Directory, network signals, and Microsoft's AI, it monitors for intrusions from both inside and outside the organisation, across a variety of attack types.

ATP assists SecOps employees to monitor:

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Further reading:

Azure ATP architecture

What capacity do you need for Azure ATP?

Working with the Azure ATP portal

WESTCOAST CLOUD

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The Azure Monitor is, as the name suggests, for monitoring your environment and reporting on it in meaningful ways. This enables administrators to deal with problems before they become a disaster. The Azure Advisor works in parallel with the Monitor and will suggest improvements, fixes, and faults to investigate. This can save administrators a huge amount of time compared to checking through every resource individually on a regular basis.

Many of the services in Azure have a built-in backup and disaster recovery function, but a business can extend this to their own resources too using the Azure Backup service or Azure Site Recovery. The Azure platform also supports a wide variety of third-party backup solutions.

WESTCOAST CLOUD

Security Center

Azure Security Center provides advanced threat protection across your environment, both within Azure and on-premises. It allows businesses to cooperate more easily and efficiently with Microsoft to secure their workloads. The ability to see the security analysis and report on individual resources in real time can restore a huge number of working hours back to security personnel each month.

Security Center is native to Microsoft Azure services, both SaaS and PaaS, and can be extended to IaaS and on-premises using a Microsoft monitoring agent.

Many businesses do not have the skills required to ensure that they are secure in today's connected world. Security Center is a tool that makes simple, confident protection accessible to security newcomers, while at the same time allowing skilled veterans to enhance their existing systems.

Further reading:

Security Center feature comparison

Improving your Secure Score

Azure Sentinel

Microsoft Azure Sentinel is a cloud-native security information and event management (SIEM) platform, delivering intelligent security analytics for an environment as well as assisting with proactive threat detection and response. Available in a single pane, at a quick glance you can monitor, maintain and analyse a high-level overview of your entire infrastructure.

The Azure Sentinel 'world' is a vast network of Microsoft and community support, collaboration, and innovation experts. Many security professionals work together on new ways to detect and automate security that can be shared with all Sentinel users.

Many small businesses can feel in over their heads when dealing with modern, cloud-based security. Sentinel can make security easier with the vast array of support, tools, and AI available to users of the service.

Further reading:

Intro to Azure Sentinel

Advanced multistage attack detection in Azure Sentinel

WESTCOAST CLOUD
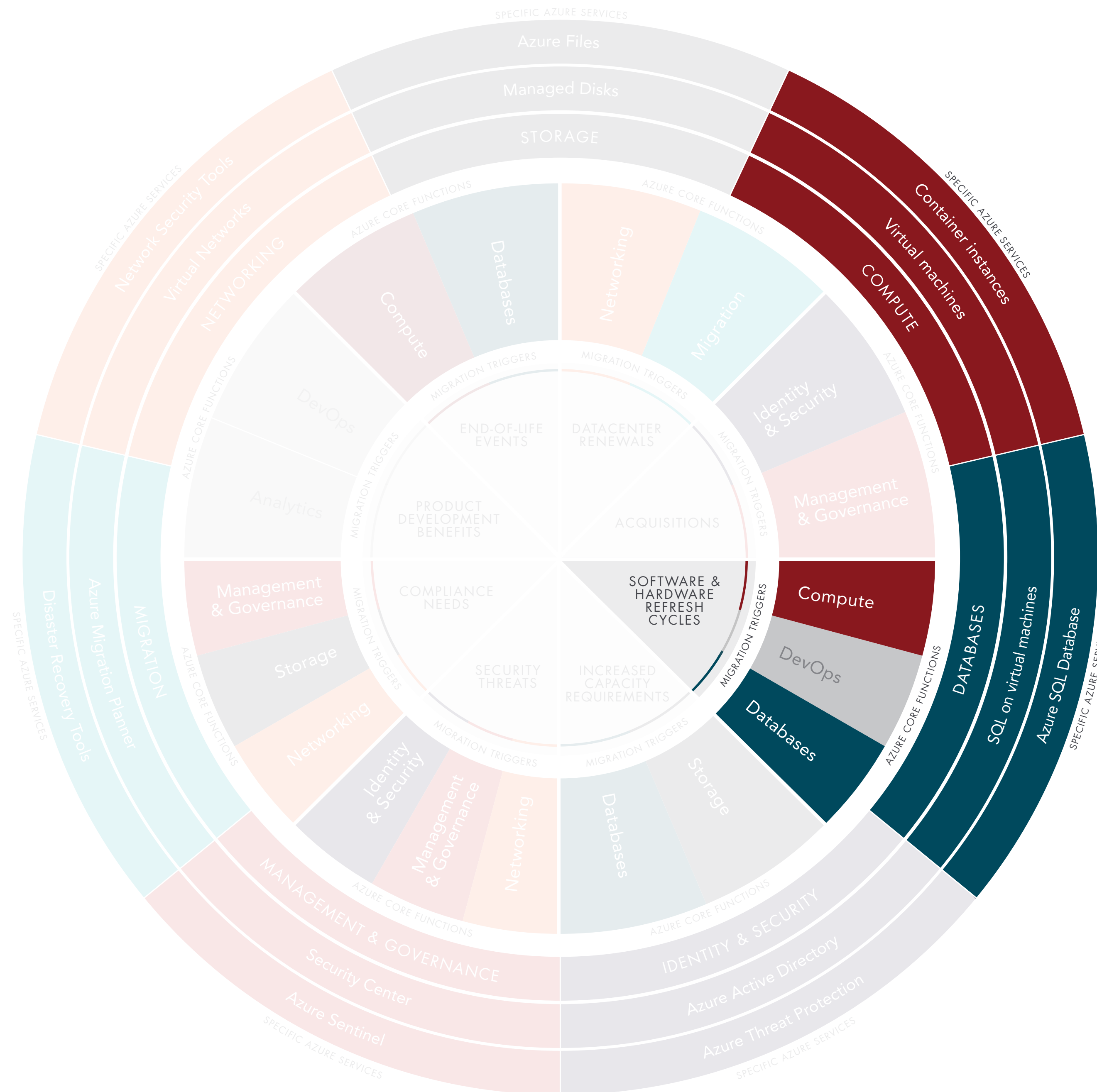
SOFTWARE & HARDWARE REFRESH CYCLES

The world of IT is always moving. Due to this, much of the hardware and software in use today may become dated, or even obsolete, in just a few years. Instead of buying more hardware, or yet another set of licenses to replace the software a business is already using, it may be worth looking to a cloud computing solution. An environment hosted on the Azure platform has a continuous hardware refresh cycle maintained by Microsoft at no extra cost.

