

EXPLORE

CMTY1234LV

The Ultimate HomeLab Guide

– History, Present, Future and Why!

Marc Huppert (VCDX #181)

Principal Consultant

#vmwareexplore #cmtty1234lv #HomeLabKing



Agenda

HOMELAB JOURNEY


- Why?
- HomeLab Hardware History
- HomeLab Hardware Today
- Wrap Up



HomeLab?

WHY?

172 badges

| | | | | | |
|--|--|---|--|--|--|
|  <p>Dell PowerStore Operate 2023 Dell Technologies</p> |  <p>Dell PowerStore Deploy 2023 Dell Technologies</p> |  <p>Data Science Foundations Dell Technologies</p> |  <p>VMware Certified Professional - Network... Broadcom</p> |  <p>VMware Certified Specialist - vSphere with... Broadcom</p> |  <p>VMware Certified Master Specialist - HCI 2024 Broadcom</p> |
|  <p>Data Insights - Fast Track Cohesity</p> |  <p>Data Platform - Fast Track Cohesity</p> |  <p>Data Protection - Fast Track Cohesity</p> |  <p>VMware Certified Master Specialist - VMware Cloud... Broadcom</p> |  <p>VMware Certified Specialist - VMware Cloud... Broadcom</p> |  <p>Double VCP - Cloud Management and Automati... Broadcom</p> |
|  <p>GenAI Foundations Dell Technologies</p> |  <p>PowerEdge XE9680 and XE8640 Install Achievement Dell Technologies</p> |  <p>Principles of AI Software & Ecosystem Intel</p> |  <p>Double VCP - Cloud Management and Automati... Broadcom</p> |  <p>VMware vRealize Operations - Cloud... Broadcom</p> |  <p>Double VCP - Data Center Virtualization & Cloud... Broadcom</p> |
|  <p>Principles of AI Everywhere Intel</p> |  <p>Cohesity Threat Detection - Getting Started Cohesity</p> |  <p>Cohesity Data Classification - Getting Started Cohesity</p> |  <p>VMware Certified Professional - Cloud... Broadcom</p> |  <p>Double VCP - Network Virtualization & Cloud... Broadcom</p> |  <p>Double VCP - Data Center Virtualization & VMware Cloud Broadcom</p> |
|  <p>Cohesity Database Technical Sales Database Professional... Cohesity</p> |  <p>VMware Certified Design Expert - Data Center... Broadcom</p> |  <p>Dell Data Protection and Management Foundations... Dell Technologies</p> |  <p>VMware Certified Professional - VMware Cloud... Broadcom</p> |  <p>Double VCP - Network Virtualization & VMware Cloud Broadcom</p> |  <p>VMware Certified Specialist - vRealize... Broadcom</p> |
|  <p>Dell PowerEdge Foundations 2023 Dell Technologies</p> |  <p>NVIDIA-Certified Associate: AI in the Data Center NVIDIA</p> |  <p>Dell PowerFlex Design 2023 Dell Technologies</p> |  <p>Double VCP - VMware Cloud & Cloud Operations Broadcom</p> |  <p>VMware Certified Advanced Professional ... Broadcom</p> |  <p>VMware Certified Professional - Cloud... Broadcom</p> |
|  <p>VMware Certified Professional - Network... Broadcom</p> |  <p>VMware Certified Specialist - vSphere with... Broadcom</p> |  <p>VMware Certified Master Specialist - HCI 2024 Broadcom</p> |  <p>VMware Certified Professional - Data Center... Broadcom</p> |  <p>Intel® Granulate™ Application Optimization Intel</p> |  <p>GoGame Finisher! "New to Cohesity" Challenge Cohesity</p> |

„Invest into myself!“

Know-How

Demos

Trainings

Exam Preparation

EXPLORE

Broadcom Proprietary and Confidential. Copyright © 2024 Broadcom. All Rights Reserved. The term "Broadcom" refers to Broadcom Inc. and/or its subsidiaries.



