



!mpactmakers

Better Business. Better Community.

Why you need...

Infrastructure as Code



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- **Cloud Architect**
- **AWS and Azure Expertise**

Agenda

- What is Infrastructure as Code (IaC)
- Tool summary
- Pros and Cons
- Deployment Options
- Demonstrations:
 - Using native Azure capabilities
 - Using a 3rd party tool (Terraform)
- Closing

What is Infrastructure as Code?

What is infrastructure as Code (IaC)?

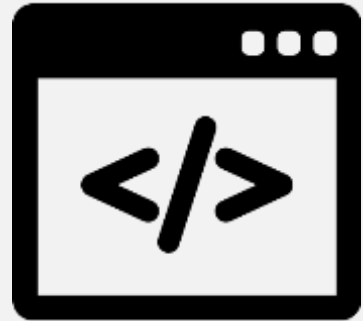
- IT provisioning process where systems are built, managed, and provisioned via code
 - ...rather than a manual process
 - Infrastructure is defined by a code library

Pros

- Make infrastructure builds faster and higher quality
- Enables DevOps
- Removes errors and allows testing before deployment
- Enables repeatable builds
- Code is self-documenting
- Integrates with source control

Cons

- Learning curve



IaC Tools

Orchestration Tools: Azure Resource Manager (ARM), AWS Cloud Formation, Terraform

- Create and Manage:
 - Networks
 - Storage
 - Load Balancers
 - PaaS components like Azure App Services and Azure SQL
 - Creation of Virtual Machines (VM)

VM Configuration Management Tools: Ansible, SaltStack, Puppet, Chef

- Define the target state of a Virtual Machine
- Goal: not remote into VM once it is running

Orchestration and VM Config Management Tools Work Together...
Our Focus is on *Orchestration*

Deployment Options

From a laptop

- Very common
 - This is what we are going to do



From a server or deployment environment

- Example: Azure Automation Service

From an Integrated Development Environment

- Example, from Visual Studio (on a laptop)



From a hosted tool of software

- Hashicorp offers a SaaS version of Terraform



Demonstration – create a VM and Network

- Deploy a Virtual Machine, Storage, and Network while we talk
- Using Two Different Approaches:
 - Terraform (3rd party tool)
 - View Script
 - Run command "terraform plan"; "terraform apply"
 - Azure Resource Manager (ARM) JSON Template
 - View Script
 - Run command "az group deployment create --name deploymentName --resourcegroup groupName --template-file c:\file.json --mode complete"

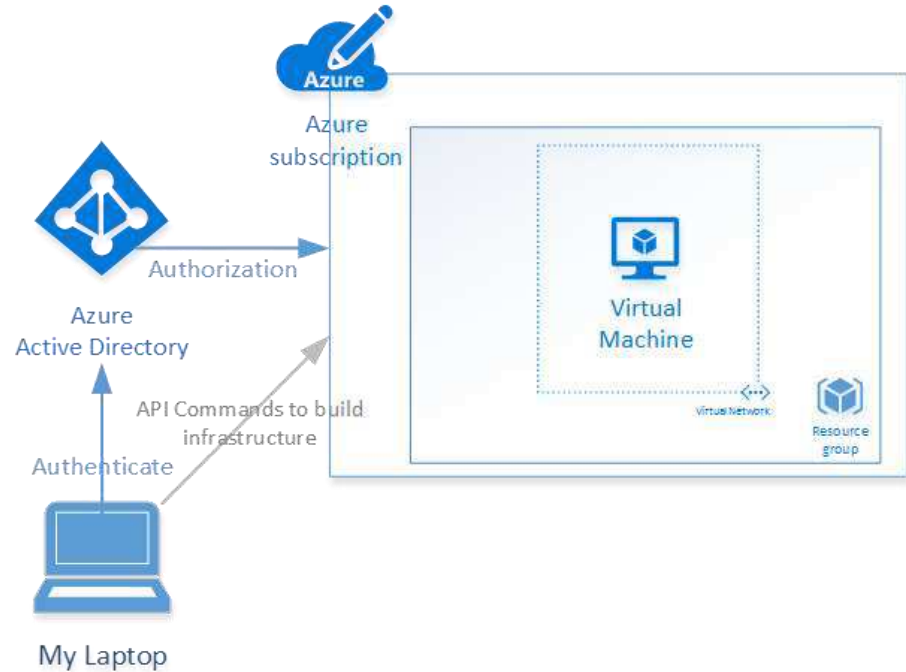


Let's run the demo

..and then finish the slides while it builds

While it's running – what are actually building?

- What are we building?
 - A network (VNET)
 - A virtual machine VM
 - VM storage
 - Network interfaces



While it's running – ARM vs Terraform

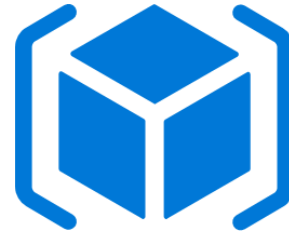
- Terraform

- Created by Hashicorp
- Works across different providers: AWS, Azure, Google, VMWare, etc.
- Open-source and paid versions
 - Pros: Faster, Easy language, More control, Multiple providers, Better destruction method
 - Cons: Uses local state (which can be difficult to manage)



- Azure Resource Manager

- Native Azure
- JSON script
 - Pros: native to Azure, no state management
 - Cons: Verbose, less intuitive



Recommendation: Terraform

Thank You!

Questions?

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