CORE SUBJECTS TO LEARN

- Compute
- DevOps
- Databases

WESTCOAST CLOUD

COMPUTE

Compute contains a significant percentage of the functions that Azure commonly provides. It is a function itself, but also a core process of many other features of the platform, from IaaS to SaaS – Compute is ingrained in it all.

The primary Azure services that you will encounter within the Compute family are:

- **Virtual machines**
- **Container instances**
- **Kubernetes**
- **Application hosting**
- **Azure functions**

Virtual machines (VM)

Azure virtual machines are one of the core on-demand, scalable resources that Azure offers. They can provide any number of functions whilst maintaining the flexibility and performance that you would expect from a public cloud. Moving away from a CapEx model of IT may be one of the smartest decisions a business could make in the next 10 years.

Virtual machines in Azure come in a wide variety of flavours, many of which fall under the following families of performance:

- **A-Series:** entry-level VMs for low-priority work and dev/test
- **B-Series:** burstable VMs to handle workload spikes but usually run at low power
- **D-Series:** general-purpose machines to handle almost anything required

- **E-Series:** optimised for memory-heavy application processing
- **F-Series:** optimised for higher processing requirements and minimal memory

Understanding the technical requirements for a VM is a crucial first step to planning a virtual environment. Paying too much for unnecessary computing power is a common mistake that can be easily avoided. Be sure to check usage, throughput, storage, CPU, and memory requirements.

Further reading:

Intro to virtual machines in Azure

Virtual machine series options: in-depth

Virtual machine sizes

WESTCOAST CLOUD

Container instances

Container instances in Azure, more recently known as the 'Azure Kubernetes Service' (AKS), provide a platform for automating deployment at scale across clusters of hosts.

AKS nodes are run on Azure virtual machines, and as such provide a similar amount of flexibility for the base specifications. Nodes can be scaled up, down, and horizontally for your needs.

As a first step when considering container instances, it's worth understanding whether there have been any operational decisions made about the platform, and what kind of storage is best applied to the scenario. From there you can look at setting scaling limits to match requirements.

Further reading:

Intro to AKS

Kubernetes core concepts

Best practices for building on AKS

WESTCOAST CLOUD

AZURE DEVOPS

Azure DevOps provides developer services to support teams as they write plans, collaborate on code development, and build and deploy applications.

You can access its integrated features through your web browser or IDE client:

- **Azure Repos**
- **Azure Pipelines**
- **Azure Boards**
- **Azure Test Plans**

These are the key words and phrases that you should listen for in a conversation, if you hear them, contact the Azure team at Westcoast Cloud.

Azure Artifacts DevOps is an advanced function within Azure, and we'd recommend having a discussion before you embark on how to get the most out of it. To speak to one of our experts, get in touch with the team at azure@westcoastcloud.co.uk.

Further reading:

Intro to Azure DevOps

Azure DevOps: features and services

WESTCOAST CLOUD

DATABASES

Databases are at the heart of all data-driven businesses – from the smallest SQL server to the largest data warehouse – and keeping your data safe and secure is therefore crucial.

Azure provides a platform for a myriad of databases, including Microsoft's own distributed database service – Azure Cosmos DB. Others include:

- **SQL**
- **MySQL**
- **PostgreSQL**
- **MariaDB**
- **HBase**
- **Azure Data Lake**

DATABASES
SQL on virtual machines

Azure can support and license SQL on a virtual machine (VM) from the latest version back to 2008 R2, making the migration from aging hardware to modern infrastructure even easier. It is also possible to bring your existing, and often valuable, SQL licensing with you, to further reduce the costs of hosting a database in a reliable, secure, and high-performance environment.

Azure supports operating systems for SQL VMs of Red Hat Enterprise, SUSE Linux, Ubuntu, Linux, and Windows.

When approaching a database migration, consider the scale of requirements for functionality and performance. It may be that an Azure SQL Database is the best fit in simple scenarios, whereas hosting on a VM is more suitable if you're looking for more control of your database. From there, considerations of cost, performance, and security can impact price and software options.

Further reading:

Intro to SQL on virtual machines

Azure Database migration guide

WESTCOAST CLOUD

Azure SQL Database

If a business does not need control over specific updates, or doesn't want the overhead of managing operating system patching, security, and maintenance, then an Azure SQL Database may be an ideal solution. Provided as a general-purpose, relational database, it gives easy access to a highly available, high-performance, modern database with enterprise functionality.

Microsoft offers a series of options for PaaS databases:

- **Single database** – has its own set of resources and access to the latest features

- **Elastic Pool** – a collection of resources providing greatest flexibility of performance and cost

- **Managed Instance** – suitable for all first-step migrations to the cloud. Provides the closest equivalent to a traditional on-premises SQL server

Consider the requirements before migrating to cloud SQL – while there will often be enhanced security in the cloud, it may come at the cost of a few more niche requirements.