Homelab Hardware History

EXPLORE

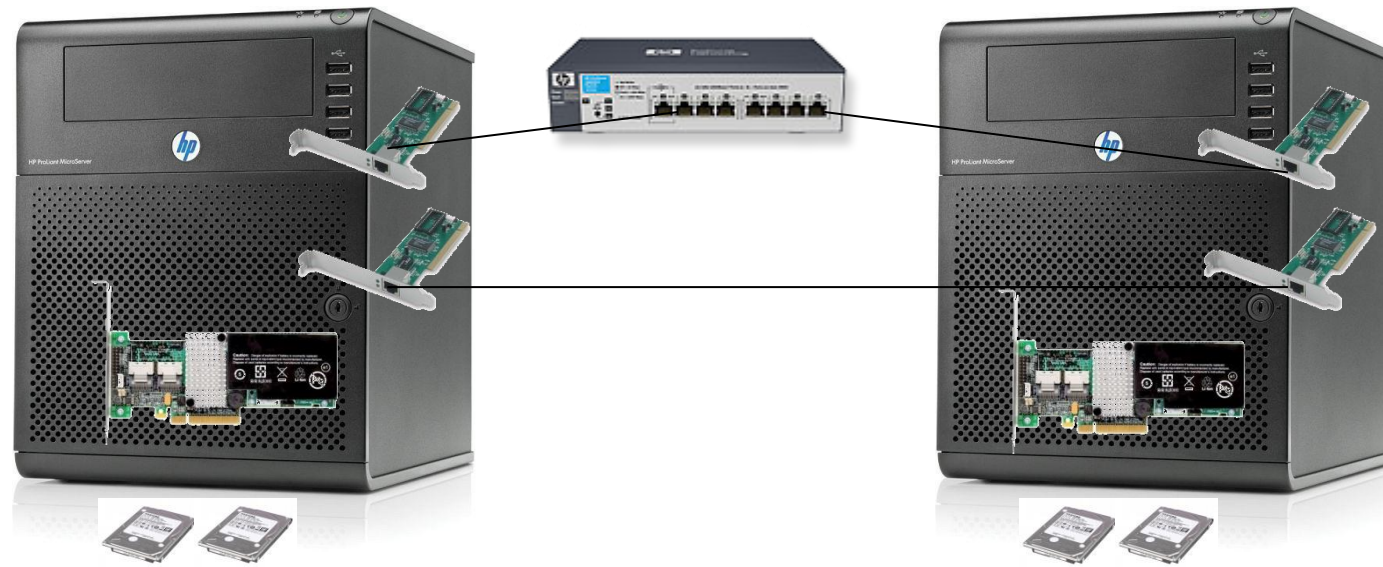
Broadcom Proprietary and Confidential. Copyright © 2024 Broadcom.
All Rights Reserved. The term "Broadcom" refers to Broadcom Inc. and/or its subsidiaries.

- 1 x Custom Server
- 3,2 GHz Dual Core
- 8 GB RAM
- IBM Serveraid Controller
- 4 x 1 TB HDD Raid 10
- 2 x 1 TB HDD Raid 1
- 16 GB SSD
- 1 GBit onBoard NIC



HomeLab Stage II „The Evolution“

2007



2 x HP Microserver
1,3 GHz Dual Core
8 GB RAM
IBM Serveraid Controller
2 x 1 TB HDD Raid 1
16 GB SSD
2 x 1 GBit NIC

VMware VSA Cluster

EXPLORE

Broadcom Proprietary and Confidential. Copyright © 2024 Broadcom.
All Rights Reserved. The term "Broadcom" refers to Broadcom Inc. and/or its subsidiaries.

HomeLab Stage IV „I want 10GbE“

2009



- 2 x Apple Mac Mini
- 2,6 GHz Quad Core
- 16 GB RAM
- 256 GB SSD
- 1 TB HDD
- 1 GBit onBoard NIC
- 1 Thunderbolt PCIe Expansion
- 1 Brocade Dual 10 GBit CNA
- 1 Thunderbolt NIC



- 1 x Custom Server
- 3,2 GHz Dual Core
- 8 GB RAM
- IBM Serveraid Controller
- 4 x 1 TB HDD Raid 10
- 2 x 1 TB HDD Raid 1
- 16 GB SSD
- 1 GBit onBoard NIC



- 2 x HP Procurve
- 8 Port Gbit Switch
- 3 VLANs
- Cisco Aironet 1100 + POE
- Cisco Aironet 1100 + POE



