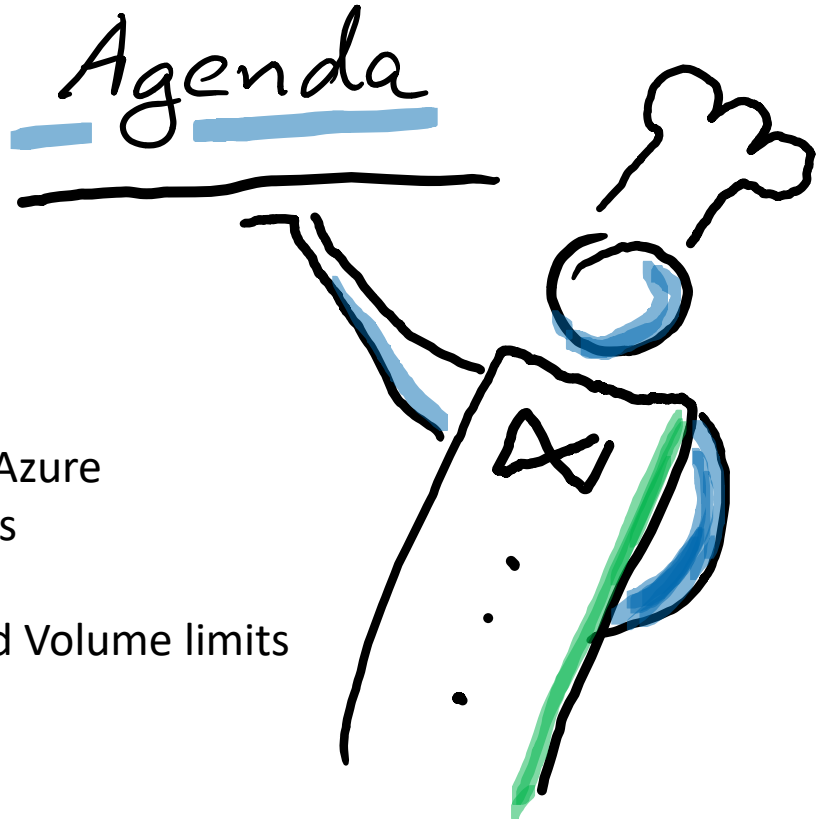
Microsoft

on

Part I
Overview

Microsoft
Ralf Klahr
Azure Compute

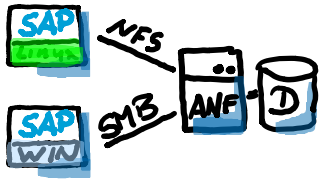
Agenda



What is ANF
SAP Landscape
SAP HANA on Azure
SAP Deployments on Azure
Non ANF Deployments
ANF Deployments
ANF Capacity Pool and Volume limits
ANF Networking
ANF Security
NFSv3 vs NFSv4.1
ANF New Features
Performance Conciderations
Sizing Example
SAP LaMa
Monitoring
Backup Options

What is Azure NetApp Files (ANF)

Azure NetApp Files (ANF)
Azure Native, First-Party Service and Support Azure NetApp Files is an Azure native, first-party service delivered **directly through the Azure Portal**.

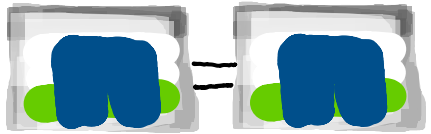


SMB and NFS support
SMB 3.0 and NFS v3.0

ANF can deliver Enterprise NFS performance
for critical environments

create and restore **near-instantaneous SnapShots and volume cloning**
With tool support ANF can create Application consistent data snapshots

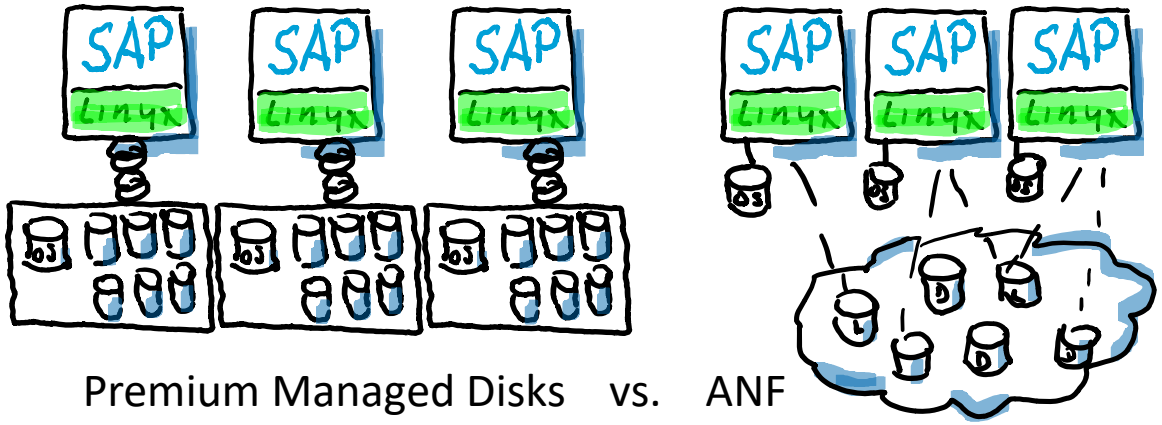
ANF can deliver sub milliseconds Latency
required by SAP for database support



HA Cluster setup very high SLA 99.99%

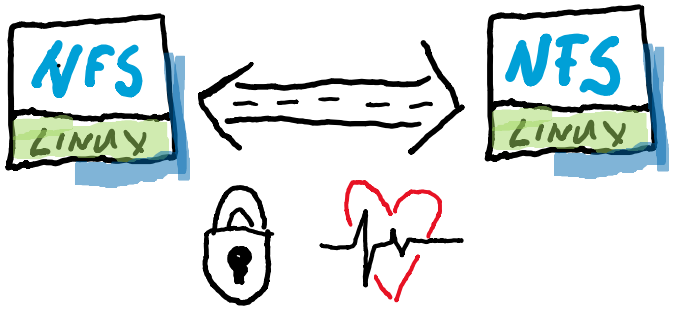
Why Azure NetApp Files for SAP?

Flexible Volume Assignment according to the Application needs

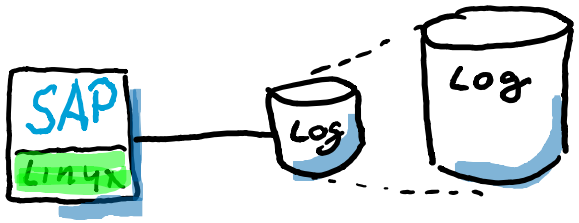


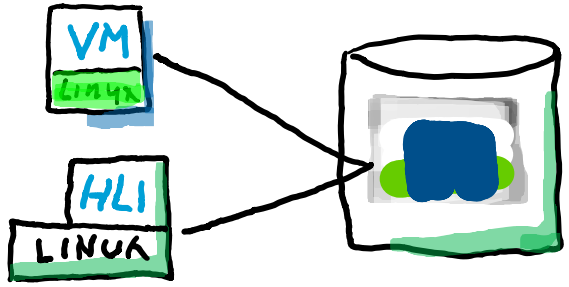
Premium Managed Disks vs. ANF

No complex Pacemaker Cluster

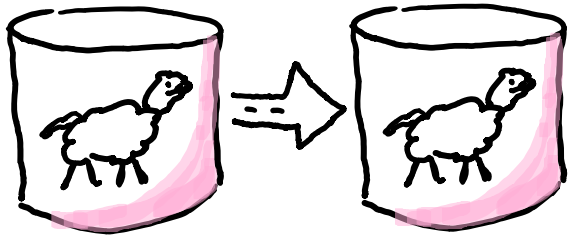


Online Volume Resize



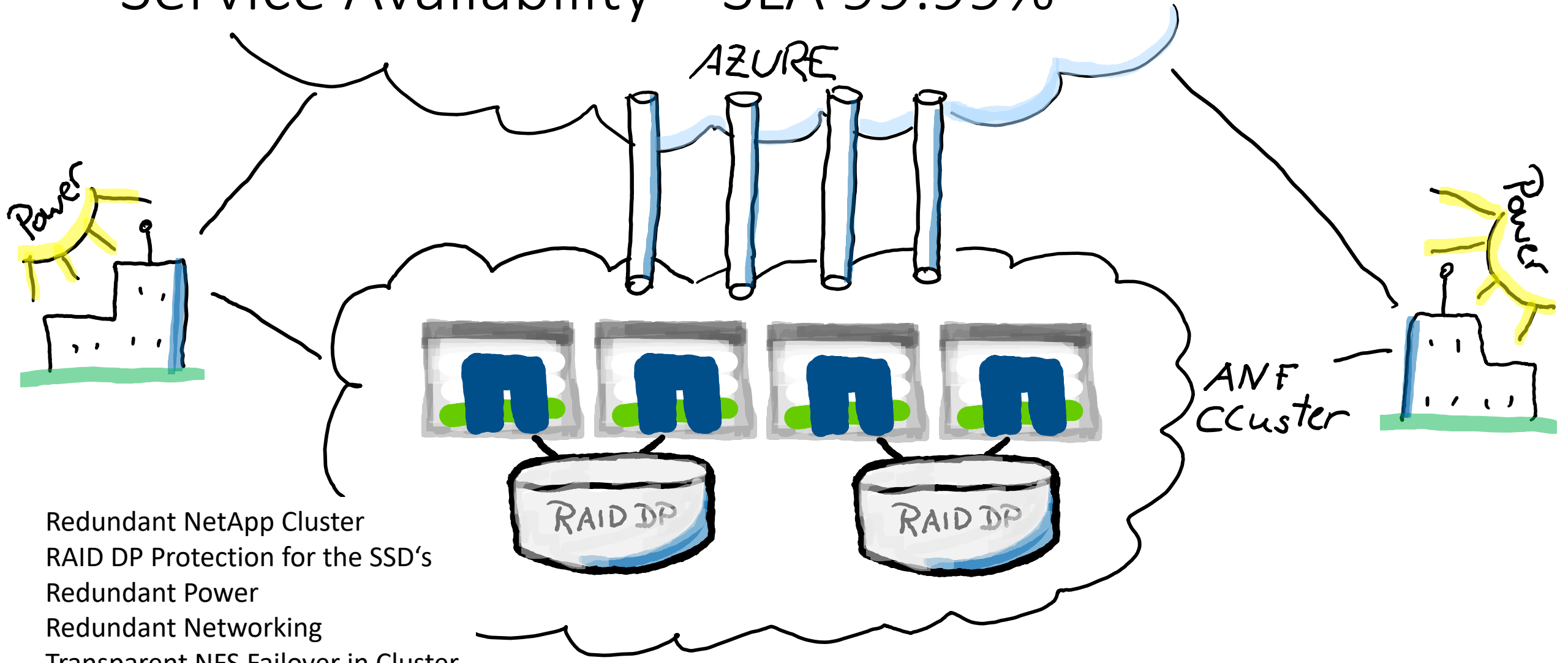


Instantaneous volume cloning – System Copy



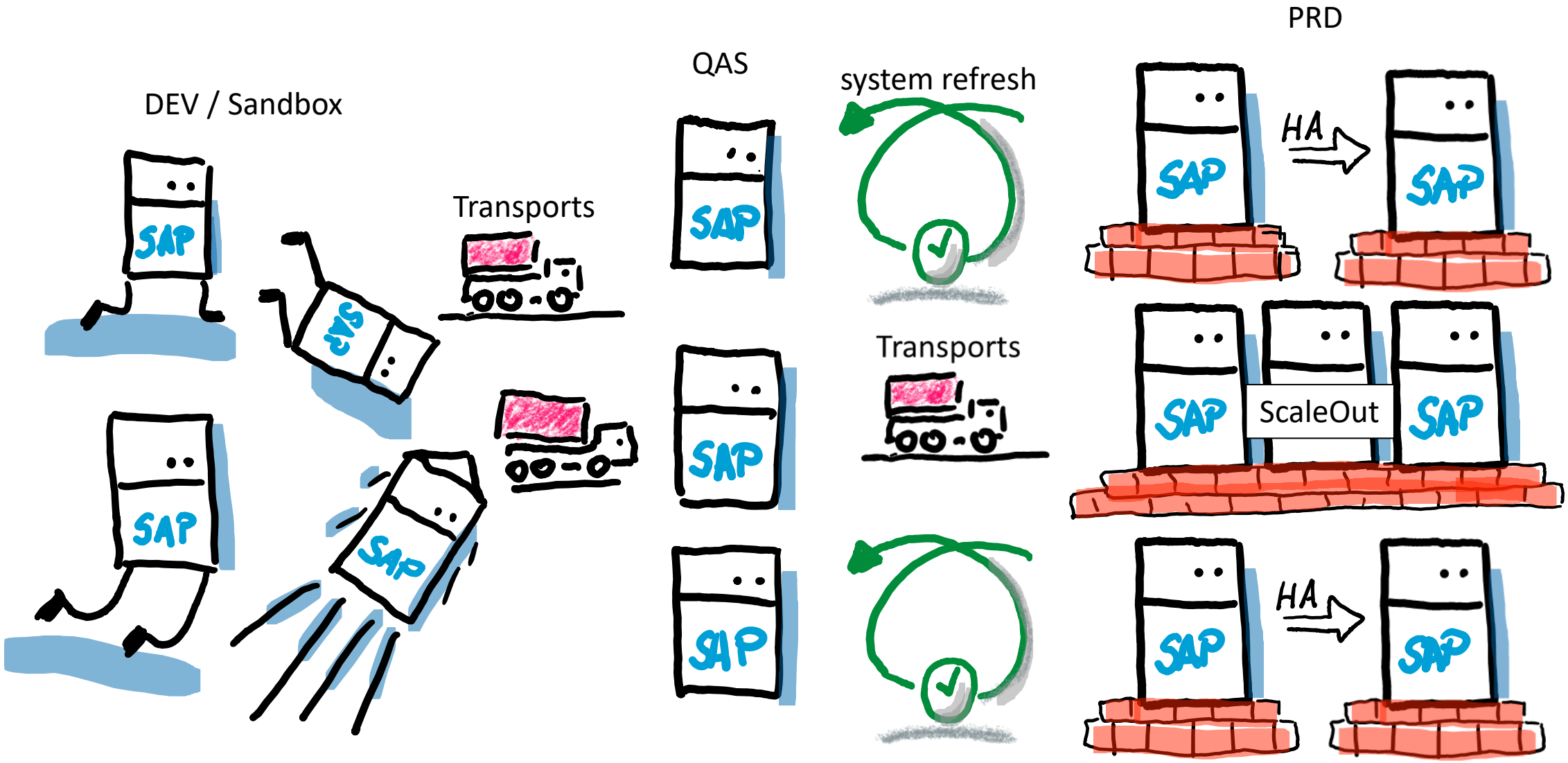
Accessible from HANA Large Instances and VM

