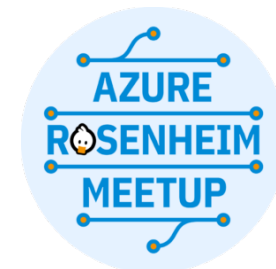


white duck

Chaos Engineering with Azure Chaos Studio pt. 1

Azure Rosenheim Meetup, 2023-03-22



 **Microsoft**
Solutions Partner

Digital & App Innovation
Azure

Specialist
Modernization of Web
Applications

Who we are



**Nico Meisenzahl (Head of DevOps Consulting and Operations,
Cloud Solution Architect, Azure & Developer Technologies MVP, GitLab Hero)**

Twitter: [@nmeisenzahl](https://twitter.com/nmeisenzahl)

LinkedIn: <https://www.linkedin.com/in/nicomeisenzahl/>



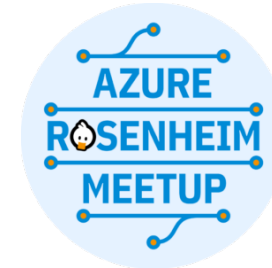
twitter.com/whiteduck_gmbh



**Philip Welz (Senior Kubernetes & DevOps Engineer &
GitLab Hero & CKA, CKAD)**

Twitter: [@philip_welz](https://twitter.com/philip_welz)

LinkedIn: <https://www.linkedin.com/in/philip-welz>



twitter.com/AzureMeetup



twitter.com/CloudNative_Ro

Housekeeping

- this meetup will be streamed on YouTube!
- want to participate?
 - join our meetup to get access to the Zoom meeting
 - <https://www.meetup.com/Azure-Meetup-Rosenheim>
 - we do also monitor the comments on YouTube

Agenda

- Azure News
- Introduction to Chaos Engineering
- Key Principles
- Azure Chaos Studio
- FAQ / Networking

Chaos Engineering with Azure Chaos Studio

AZURE NEWS

Azure News

- Azure Monitor integration with Azure Container Apps
- ContainerLogV2 Schema in Azure Monitor container insights
- Azure Firewall Basic
- Microsoft Azure Load Testing
- AAD for Azure Database for PostgreSQL – Flexible Server
- Immutable vaults for Azure Backup
- AKS introduces two pricing tiers: Free and Standard

Chaos Engineering with Azure Chaos Studio

INTRODUCTION TO CHAOS ENGINEERING

History

- 2003 – Amazon
 - GameDays
- 2006 – Google
 - DiRT
- 2010/2011 – Netflix
 - Chaos Monkey
 - Simian Army
- 2012 – Martin Fowler
 - Phoenix Servers
- 2014 - Chaos Engineer (Netflix)



Today

- Pillar of Well-Architected Framework (WAF)
 - AWS, Azure, ...
- Conferences
 - Chaos Conf, Chaos Carnival, Conf42, ...
- CNCF
 - Chaos Mesh, Litmus Chaos, ...

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**.*

- <https://principlesofchaos.org>

But what does experimenting really mean?

- Controlled fault injection into a system or service
- That impacts functionality
- Is likely to occur in the real world

Goals

- Identify weaknesses
- Build confidence
- Experience
- Increase resiliency

Benefits

- Increased availability, reduced MTTR & MTTD
 - Teams who frequently run Chaos Engineering experiments have >99.9% availability
- <https://www.gremlin.com/state-of-chaos-engineering/2021/?soce2021=true>

