

Azure management and governance

UNDERSTANDING MICROSOFT AZURE MANAGEMENT AND GOVERNANCE



Maarten Van den Broeck

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Microsoft Azure

Introduction to Azure course

- A comprehensive online cloud computing platform
- Used for e.g. data storage, application development, and web hosting
- Flexible and scalable, able to integrate with other Microsoft services (e.g. Power BI)



Azure services vs. resources

Service

- Set of features or functionality
- Integrated components
- Examples:
 - Azure Monitor (monitoring)
 - Azure Resource Manager (resource management)
 - Microsoft Cost Management (cost management)

Resource

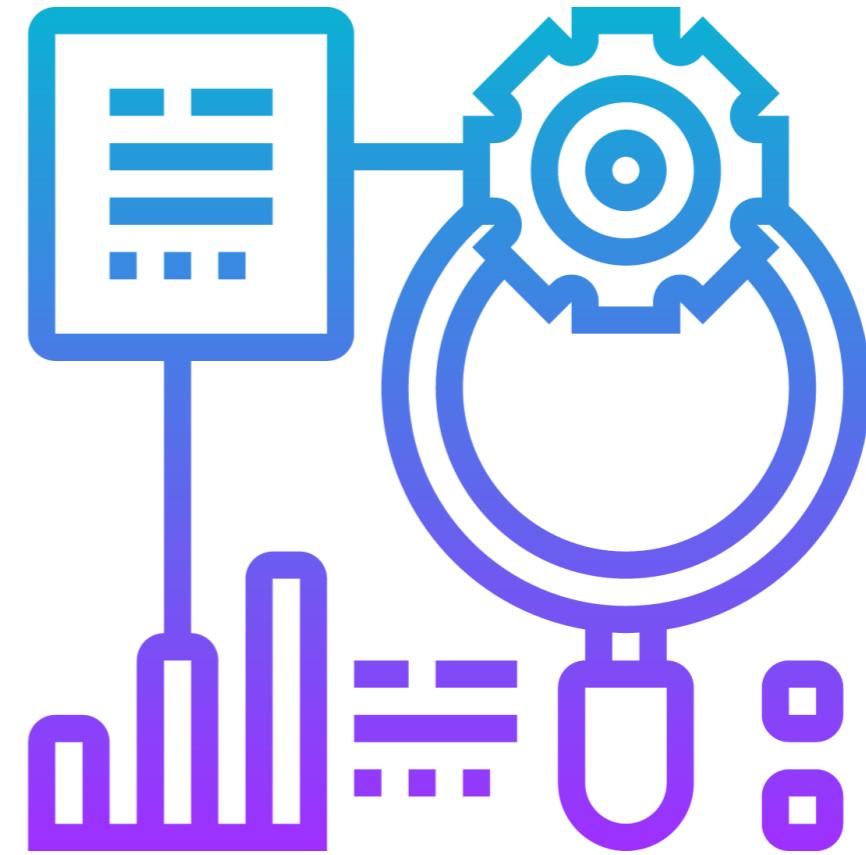
- Specific product or object of a service
- Manageable item
- Examples:
 - Database
 - Web application
 - Virtual machine

Management and governance in Azure



Management and governance use cases

- Manage resources supporting business applications
- Pro-actively manage costs to avoid going over budget
- Ensure data protection standards are implemented and enforced
- Monitor the performance and availability of your applications and resources



Example use case: dashboard performance

You're hosting a sales data dashboard in Azure with interactive features

Using Azure services, you can:

- Ensure the dashboard can handle varying traffic dynamically
- Ensure continuity and disaster recovery with data replication across Azure regions



Example use case: dashboard performance

You're hosting a sales data dashboard in Azure with interactive features

Using Azure services, you can:

- Collect and analyze performance metrics and usage data
- Use it to further improve the dashboard and optimize user experience



Let's practice!

