

# Stress-Testing Azure Resources using Chaos Studio



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# Peter De Tender

## Azure Architecture, DevOps and App Migration focus

- +27 years background in Microsoft Technologies
- +13 years MCT, Former Azure MVP (5y)
- Last 11 years 100% focused on Azure
- Technical writer, book author and technical blogger
- HashiCorp Ambassador 2020-2023

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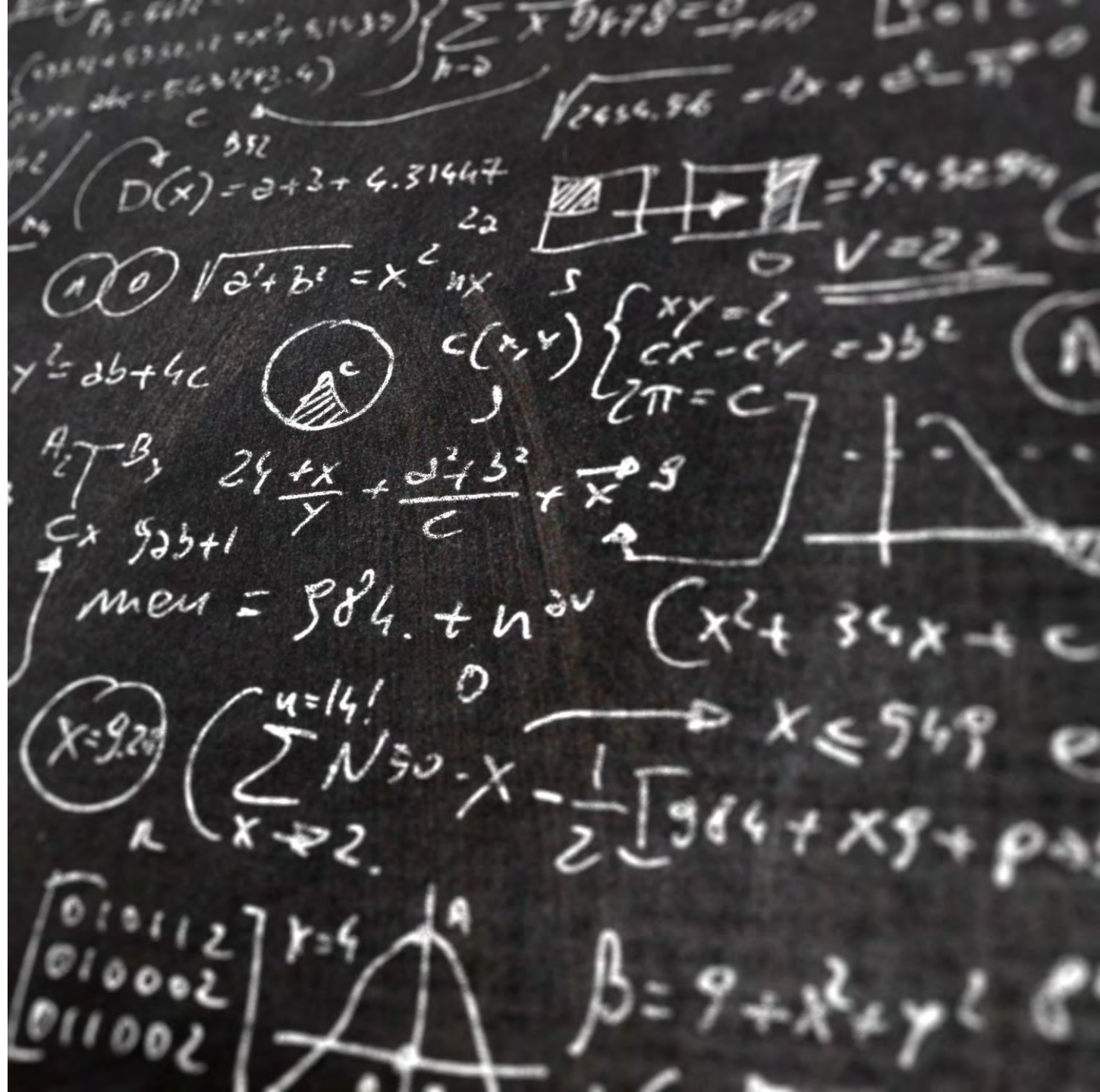
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*“...Bring me an audience, I give them Azure knowledge in return...”*