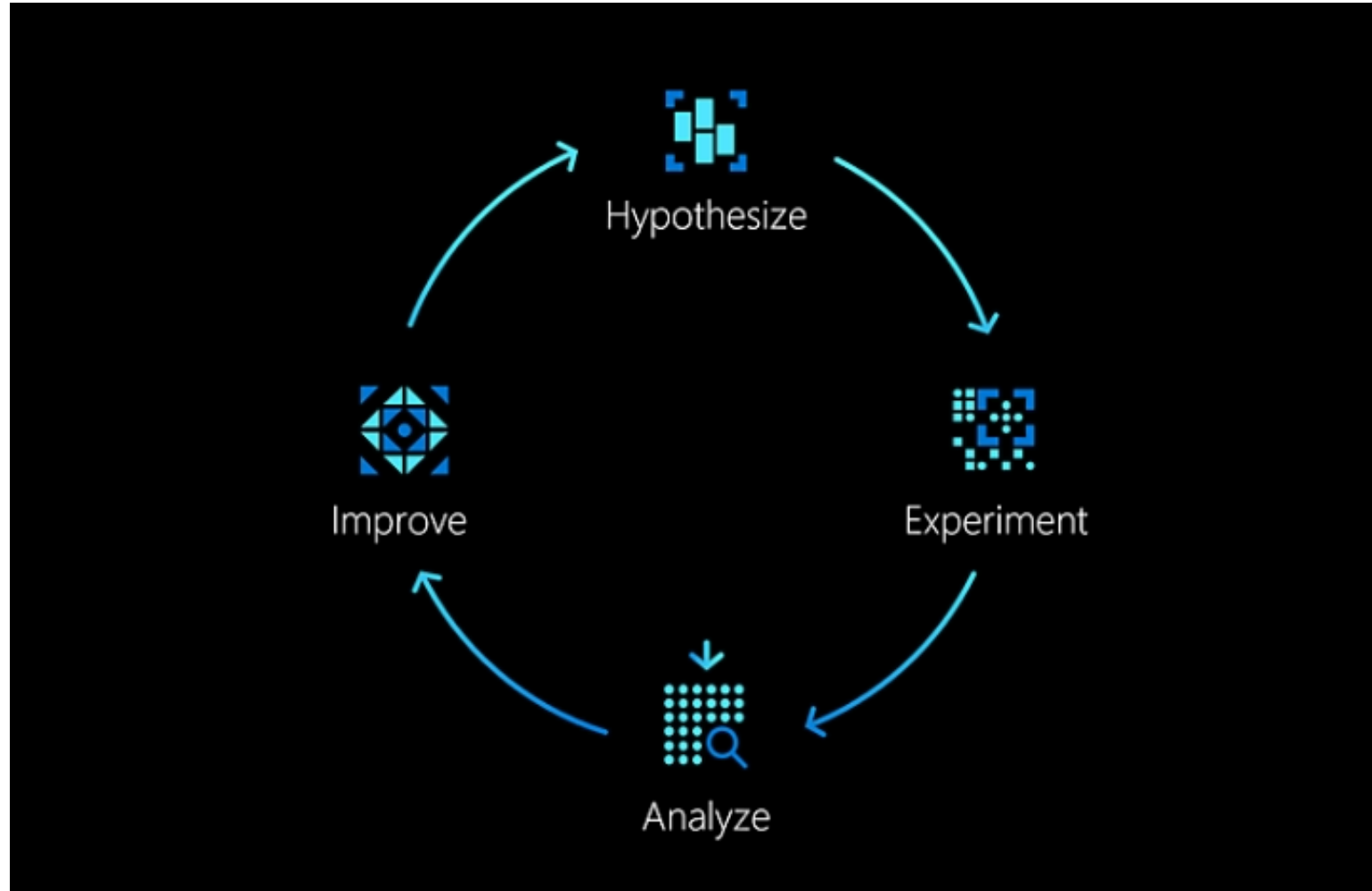
Chaos Engineering with Azure Chaos Studio

KEY PRINCIPLES

Key principles

- Build a Hypothesis around **Steady State** Behavior
- Vary Real-world **Events**
- Run Experiments in **Production**
- Automate Experiments to Run **Continuously**
- Minimize **Blast Radius**
- <https://principlesofchaos.org/>

Practice



At last...

You don't choose the moment, the moment chooses you.

You only choose how prepared you are when it does.

- Fire Chief Mike Burtch

Chaos Engineering with Azure Chaos Studio

AZURE CHAOS STUDIO

General

- Managed with deep ARM integration
- Pillar of the Azure Well-Architected Framework (WAF)
- As of now Public Preview
 - Likely this will change in April
- Orchestrate fault-injection into Azure Resources
- Private option via vNet injection

Faults

- *Types*
 - *Service-direct* faults
 - Run directly against an Azure resource without installation
 - *Agent-based* faults
 - Installation of an Agent needed
- Providers
- Library