Further reading:

Choosing the right deployment option in Azure SQL

Platform as a Service (PaaS)

WESTCOAST CLOUD

SPECIFIC AZURE SERVICES

Azure Files

Managed Disks

STORAGE

INCREASED CAPACITY REQUIREMENTS

Many small businesses may store their data locally on a server in a storage room at the back of the office. What happens when your important data reaches the point where a new hard disk needs to be added to the machine? What if there are no further expansion slots for disks? Do you buy a new server, do you add a second server or configure some external storage? Or perhaps you look to expand your storage into the cloud.

CORE SUBJECTS TO LEARN

- Storage
- Databases

WESTCOAST CLOUD

(Sunburst diagram labels:)

SPECIFIC AZURE SERVICES — Network Security Tools — Virtual Networks — NETWORKING — AZURE CORE FUNCTIONS — Compute — Databases — Networking — MIGRATION TRIGGERS — Migration — Identity & Security — COMPUTE — Virtual machines — Container instances — SPECIFIC AZURE SERVICES

DevOps — Analytics — DATACENTER RENEWALS — ACQUISITIONS — Management & Governance — AZURE CORE FUNCTIONS — Compute

PRODUCT DEVELOPMENT BENEFITS — SOFTWARE & HARDWARE REFRESH CYCLES — DevOps

COMPLIANCE NEEDS — INCREASED CAPACITY REQUIREMENTS — Databases

SECURITY THREATS — Storage — Databases — MIGRATION TRIGGERS

Management & Governance — Storage — Networking — Identity & Security — Management & Governance — Networking — MIGRATION TRIGGERS

Disaster Recovery Tools — Azure Migration Planner — MIGRATION — AZURE CORE FUNCTIONS — SPECIFIC AZURE SERVICES

MANAGEMENT & GOVERNANCE — Security Center — Azure Sentinel — SPECIFIC AZURE SERVICES — AZURE CORE FUNCTIONS

IDENTITY & SECURITY — Azure Active Directory — Azure Threat Protection — SPECIFIC AZURE SERVICES — AZURE CORE FUNCTIONS

DATABASES — SQL on virtual machines — Azure SQL Database — SPECIFIC AZURE SERVICES

STORAGE

All of the services within Azure Compute, as well as all your data, have to reference some form of storage. Whether your software requires a specific type of storage or is flexible, Azure has all bases covered.

Azure can provide your typical hard disk as part of a virtual machine, or a storage share that is accessible via a mapped drive or browser. It can also delve into tiered storage at variable price points. Or finally, to access data on a massive scale, Azure can create a data lake.

WESTCOAST CLOUD

STORAGE

Managed Disks

Azure Managed Disks are units of virtualised storage, part of a much larger managed storage device, which appear on your machines as if they were physical disks. These disks are designed to be highly available, easily scalable, and very flexible to your needs.

Managed Disks are currently available in these types:

- Ultra-Disk: massive throughput and I/O capabilities for intense workloads
- Premium SSD: high-performance disks without usage costs
- Standard SSD: performance disks with small I/O charges
- Standard HDD: standard disks for lower

  throughput requirements

Many businesses will have a variety of requirements for data storage performance. It is important to match those requirements to the available managed disk options to reduce costs.

Further reading:

Intro to Azure Managed Disks

Azure premium storage

WESTCOAST CLOUD

STORAGE
Azure Files

Azure Files provides file shares fully managed by Microsoft (Security, updates, refreshes) that can be mounted as a drive on both cloud and on-premises deployments of Windows, Linux, and macOS. It can also be used to extend existing storage solutions into the cloud, to provide flexible storage space beyond on-premises capabilities.

Azure Files can be deployed in either standard or premium file shares, differing in data manipulation charges and file share performance.

Many businesses will use cloud storage as a first into cloud computing. Azure Files can support this step by making the process less intimidating. Just extending on-premises storage into the cloud can provide reliable evidence of cloud storage value before considering a full-blown migration.

Further reading:

What is Azure Files?

