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Under the hood of Business Central service

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When you are passionate about
Microsoft Dynamics NAV/365 Business Central

Plan

- Introductions ☺
- …

Plan

- Introductions ☺
- Cloud Solution Provider and Azure Active Directory: How do they work with Business Central?
- Signing in to Business Central: How it really works
- Managing Business Central environments
- Deep-dive into the platform topology

Plan

- Introductions ☺
- Cloud Solution Provider and Azure Active Directory: How do they work with Business Central?
- Signing in to Business Central: How it really works
- Managing Business Central environments
- Deep-dive into the platform topology

Cloud Solution Provider (CSP)

- CSP is a program that enables partners to
  - Sell Microsoft cloud services
  - Manage and support their customers

- Business Central can only be licensed through CSP

Example

Azure Active Directory (AAD)

<u>AAD Tenant</u>

Name = Fabrikam

Users:
- Ben
- Christian

Groups:
- Admin Agents
  - Christian
- Helpdesk Agents

CSP Partner

<u>AAD Tenant</u>

Name = NAVTechDays2018Demo

Partner Relationships:
- CSP Partner = Fabrikam

Users:
- AdminUser
- Luc

Roles
- Global Administrator
  - AdminUser

Subscriptions:
- Business Central

Licenses:
- Luc: Business Central

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Demo:

CSP and BC

Who can access BC? Also admin users!

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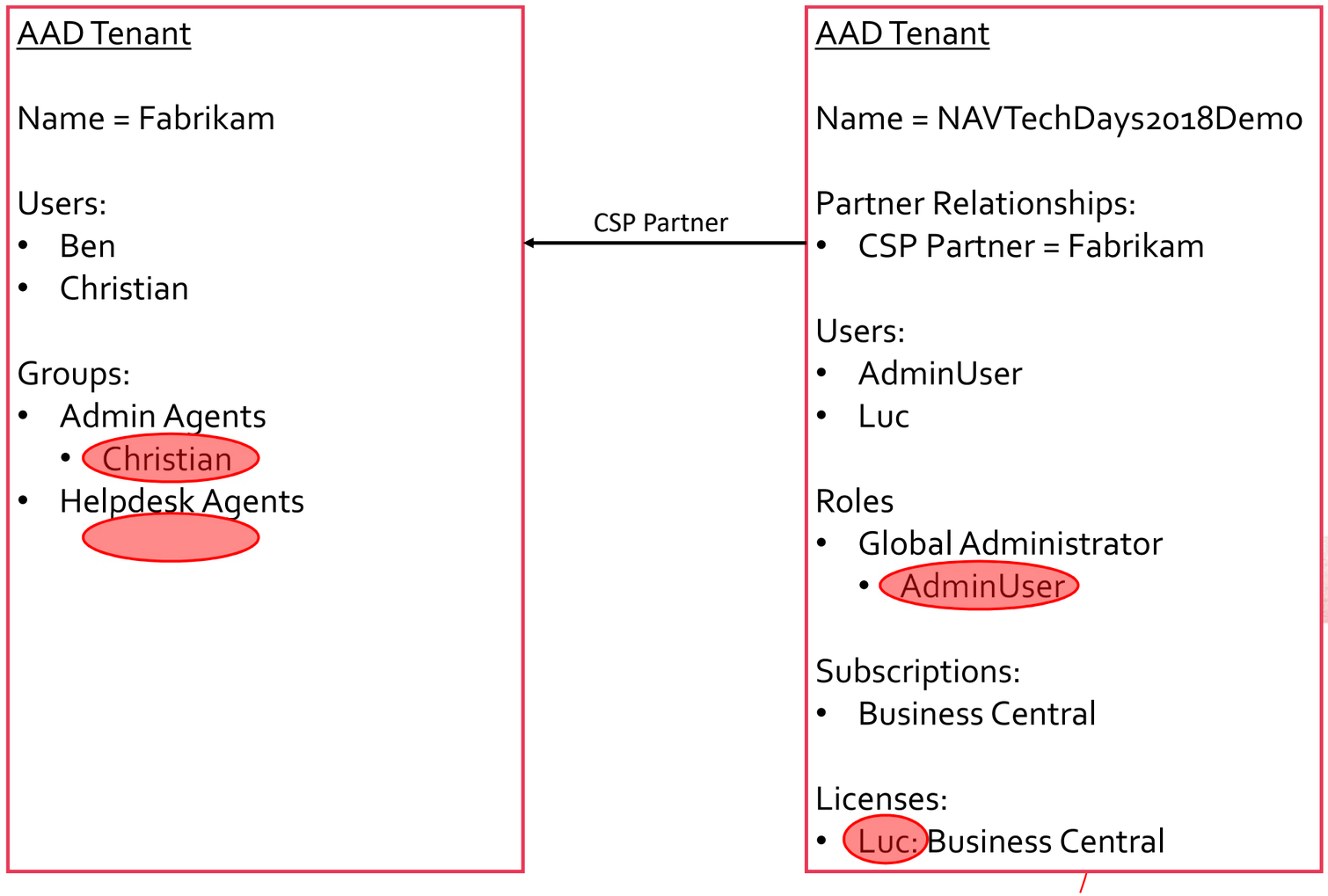
Azure Active Directory (AAD)



Demo:

Delegated Admin

Partner Center API

- We saw how we can use the **Partner Center UI** to:
  - Create customers
  - Subscribe customers to Business Central
  - Create users
  - Assign Business Central licenses to users

- Everything can be done using the **Partner Center API**

https://docs.microsoft.com/en-us/dotnet/api/?view=partnercenter-dotnet-latest

Demo:

Partner Center API

Data Planes

Canada (2 datacenters)

Canada

US (4 datacenters)

United States
Mexico

West Europe (4 datacenters)

Austria
Belgium
France
Germany
Italy
Netherlands
Serbia (W1)
Spain
Switzerland
United Kingdom

North Europe (1 datacenter)

Denmark
Estonia (W1)
Finland
Iceland
Norway
Sweden

Asia & Africa (1 datacenter)

Hong Kong (W1)
Japan (W1)
Malaysia (W1)
South Africa (W1)
South Korea (W1)
Taiwan (W1)
United Arab Emirates (W1)

Oceania (2 datacenters)

Australia
New Zealand

https://docs.microsoft.com/en-us/dynamics365/business-central/dev-itpro/compliance/apptest-countries-and-translations

Control Planes

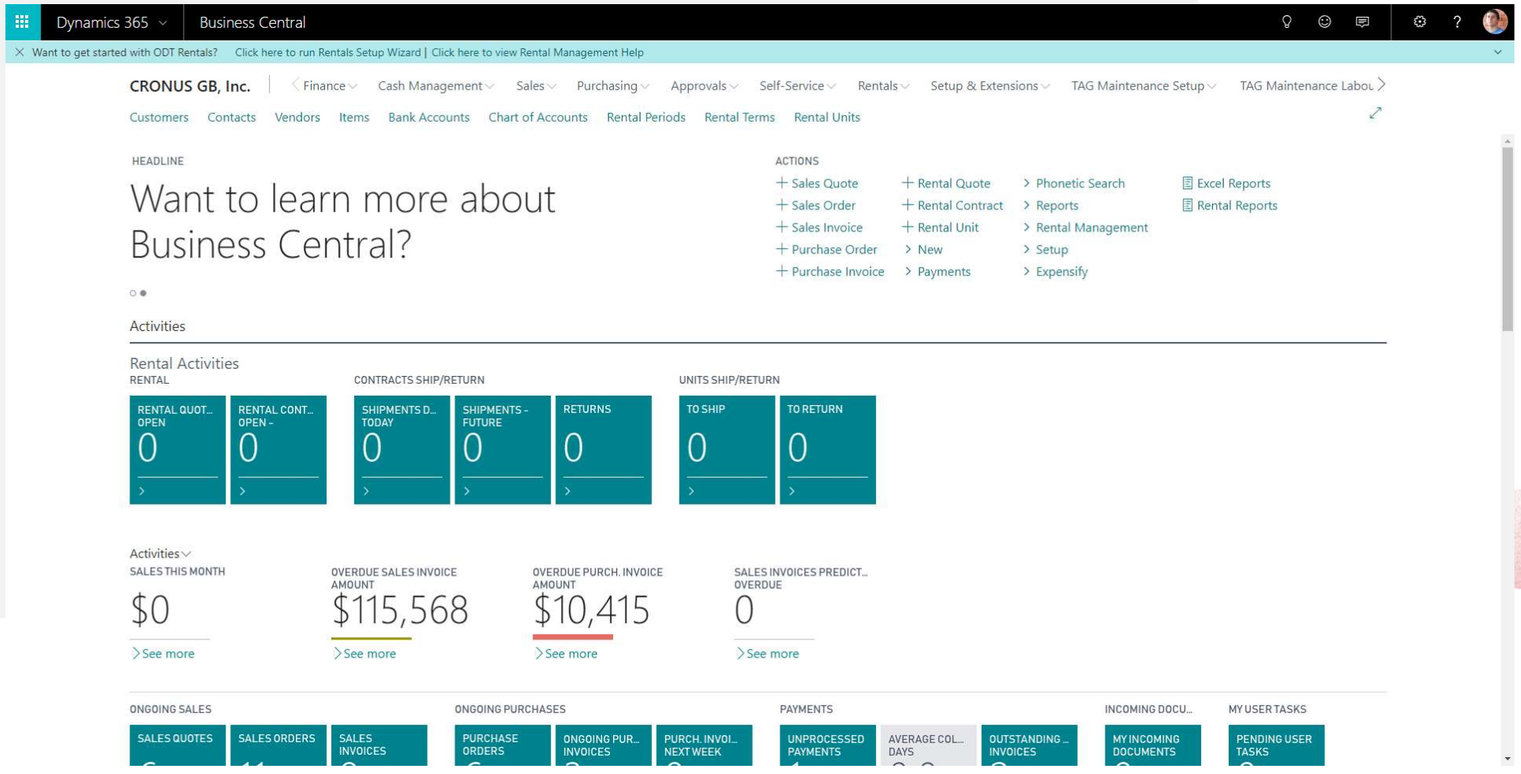
Database Monitor
Elastic Pool Optimizer
Extension Management Service
Health Monitor
Management Portal
Management Service
Provisioning Service
Sync Daemon
Tenant Admin Backend Service
Tenant Buffering Service
Tenant Maintenance Service
Tenant Upgrader