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Cost management and governance

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Costs in Azure

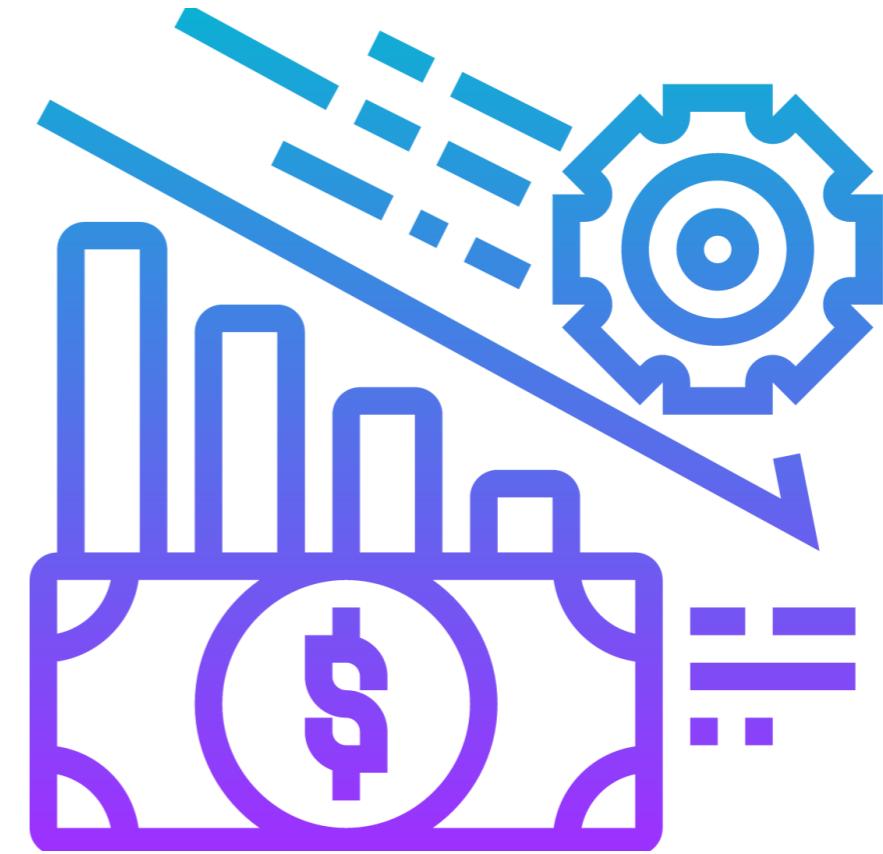
- *Renting* resources and services instead of having your own
- Typical Azure cost structure: pay-as-you-go
- Azure Marketplace for third-party vendors



Cost management

Typical cost management tasks in Azure:

- Follow-up of resource and application costs
- Setting up budgets, limits, and alerts
- Cost analysis



Example use case: budgeting

You are responsible for setting up the budgets in Azure for the data projects of your company

Using Azure, you can:

- Set spending limits
- Set up an alert if the project goes over budget
- Create a monthly cost overview report

Budget scoping
The budget you create will be assigned to the selected scope. Use additional filters like resource groups to have your budget monitor with more granularity as needed.

Scope: Contoso (Demo) [Change scope](#)

Filters: [Add filter](#)

Budget Details
Give your budget a unique name. Select the time window it analyzes during each evaluation period, its expiration date and the amount.

* Name: budget-demo

* Reset period: Monthly

* Creation date: 2021 March 1

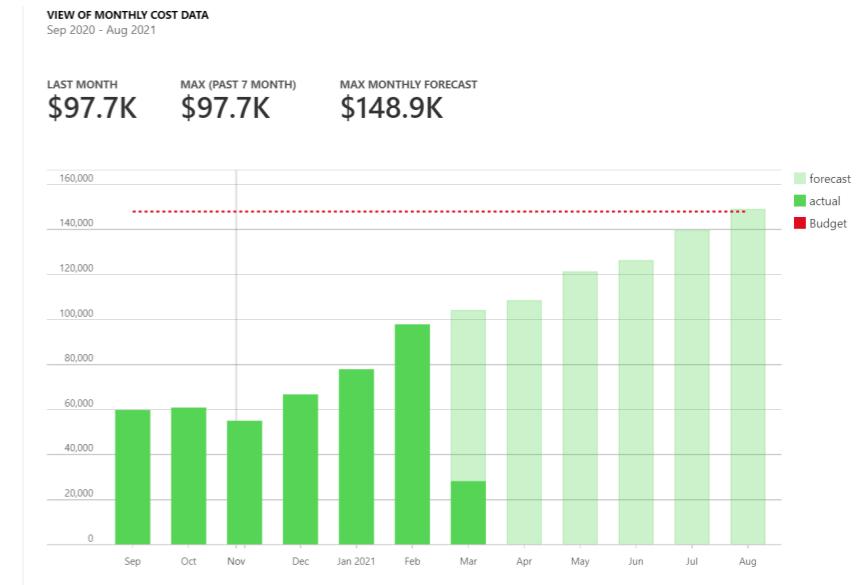
* Expiration date: 2023 February 28

Budget Amount
Give your budget amount threshold

Amount (\$): 148000

Suggested budget: \$148.9K based on forecast.