Service Availability – SLA 99.99%



Redundant NetApp Cluster
RAID DP Protection for the SSD‘s
Redundant Power
Redundant Networking
Transparent NFS Failover in Cluster

SAP Landscape

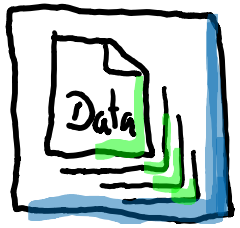


SAP HANA on Azure

What do I need to run SAP HANA in Azure

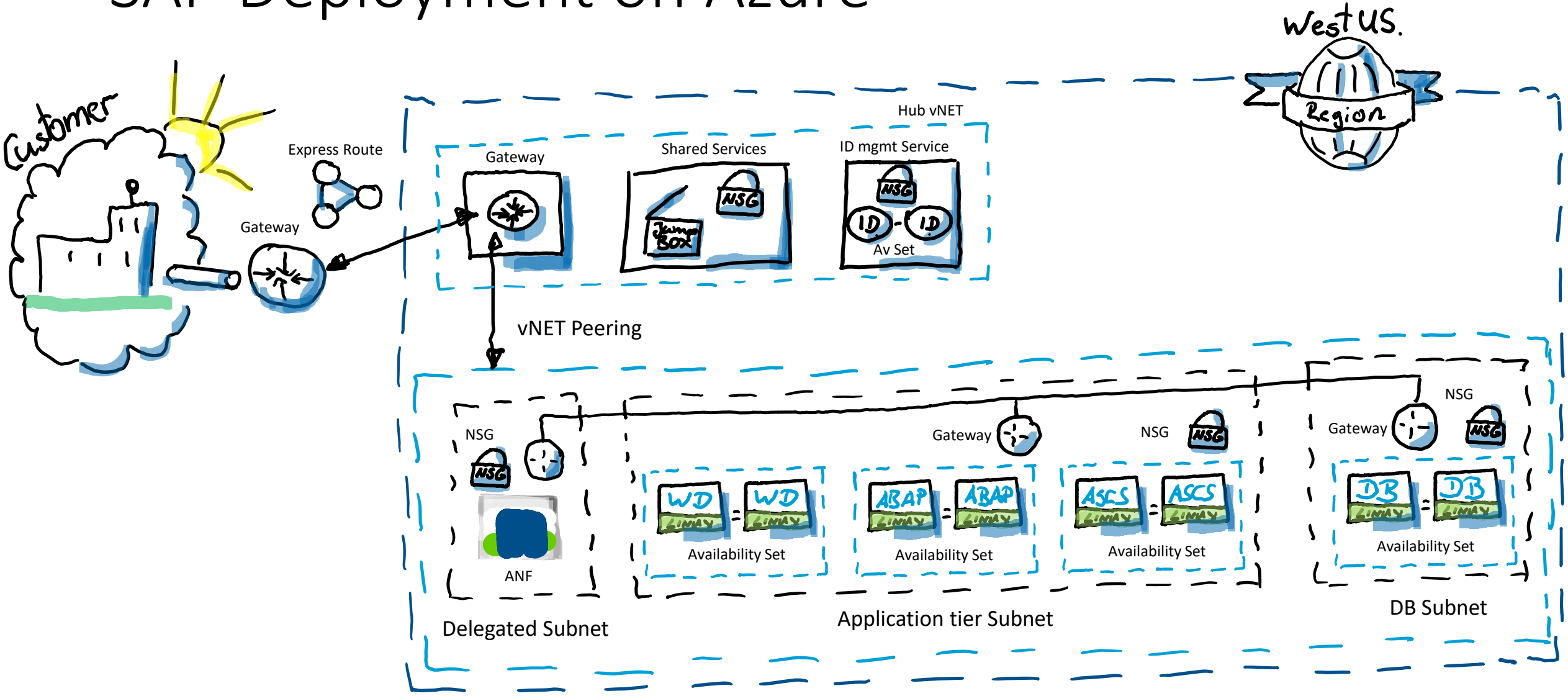
...a certified VM / OS combination for SAP workloads...
!!!SAP HANA requires a separate certification!!!

...a very fast network with very low latency

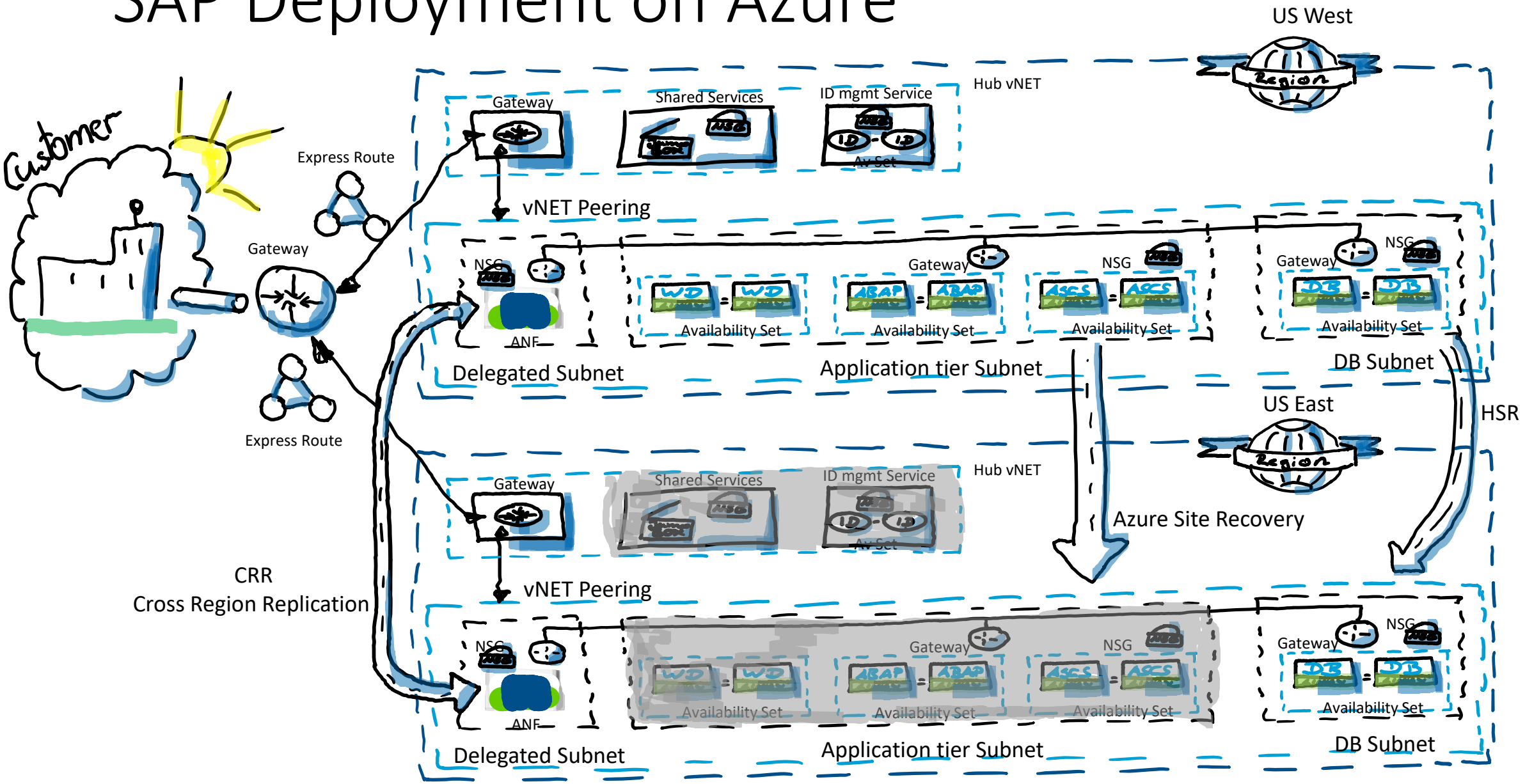


...a supported storage. Choice of storage: Premium Managed Disks, Ultra Disks and ANF
!!! SAP HANA requires special KPI's to be fulfilled by the attached storage!!!