Global Services

Global Services

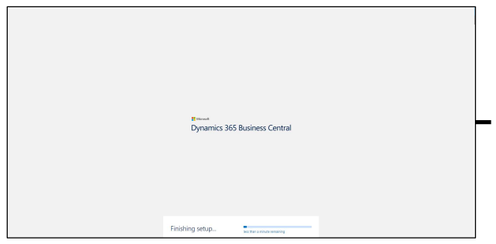
Fixed Client Endpoint
Fixed Web Service Endpoint
Global Tenant Manager

Tenant Creation & Access



Tenant creation - Global

https://businesscentral.dynamics.com



Data Plane Clusters

Fixed Client Endpoint

1. Get Tenant Info

2. Check license

Global Tenant Manager

3. Broadcast

4. Create Tenant

West Europe

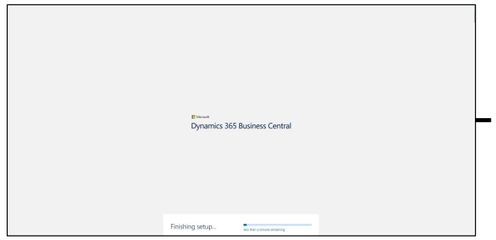
North Europe

Regional Control Planes

Global Services

Tenant creation - Regional

https://businesscentral.dynamics.com



Data Plane Clusters

Sync Daemon

2. Reserve

3. Start

Management Service

1. Enqueue

Operations

Tenant Buffering Service

NSTs

App

B1

B2

B3

Buffer Tenants

T1

T2

T3

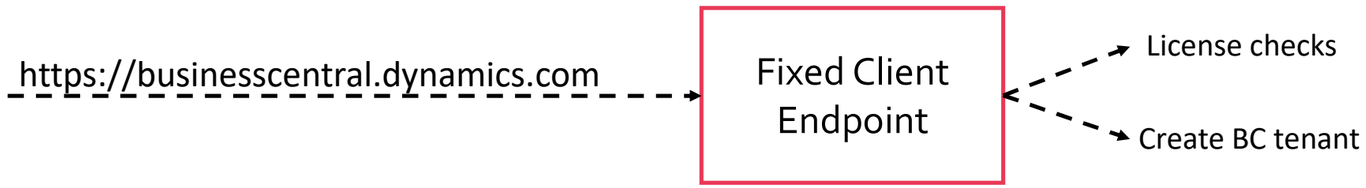
Customer Tenants

Regional Control Plane

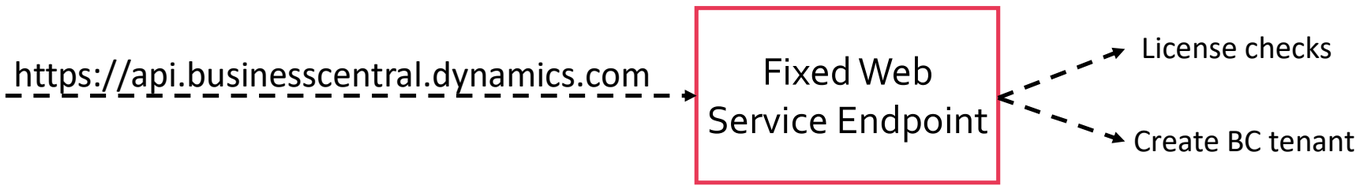
Data Plane Cluster

Business Central Web Services

- The web client endpoint performs license checks and creates the tenant

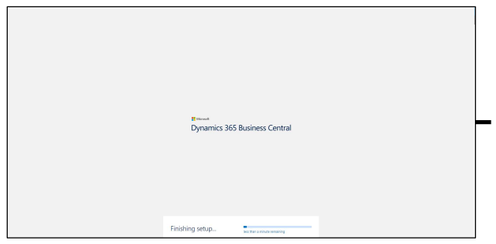


- The web service endpoint does the exact same



Tenant access - Global

https://businesscentral.dynamics.com



Data Plane Clusters

Fixed Client Endpoint

1. Get Tenant Info

5. Redirect to cluster

2. Check license

Global Tenant Manager

3. Broadcast

4. Get Tenant Info

West Europe

North Europe

Regional Control Planes

Global Services

Tenant lifecycle

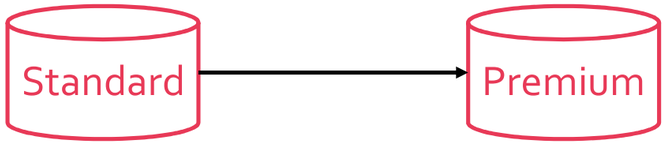
AAD Tenant

Name = NAVTechDays2018Demo

Subscriptions:
- Business Central - Viral
- Business Central - Paid

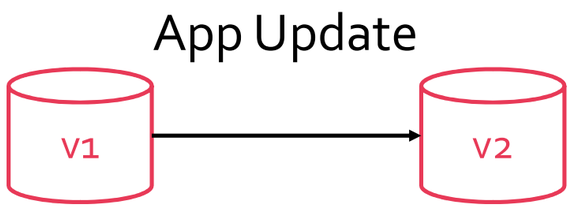
Tenant Maintenance Service

Automatic scaling of paid customer databases



Automatic removal of unsubscribed customers

- Grace period after unsubscribing (e.g. 90 days)
- Tenant is only dismounted at first
- Removed databases can be restored (5 weeks)