# What is Site Reliability Engineering (SRE)



# What is SRE?

SRE(\*) refers to **Site Reliability Engineering** or **Site Reliability Engineer**

## Site:

- *The application workloads your SRE team are managing*

## Site:

- *Originally within Google, this referred to making sure that "www.google.com" was always available, no matter what...*

# What is SRE?

SRE(\*) refers to **Site Reliability Engineering** or **Site Reliability Engineer**

## Reliability:

- *Guaranteeing that any running application is available according the business requirements*

## Engineering:

- *Applying the principles of computer science and engineering to build and maintain systems and applications, from development to monitoring*

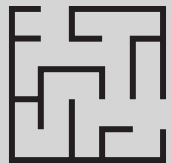
# The role of an SRE?



*Sometimes*, our task is writing software for large-scale workloads

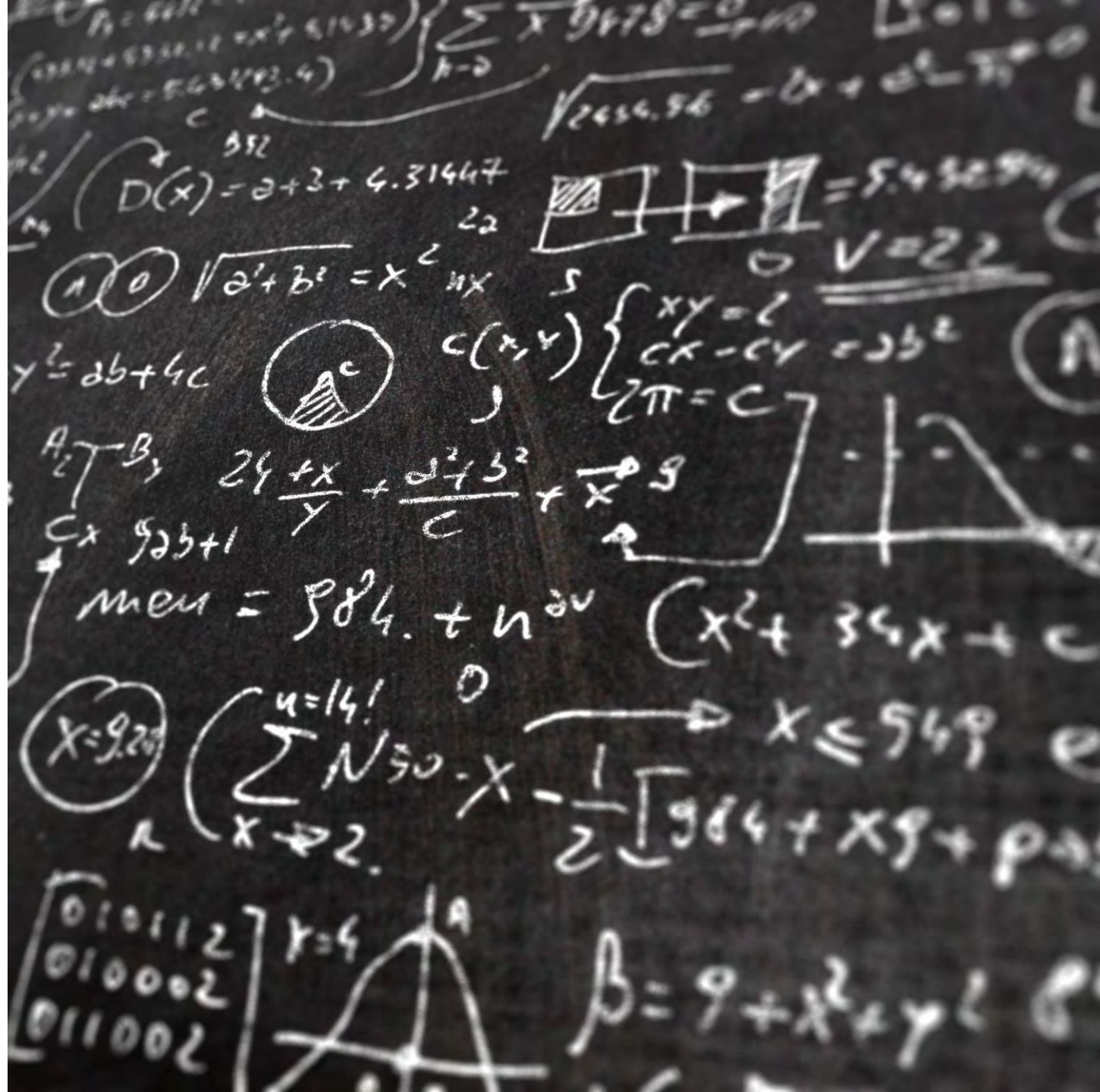


*Sometimes*, our task is building additional pieces that those large-scale workloads need, like backup, monitoring, load-balancing,...



*Sometimes*, our task is figuring out how to apply existing solutions to new problems

# What is Chaos Engineering



# What is Chaos Engineering?

*“...Chaos Engineering is the discipline of **experimenting** on a system in order to **build confidence** in the system’s capability to **withstand** turbulent conditions in production...”*

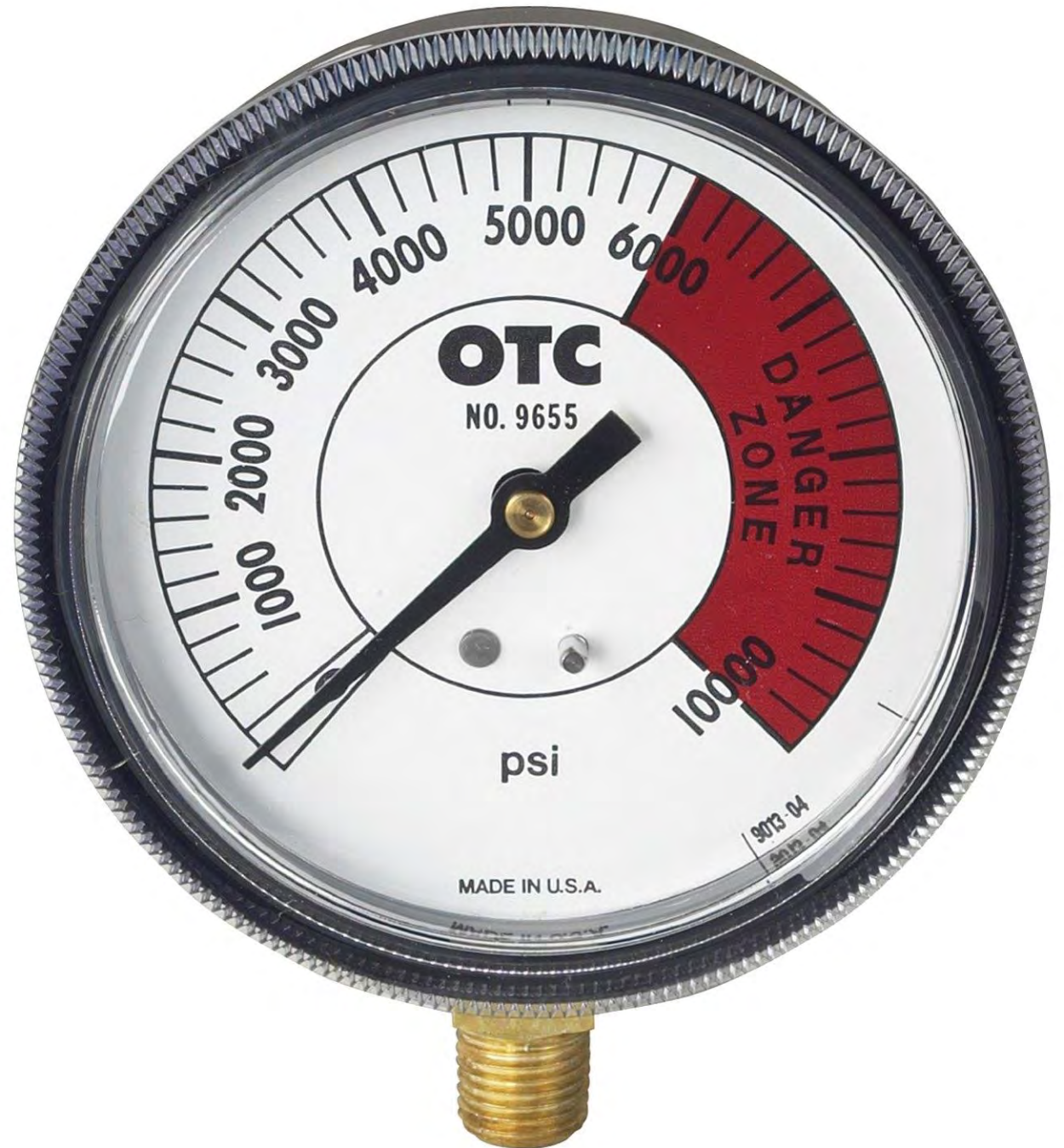
Source: <https://principlesofchaos.org/>