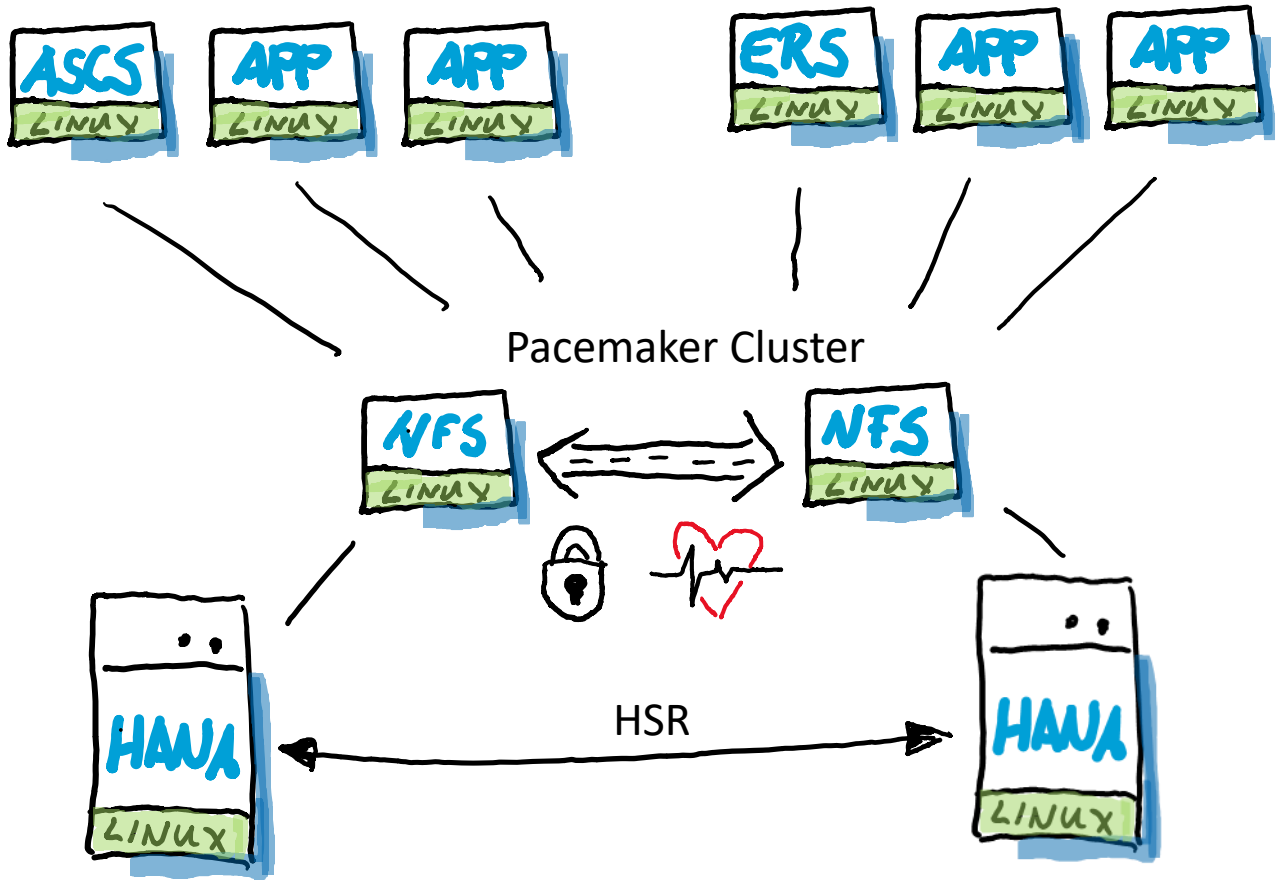
SAP Deployment on Azure



SAP Deployment on Azure

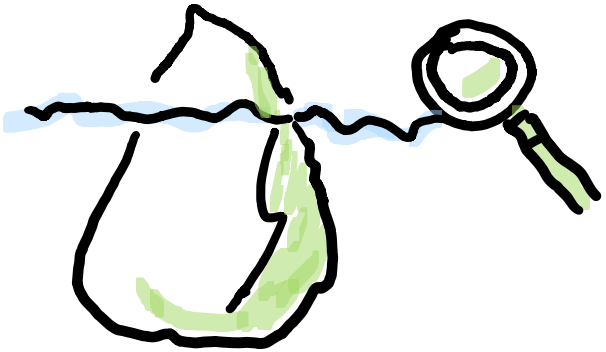


Non ANF Deployment



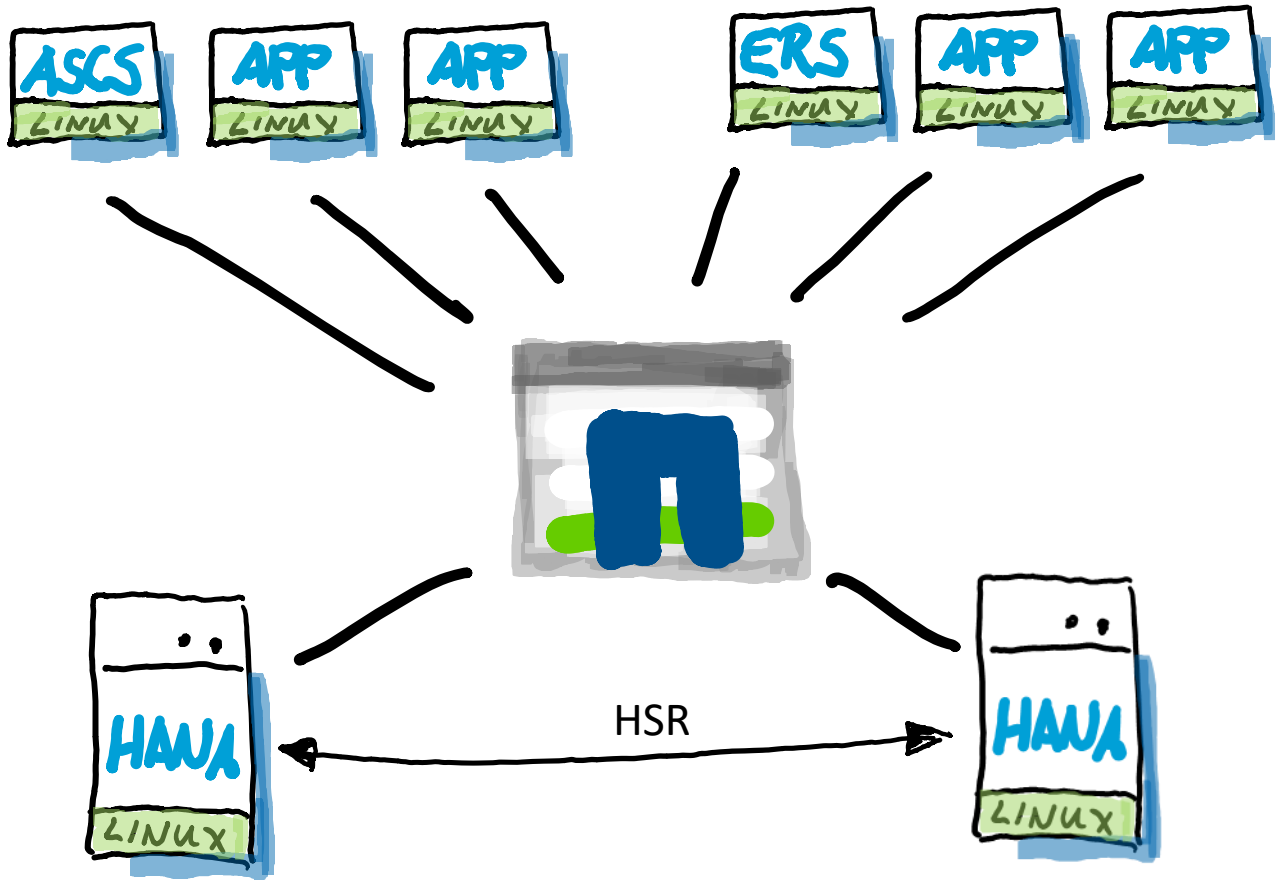
hard to keep it online
- **high administration effort**

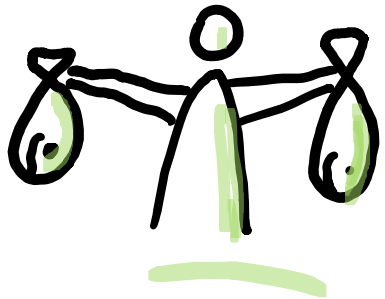
cost intensive
- **high TCO**



never know how big the iceberg really is
- **test intensive**
- **complex**

ANF Deployment





easy catch
- **low administration**

cost under control
- **lower TCO**

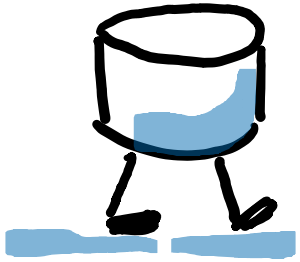
smart
SLA 99.99%
No Cluster
- **no testing**
- **simple**

ANF Architecture Capacity Pool

Standard 16MB/s / TB

- large volume as central backup volume
- NFS load

Premium 64MB/s / TB

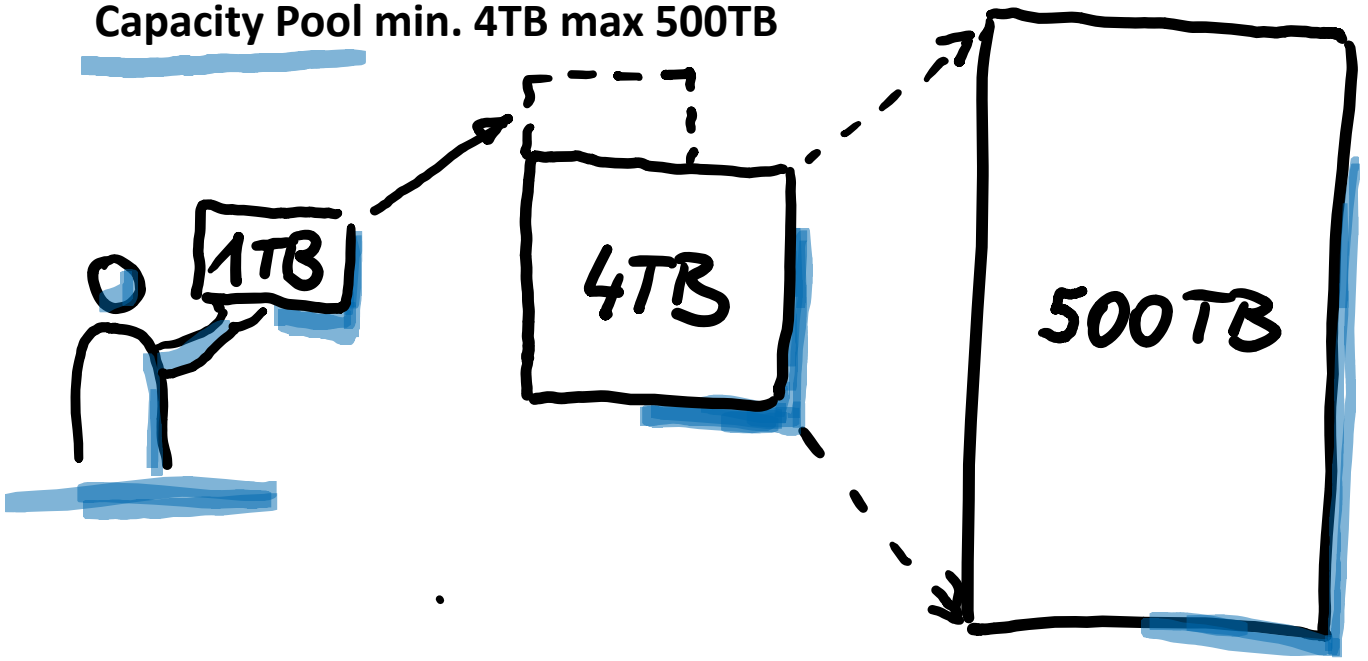


- Data and Log
- Shared
- Backup
- NFS Load

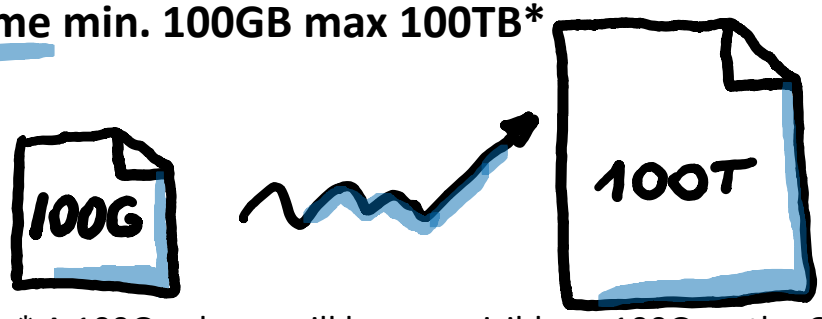
Ultra 128MB/s / TB

- critical Data and log volumes

Capacity Pool min. 4TB max 500TB

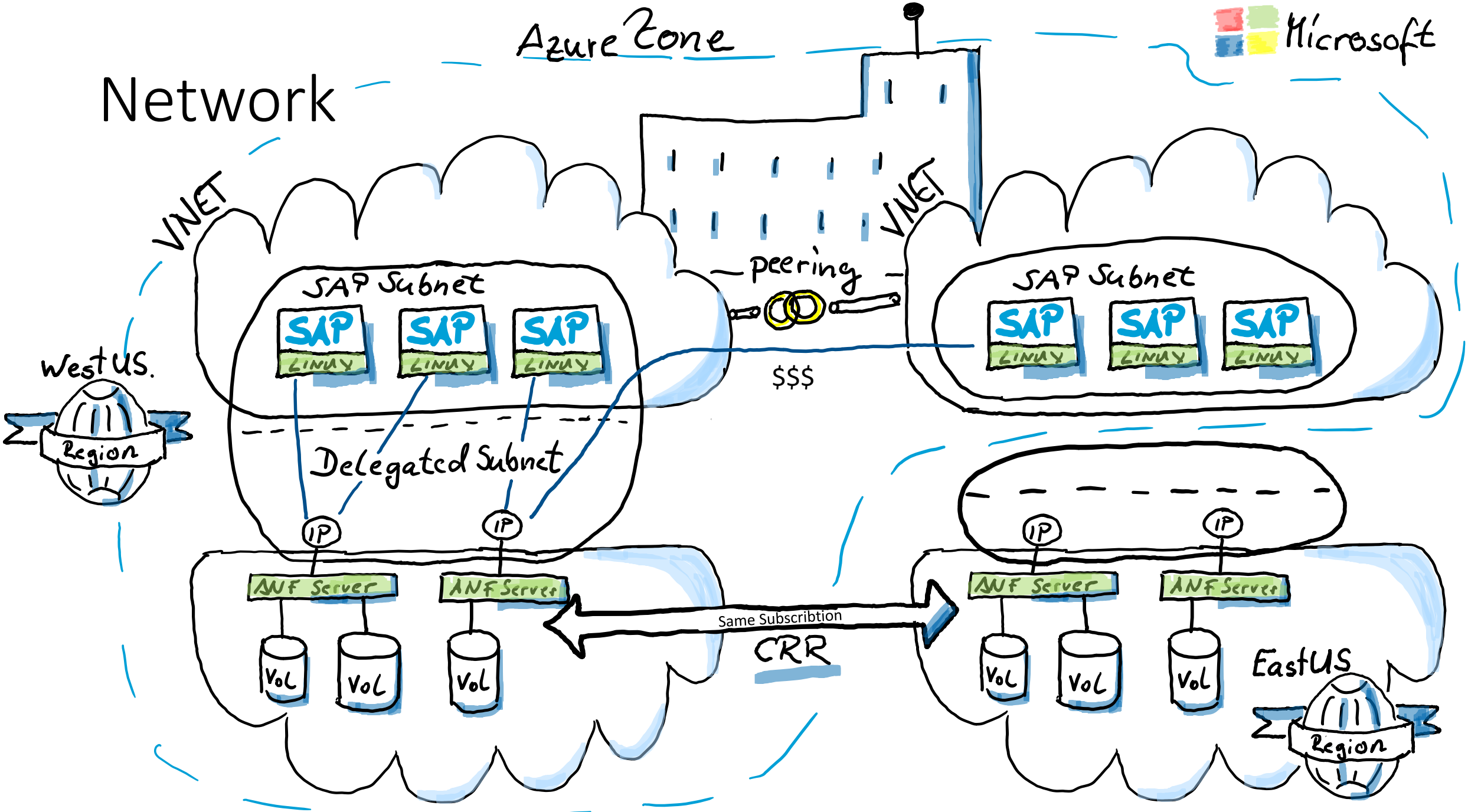


Volume min. 100GB max 100TB*



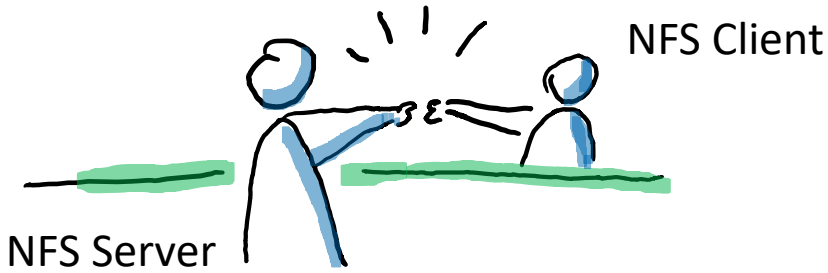
* A 100G volume will be now visible as 100G on the OS not 100T anymore
!!! no Autogrow anymore.!!!