Tenant Upgrader

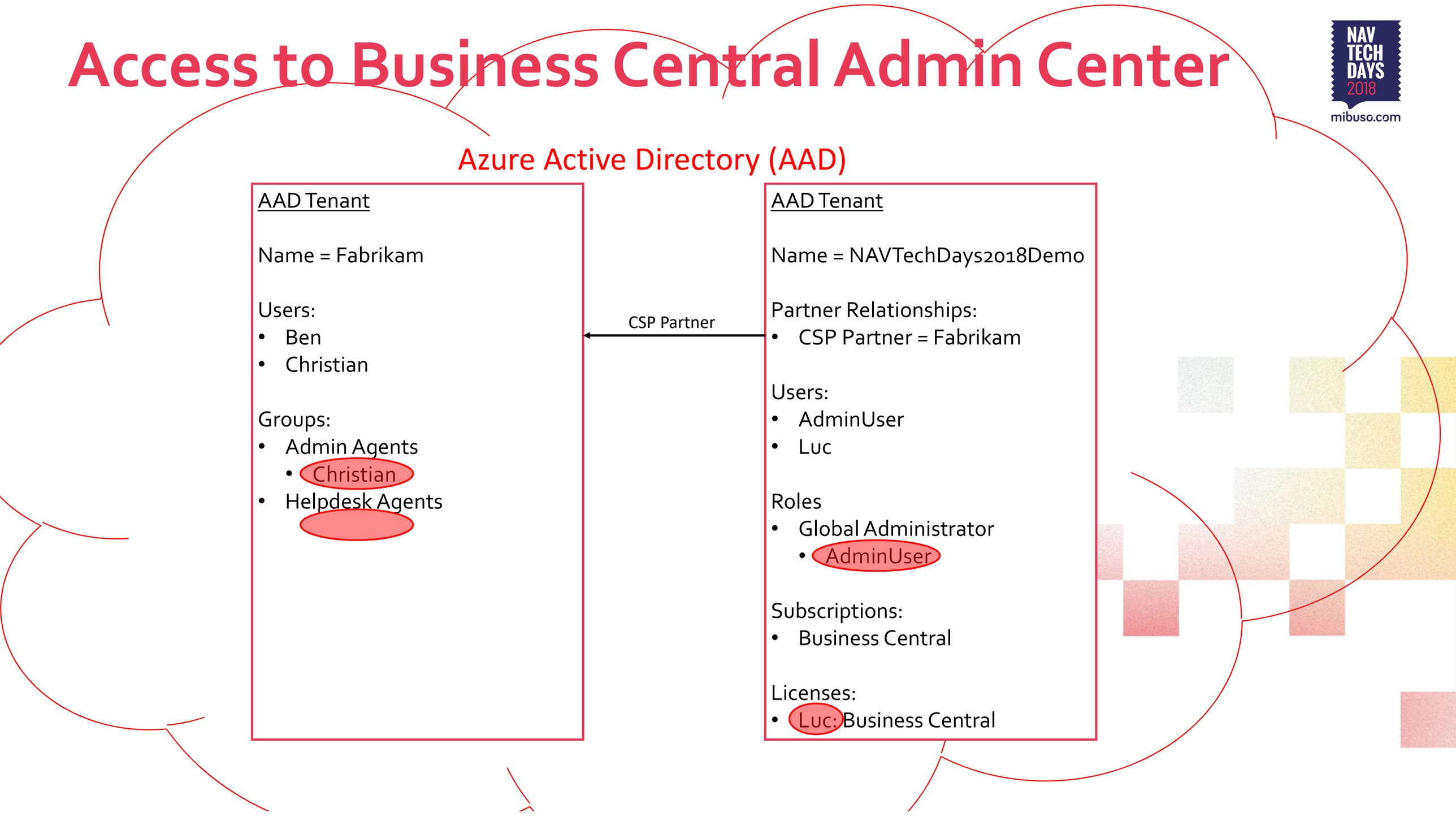
Automatic scheduling of tenant upgrades

- Tenant is only upgraded within specified time window
- Tenant is upgraded on a specified date*
- Limits number of upgrades within cluster

Demo:

Business Central Admin Center

Access to Business Central Admin Center



AAD vs. BC

Azure Active Directory (AAD)

AAD Tenant

Name = NAVTechDays2018Demo

Partner Relationships: ...
Users: ...
Roles: ...
Subscriptions: ...
Licenses: ...

Business Central (BC)

BC Environment
AAD tenant = NAVTechDays2018Demo
Type = Production
Name = Production
Users: ...

BC Environment
AAD tenant = NAVTechDays2018Demo
Type = Sandbox
Name = Sandbox
Users: ...

BC Environment
AAD tenant = NAVTechDays2018Demo
Type = Sandbox
Name = MySandbox
Users: ...

Admin Center API

- We saw how we can use the **Business Central Admin Center UI** to:
  - Specify upgrade window
  - Specify notification emails
  - Create/delete sandbox environments
  - Get telemetry

- Everything can be done using the **Business Central Admin Center API**

https://docs.microsoft.com/en-us/dynamics365/business-central/dev-itpro/administration/administration-center-api

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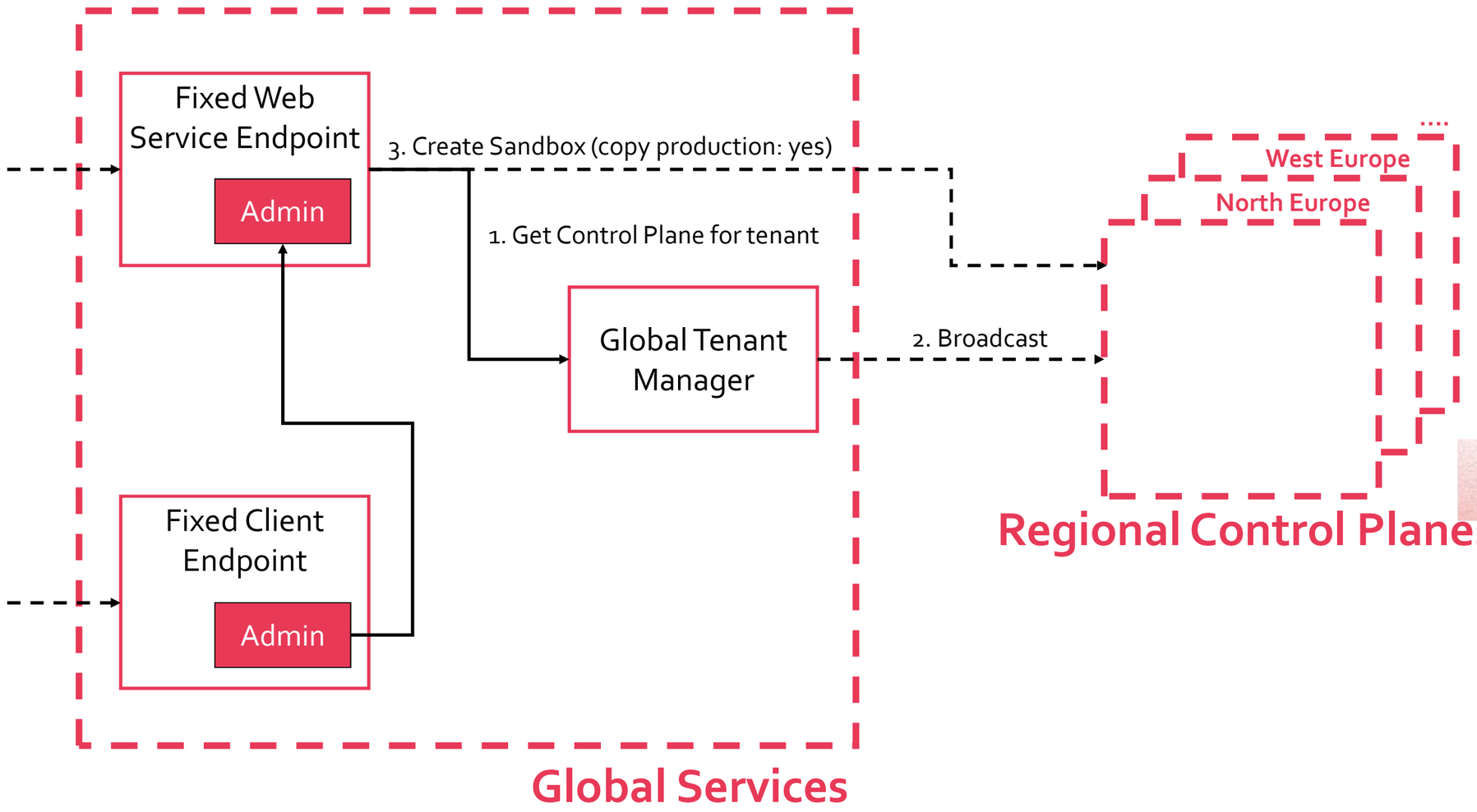
Demo:

Business Central Admin Center API

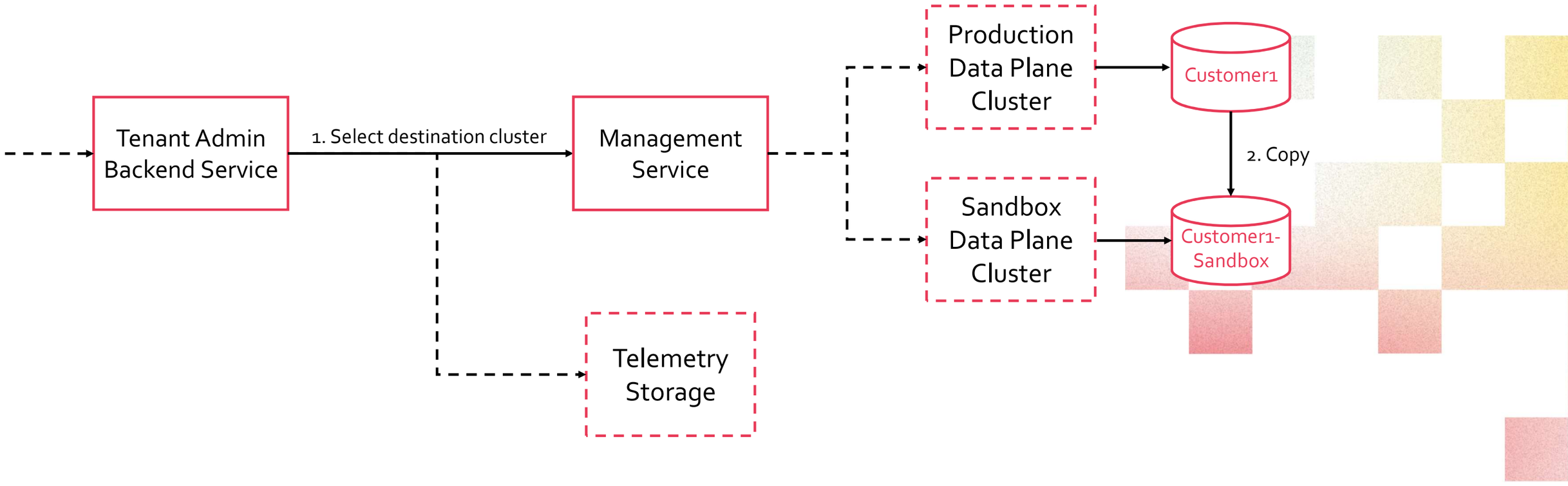
Admin Center - Global

https://businesscentral.dynamics.com/<TenantId>/admin
https://api.businesscentral.dynamics.com/v1.1/admin/applications/BusinessCentral/environments/Sandbox

