Automation in the cloud for the reluctant IT Pro

@thomasvochten

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Thank you!

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If you find yourself doing something more than once: automate it!

Automate what exactly?

- Microsoft Teams creation

- License management

- Reporting & auditing

- Monitoring

- More advanced business scenarios:

  "When a user leaves the company, let other users know which shared documents they will lose access to"

Need to run something on a schedule?

- Task Scheduler in Windows
- Cron jobs in Linux

Choices…

- Scheduled Tasks
- Azure Webjobs
- Azure Automation
- Azure Functions

- Azure Logic Apps
- Power Automate
- Azure DevOps / GitHub Actions
- Azure batch

When to use what?

flexibility • cost • complexity •
resilience • orchestration •
security • triggers • scaling •
output needs

But I just want to run some PowerShell?

- Azure Automation
- Azure Functions

Running PowerShell in the cloud
security considerations
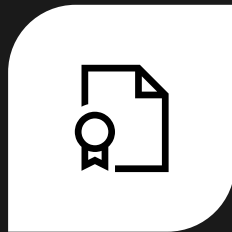

Where do you store credentials?

What permissions do you need?

Register your app in Azure AD

Authentication

Authorization

API / Permissions name	Type	Description	Admin consent req...	Status
∨ Microsoft Graph (8)				···
Directory.ReadWrite.All	Application	Read and write directory data	Yes	✓ Granted for thvo.net ···
Group.ReadWrite.All	Application	Read and write all groups	Yes	✓ Granted for thvo.net ···
Team.Create	Application	Create teams	Yes	✓ Granted for thvo.net ···
Team.ReadBasic.All	Application	Get a list of all teams	Yes	✓ Granted for thvo.net ···
TeamMember.ReadWrite.All	Application	Add and remove members from all teams	Yes	✓ Granted for thvo.net ···
TeamSettings.ReadWrite.All	Application	Read and change all teams' settings	Yes	✓ Granted for thvo.net ···
User.Read	Delegated	Sign in and read user profile	-	✓ Granted for thvo.net ···
User.ReadWrite.All	Application	Read and write all users' full profiles	Yes	✓ Granted for thvo.net ···

Azure Automation

- Process automation through Runbooks
- Runbook & PowerShell Gallery support
- Helpers for using variables and other dependencies
- Additional configuration & update management capabilities
- Good integration with IaaS components of Azure
- The "tried & true" approach

Azure Functions

- Serverless
- Flexible & scalable
- Many triggers to choose from
- Very good integration with VSCode
- Support for the PowerShell Gallery
- If you need ultimate control
- Can be intimidating at first

PowerShell in a Function App

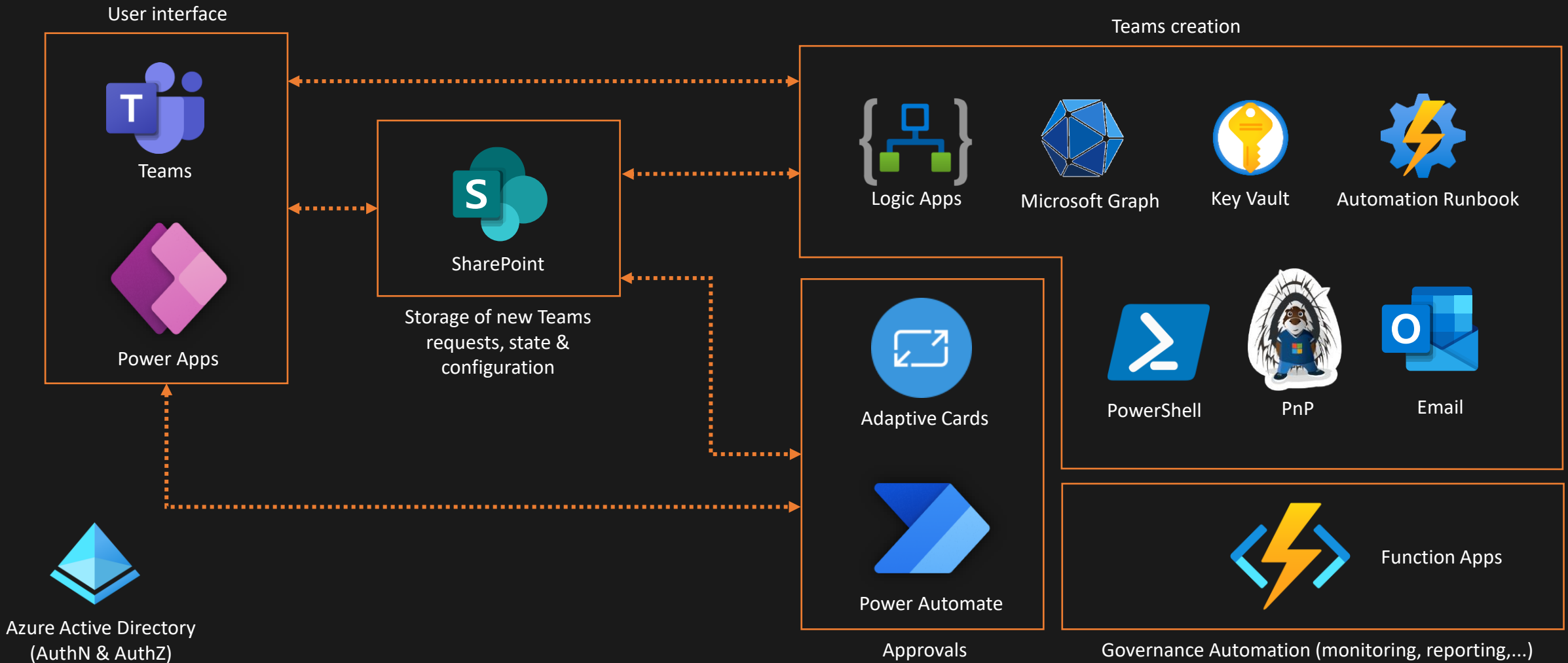| Publish *	⦿ Code ◯ Docker Container
Runtime stack *	PowerShell Core ⌄
Version *	7.0 ⌄
Region *	West Europe ⌄

Demo 2 - Azure Functions

Creating and reporting on Teams with PowerShell

```
Find-Module Microsoft.Graph.Teams
Find-Module PnP.PowerShell
```

Stepping it up!

Demo 3 - Provisioning Engine

Creating Teams using Teams, Power Apps,
Power Automate, SharePoint, Logic Apps and Automation

What about the costs?

Azure costs by product

Justin Grote
@JustinWGrote

My @AzureFunctions #Powershell, which processed 496,000 tickets last month, including a peak of 14,000 tickets a second, georedundant across 8 azure regions, cost $8 to run last month (which was absorbed by our partner credit)

Serverless is the future.

1:43 AM · Mar 10, 2020 · Twitter Web App

Other important considerations

- Security
- Orchestration
- Resiliency
- Scale
- Performance
- Conflicts
- Logging & output
- …

Maintainability of your scripts

- Have you thought about version control?
- Git is the de facto standard, and it's free!
- You don't have to be a developer to use git and GitHub

https://thvo.me/git

Useful reading

Background jobs best practices

Overview of all Azure Services

Using PnP PowerShell in Azure Functions

Provisioning engine sample application

Key takeaways

- Use the simplest tool that could possibly work

- Balance cost, flexibility & complexity when making a choice

- Most common choices for running PowerShell in the cloud:
  - Azure Automation
  - Azure Functions

- Don't forget low-code solutions such as Power Automate

- Consider security aspects such as app permissions & secure storage of credentials (Keyvault)