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Governance and compliance

- Guiding principles for operating responsibly
- Principles: accountability, transparency, security
- Typical use case: compliance
 - Adherence to applicable industry standards, laws, and regulations
 - Supervised internally and externally



Governance with Azure

Typical governance tasks in Azure:

- Set up specific governance policies
- Log user actions to provide an audit trail
- Document and report fulfillment of regulatory obligations with the help of Azure
- Azure takes into account different requirements according to region

The screenshot shows the Microsoft Azure Policy Getting started page. The left sidebar includes links for Overview, Getting started (which is selected), Compliance, Remediation, Events, Authoring (with sub-links for Definitions, Assignments, and Exemptions), and a search bar. The main content area features a heading 'Real-time control and compliance assessment at scale' with a sub-note about Azure Policy's implementation of proper guardrails and compliance across the organization. It includes three main sections: 'Assign policies' (Browse built-in policies and assign policies at scale), 'Assess compliance' (Get a compliance overview of all your assignments), and 'Author definitions' (Create custom policy definitions tailored to your environment). Below these are 'Recommended policy assignments' with links to 'Inherit tags from Resource Group', 'Require tag on Resource Group', 'Not allowed resource types', 'Audit Windows VMs for security', 'Enable Azure Monitor for VMs', and 'Enable Microsoft Defender for Cloud'. The top right corner shows a user profile for 'anneleen.rummens@ou...' and a link to 'STANDAARDMAP (ANNELEENRU...)'.

Example use case: data protection regulations

You are the compliance officer in charge of ensuring your company follows data protection regulations

Using Azure, you can:

- Enforce the use of data sensitivity labels
- Require encryption of sensitive data

The screenshot shows the Microsoft Azure Policy | Compliance interface. The top navigation bar includes 'Microsoft Azure', a search bar, and a 'Home > Policy | Compliance > Assign policy ...' breadcrumb trail. Below the navigation is a horizontal menu bar with tabs: Basics (selected), Advanced, Parameters, Remediation, Non-compliance messages, and Review + create.

The main content area is titled 'Scope' and contains a 'Scope' section with a note 'Learn more about setting the scope *'. A dropdown menu is open, showing 'Azure subscription 1/portfolio' with a green checkmark icon and a blue '...' button.

Below the scope section is an 'Exclusions' section with a note 'Optionally select resources to exclude from the policy assignment.' followed by an empty input field and a blue '...' button.

The 'Basics' section contains three fields:

- 'Policy definition *': A dropdown menu showing 'Require a tag on resources' with a green checkmark icon and a blue '...' button.
- 'Assignment name *': A dropdown menu showing 'Require a tag on resources' with a green checkmark icon and a blue '...' button.
- 'Description': A text input field containing the placeholder 'Require a sensitivity tag: public, restricted, confidential or strictly confidential.' This field has a purple border.

At the bottom of the page are four buttons: 'Review + create' (blue), 'Cancel' (white), 'Previous' (light gray), and 'Next' (light gray).

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Resource management and monitoring