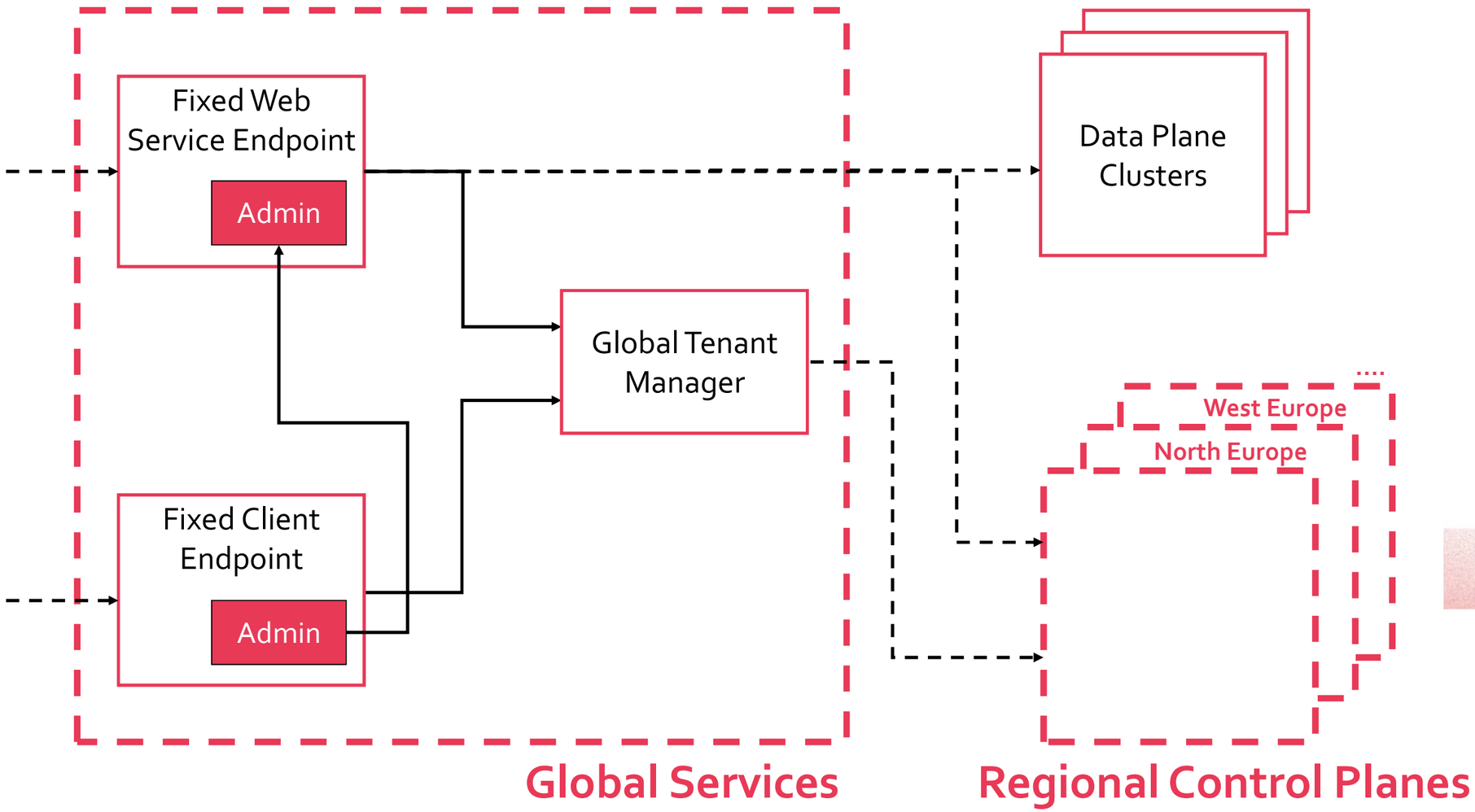


Admin Center - Regional

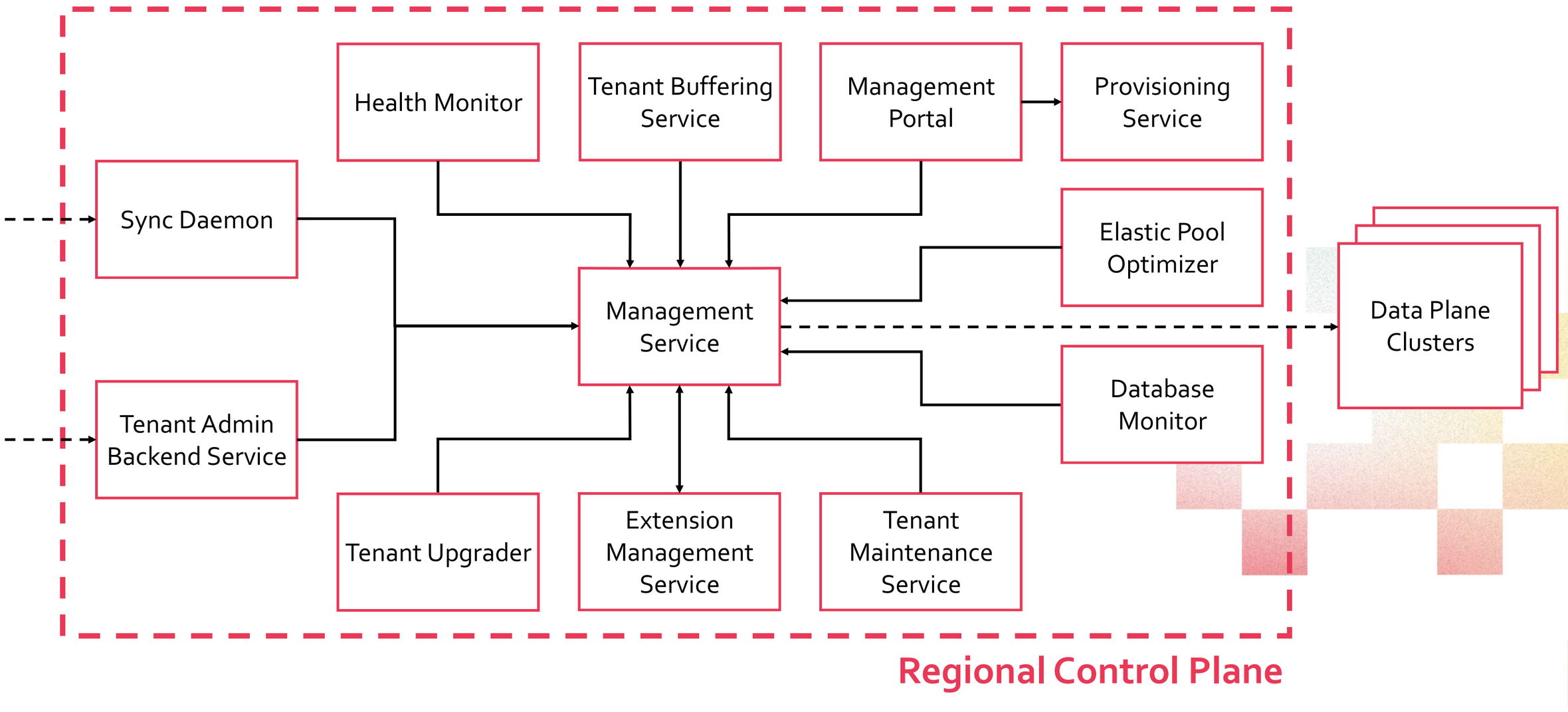
https://businesscentral.dynamics.com/<TenantId>/admin
https://api.businesscentral.dynamics.com/v1.1/admin/applications/BusinessCentral/environments/Sandbox