Planning for an Azure File Sync deployment

Azure Storage redundancy

WESTCOAST CLOUD

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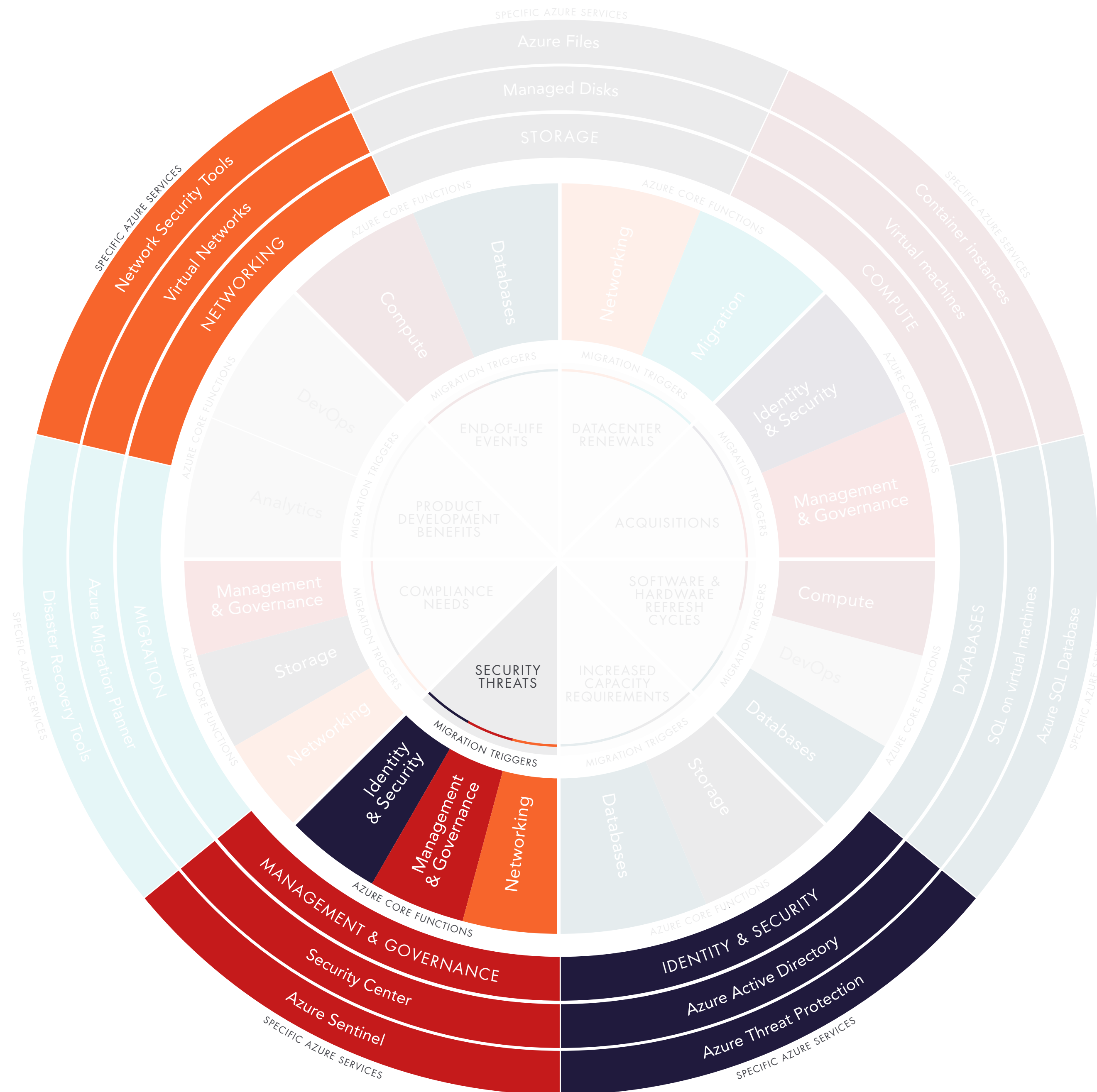## Microsoft offers a series of options for PaaS databases:

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Platform as a Service (PaaS)

SECURITY THREATS

Even the most experienced IT security specialists have a full-time workload keeping up with the latest threats and vulnerabilities in the environments they are responsible for. Moving to a cloud platform allows your IT team to shift some of that responsibility to Microsoft, and collaborate to make use of industry-leading security tools.

Microsoft's security AI allows businesses to combat zero-day vulnerabilities as efficiently as possible.

CORE SUBJECTS TO LEARN

- Identity & Security
- Management & Governance
- Networking

WESTCOAST CLOUD

IDENTITY & SECURITY

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Azure AD for European customers

Azure AD price comparison

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Further reading:

Azure ATP architecture

What capacity do you need for Azure ATP?

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Security Center feature comparison

Improving your Secure Score

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Further reading:

Intro to Azure Sentinel

Advanced multistage attack detection in Azure Sentinel

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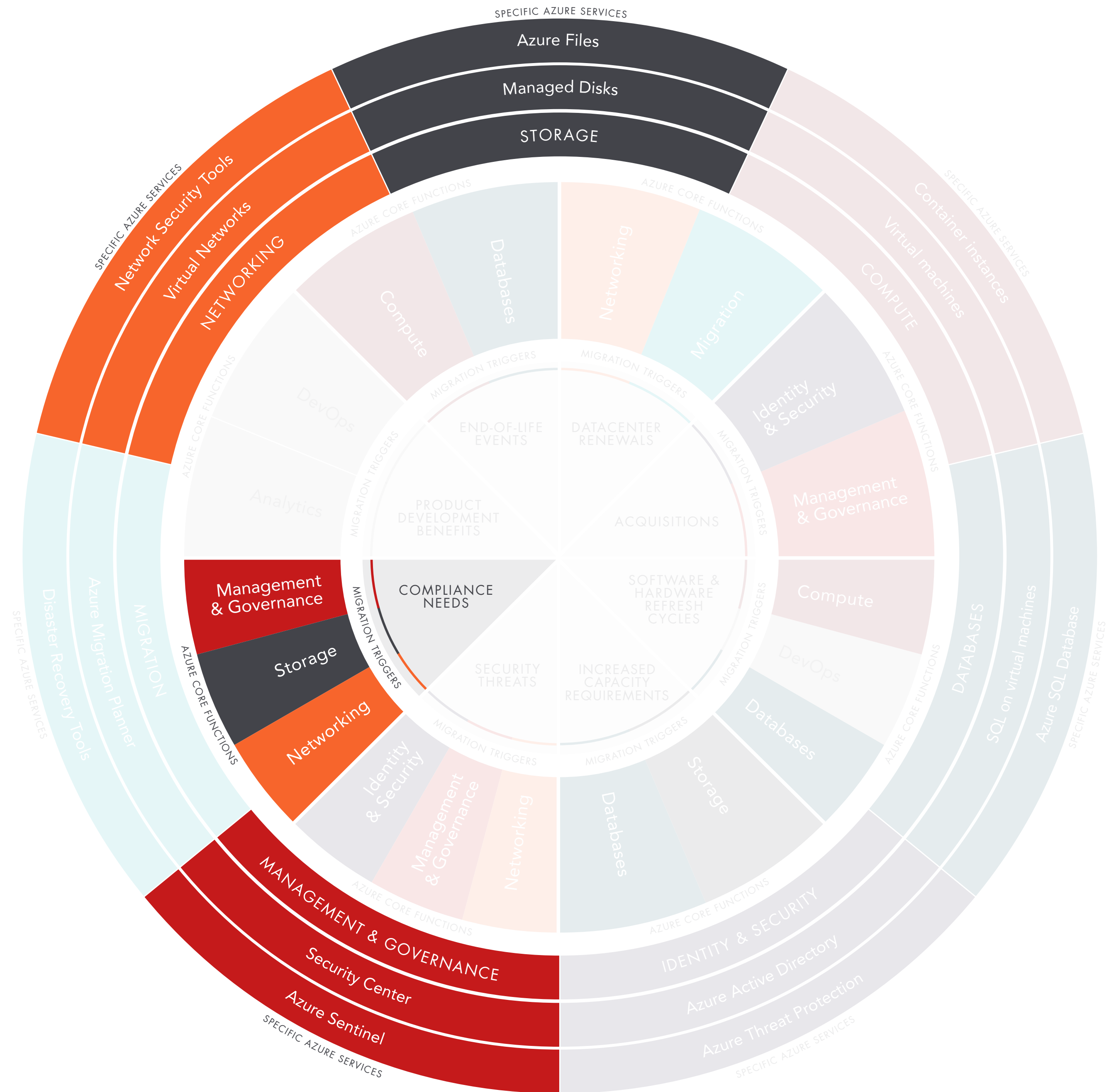
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Further reading:

Network Security Groups

Azure Firewalls

Application Gateways

COMPLIANCE NEEDS

Data security and integrity has become a core focus not only for businesses but also regulatory bodies. Housing data at the business premises, or in an aging datacenter, may not be 100% compliant. Moving to the Azure platform helps businesses meet their regulatory standards around the world:

Microsoft compliance offerings

CORE SUBJECTS TO LEARN

- Management & Governance
- Storage
- Network

Sunburst chart labels

SPECIFIC AZURE SERVICES
- Azure Files
- Managed Disks
- STORAGE
- Network Security Tools
- Virtual Networks
- NETWORKING
- Management & Governance
- Storage
- Networking
- Disaster Recovery Tools
- Azure Migration Planner
- MIGRATION
- MANAGEMENT & GOVERNANCE
- Security Center
- Azure Sentinel

AZURE CORE FUNCTIONS
- Databases
- Compute
- DevOps
- Analytics
- Identity & Security
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- Networking

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- END-OF-LIFE EVENTS
- DATACENTER RENEWALS
- PRODUCT DEVELOPMENT BENEFITS
- ACQUISITIONS
- COMPLIANCE NEEDS
- SOFTWARE & HARDWARE REFRESH CYCLES
- SECURITY THREATS
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WESTCOAST CLOUD

Azure Files

Managed Disks

STORAGE

MANAGEMENT & GOVERNANCE

A number of tools within the Azure platform have been designed to make the management of your environment as simple as possible.

The Azure Monitor is, as the name suggests, for monitoring your environment and reporting on it in meaningful ways. This enables administrators to deal with problems before they become a disaster. The Azure Advisor works in parallel with the Monitor and will suggest improvements, fixes, and faults to investigate. This can save administrators a huge amount of time compared to checking through every resource individually on a regular basis.

Many of the services in Azure have a built-in backup and disaster recovery function, but a business can extend this to their own resources too using the Azure Backup service or Azure Site Recovery. The Azure platform also supports a wide variety of third-party backup solutions.

GOVERNANCE

Security Center

Azure Sentinel

SPECIFIC AZURE SERVICES

IDENTITY

Azure Active Directory

Azure Threat Protection

WESTCOAST CLOUD

MANAGEMENT & GOVERNANCE

Security Center

Azure Security Center provides advanced threat protection across your environment, both within Azure and on-premises. It allows businesses to cooperate more easily and efficiently with Microsoft to secure their workloads. The ability to see the security analysis and report on individual resources in real time can restore a huge number of working hours back to security personnel each month.

Security Center is native to Microsoft Azure services, both SaaS and PaaS, and can be extended to IaaS and on-premises using a Microsoft monitoring agent.

Many businesses do not have the skills required to ensure that they are secure in today's connected world. Security Center is a tool that makes simple, confident protection accessible to security newcomers, while at the same time allowing skilled veterans to enhance their existing systems.

Further reading:

Security Center feature comparison

Improving your Secure Score

WESTCOAST CLOUD

MANAGEMENT & GOVERNANCE
Azure Sentinel

Microsoft Azure Sentinel is a cloud-native security information and event management (SIEM) platform, delivering intelligent security analytics for an environment as well as assisting with proactive threat detection and response. Available in a single pane, at a quick glance you can monitor, maintain and analyse a high-level overview of your entire infrastructure.

The Azure Sentinel 'world' is a vast network of Microsoft and community support, collaboration, and innovation. Many security professionals work together on new ways to detect and automate security that can be shared with all Sentinel users.

Many small businesses can feel in over their heads when dealing with modern, cloud-based security. Sentinel can make security easier with the vast array of support, tools, and AI available to users of the service.

Further reading:

Intro to Azure Sentinel

Advanced multistage attack detection in Azure Sentinel

WESTCOAST CLOUD

STORAGE

All of the services within Azure Compute, as well as all your data, have to reference some form of storage. Whether your software requires a specific type of storage or is flexible, Azure has all bases covered.

Azure can provide your typical hard disk as part of a virtual machine, or a storage share that is accessible via a mapped drive or browser. It can also delve into tiered storage at variable price points. Or finally, to access data on a massive scale, Azure can create a data lake.

GOVERNANCE

Security Center

Azure Sentinel

SPECIFIC AZURE SERVICES

IDENTITY

Azure Active Directory

Azure Threat Protection

WESTCOAST CLOUD

STORAGE

Managed Disks

Azure Managed Disks are units of virtualised storage, part of a much larger managed storage device, which appear on your machines as if they were physical disks. These disks are designed to be highly available, easily scalable, and very flexible to your needs.

Managed Disks are currently available in these types:

- Ultra-Disk: massive throughput and I/O capabilities for intense workloads
- Premium SSD: high-performance disks without usage costs
- Standard SSD: performance disks with small I/O charges
- Standard HDD: standard disks for lower

  throughput requirements

Many businesses will have a variety of requirements for data storage performance. It is important to match those requirements to the available managed disk options to reduce costs.