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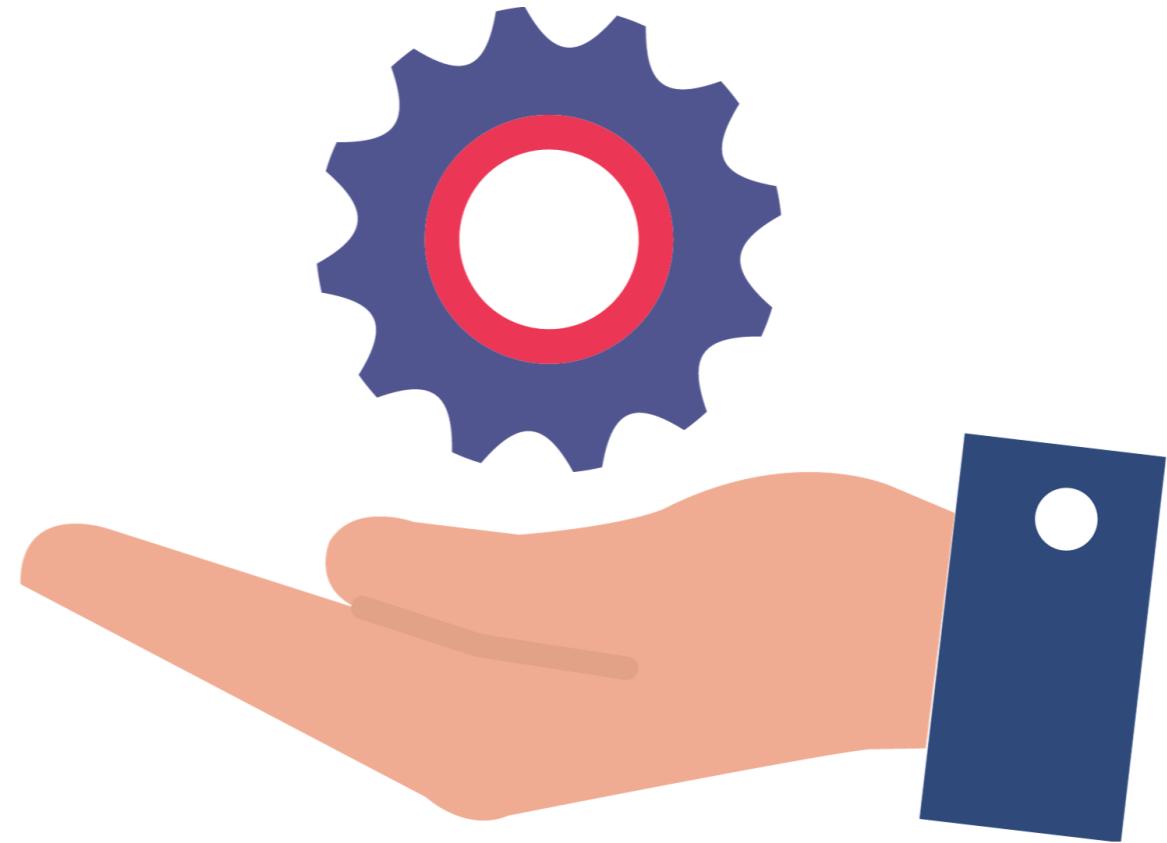
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Resource management in Azure

- Creating, organizing, and controlling resources
- Features:
 - Infrastructure as a code (IaC)
 - Resource tags
 - Resource locks



Infrastructure as code (IaC)

Managing resources using structured code and automation tools rather than manual processes

Benefits:

- Consistency and reproducibility
- Easier to document and share
- Less error-prone



Resource tags and locks in Azure

Resource tags

- Label resources (e.g., per project)
- Enable tracking of resources (e.g., to follow-up costs)

Resource locks

- Prevent modifications to resources
- Prevent deletion of resources
- Permanent or temporary (e.g., during maintenance)