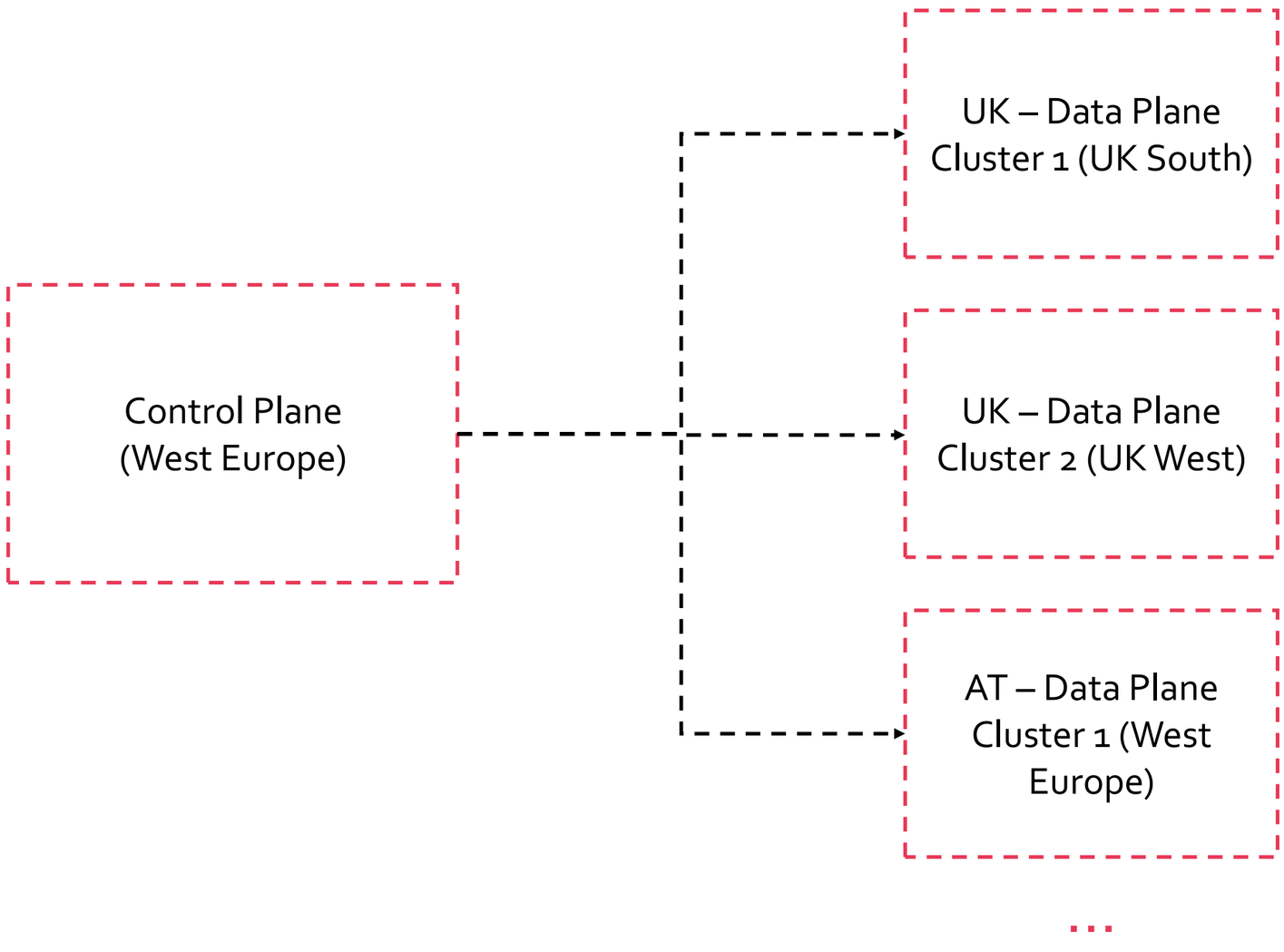
Full picture of control plane - Global



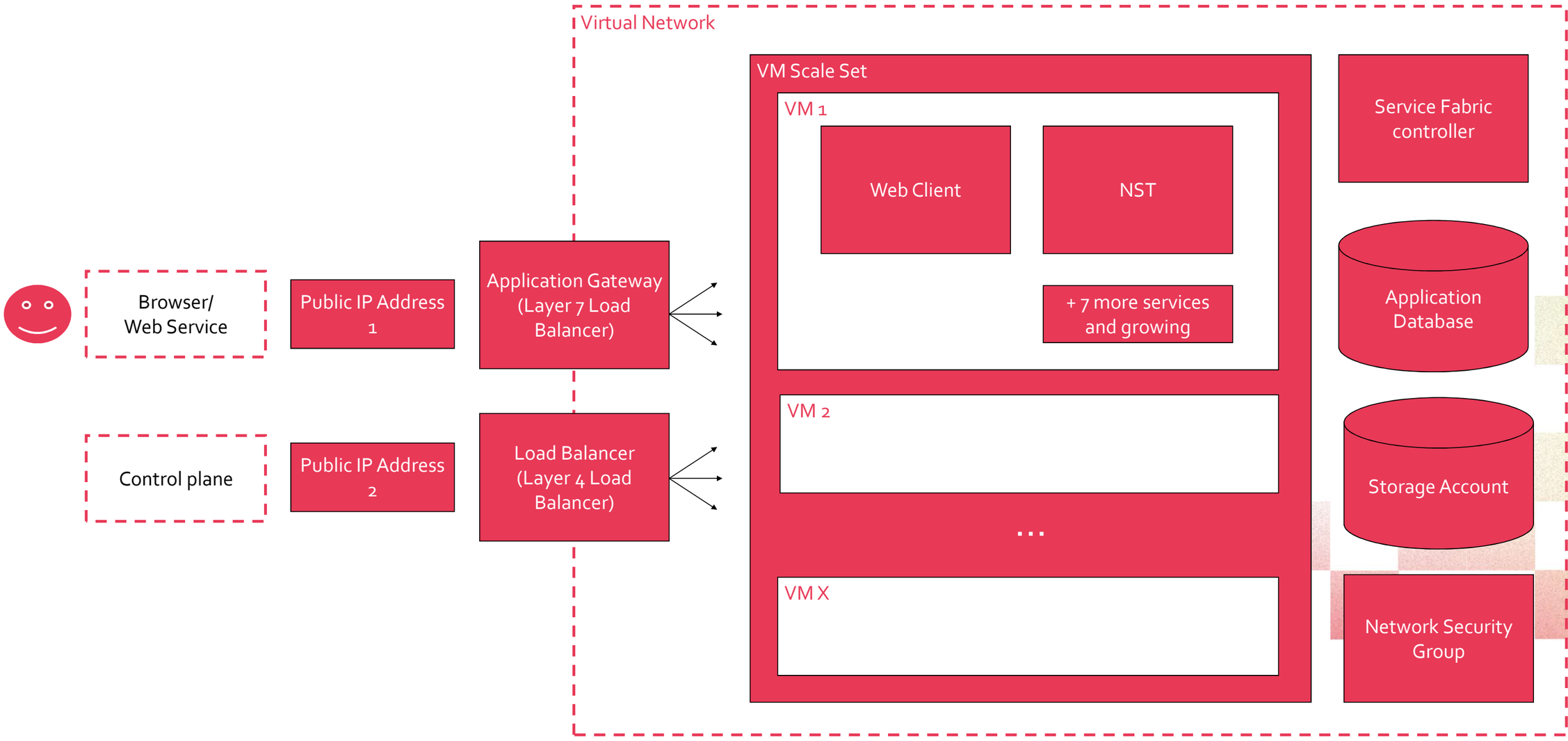
Full picture of control plane - Regional



Deep dive into data plane clusters



Data Plane - Cluster



Data tier – Azure SQL in various flavors

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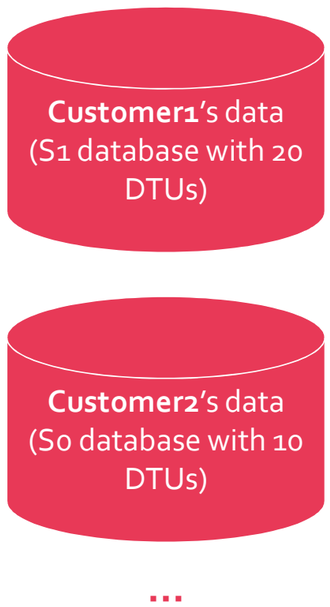
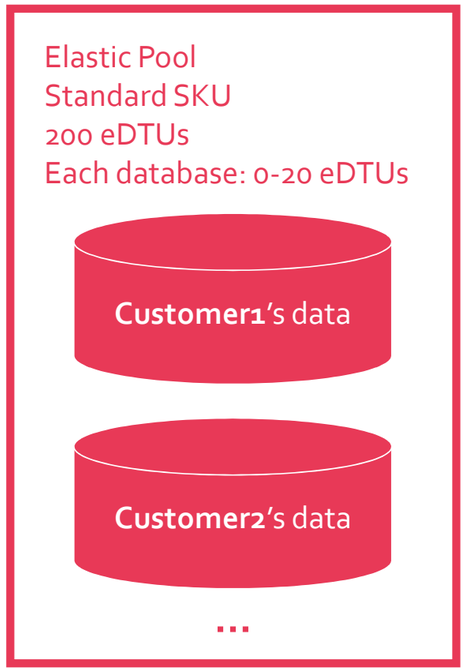
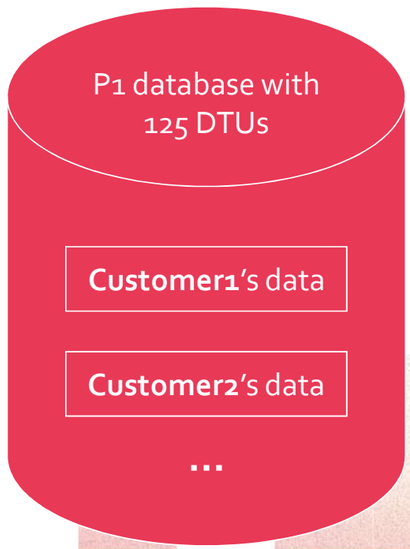
Individual databases