Network

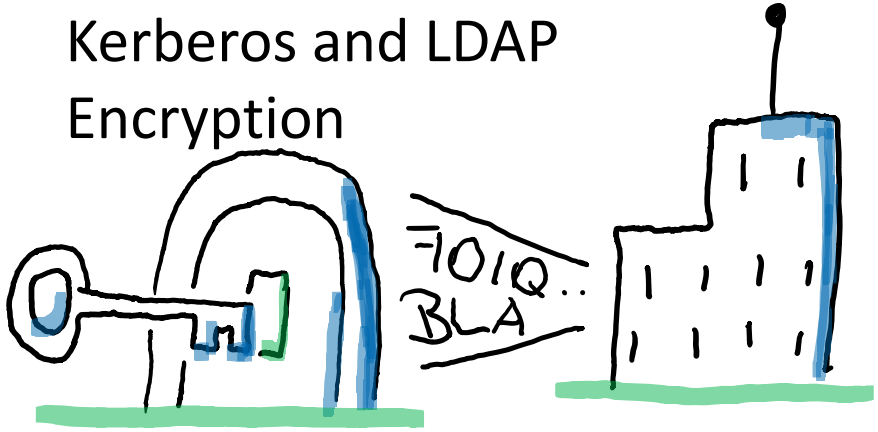

Azure Zone
Microsoft
VNET
VNET
peering
SAP Subnet
SAP Subnet
SAP
LINUX
$$$
West US.
Region
Delegated Subnet
IP
ANF Server
ANF Server
Same Subscribtion
CRR
Vol
East US
Region

ANF Security

Linux ID Map Deamon NFSv4.1

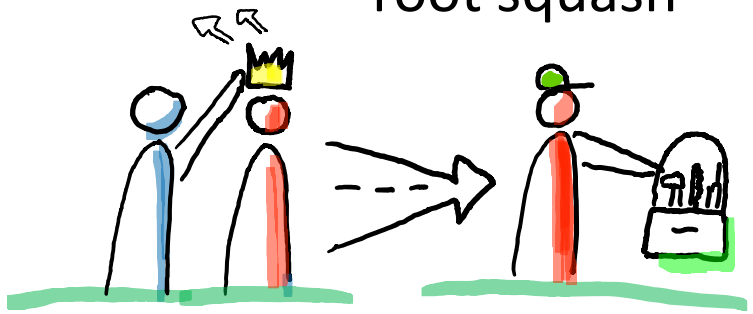


Kerberos and LDAP Encryption



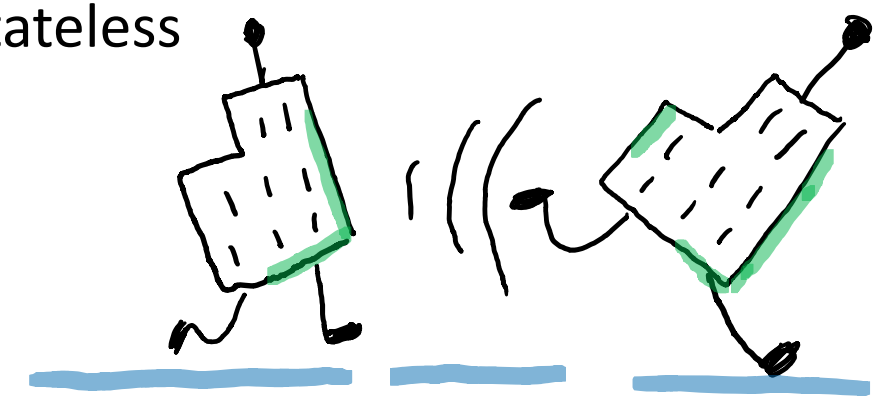
Export Policies

root squash

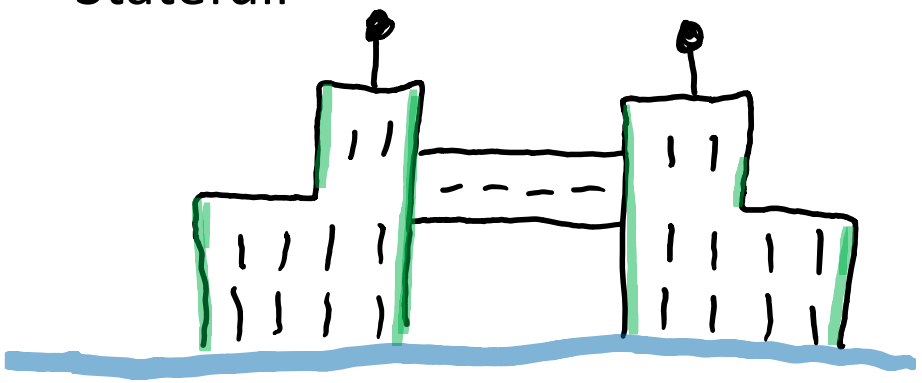


NFSv3 vs. NFSv4.1

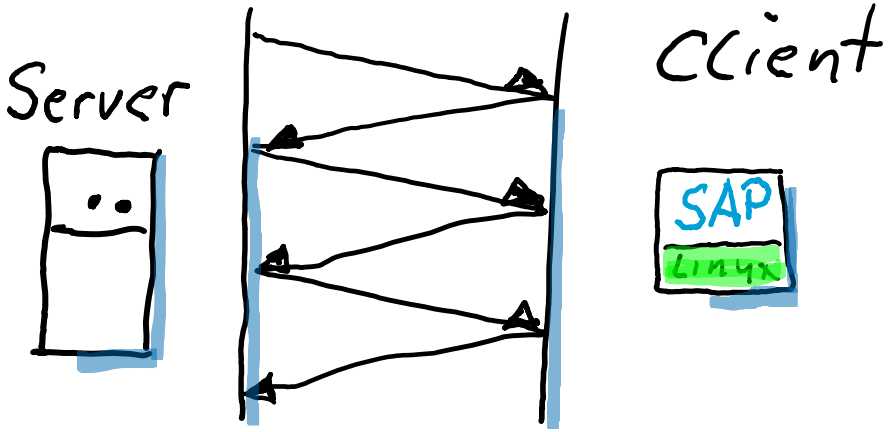
Stateless



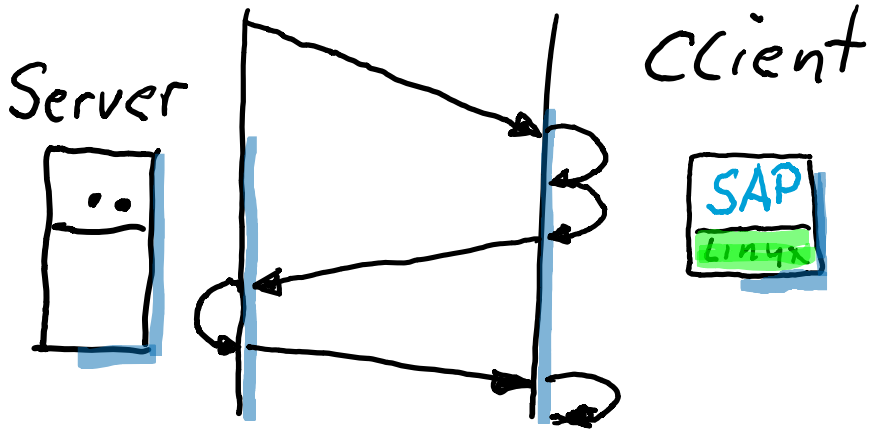
Statefull



Single Operation per RFC call

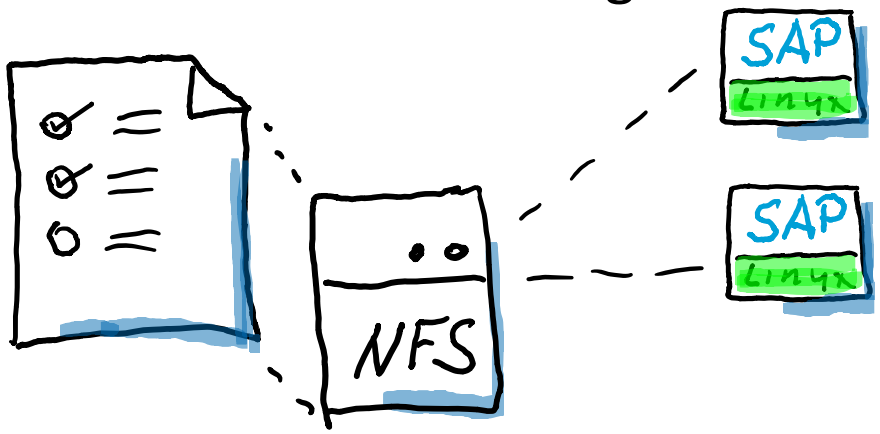


Multiple Operations per RFC call

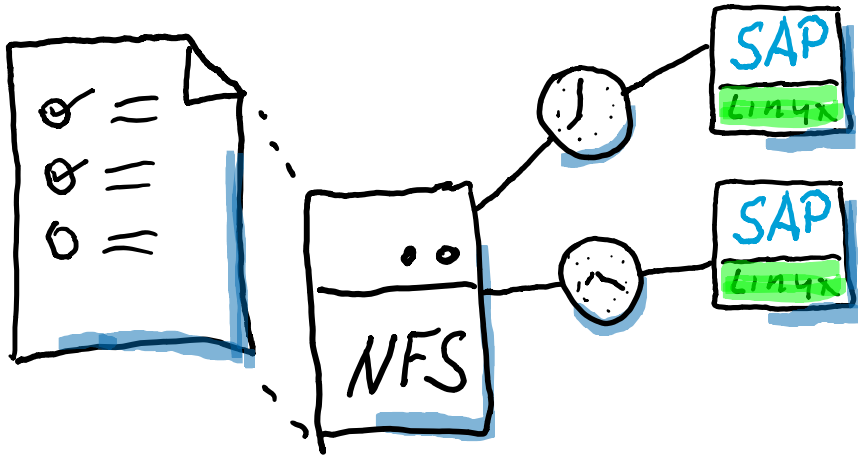


NFSv3 vs. NFSv4.1

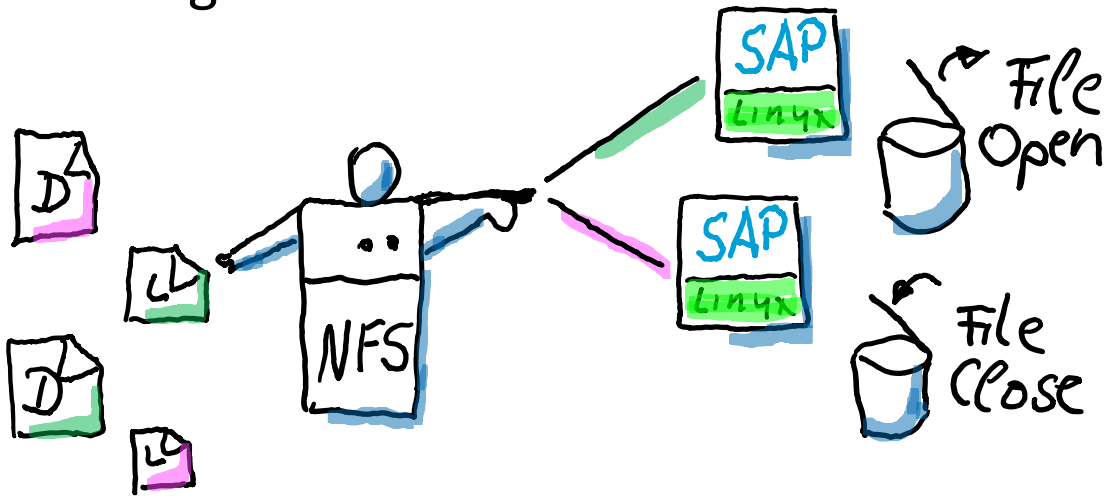
Server Based File Locking



Leased Base File Locking

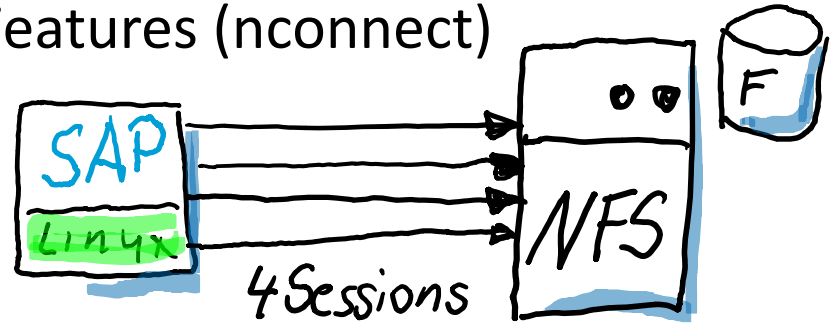


Delegations

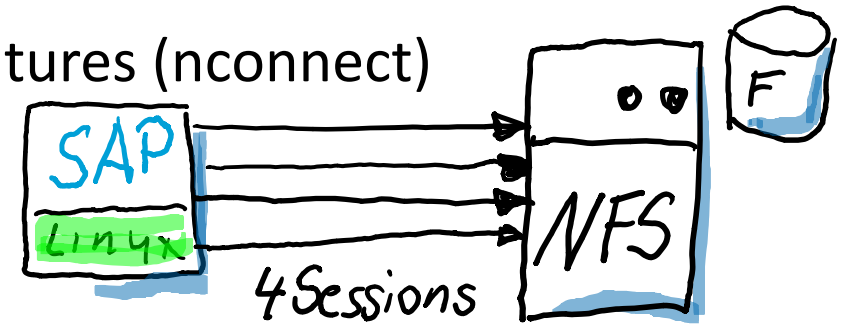


NFSv3 vs. NFSv4.1

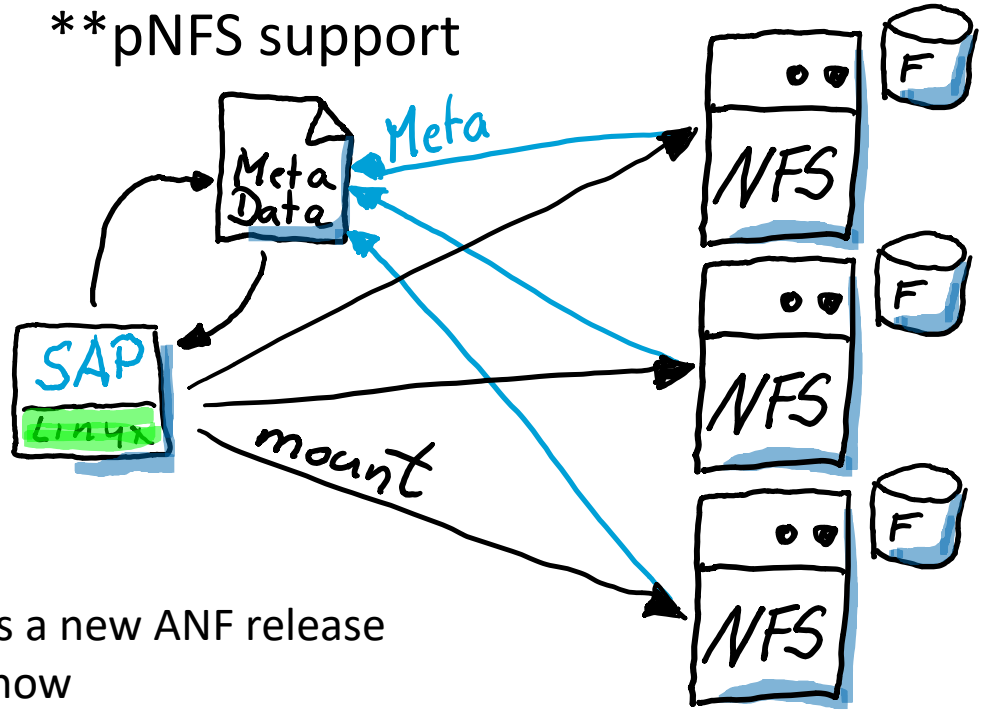
NFS Features (nconnect)