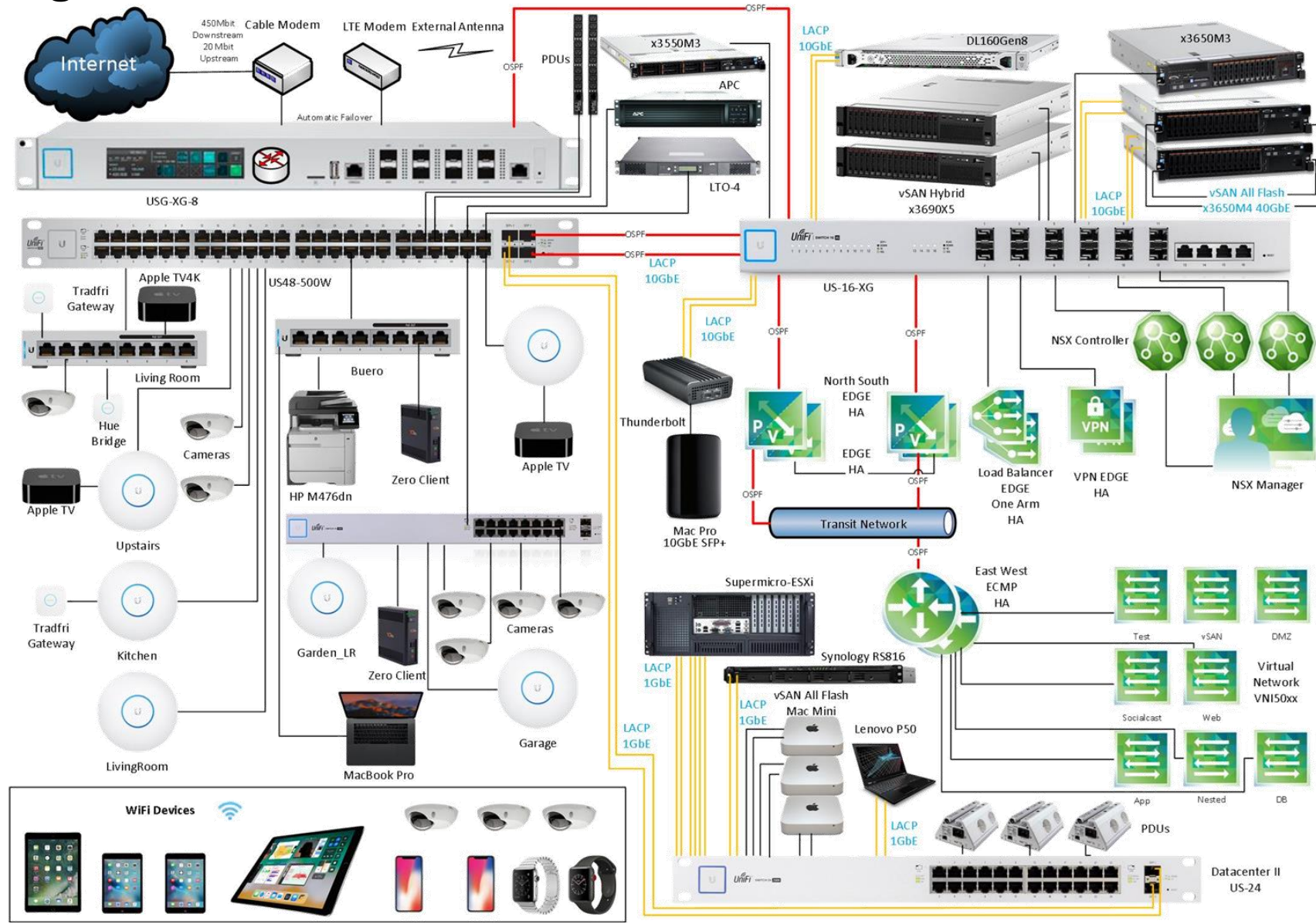


EXPLORE

Broadcom Proprietary and Confidential. Copyright © 2024 Broadcom. All Rights Reserved. The term "Broadcom" refers to Broadcom Inc. and/or its subsidiaries.

Network Changes

2014



EXPLORE

Broadcom Proprietary and Confidential. Copyright © 2024 Broadcom. All Rights Reserved. The term "Broadcom" refers to Broadcom Inc. and/or its subsidiaries.

Dell VRTX

2016



Intel(R) Xeon(R) Gold 5118 CPU @ 2.30GHz
 2.295 GHz
 2
 12
 48
 Active (Inactive on restart)

669 GB
 385.52 MB
 668.62 GB

| | |
|--------------|------------|
| vmnic0 | 10 Gbit/s |
| vmnic1 | 10 Gbit/s |
| vmnic2 | 10 Gbit/s |
| vmnic3 | 10 Gbit/s |
| vmnic4 | 40 Gbit/s |
| vmnic1000402 | 40 Gbit/s |
| vusb0 | 100 Mbit/s |

OMIVV Host Information

Service Tag
FCH3B33

PowerEdge M640 (VRTX)

Fault Resilient Memory
Enabled and Protected

System Lockdown Mode
Off

| | |
|-----------------------|----------------------------------|
| Identification | esxm640a.office.home |
| Hypervisor & Firmware | VMware ESXi 7.0.0 build-15843807 |
| Blade Chassis | 5KTDWC2 |

OMIVV Host Health

Server Global Status

Healthy

Chassis Global Status

Main System Chassis

Memory

Processors

Temperatures

Voltagages

Batteries

Power Management

Physische Festplatten

| | Status | Name | Zustand | Steckplatznummer | Kapazität | Datenträgertyp |
|---|--------|-------------------------|---------|------------------|-----------|----------------|
| + | ✓ | Solid State Disk 0:0:0 | Online | 0 | 3.49TB | SSD |
| + | ✓ | Solid State Disk 0:0:1 | Online | 1 | 3.49TB | SSD |
| + | ✓ | Solid State Disk 0:0:2 | Online | 2 | 3.49TB | SSD |
| + | ✓ | Solid State Disk 0:0:3 | Online | 3 | 3.49TB | SSD |
| + | ✓ | Solid State Disk 0:0:5 | Online | 5 | 3.49TB | SSD |
| + | ✓ | Solid State Disk 0:0:6 | Online | 6 | 3.49TB | SSD |
| + | ✓ | Solid State Disk 0:0:7 | Online | 7 | 3.49TB | SSD |
| + | ✓ | Solid State Disk 0:0:8 | Online | 8 | 3.49TB | SSD |
| + | ✓ | Solid State Disk 0:0:20 | Online | 20 | 837.75GB | SSD |
| + | ✓ | Solid State Disk 0:0:21 | Online | 21 | 837.75GB | SSD |
| + | ✓ | Solid State Disk 0:0:22 | Online | 22 | 837.75GB | SSD |
| + | ✓ | Solid State Disk 0:0:23 | Online | 23 | 837.75GB | SSD |