# The curious case of CPU pressure

Aka

- Virtual Machine
- KeyVault, NSG,...
- DevOps Engineer



# The curious case of CPU pressure

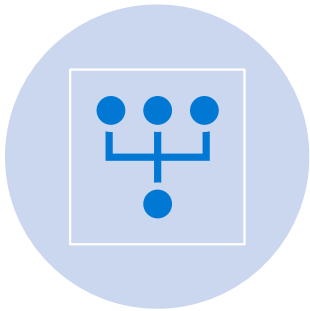
Aka

- VM Scale Sets
- Azure Kubernetes Service
- Cosmos DB

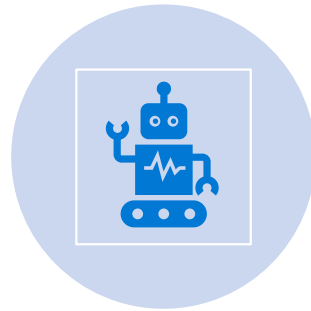
(all of the above and more,  
and all at once)



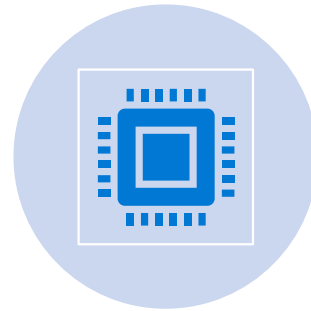
# Is Chaos Engineering – Devops 3.0?