*NFS Features (nconnect)



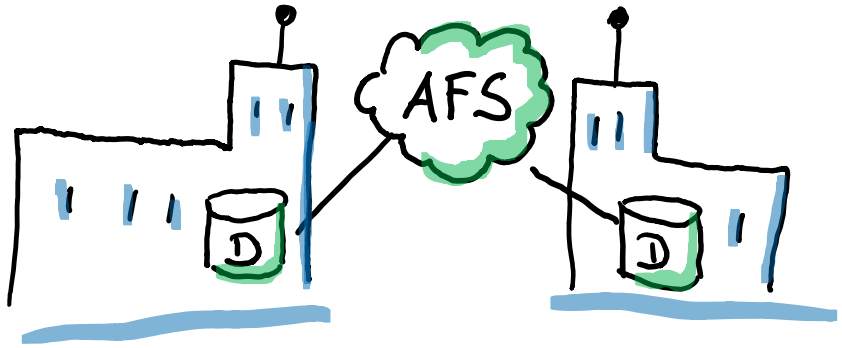
**pNFS support



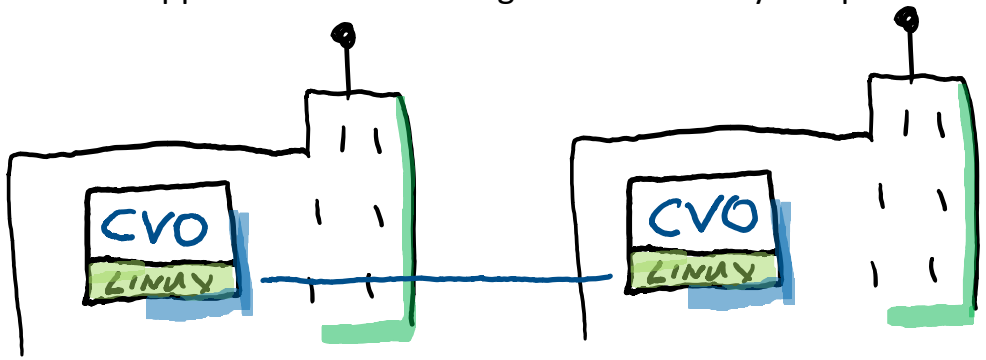
* Not yet supported with ANF – requires a new ANF release

** no support of multiple sessions as of now

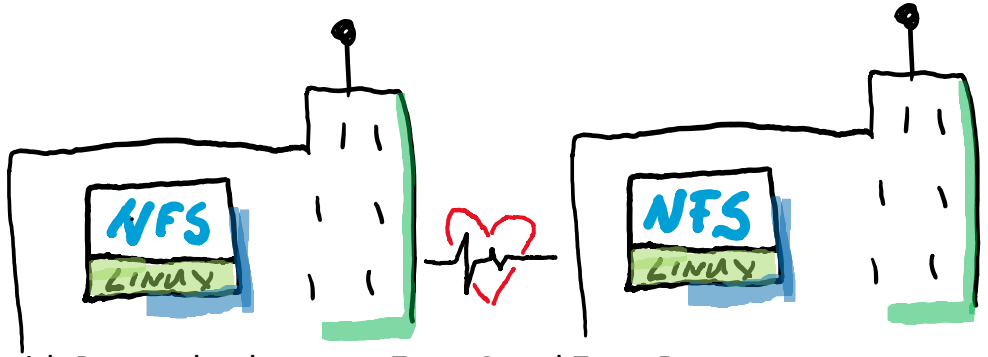
Data Replication between Zones



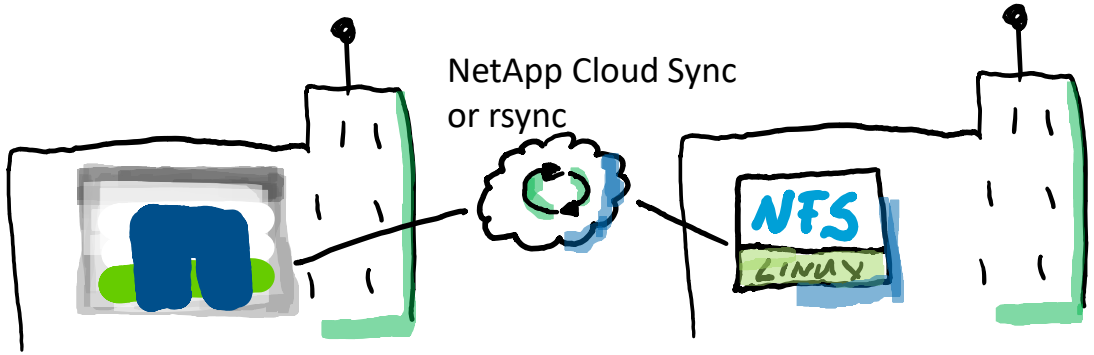
Azure File Service (on ZRS) – Sync - between **Zone A** and **Zone B**
!!! no remount required (v3 and v4.1) – transparent failover !!!
!!! No support for Data- and Log-Files – relatively low performance !!!



CVO with SnapMirror between **Zone A** and **Zone B**
!!! remount required – no transparent failover !!!
!!! No support for Data- and Log-Files – reasonable Performance!!!

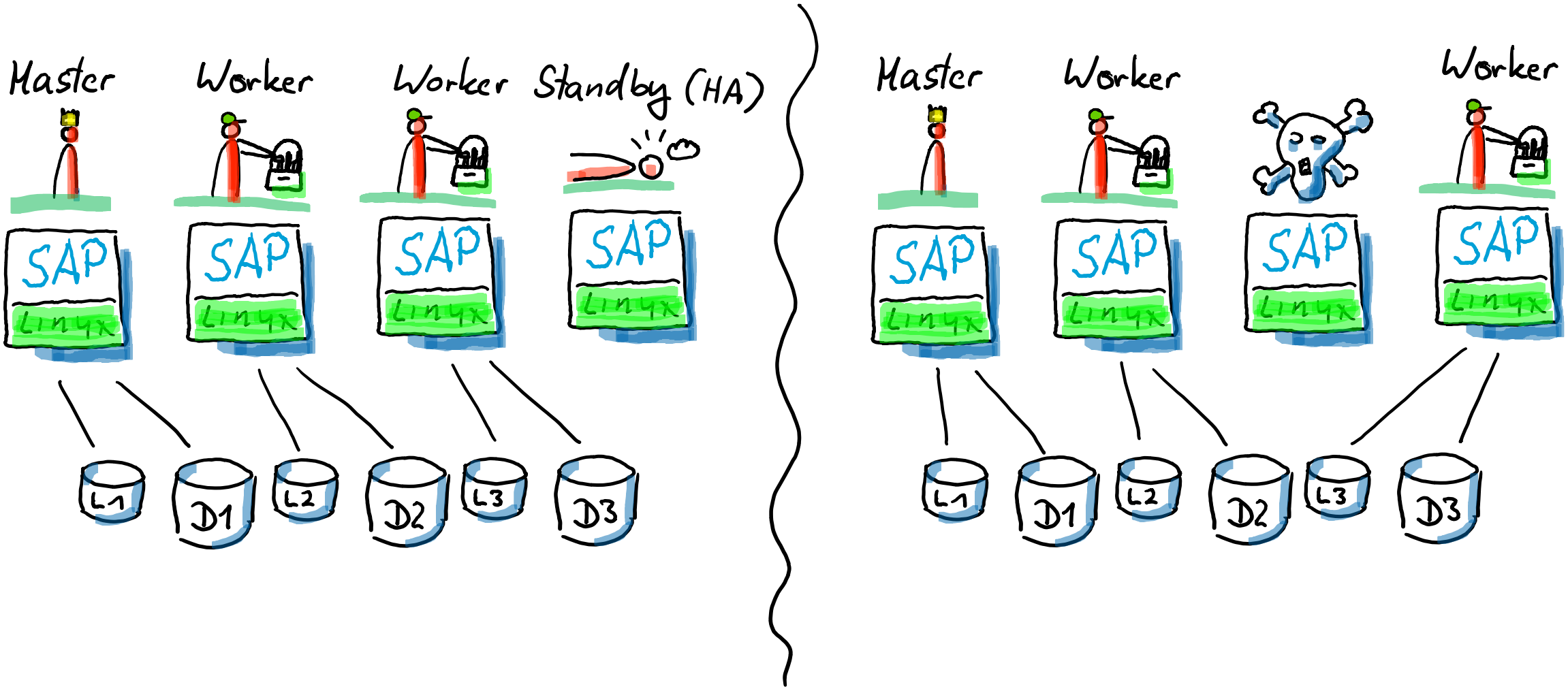


DRBD with Pacemaker between **Zone A** and **Zone B**
!!! no remount required (NFSv3) – no transparent failover !!!
!!! No support for Data- and Log-Files – relatively low performance !!!



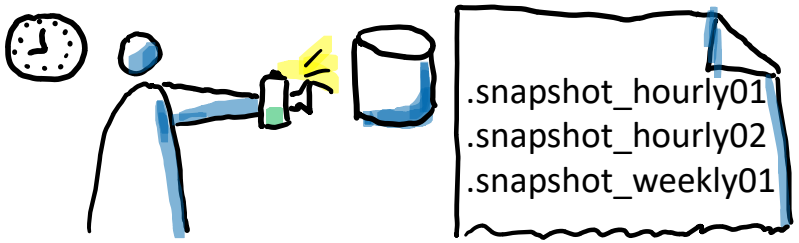
async - NetApp Cloud sync or rsync (Linux) between **Zone A** and **Zone B**
!!! remount required - no transparent failover !!!
!!! No support for Data- and Log-Files – relatively low performance !!!