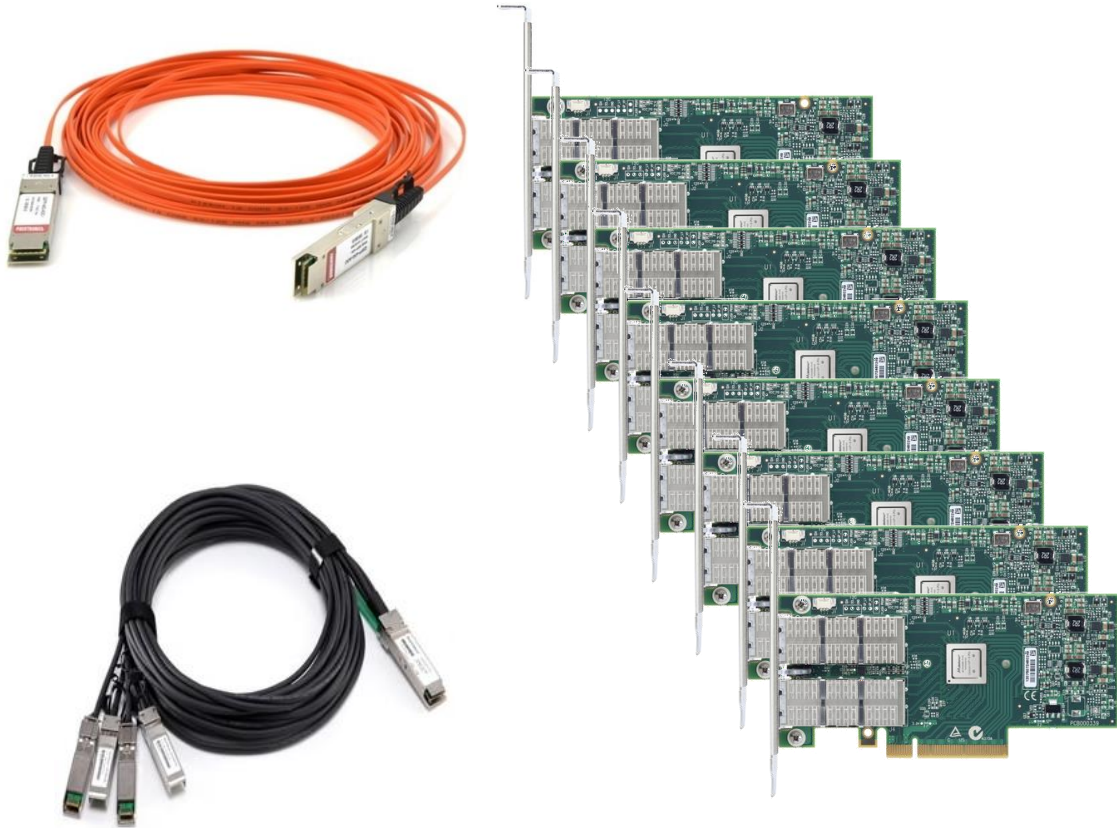
| Name | LUN | Type | Capacity | Datastore |
|---|-----|------|-----------|-----------|
| Local SAMSUNG Disk (naa.5002538a49150450) | 0 | disk | 6.99 TB | VRTX_vSAN |
| Local SAMSUNG Disk (naa.5002538b001faea0) | 0 | disk | 745.21 GB | VRTX_vSAN |

EXPLORE

Broadcom Proprietary and Confidential. Copyright © 2024 Broadcom. All Rights Reserved. The term "Broadcom" refers to Broadcom Inc. and/or its subsidiaries.

40GbE

2018



EXPLORE

Broadcom Proprietary and Confidential. Copyright © 2024 Broadcom.
All Rights Reserved. The term "Broadcom" refers to Broadcom Inc. and/or its subsidiaries.