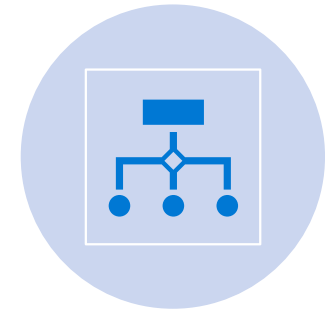
**FIRST, WE HAD AGILE ...**



**NEXT CAME DEVOPS...**

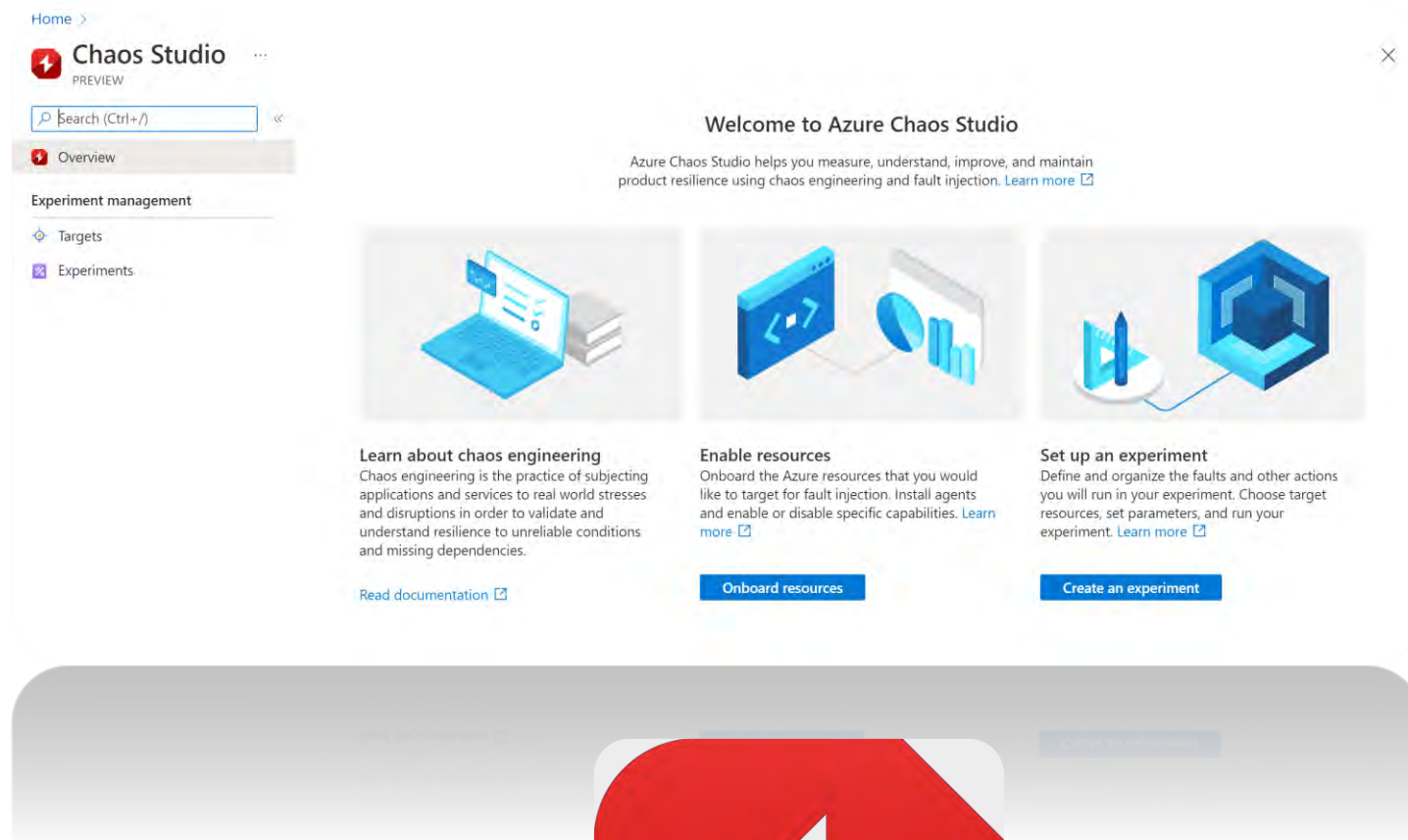


**THEN WE TALKED  
ABOUT SITE RESILIENCY  
ENGINEERING (SRE)  
(DEVOPS 2.0?)**



**SO CHAOS  
ENGINEERING IS  
DEVOPS 3.0, RIGHT?**

# Welcome to Azure Chaos Studio



Home >

**Chaos Studio** PREVIEW

Search (Ctrl+/)


Overview

Experiment management

- Targets
- Experiments

### Welcome to Azure Chaos Studio


Azure Chaos Studio helps you measure, understand, improve, and maintain product resilience using chaos engineering and fault injection. [Learn more](#)



#### Learn about chaos engineering

Chaos engineering is the practice of subjecting applications and services to real world stresses and disruptions in order to validate and understand resilience to unreliable conditions and missing dependencies.


[Read documentation](#)



#### Enable resources

Onboard the Azure resources that you would like to target for fault injection. Install agents and enable or disable specific capabilities. [Learn more](#)

[Onboard resources](#)



#### Set up an experiment

Define and organize the faults and other actions you will run in your experiment. Choose target resources, set parameters, and run your experiment. [Learn more](#)

[Create an experiment](#)



# Azure Chaos Studio

- Chaos Engineering as a service, allowing you to inject faults into your Azure workloads
  - Virtual Machines
  - Network Security Groups
  - Kubernetes Clusters (AKS)
  - Azure Regional Outages
  - ...
- Chaos Experiments
  - Service-Direct faults
  - Agent-based faults (VMs)

# Chaos Experiments

→ A collection of Steps

→ Running sequentially

→ Containing Branch(es)