ScaleOut Support N+1 with NFSv4.1

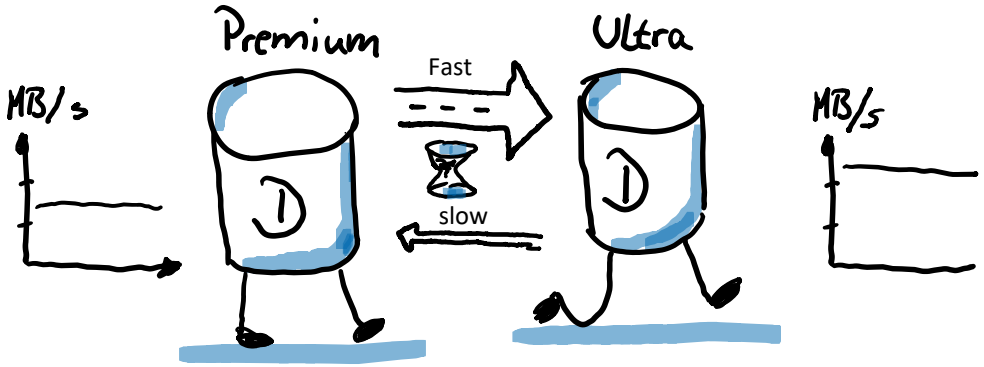


New ANF Features

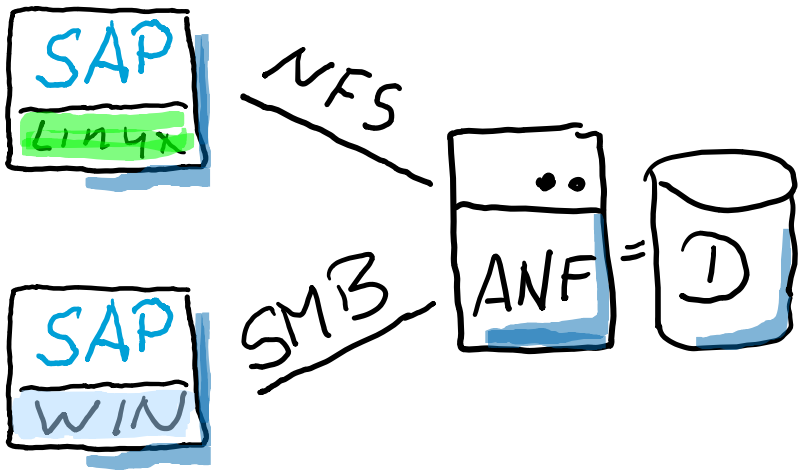
Automated Snapshot Policies



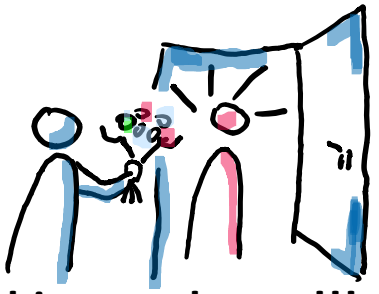
Dynamic Volume Service Level Change



Dual Protocol Access to ANF volume

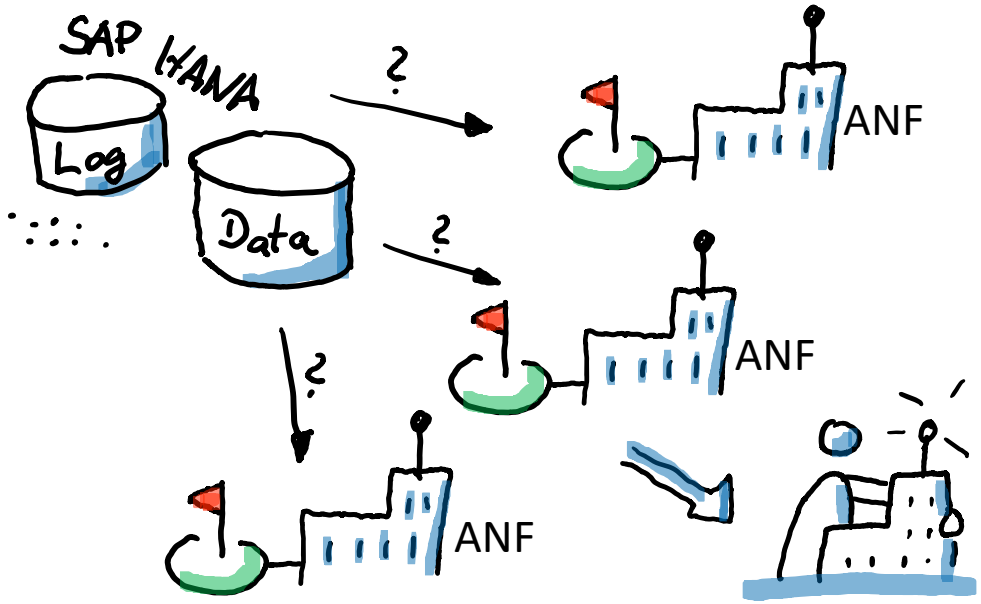


New ANF Features (Upcoming)



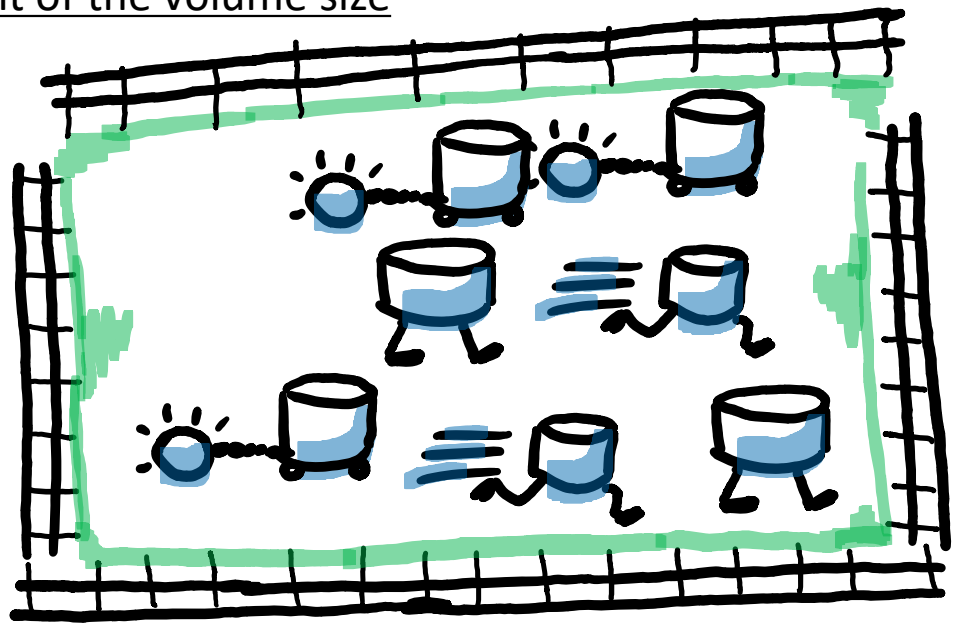
!!!Subject to change!!!

Volume Placement Group (VPG) for SAP HANA
ANF will distribute data, log, backup, and shared volumes accordingly to the the best practice over ANF



!!!Multiple IP‘s for the volumes + PPG

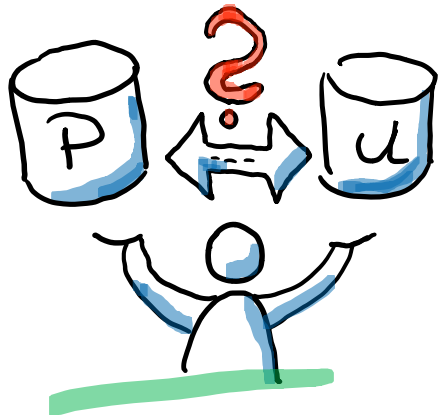
Manual QoS Capacity Pool
Volume specific throughput configurable
<u>independent of the volume size</u>



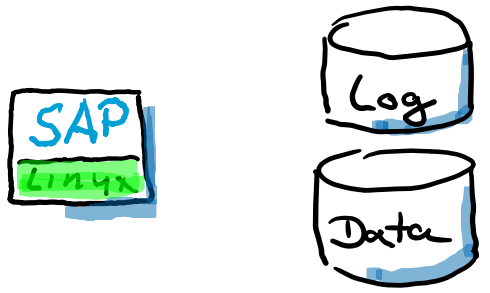
```
PS /home/ralf> Register-AzProviderFeature -ProviderNamespace Microsoft.NetApp -FeatureName ANFFlexPool
FeatureName ProviderName     RegistrationState
----------- ------------     -----------------
ANFFlexPool Microsoft.NetApp Registering
```

Sizing Considerations

min KPI‘s from SAP
250 MB/s Log Volume write
400 MB/s Data Volume read
no KPI‘s for Log-Backup, Backup and shared