Further reading:

Intro to Azure Managed Disks

Azure premium storage

WESTCOAST CLOUD

STORAGE

Azure Files

Azure Files provides file shares fully managed by Microsoft (Security, updates, refreshes) that can be mounted as a drive on both cloud and on-premises deployments of Windows, Linux, and macOS. It can also be used to extend existing storage solutions into the cloud, to provide flexible storage space beyond on-premises capabilities.

Azure Files can be deployed in either standard or premium file shares, differing in data manipulation charges and file share performance.

Many businesses will use cloud storage as a first into cloud computing. Azure Files can support this step by making the process less intimidating. Just extending on-premises storage into the cloud can provide reliable evidence of cloud storage value before considering a full-blown migration.

Further reading:

What is Azure Files?

Planning for an Azure File Sync deployment

Azure Storage redundancy

GOVERNANCE

Security Center

Azure Sentinel

SPECIFIC AZURE SERVICES

IDENTITY

Azure Active Directory

Azure Threat Protection

WESTCOAST CLOUD

Azure Files

Managed Disks

STORAGE

NETWORKING

Having your resources within an Azure network puts state-of-the-art technology and connectivity methods at your fingertips. You have access to the tools and services required to make your cloud environment as secure as possible.

Being on an Azure network also means that your resources can make use of the Microsoft Backbone – one of the world's largest and most secure datacenter networks.

GOVERNANCE

Security Center

Azure Sentinel

SPECIFIC AZURE SERVICES

IDENTITY

Azure Active Directory

Azure Threat Protection

WESTCOAST CLOUD

NETWORKING

Virtual Networks

Networking within Azure offers all the possibilities of a traditional network. The capabilities and features of the platform can be used in combination or on it's own, to facilitate any solution.

Services available within Azure networking include:

- **Virtual Network**
- **ExpressRoute**
- **VPN Gateway**
- **Azure DNS**
- **Azure Bastion**

Primarily, each solution will need some form of network connectivity, whether it's public facing for a service, or private for data access. Once you understand the limitations and requirements for connectivity, you can start building a strategy for effective security.

Further reading:

Intro to Azure networking

Azure Virtual Network (VNet)

WESTCOAST CLOUD

NETWORKING

Network Security Tools

Due to the architecture of public cloud, a different approach to network security is required: the single point of entry to a network needs to be configured and managed correctly to exist. Services such as the Azure Firewall or Azure Application Gateways can provide security to specific areas of the environment. Meanwhile, Network Security Groups provide rule-based traffic routing between resources deep within the network.
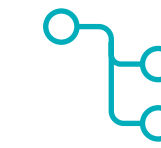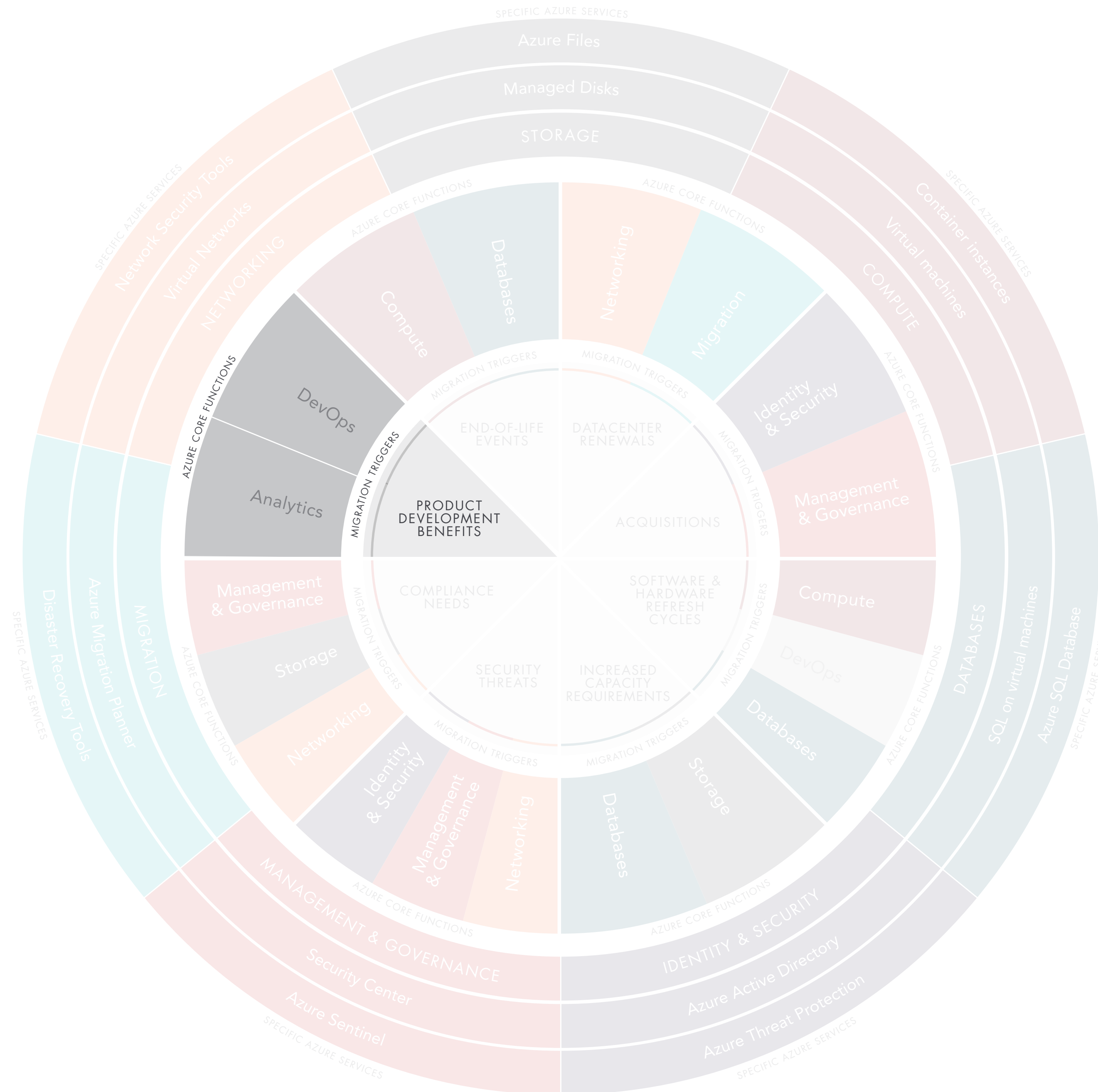
To be able to effectively secure an environment in Azure, it is necessary to understand which parts of your network are vulnerable. Following that, you need to identify the right tools to provide the required security.