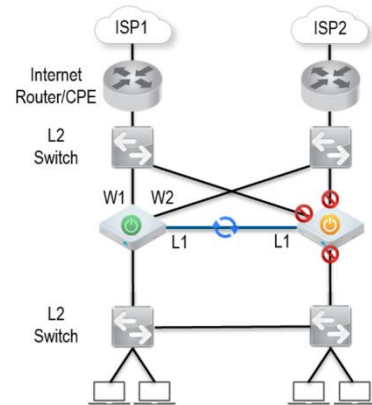
Velocloud

2019



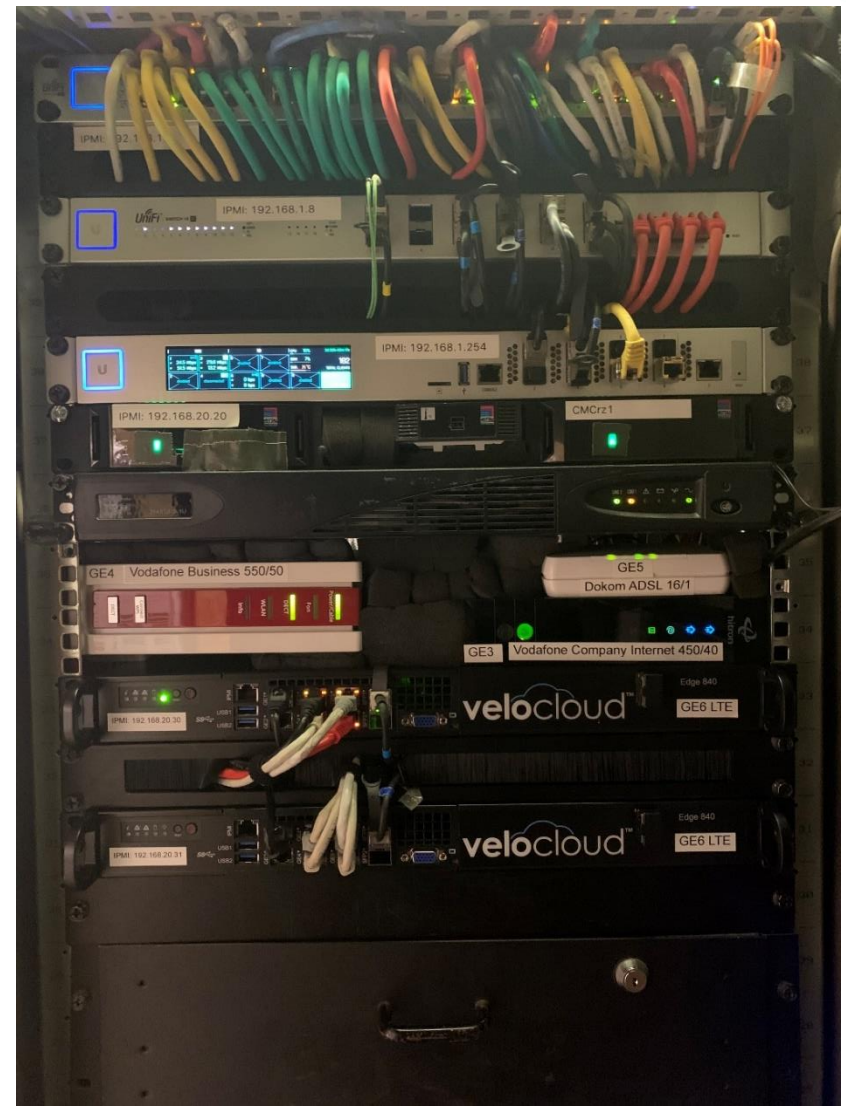
More Edges

Dedicated Demo Environment



Business Policies

| Edge | Status | HA | Links |
|---------------------------------|--------------------------------------|--------------------------------------|--|
| VCDX181_VirtualEdge_HA | ● | ● | ↔ 1 |
| VCDX181_VirtualEdge_HighLatency | ● | | ↔ 1 |
| VCDX181_840Edge_HA | ● | ● | ↔ 3 ↔ 1 |

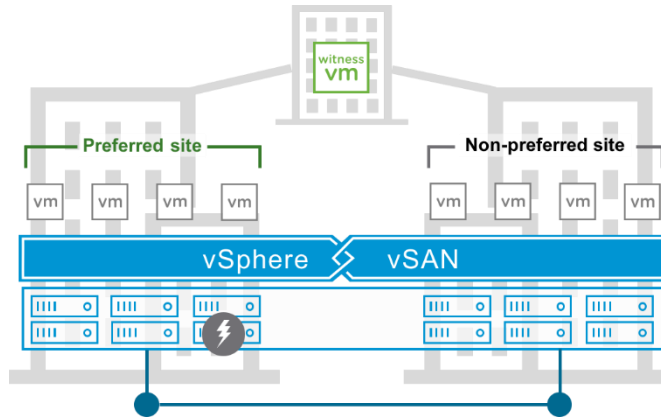


EXPLORE

Broadcom Proprietary and Confidential. Copyright © 2024 Broadcom. All Rights Reserved. The term "Broadcom" refers to Broadcom Inc. and/or its subsidiaries.

vSAN for every use case

- vc.office.home
 - Cyberdyne
 - AutoDeploy
 - vSAN_Dell_VRTX_AF_Nvidia-Quadro_P4000
 - vSAN_Fujitsu_RX2540M2_AF_NVMe_Nvidia-P4
 - vSAN_IBM_x3650M3_Hybrid_FC-SAN
 - vSAN_IBM_x3650M4_AF_Nvidia-P4
 - vSAN_IBM_x3690X5_Hybrid_Encrypted
 - esx3650m4witness.office.home
 - esx3690x5witness.office.home
 - esrx2540witness.office.home
 - Cyberdyne_Nested
 - SkyNet_Defense_Grid
 - vSAN_Stretched_Terminator_Factory
 - skynet-factory-witness.skynet.local
- vcarm.office.home
 - Cyberdyne_Research_Laboratory
 - ARM
- vcremote.office.home
 - Cyberdyne_Research_Systems
 - Apple_MacPro
 - Lenovo
 - vSAN_Apple_MacMini_AF_Encrypted
 - vSAN_SuperMicro
 - esxvsansupermicrowitness.office.home



2020



EXPLORE

Broadcom Proprietary and Confidential. Copyright © 2024 Broadcom. All Rights Reserved. The term "Broadcom" refers to Broadcom Inc. and/or its subsidiaries.

