



# Cloud **Terraformation**

FROM CLICKOPS TO  
INFRASTRUCTURE AS CODE

# **Agenda**

ABOUT  
THE LANGUAGE  
THE PROVIDER  
THE ASSIGNMENT  
QUESTIONS

# Hello from Grand Rapids!

I'm Victor Frye

Your friendly neighborhood developer

Unchallenged #1 Clippy fan

Love the internet and fun

- [victorfrye.com/blog](https://victorfrye.com/blog)
- [microsoftgraveyard.com](https://microsoftgraveyard.com)
- [shrugman.com](https://shrugman.com)

Passion for .NET, React, Azure, Xbox

DevOps specialist at Leading EDJE

Building with Microsoft solutions



# About **Leading EDJE**

Technology consultancy and services

- Strategists, innovators, partners
- Craft **bespoke solutions**
- **Positive disruption** of business norm

Real. Fun. Geeks.

**FREE** lunch and learns

Expert talent

- **Cloud infrastructure**
- Digital and app innovation
- Data and AI
- Project management



# The ClickOps story

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Build application

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What infrastructure?

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Click in web portal

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Deploy and cross fingers

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Please do not change it



The background features a light blue gradient with several abstract, soft-edged shapes in shades of blue and purple. These shapes resemble clouds or large, inflated balloons, scattered across the frame. Smaller, solid-colored spheres in similar hues are also present, adding to the abstract, modern aesthetic.

# **The Answer**

CODIFY INFRASTRUCTURE

The background is a light blue gradient with various abstract elements. There are several spheres of different sizes in shades of blue and purple. At the bottom, there are larger, more complex organic shapes in similar colors, resembling liquid droplets or clouds. The overall aesthetic is clean and modern.

# **The Language**

INFRASTRUCTURE AS CODE

# HashiCorp Terraform

An infrastructure as code tool

Source-available

Cloud-agnostic

Declarative

Stateful

Uses Terraform configuration language (HCL)

Elements include:

- Blocks (e.g. resources, variables, data)
- Arguments (e.g. name = "value")
- Expressions (e.g. name = var.example)



```
resource "azurerm_resource_group" "example" {  
  name      = "example-resources"  
  location  = "Central US"  
}  
  
resource "azurerm_static_web_app" "example" {  
  name                        = "example"  
  resource_group_name        = azurerm_resource_group.example.name  
  location                   = azurerm_resource_group.example.location  
}
```

## EXAMPLE CODE FOR MANAGING AN AZURE STATIC WEB APP

# Write, Plan, Apply



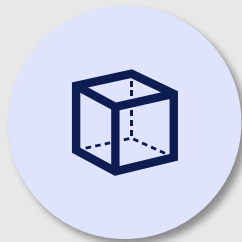
# Alternative options



Bicep



CloudFormation



Pulumi



Chef

# Multiple providers

**AWS**

**AzureRM**

**Google**

**Kubernetes**

**AzAPI**

**AzureAD**

**MSGraph**

**GitHub**

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# **The Provider**

YOUR CLOUD SPECIFIC INTERFACE

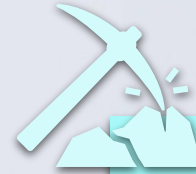


# Choose your provider



## AzureRM

- Automatic API versioning
- Simplicity
- Comprehensive documentation



## AzAPI

- Immediate API access
- Targeted resource updates
- Fine-grained control

# Terraforming Azure

ClickOps resources in the  
Azure portal

Configure workload identity  
federation with Entra ID

Set up Terraform backend with  
blob storage

Use template exports for  
Terraform

Automate CI/CD with GitHub  
Actions



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# **The Assignment**

READY, SET, GO!

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# **Install Terraform**

DEMONSTRATION

The background features a light blue gradient with several abstract, soft-edged shapes in shades of blue and purple. These shapes include large, irregular blobs and smaller, smooth spheres of varying sizes, some of which are partially cut off by the edges of the frame. The overall aesthetic is clean and modern.

# **Set up auth**

DEMONSTRATION



The background features a light blue gradient with several abstract, 3D-rendered shapes. On the left side, there are large, overlapping, rounded blobs in shades of blue and purple. Scattered across the right side are several smaller, solid blue spheres of varying sizes. The overall aesthetic is clean and modern.

# Create backend

DEMONSTRATION

The background features a light blue gradient with several 3D-rendered spheres and organic, cloud-like shapes in shades of blue and purple. These elements are scattered across the frame, with a larger cluster on the left and smaller ones on the right and bottom.

# **Configure RBAC**

DEMONSTRATION

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# **Export Terraform**

DEMONSTRATION

The background features a light blue gradient with several abstract, soft-edged shapes in shades of blue and purple. These shapes include large, rounded blobs and smaller spheres, some of which are semi-transparent, creating a layered, 3D effect. The shapes are scattered across the frame, with a large cluster on the left and several smaller ones on the right and bottom.

# **Refactor configurations**

DEMONSTRATION

The background features several abstract, 3D-rendered shapes in shades of blue and purple. On the left side, there are larger, more complex blobs and spheres. On the right side, there are smaller, simpler spheres. The overall aesthetic is clean and modern.

# **Import state**

DEMONSTRATION



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# **Build plan**

DEMONSTRATION

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# **Apply plan**

DEMONSTRATION

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# **Automate CI/CD**

DEMONSTRATION

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# **Did it work?**

**SHRUGMAN.COM**

# Thank you

Cloud Terraformation: Presentation  
feedback



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