CP Premium



64MB/s x 4TB = 256MB/s

64MB/s x 6.25TB = 400MB/s

64MB/s x 10.25TB Premium

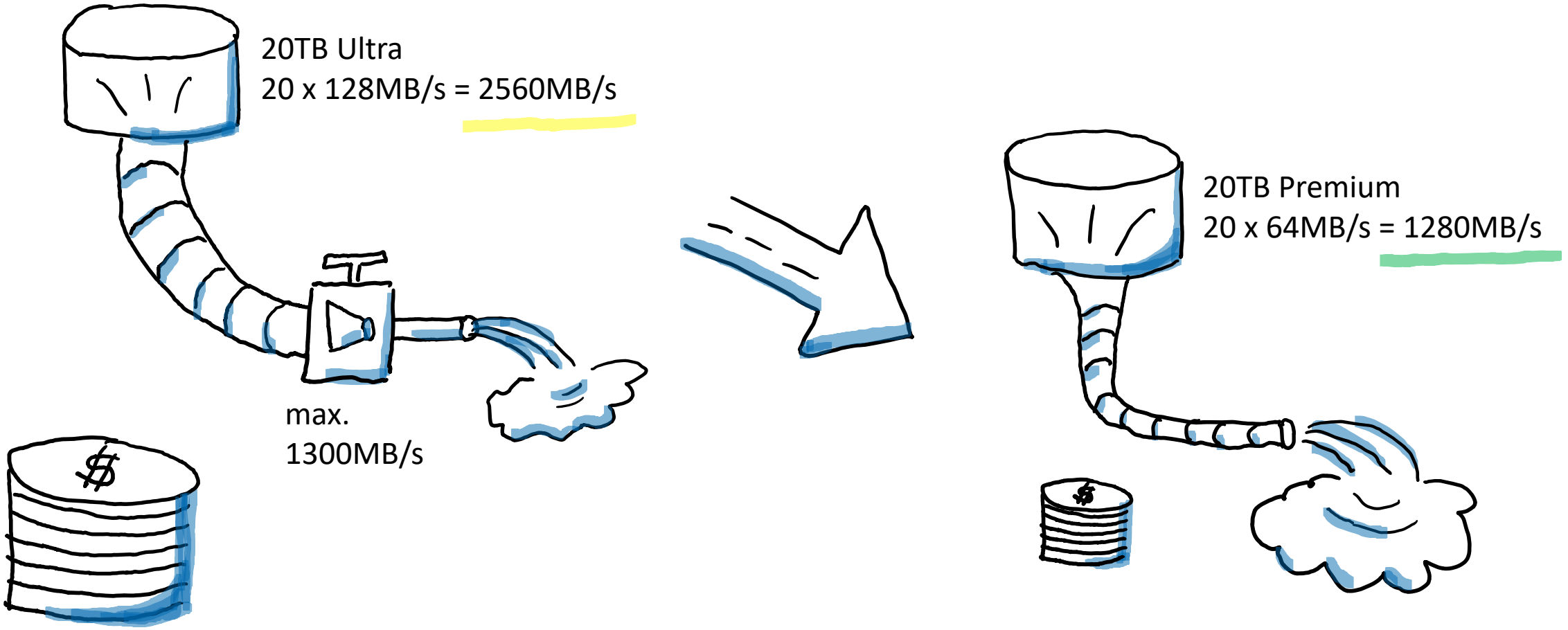
CP Ultra

128MB/s x 2TB = 256MB/s

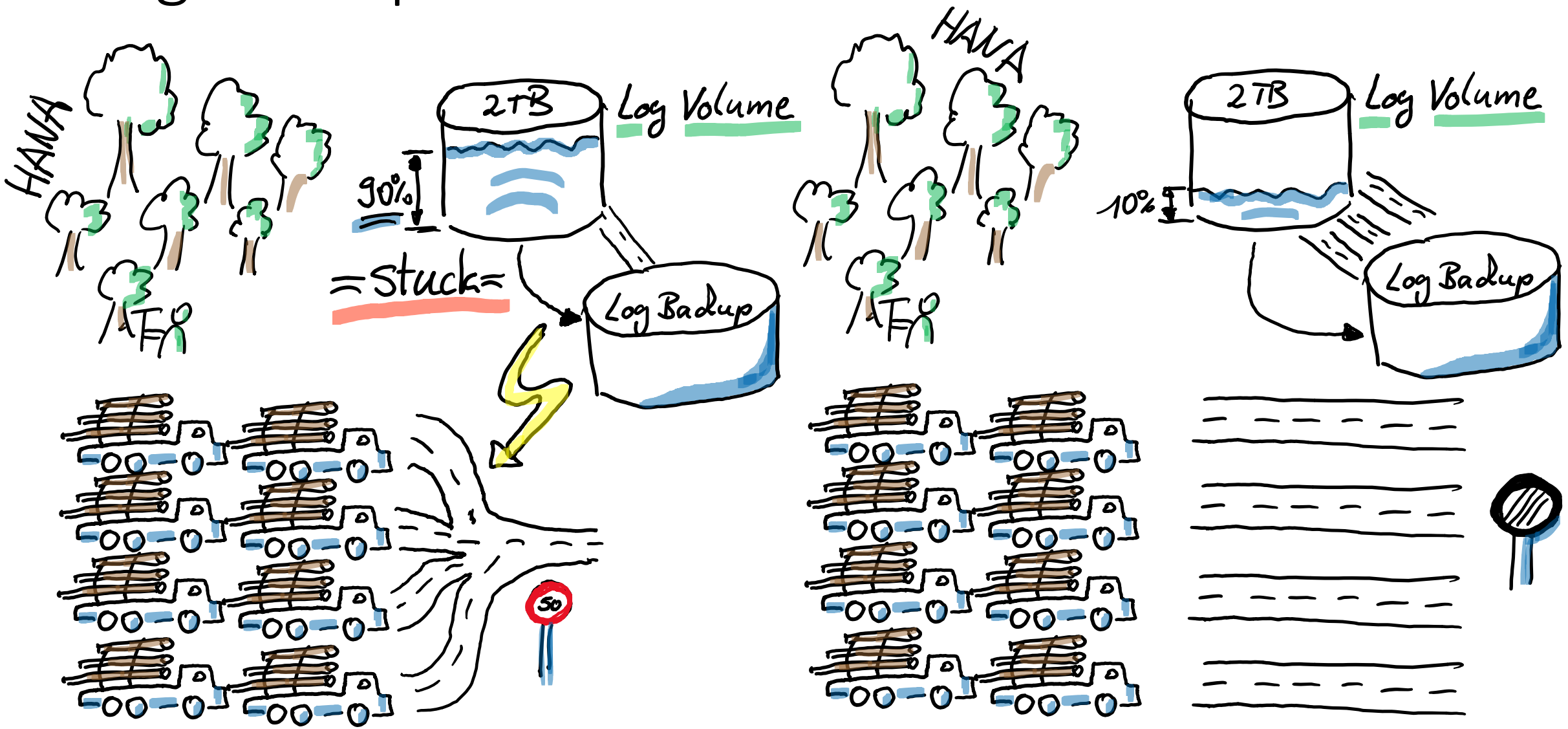
128MB/s x 3.2TB = 400MB/s

128MB/s x 5.2TB Ultra

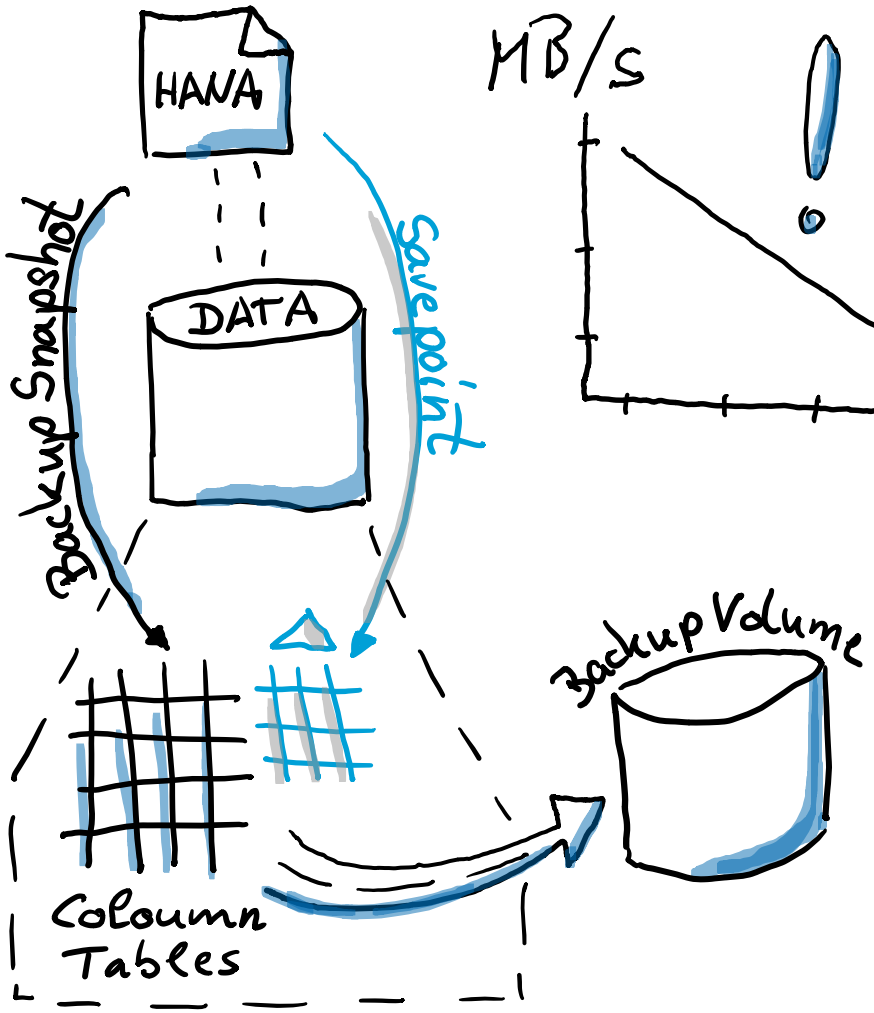
Performance Considerations

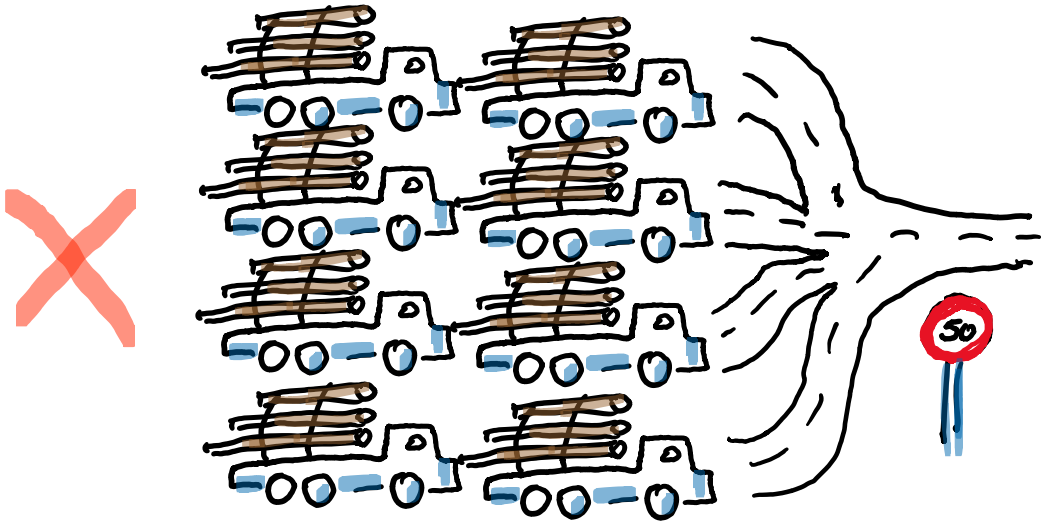


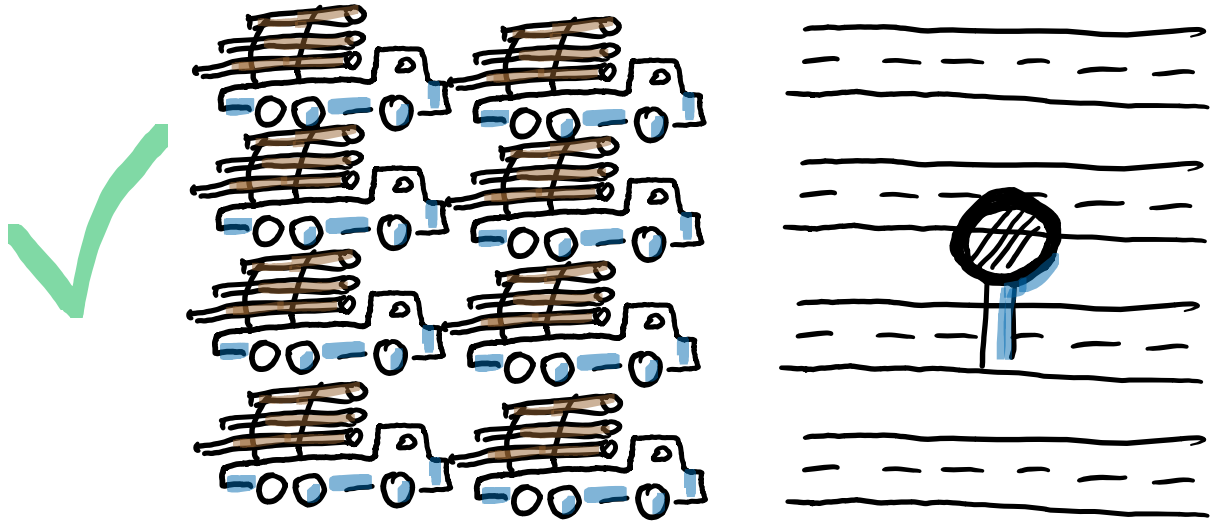
Log Backup Performance



Data Backup Performance

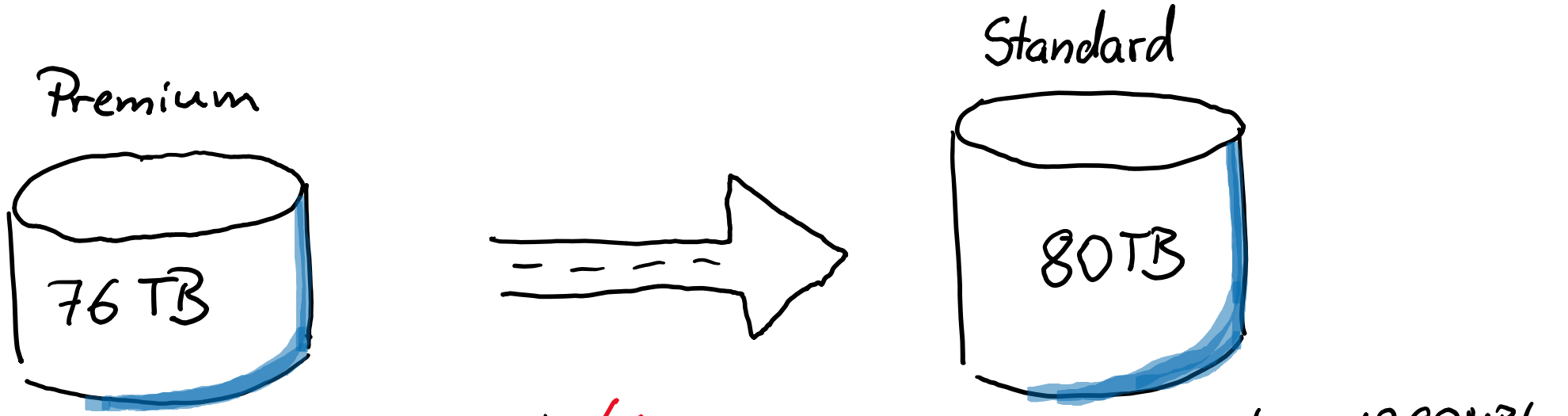






Data Backup Performance

Customer Case 76 TB Bachup Volume



76×64MB/s = 4.86GB/s

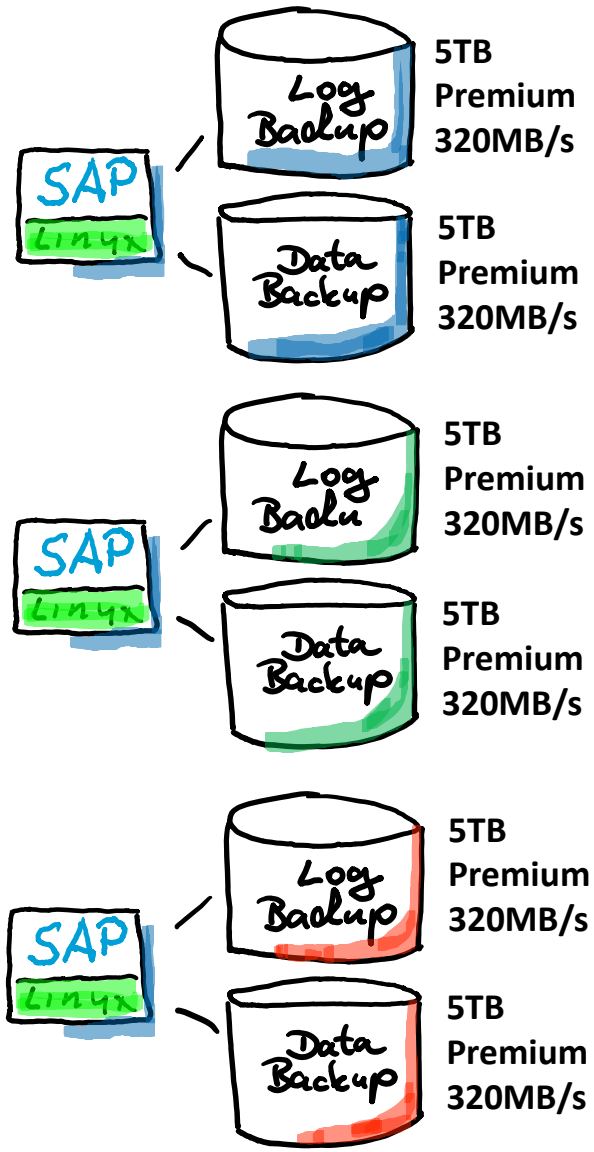
≈460 $/Day

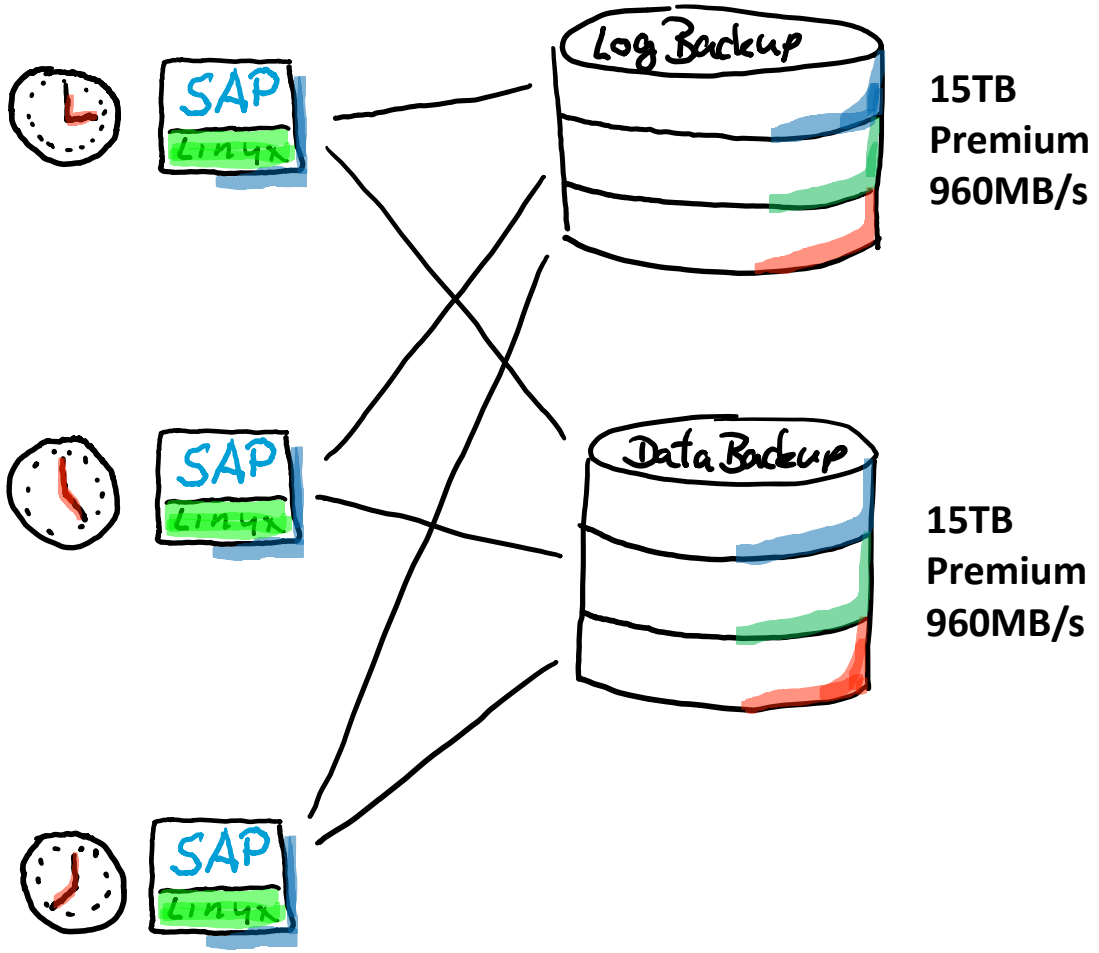
80 × 16MB/s = 1280MB/s

≈250 $/Day

saving 70k $/Year

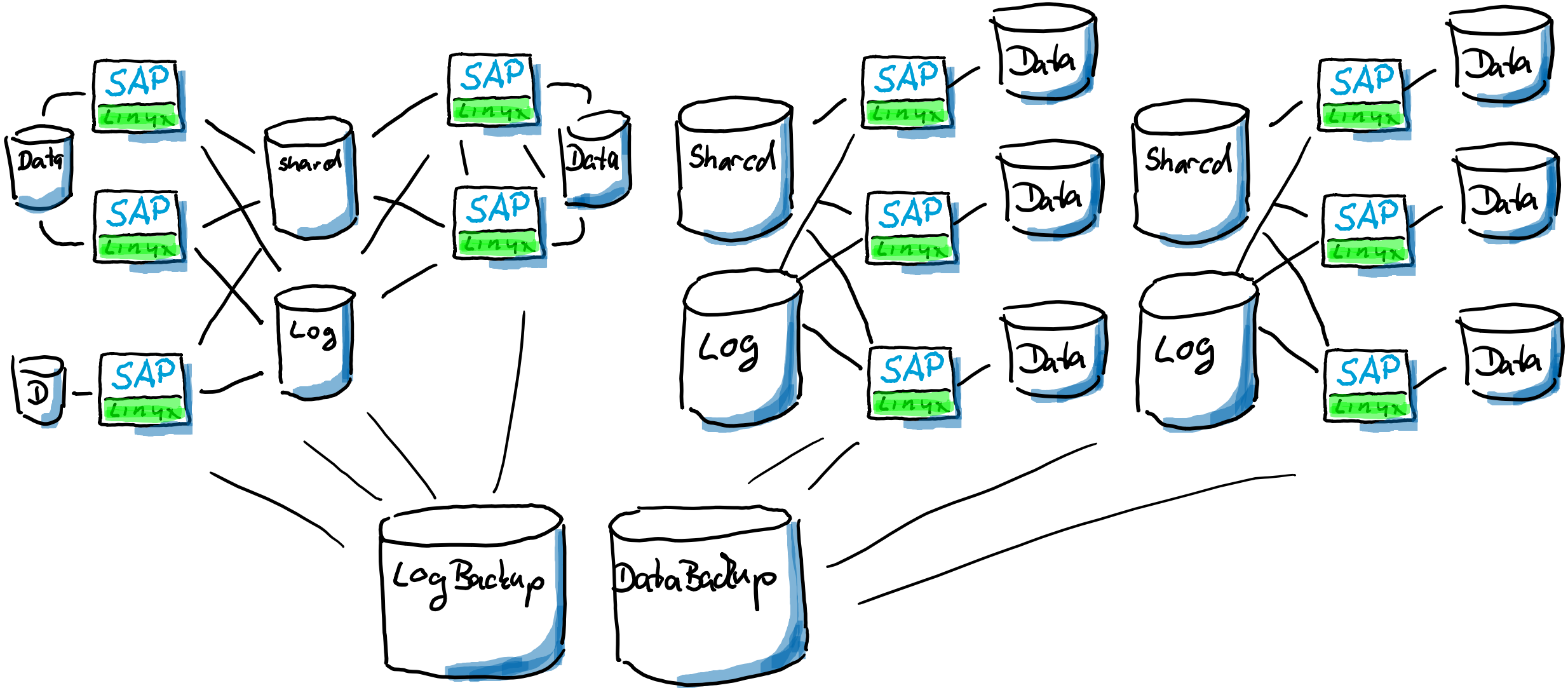
Consolidating Backup Volumes





Sizing Options