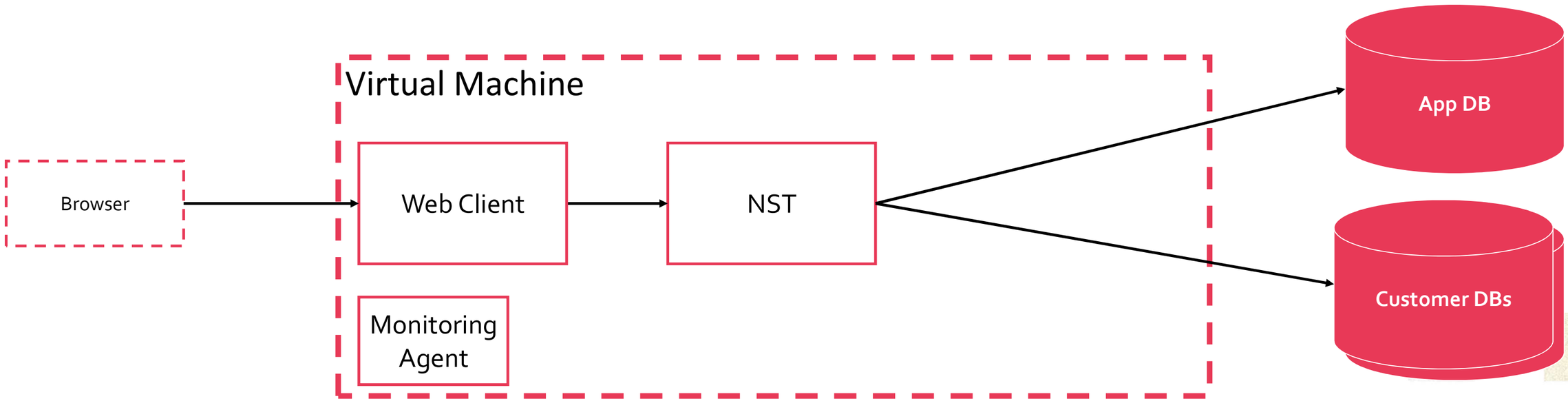
Elastic Pools

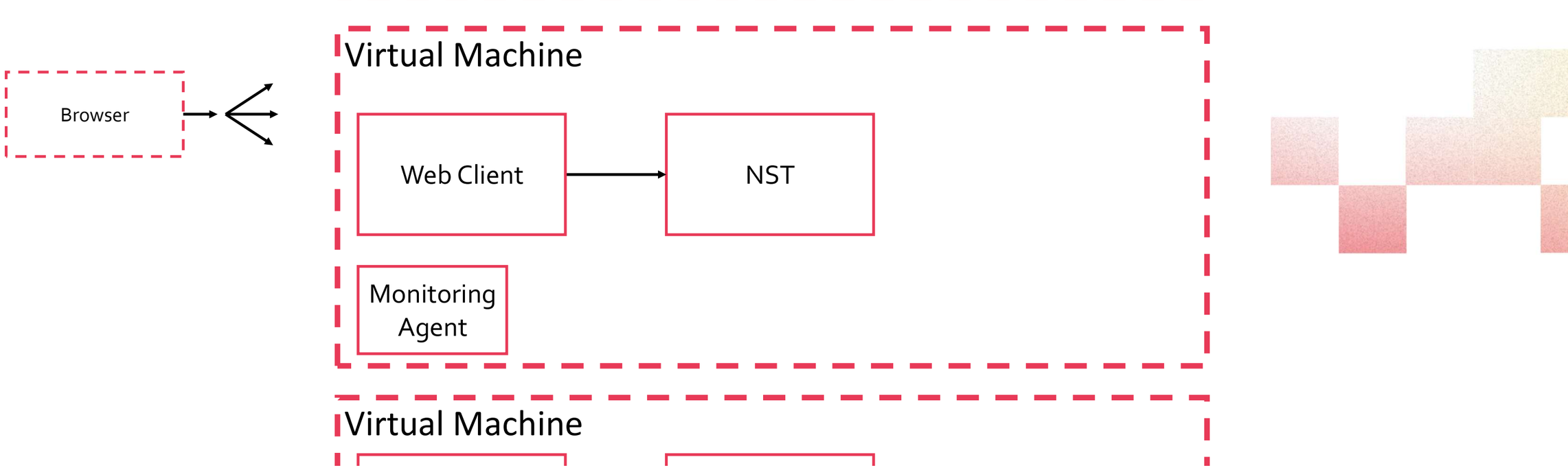


"Shared Database" model



BC Platform


Virtual Machine
Browser
Web Client
NST
Monitoring Agent
App DB
Customer DBs

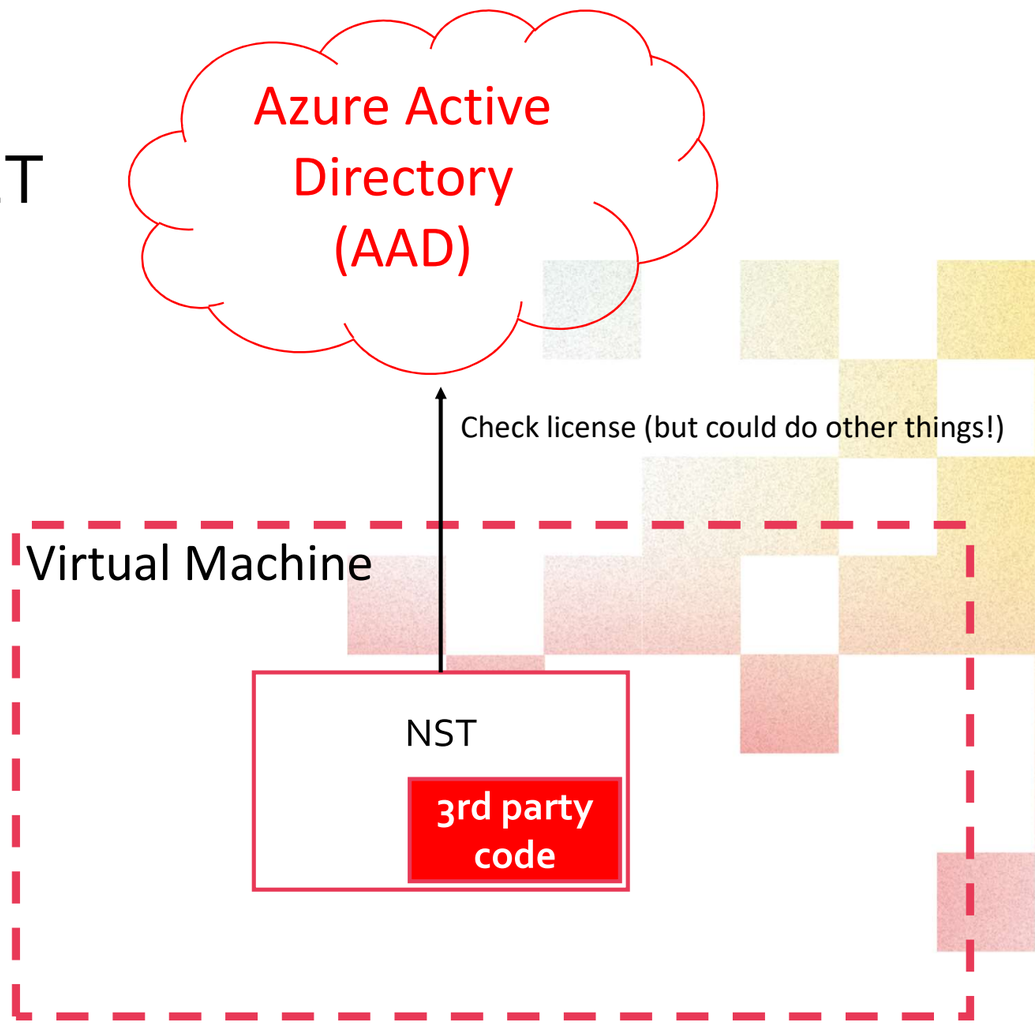

Virtual Machine
Browser
Web Client
NST
Monitoring Agent
Virtual Machine

Security risk: Untrusted code

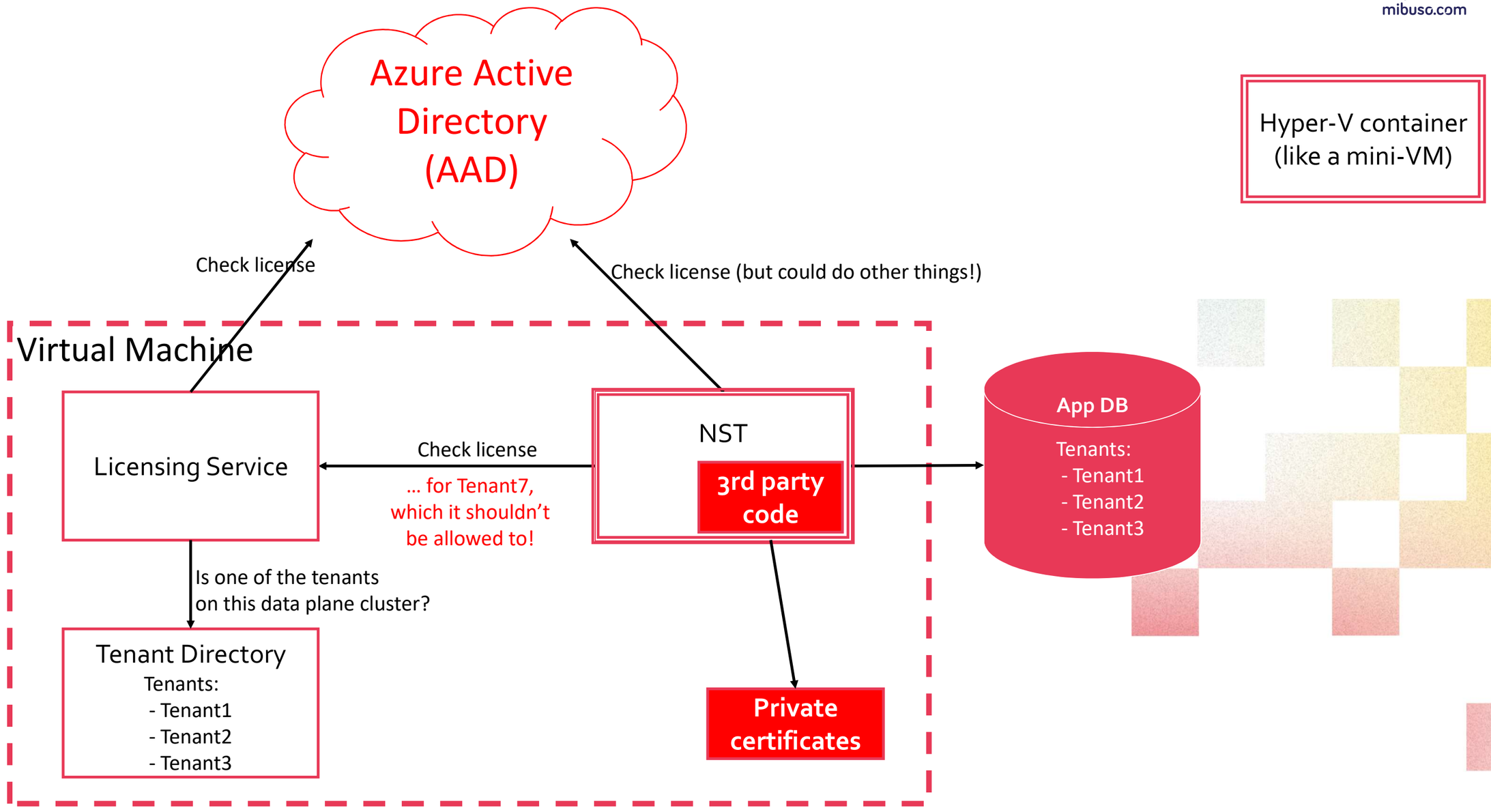