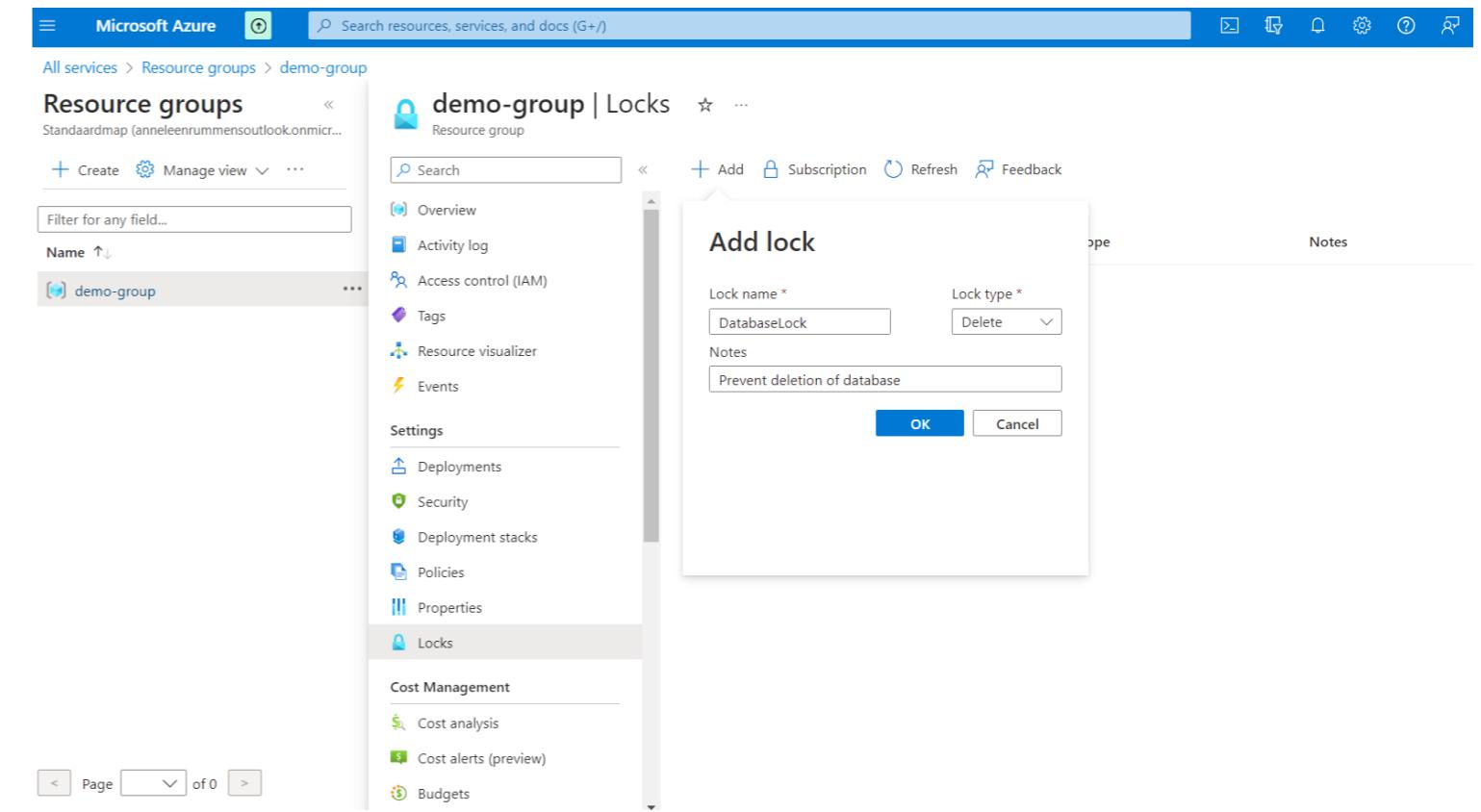


Example use case: business-critical resources

You are responsible for managing business-critical resources in Azure and want to ensure that those resources cannot be deleted

Using Azure, you can:

- Tag critical resources as 'critical'
- Put a resource lock on critical resources to block deletion



Monitoring with Azure

- Maintain an overview of all your processes in Azure
- Typical monitoring tasks in Azure:
 - Identify potential issues with resources or applications
 - Follow-up on usage and costs
 - Analyze log history to plan for future needs
- Azure provides a lot of capability to monitor for issues and optimize processes proactively