Network Infrastructure

2021



Ubiquiti Aggregator 28 Port 10GbE + 25GbE

Ubiquiti 48 Port PoE 1GbE + 10 GbE

Ubiquiti 24 Port PoE 1GbE + 10 GbE

Ubiquiti 16 Port PoE 1GbE

WiFi AccessPoints Everywhere



Nvidia Networking 16 Port 100 GbE

Internet 2,4 Gbit Downstream, 150 Mbit Upstream

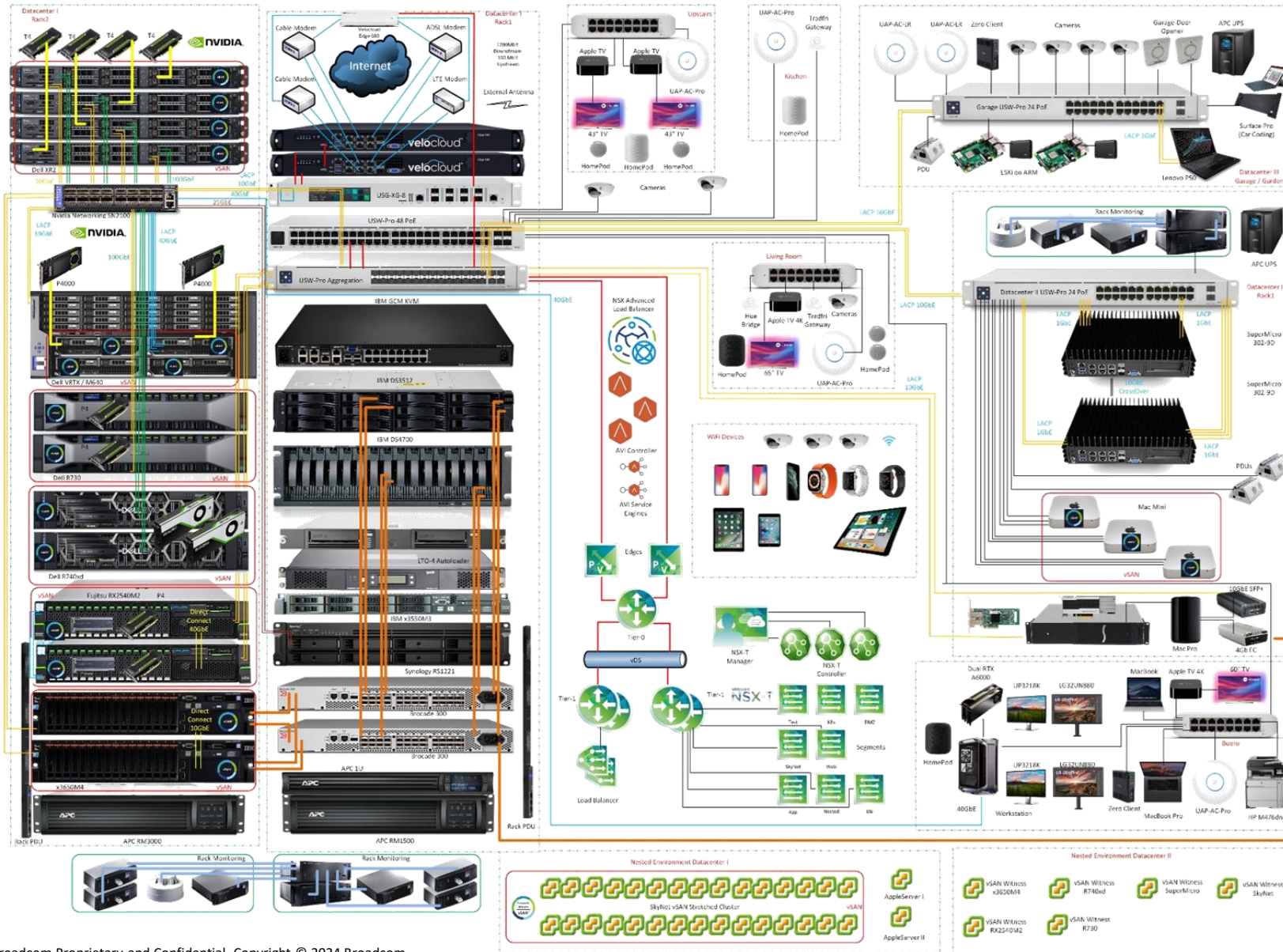


EXPLORE

Broadcom Proprietary and Confidential. Copyright © 2024 Broadcom. All Rights Reserved. The term "Broadcom" refers to Broadcom Inc. and/or its subsidiaries.