3 Dev, 2 Sandbox, 3 QAS and 3 PRD

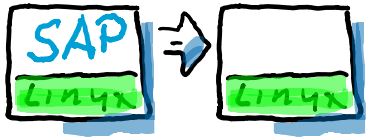


SAP LaMa Support

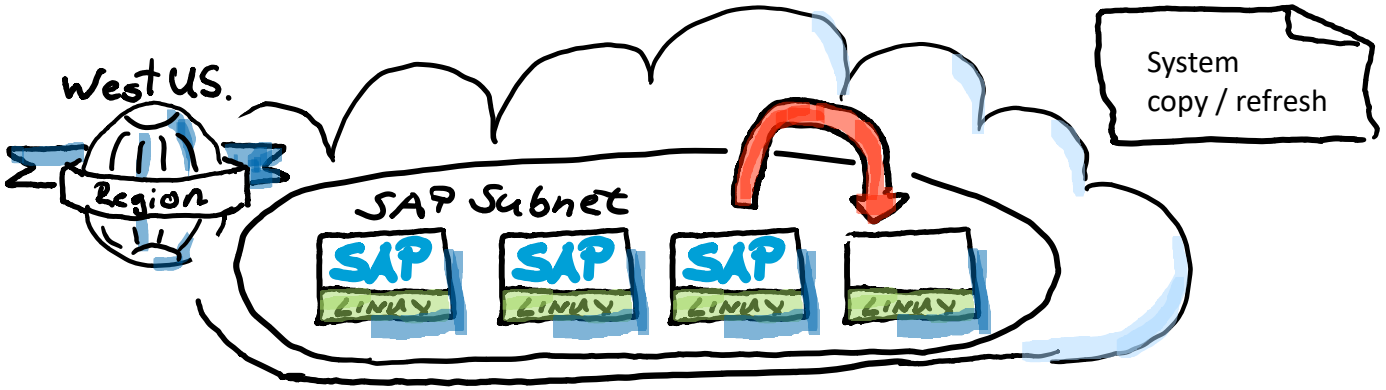
SAP Landscape Management Support with ANF - **fully integrated**

Start and Stop

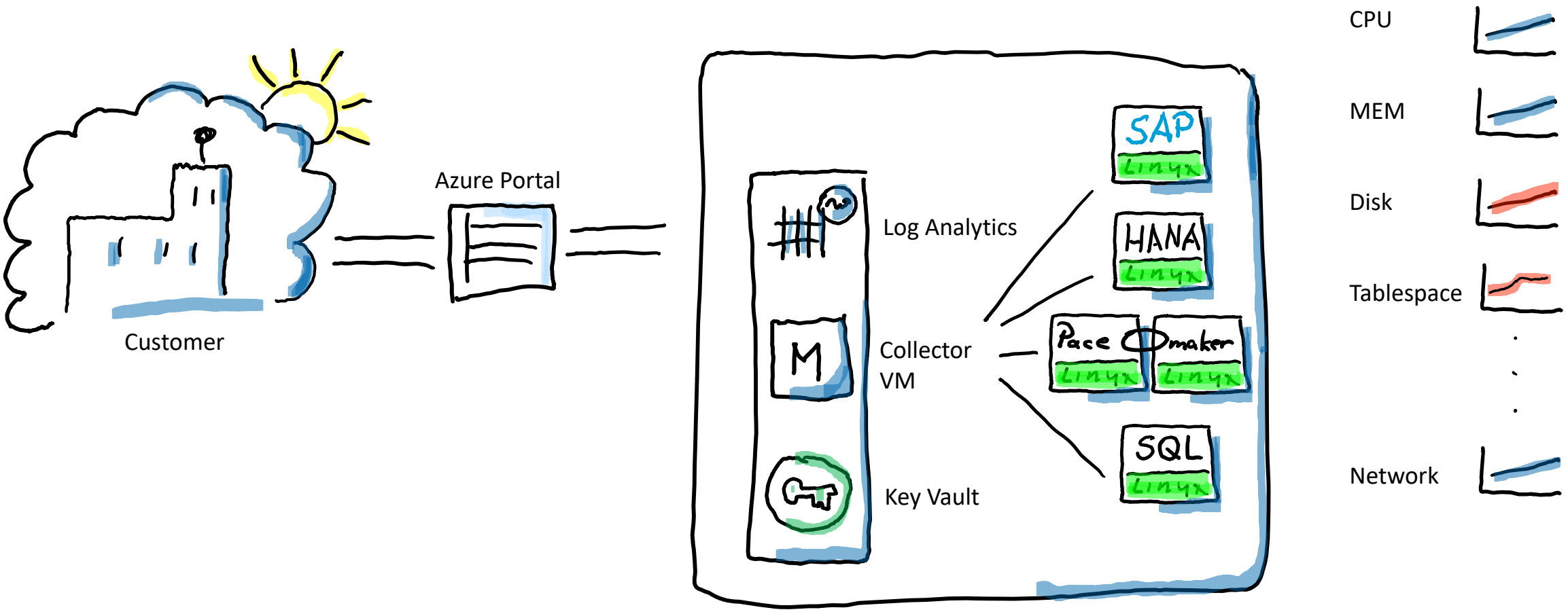
Relocate



Integrated support of system copy and refresh



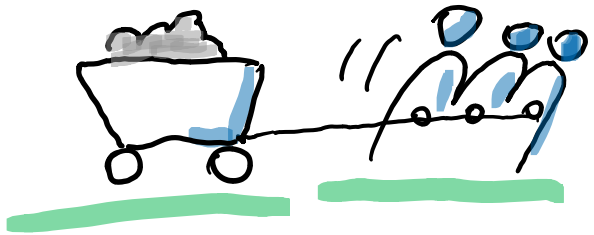
Monitoring



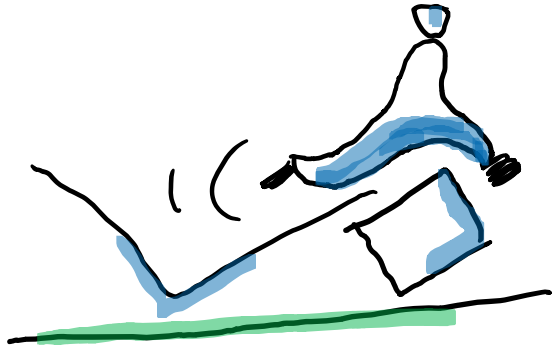
https://docs.microsoft.com/en-us/azure/virtual-machines/workloads/sap/azure-monitor-overview

Backup - Options

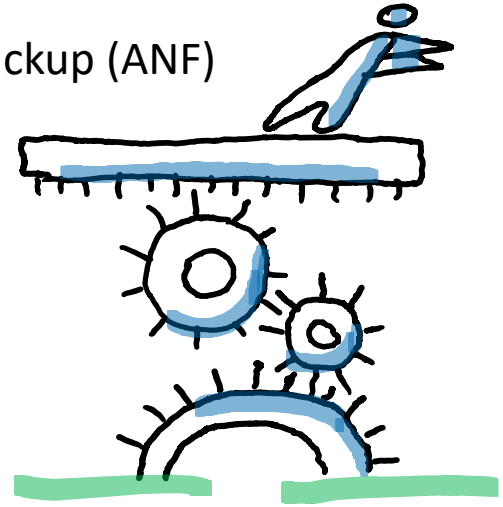
Default NFS Backup



azacsnap (private preview)



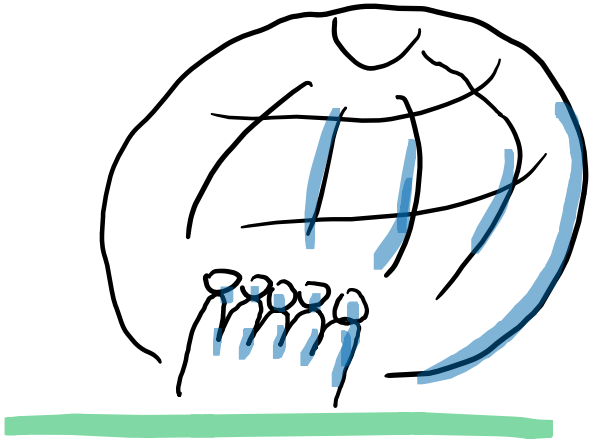
az backup (ANF)

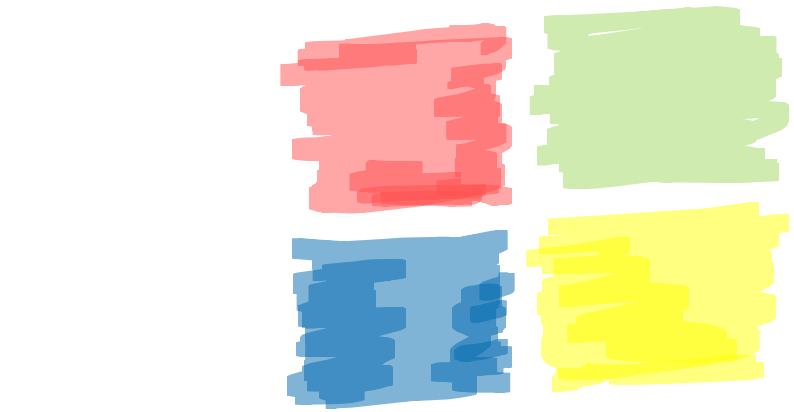


GitHub NetApp Script

https://github.com/netapp/ntaphana

Commvault IntelliSnap >=11.21





Thank You