Further reading:

Network Security Groups

Azure Firewalls

Application Gateways

WESTCOAST CLOUD

PRODUCT DEVELOPMENT BENEFITS

Businesses that create and develop software solutions may be wasting time and resources, as projects bottleneck or suffer during large updates. DevOps in Azure can help make a business more efficient with automated processes, shared responsibility, and better collaboration tools.

Analytics tools also provide greater understanding of the data a business has available, and can help to tackle issues before they become a real problem.

CORE SUBJECTS TO LEARN

- DevOps
- Analytics

AZURE DEVOPS

Azure DevOps provides developer services to support teams as they write plans, collaborate on code development, and build and deploy applications.

You can access its integrated features through your web browser or IDE client:

- **Azure Repos**
- **Azure Pipelines**
- **Azure Boards**
- **Azure Test Plans**

These are the key words and phrases that you should listen for in a conversation, if you hear them, contact the Azure team at Westcoast Cloud

Azure Artifacts DevOps is an advanced function within Azure, and we'd recommend having a discussion before you embark on how to get the most out of it. To speak to one of our experts, get in touch with the team at azure@westcoastcloud.co.uk.

Further reading:

Intro to Azure DevOps

Azure DevOps: features and services

# AZURE STREAM ANALYTICS (BESPOKE CONVERSATION NECESSARY)

Azure Stream Analytics is a real-time analytics and complex-event processing engine. It is designed to process high volumes of streaming data from multiple sources simultaneously, and help businesses process that data for insights.

The following scenarios are examples of when you can use Azure Stream Analytics:

- **Analyse real-time telemetry streams from IoT devices**
- **Web logs/clickstream analytics**
- **Geospatial analytics for fleet management and driverless vehicles**
- **Remote monitoring and predictive maintenance of high-value assets**
- **Real-time analytics on point-of-sale data for inventory control and anomaly detection**

When deployed correctly, analytics can have a massive and measurable effect on your business outcomes. To make sure you get the most out of Azure Stream Analytics, we'd recommend sitting down with one of our experts to discuss your needs. Drop us an email to get started:

azure@westcoastcloud.co.uk

WESTCOAST CLOUD
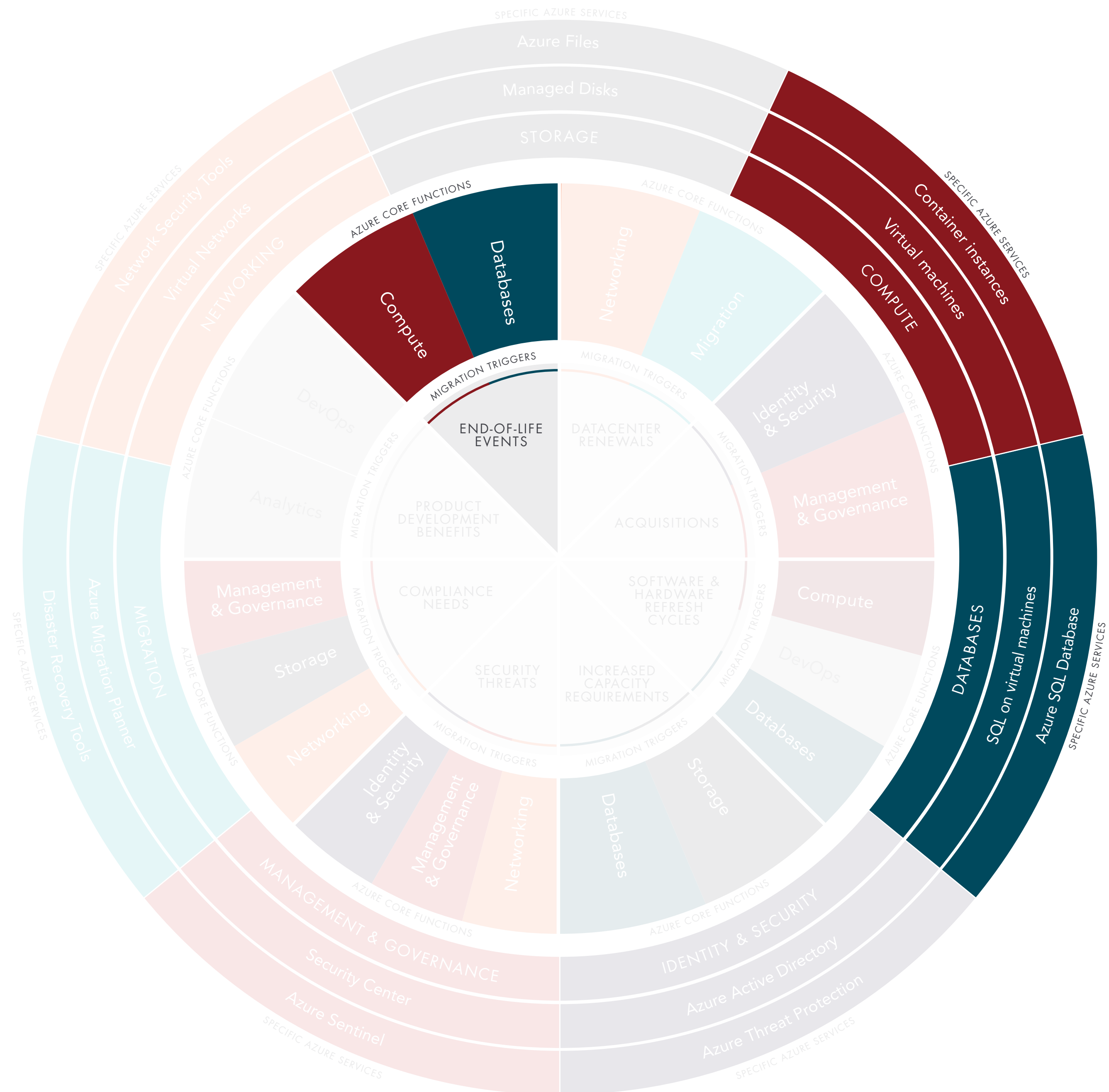
END-OF-LIFE EVENTS

Both hardware and software cycles include end-of-life contingencies. It may be the architecture of hardware, or an antiquated piece of software that has been discontinued in the past. Businesses either face a high risk if they continue with the same operations, or significant investment to evolve their systems. Moving to a cloud-hosted platform can significantly reduce risks, and may even provide an alternative solution that performs the same functions as the old technology but in an easily managed environment.

CORE SUBJECTS TO LEARN

- Databases
- Compute

WESTCOAST CLOUD

DATABASES

Databases are at the heart of all data-driven businesses – from the smallest SQL server to the largest data warehouse – and keeping your data safe and secure is therefore crucial.

Azure provides a platform for a myriad of databases, including Microsoft's own distributed database service – Azure Cosmos DB. Others include:

- **SQL**
- **MySQL**
- **PostgreSQL**
- **MariaDB**
- **HBase**
- **Azure Data Lake**

WESTCOAST CLOUD

SQL on virtual machines

Azure can support and license SQL on a virtual machine (VM) from the latest version back to 2008 R2, making the migration from aging hardware to modern infrastructure even easier. It is also possible to bring your existing, and often valuable, SQL licensing with you, to further reduce the costs of hosting a database in a reliable, secure, and high-performance environment.

Azure supports operating systems for SQL VMs of Red Hat Enterprise, SUSE Linux, Ubuntu, Linux, and Windows.

When approaching a database migration, consider the scale of requirements for functionality and performance. It may be that an Azure SQL Database is the best fit in simple scenarios, whereas hosting on a VM is more suitable if you're looking for more control of your database. From there, considerations of cost, performance, and security can impact price and software options.

Further reading:

Intro to SQL on virtual machines

Azure Database migration guide

WESTCOAST CLOUD

Azure SQL Database

If a business does not need control over specific updates, or doesn't want the overhead of managing operating system patching, security, and maintenance, then an Azure SQL Database may be an ideal solution. Provided as a general-purpose, relational database, it gives easy access to a highly available, high-performance, modern database with enterprise functionality.

Microsoft offers a series of options for PaaS databases:

- **Single database** – has its own set of resources and access to the latest features

- **Elastic Pool** – a collection of resources providing greatest flexibility of performance and cost

- **Managed Instance** – suitable for all first-step migrations to the cloud. Provides the closest equivalent to a traditional on-premises SQL server

Consider the requirements before migrating to cloud SQL – while there will often be enhanced security in the cloud, it may come at the cost of a few more niche requirements.

Further reading:

Choosing the right deployment option in Azure SQL

Platform as a Service (PaaS)

WESTCOAST CLOUD

COMPUTE

Compute contains a significant percentage of the functions that Azure commonly provides. It is a function itself, but also a core process of many other features of the platform, from IaaS to SaaS – Compute is ingrained in it all.

The primary Azure services that you will encounter within the Compute family are:

- **Virtual machines**
- **Container instances**
- **Kubernetes**
- **Application hosting**
- **Azure functions**

Virtual machines (VM)

Azure virtual machines are one of the core on-demand, scalable resources that Azure offers. They can provide any number of functions whilst maintaining the flexibility and performance that you would expect from a public cloud. Moving away from a CapEx model of IT may be one of the smartest decisions a business could make in the next 10 years.

Virtual machines in Azure come in a wide variety of flavours, many of which fall under the following families of performance:

- **A-Series:** entry-level VMs for low-priority work and dev/test
- **B-Series:** burstable VMs to handle workload spikes but usually run at low power
- **D-Series:** general-purpose machines to handle almost anything required

- **E-Series:** optimised for memory-heavy application processing
- **F-Series:** optimised for higher processing requirements and minimal memory

Understanding the technical requirements for a VM is a crucial first step to planning a virtual environment. Paying too much for unnecessary computing power is a common mistake that can be easily avoided. Be sure to check usage, throughput, storage, CPU, and memory requirements.

Further reading:

Intro to virtual machines in Azure

Virtual machine series options: in-depth

Virtual machine sizes

Container instances

Container instances in Azure, more recently known as the 'Azure Kubernetes Service' (AKS), provide a platform for automating deployment at scale across clusters of hosts.

AKS nodes are run on Azure virtual machines, and as such provide a similar amount of flexibility for the base specifications. Nodes can be scaled up, down, and horizontally for your needs.

As a first step when considering container instances, it's worth understanding whether there have been any operational decisions made about the platform, and what kind of storage is best applied to the scenario. From there you can look at setting scaling limits to match requirements.

Further reading:

Intro to AKS

Kubernetes core concepts

Best practices for building on AKS

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