Solutioncenter

2023



EXPLORE

Broadcom Proprietary and Confidential. Copyright © 2024 Broadcom. All Rights Reserved. The term "Broadcom" refers to Broadcom Inc. and/or its subsidiaries.



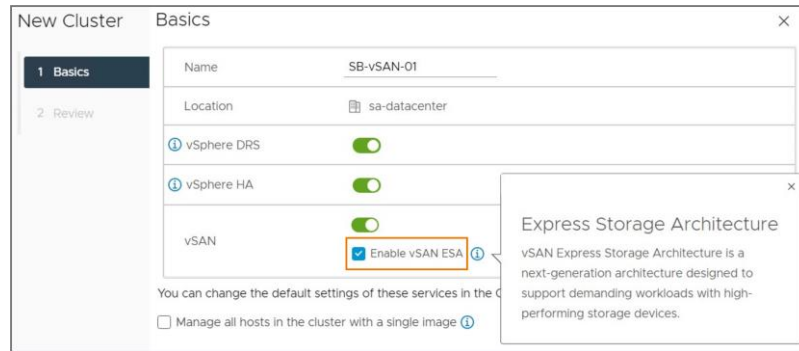
Homelab Hardware Today

EXPLORE

Broadcom Proprietary and Confidential. Copyright © 2024 Broadcom.
All Rights Reserved. The term "Broadcom" refers to Broadcom Inc. and/or its subsidiaries.

vSAN ESA

2024



Dell R740 vSAN ESA Max

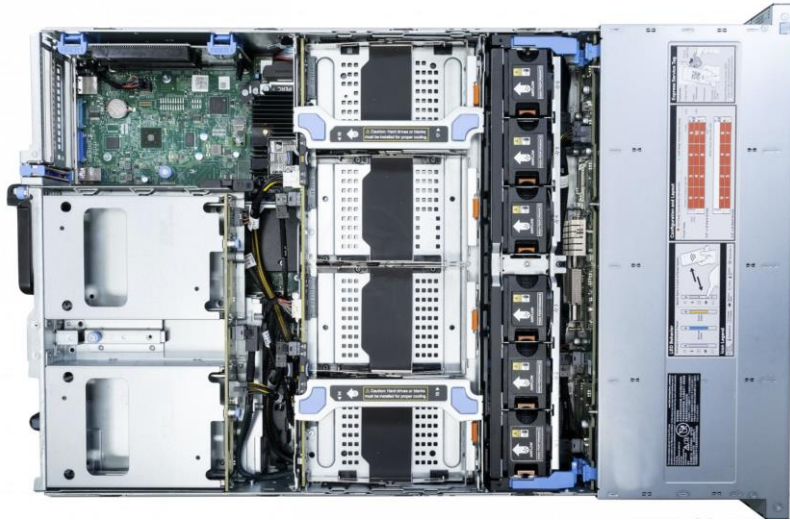
- VMware vSAN ESA Max Full NVMe
- 2 x Intel 6130 16 Cores 2,10GHz
- 768GB DDR4 2666MHz RAM
- Dell Perc H730P Controller
- 1 x 400GB SATA SSD ESXi Boot
- 4 x Intel P4800X 375GB NVMe
- 2 x 100GbE QSFP
- 2 x 10GbE SFP+

EXPLORE

Broadcom Proprietary and Confidential. Copyright © 2024 Broadcom. All Rights Reserved. The term "Broadcom" refers to Broadcom Inc. and/or its subsidiaries.

BCDR

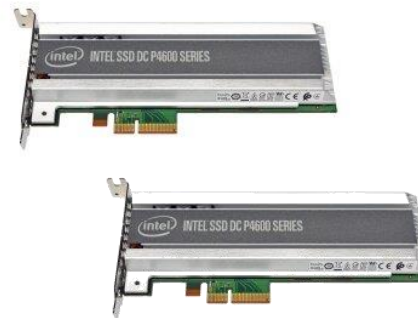
2024



Dell R740xd VCDR

Backup and Disaster Recovery (Cohesity, DataDomain, PowerProtect, Veeam)

- 2 x Intel 8167M 26 Cores 2.0 GHz
- 768GB DDR4 2666MHz RAM
- Dell Perc H740P Controller 8GB
- IBM Serveraid Controller
- 1 x 400GB SATA SSD ESXi Boot
- 4 x 800GB NVMe
- 4 x 18TB 3,5" Storage Mid Bay SATA HDDs
- 2 x 7,68TB SAS SSD
- 2 x 25GbE SFP28