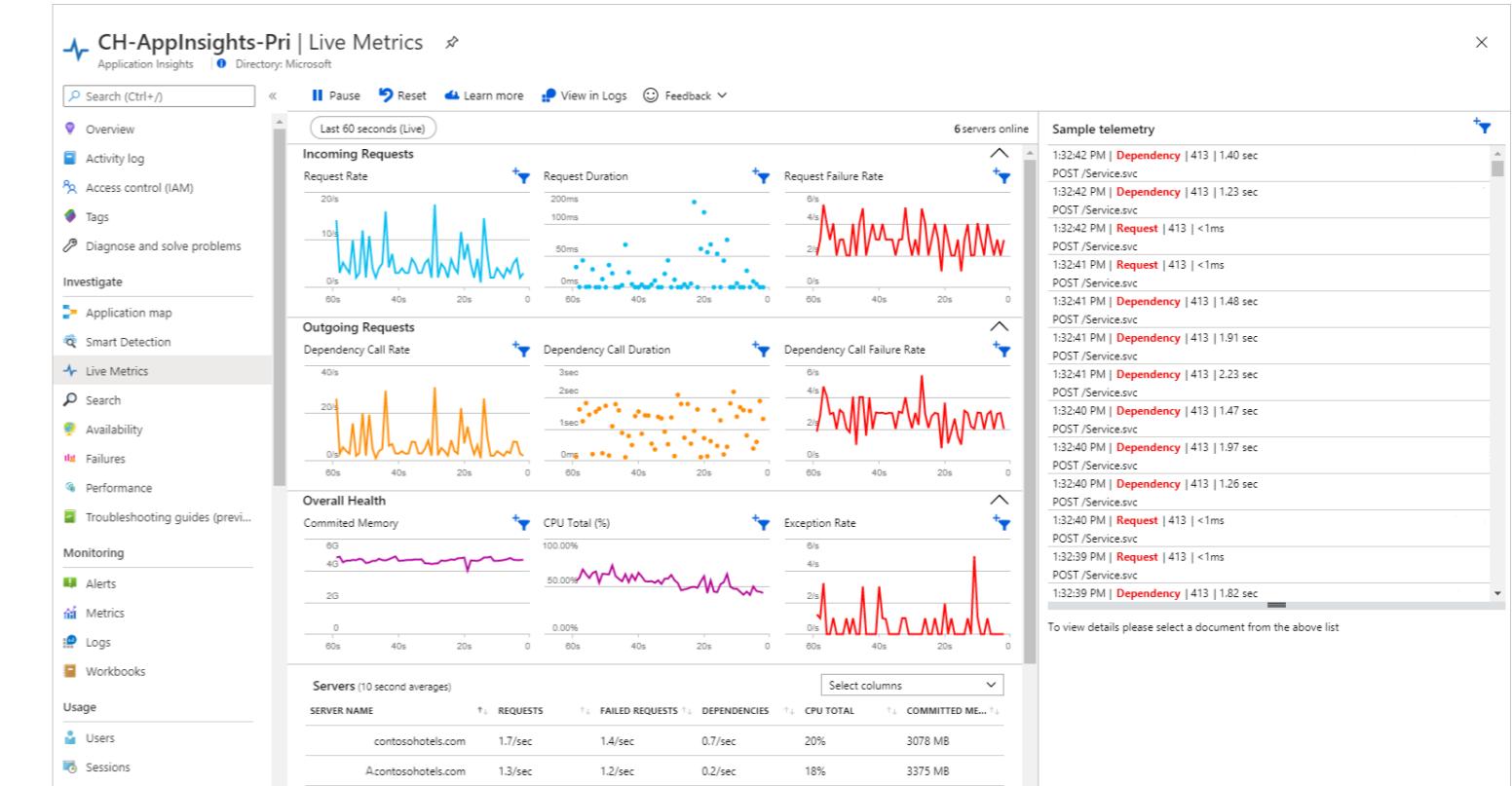
The screenshot shows the Microsoft Azure Monitor Overview page. At the top left is the Microsoft Azure logo and a search bar. To the right are various navigation icons and the user's email address: 'anneleen.rummens@ou...' and 'STANDAARDMAP (ANNELEENRU...)'. The main content area has a header 'Monitor | Overview' with tabs for 'Overview' and 'Tutorials'. Below this is a section titled 'Insights' with a sub-section 'Use curated monitoring views for specific Azure resources. [View all insights](#)'. It features four cards: 'Application insights' (monitor app availability, performance, errors, and usage), 'Container Insights' (gain visibility into controller, node, and container health), 'VM Insights' (monitor VM health, performance, and dependencies), and 'Network Insights' (view network resource health and metrics). A section titled 'Detection, triage, and diagnosis' follows, with sub-sections 'Metrics' (create charts to monitor and investigate usage and performance), 'Alerts' (get notified and respond using alerts and actions), 'Logs' (analyze and diagnose issues with log queries), 'Workbooks' (view, create, and share interactive reports), 'Change Analysis' (investigate what changed to triage incidents), and 'Diagnostic Settings' (route monitoring metrics and logs to selected locations). At the bottom left is a sidebar with links to 'Overview', 'Activity log', 'Alerts', 'Metrics', 'Logs', 'Change Analysis', 'Service health', and 'Workbooks'. The bottom right shows the URL 'https://portal.azure.com/#'.

Example use case: monitoring application health

You manage a web application with the help of Azure, a business-critical application, so you are tasked to minimize downtime

Using Azure, you can:

- Proactively detect issues with resources to prevent downtime
- Monitor usage traffic to plan new resource capacity



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Resource creation, tags and locks

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