- Partners and customers publish extensions
  - Will be executed by the NST
  - Could be malicious
  - Especially challenging while we still have .NET

- Goal: Protect Business Central customers against vulnerabilities in the NST

- How: Isolate the NST as much as possible

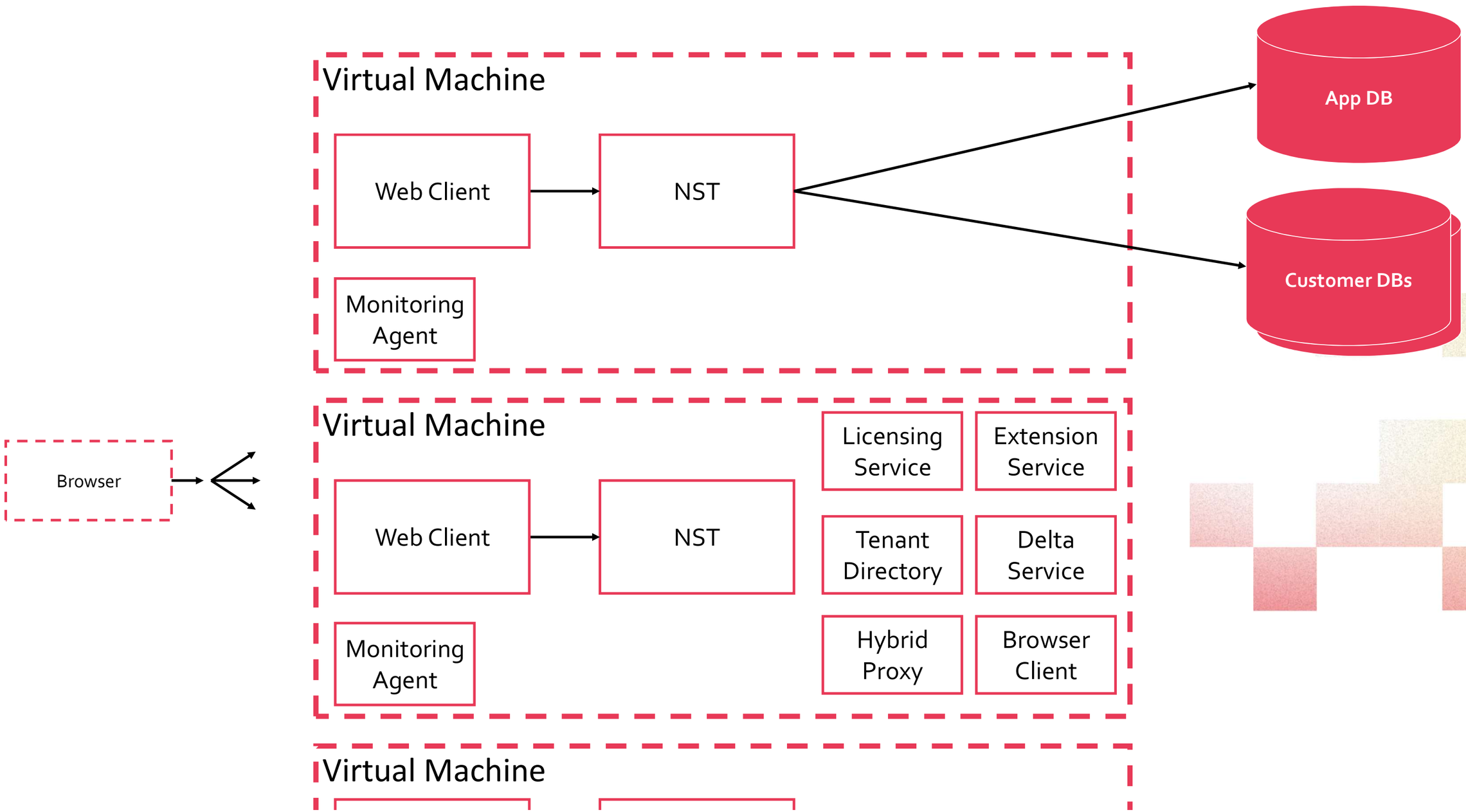


Isolating the NST



Hyper-V container
(like a mini-VM)