→ Running parallel within a step

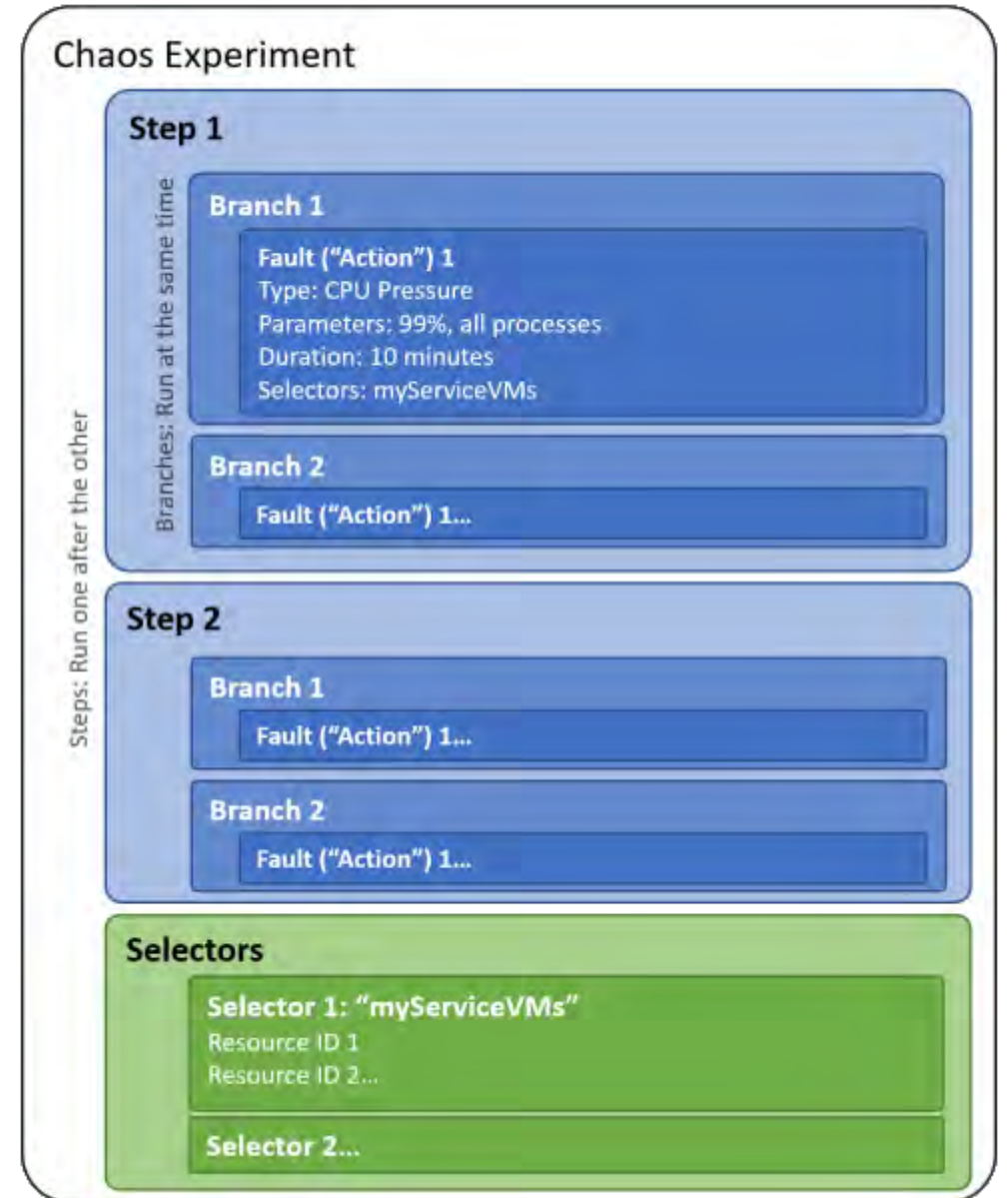
→ Containing Actions

→ Performing the fault injections

→ Targeting Selectors

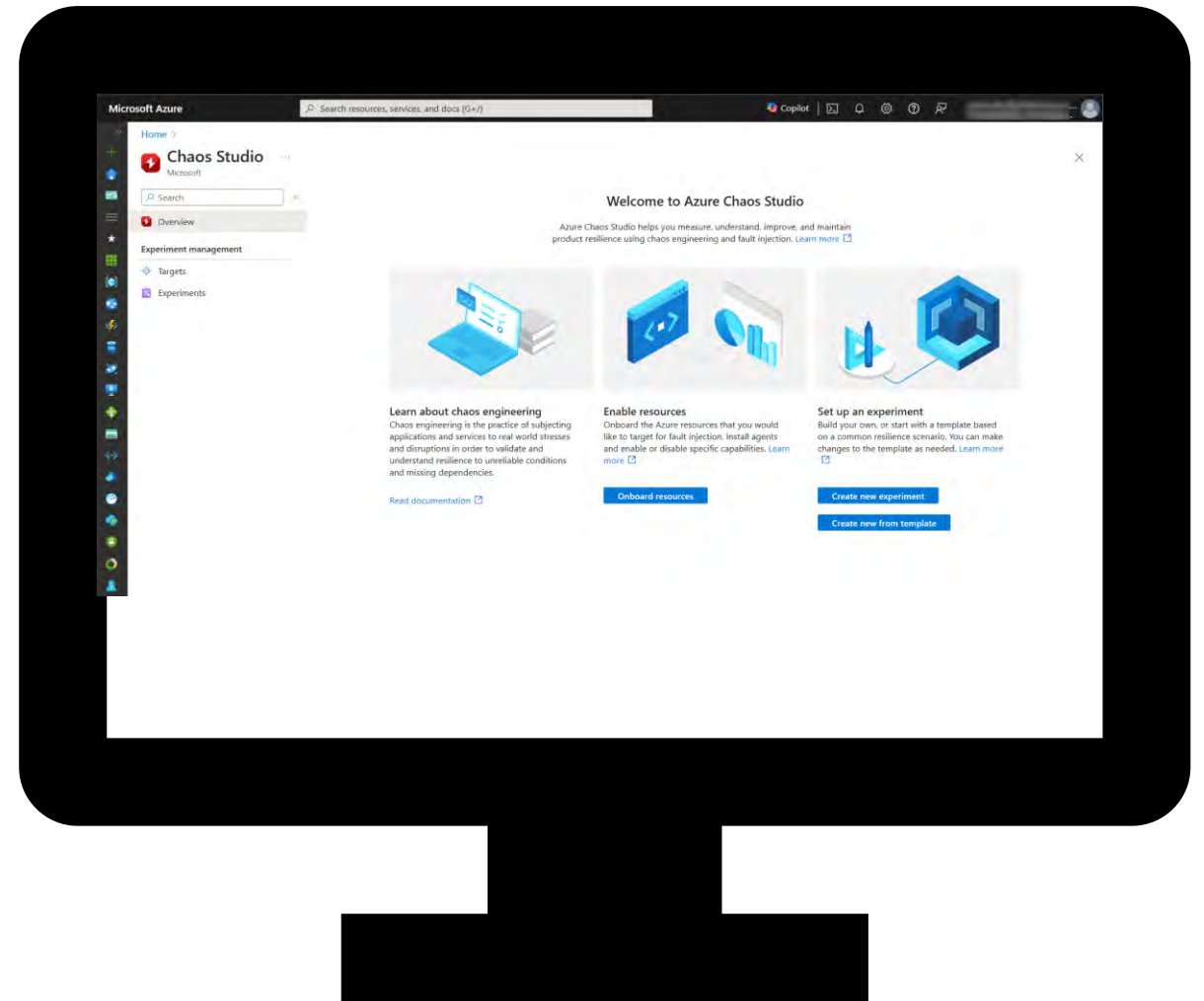
→ Your actual Azure Resources

(Experiments = just another Azure Resource)



# Azure Chaos Studio

DEMO



# Resources

Public Microsoft Docs

<https://learn.microsoft.com/en-us/azure/chaos-studio/>

My Demo Scenarios:

<https://learn.microsoft.com/en-us/azure/chaos-studio/chaos-studio-tutorial-aks-portal>

<https://learn.microsoft.com/en-us/azure/chaos-studio/chaos-studio-tutorial-agent-based-portal>

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# Thank you!

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