



# DP-201T06: Designing for Efficiency and Operations



# Lesson Objectives

- Maximize efficiency of cloud spend
- Use Monitoring and Analytics to gain Operational Insights
- Use Automation to reduce effort and errors

# Maximize your Cloud Spend

- How the cloud changes your expenses
- Track your cloud spend
- Organize to optimize
- Optimizing IaaS costs
  - Compute
  - Right size virtual machines
  - Implement shutdown schedules for virtual machines
  - Apply compute cost discounts
  - Virtual machine disk storage cost optimization
- Optimizing PaaS costs
  - Optimizing Azure SQL Database costs
  - Optimizing Blob storage costs
  - Leverage consumption pricing models
  - Pause Compute Operations





# Monitoring and Analytics to gain Operational Insights

Monitoring is the act of collecting and analyzing data to determine the performance, health, and availability of your business application and the resources that it depends on.

## Core Monitoring

Core monitoring provides fundamental, required monitoring across Azure resources and gives you visibility into four key core monitoring areas:

- Activity logging
- Health of cloud services
- Metrics and diagnostics
- Recommendations on best practices

## Deep infrastructure monitoring

For typical IaaS workloads, there's more metrics and diagnostic information to gather from the network or operating systems. Pulling information from SQL Server to ensure it's properly configured, to analyzing free disk space across all the servers in your environment are all examples where Log Analytics can provide deep insights.

## Deep application monitoring

You can take your monitoring capabilities even further by looking deep into your applications to identify performance issues, usage trends, and overall availability of services. By using an application performance management tool, you can better detect and diagnose issues that occur within your web apps and services.

# Automation to Reduce Effort and Error

Managing the infrastructure of any type of workload involves configuration tasks. This configuration can be done manually, but it can be labor-intensive, error prone, and inefficient.

## Infrastructure as code

Infrastructure as code is the management of infrastructure (networks, virtual machines, load balancers, and connection topology) in a descriptive model, using a versioning system similar to what is used for source code. There are two different approaches you can take: imperative and declarative automation.

## Automation of operational tasks

There are ongoing operational activities that can also be automated. Automating these tasks with Azure Automation reduces manual workloads, enables configuration and update management of compute resources, and centralizes shared resources such as schedules, credentials, and certificates.

## Automating development environments

At the other end of the pipeline of your cloud infrastructure are the development machines used by developers to write the applications and services that are the core of your business. You can use Azure DevTest Labs to stamp out VMs with all of the correct tools and repositories that they need.

# Lab: Designing for Efficiency and Operations



# Lab overview

The students will explore way in which they can maximise the efficiency of using a cloud environment and how they can monitor and analyze operational efficiencies from the Azure portal. They will also look at how automation can be used to reduce effort and error.

## Lab objectives

After completing this lab, you will be able to:

1. Maximize the Efficiency of your Cloud Environment
2. Use Monitoring and Analytics to Gain Operational Insights
3. Use Automation to Reduce Effort and Error

# Lab scenario

You have recently been hired as a senior data engineer at AdventureWorks and are working on building a cloud data platform solution that meets the organizations technical and business requirements.

The Chief Financial Officer (CFO) has expressed concerns that she does not want the costs of running the infrastructure to “spiral out of control”. She would like assurances that the information services team are operating the supporting services as efficiently as possible and she would like to know what steps are being taken to get information that provides evidence of how the environment is being used.

In addition, the CIO wants to gain an understanding how the team can monitor the systems and work efficiently through automation and would like an overview of what can be done to ensure that administrative effort can be reduced through automation.

At the end of this lab, you will have:

1. Maximize the Efficiency of your Cloud Environment
2. Use Monitoring and Analytics to Gain Operational Insights
3. Use Automation to Reduce Effort and Error



# Lab review

- Exercise 1 – Are there aspects of the Price Calculator that would be helpful?
- Exercise 2 – Was there any debate in the monitoring technologies chosen?
- Exercise 3 – Are there any additional tasks that you think a Data Engineer should perform?

# Module Summary

## In this module, you have learned about:

- Maximize efficiency of cloud spend
- Use Monitoring and Analytics to gain Operational Insights
- Use Automation to reduce effort and errors

## Next steps >

After the course, consider watching this video that introduces [Azure DevOps](#) and how you can use it to bring about operational efficiencies.