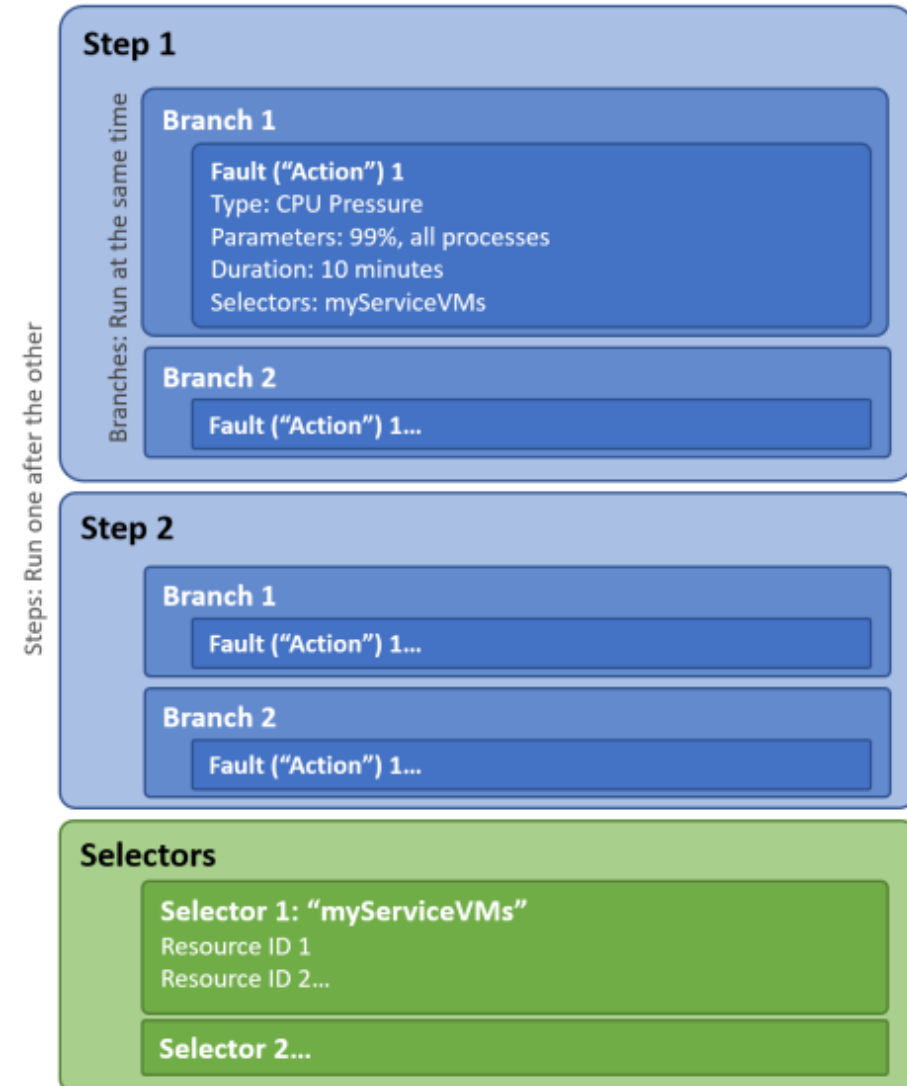
Resources

- *Target*
 - Enables Chaos Studio to interact with an Azure resource
- *Capability*
 - Child resource of Target
 - Enables a particular fault for a resource
- *Experiment*
 - Describes the faults to run and the resources to run against

Experiment

- Logic: How and When
 - Steps
 - Run one after the other
 - Branches
 - Run at the same time
- Selector: Target

Chaos Experiment



Experiment

```
properties: {
  selectors: [
    {
      type: 'List'
      id: 'Selector1'
      targets: [
        {
          id: ChaosStudioTarget.id
          type: 'ChaosTarget'
        }
      ]
    }
  ]
  steps: [
    {
      name: 'akvAccessDenied10m'
      branches: [
        {
          name: 'akvAccessDenied10m'
          actions: [
            {
              name: 'urn:csci:microsoft:keyVault:denyAccess/1.0'
              type: 'continuous'
              duration: 'PT10M'
              selectorId: 'Selector1'
              parameters: []
            }
          ]
        }
      ]
    }
  ]
}
```

Permissions & Security

- *3 Layers*
 - Azure AD
 - Experiments
 - System Managed Identity
 - Resource onboarding
- Agents
 - User Assigned Identity

FAQ / NETWORKING

Useful links

- <https://principlesofchaos.org/>
- <https://netflixtechblog.com/the-netflix-simian-army-16e57fbab116>
- <https://martinfowler.com/bliki/PhoenixServer.html>
- <https://learn.microsoft.com/en-us/azure/chaos-studio/>

Questions?



**Nico Meisenzahl (Head of DevOps Consulting and Operations,
Cloud Solution Architect, Azure & Developer Technologies MVP, GitLab Hero)**

Twitter: [@nmeisenzahl](https://twitter.com/nmeisenzahl)

LinkedIn: <https://www.linkedin.com/in/nicomeisenzahl/>



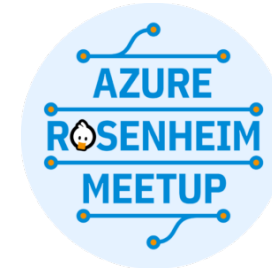
twitter.com/whiteduck_gmbh



**Philip Welz (Senior Kubernetes & DevOps Engineer &
GitLab Hero & CKA, CKAD)**

Twitter: [@philip_welz](https://twitter.com/philip_welz)

LinkedIn: <https://www.linkedin.com/in/philip-welz>



twitter.com/AzureMeetup



twitter.com/CloudNative_Ro