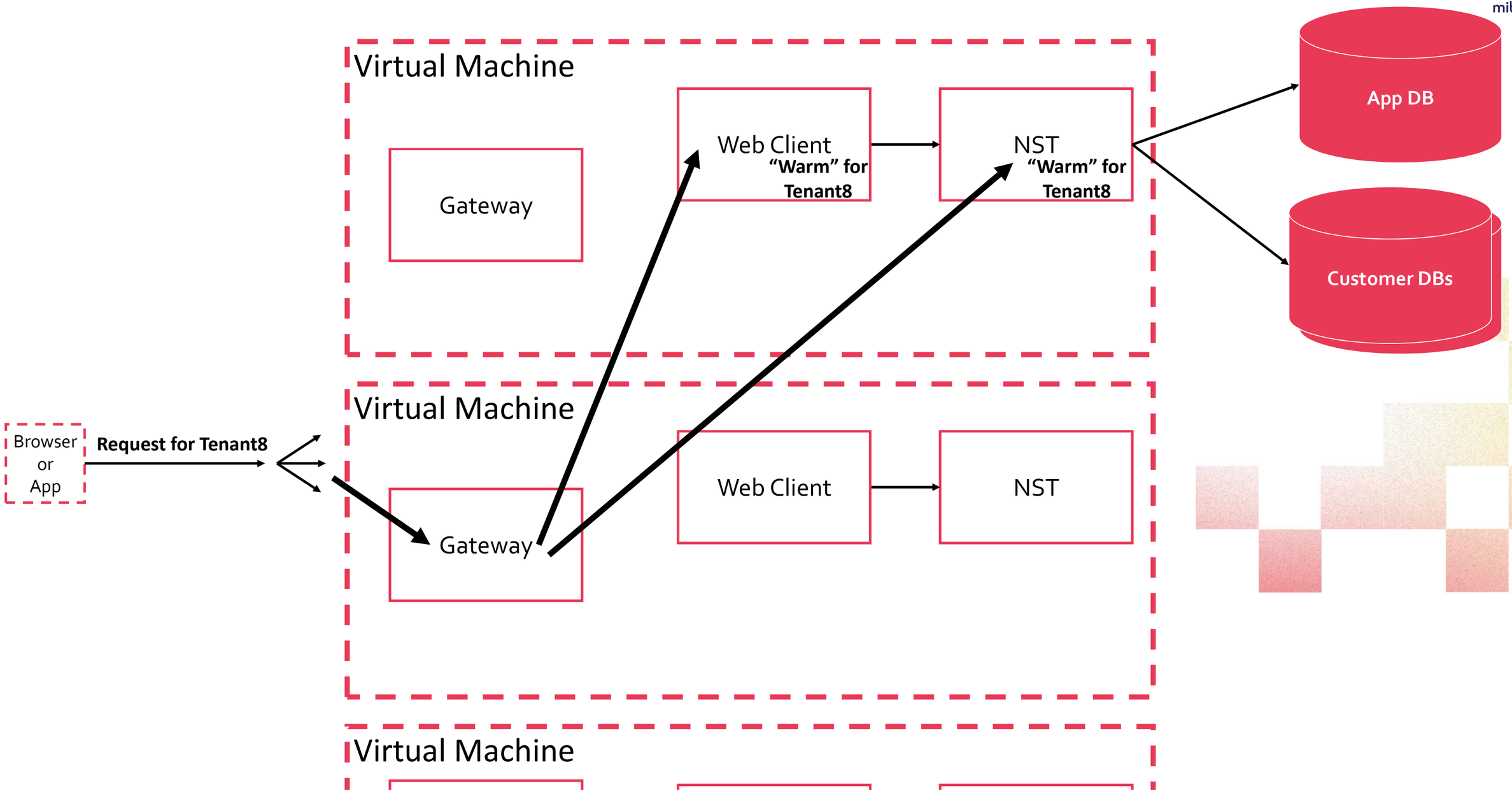
BC Platform


Virtual Machine
Web Client
NST
Monitoring Agent
App DB
Customer DBs
Browser
Virtual Machine
Web Client
NST
Monitoring Agent
Licensing Service
Extension Service
Tenant Directory
Delta Service
Hybrid Proxy
Browser Client
Virtual Machine

BC Platform Future: Request Routing

- Problem:
  - Requests for the same tenant may go to different NSTs
  - NST is “cold” (no cache, no DB connection, etc.)
  - Poor performance
- Solution:
  - Intelligent routing
  - Requests for the same tenant always routed to the same Web Client and NST

BC Platform Future: Intelligent Routing



BC Platform Future: Scale Blockers

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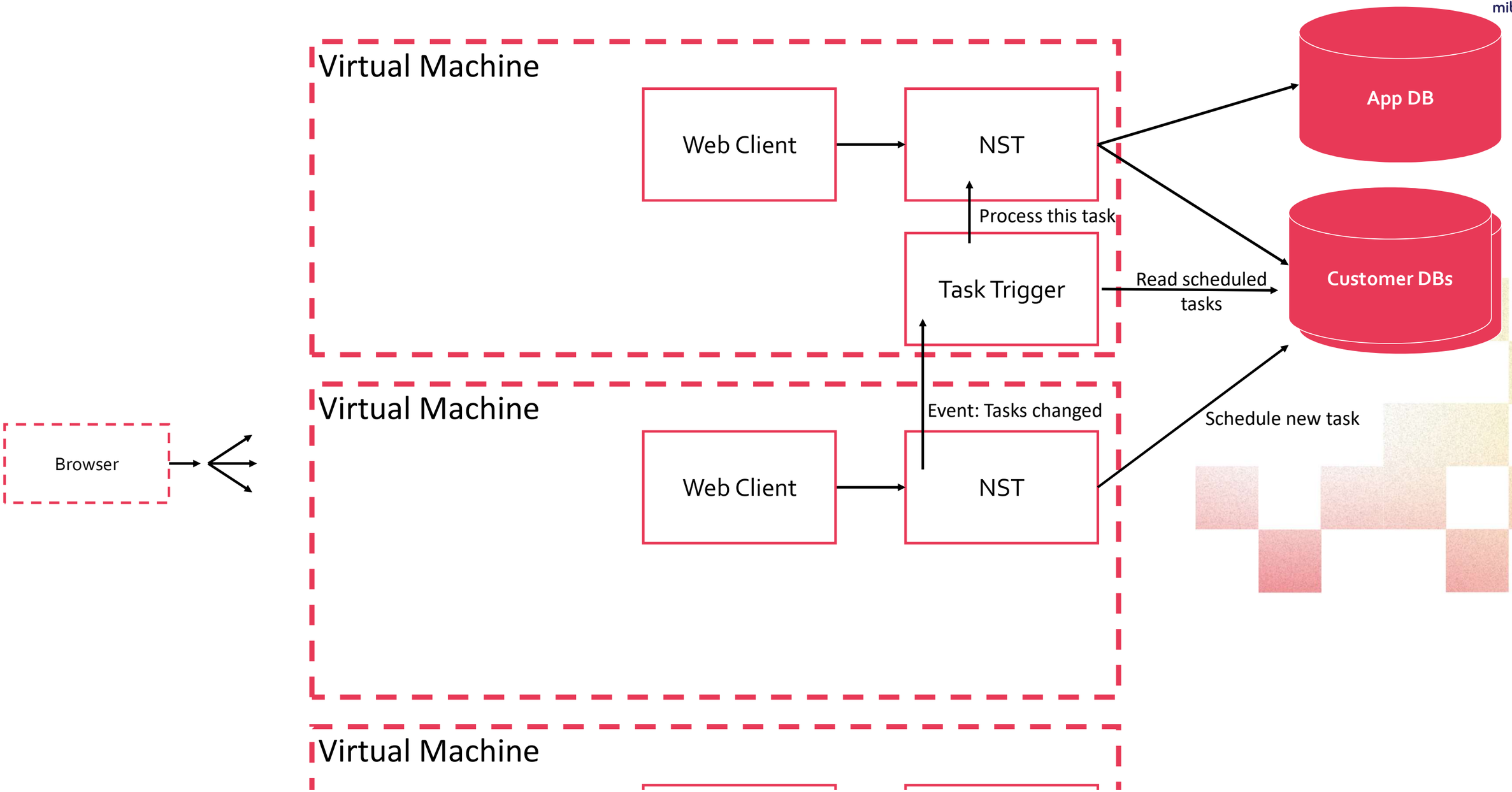
- Problem: Algorithms in the NST prevent:
  - Many VMs in a data plane cluster
  - Many tenants in a data plane cluster
  - Using VM resources efficiently

- Example: Processing of scheduled tasks (job queue)

BC Platform Future: Efficient Coordination



Platform Direction (infrastructure level)

- **In the cloud**
  - Performance
  - Scale
  - Governance
  - Operability
- **On-premises**
  - Simple setup as usual: NST and Web Client

Summary

- Under the hood of the Business Central service

- Data plane topology deep-dive
  - Topology & Azure structures
  - Platform changes and direction

- Administrative capabilities (UI and API)
  - CSP
  - BC Admin Center

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Any Questions?

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Thank you

THANK YOU