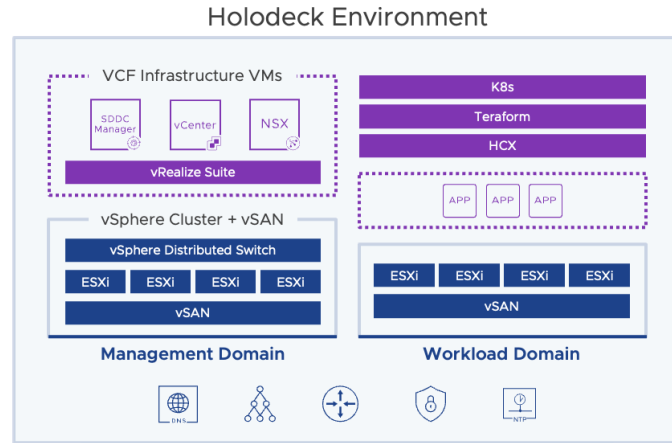
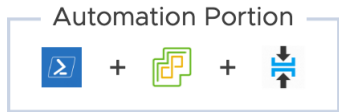


EXPLORE

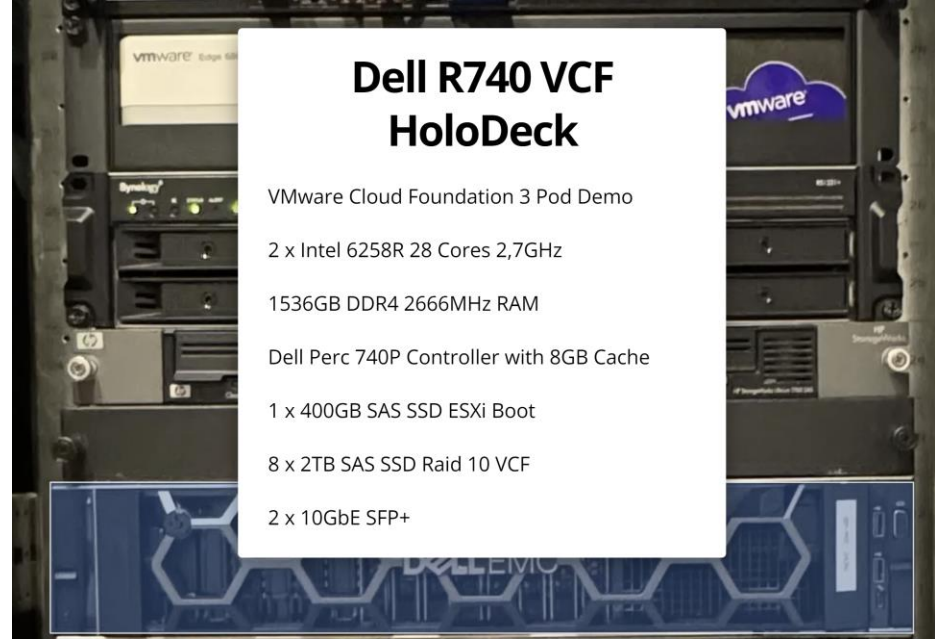
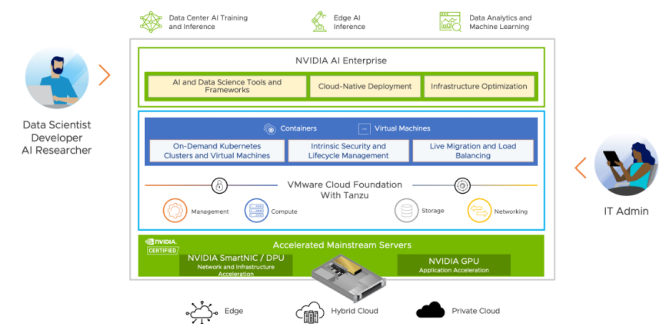
Broadcom Proprietary and Confidential. Copyright © 2024 Broadcom. All Rights Reserved. The term "Broadcom" refers to Broadcom Inc. and/or its subsidiaries.

Holodeck VCF & AI

2024



Physical ESXi Server



Dell R740 VCF HoloDeck

- VMware Cloud Foundation 3 Pod Demo
- 2 x Intel 6258R 28 Cores 2,7GHz
- 1536GB DDR4 2666MHz RAM
- Dell Perc 740P Controller with 8GB Cache
- 1 x 400GB SAS SSD ESXi Boot
- 8 x 2TB SAS SSD Raid 10 VCF
- 2 x 10GbE SFP+

EXPLORE

Broadcom Proprietary and Confidential. Copyright © 2024 Broadcom. All Rights Reserved. The term "Broadcom" refers to Broadcom Inc. and/or its subsidiaries.

VCF-Site_A @HomeLab (Standard Design)

2024



vmw Cloud Foundation

SDDC Manager Dashboard

- 0 Solutions
 - Workload Management 0
- 2 Workload Domains
 - Management Domain 1
 - VI Domain 1
- Host Type and Usage
 - Host Types
 - Hybrid Host 0
 - All Flash Host 11
 - Usage 11 Total
 - 11 Used
 - 0 Unallocated
 - Top Domains in Host Allocation
 - wld-domain01 4
 - mgmt-domain

vcenter-mgmt.vcf.sddc.lab

- mgmt-datacenter-01
 - mgmt-cluster-01
 - esxi-1.vcf.sddc.lab
 - esxi-2.vcf.sddc.lab
 - esxi-3.vcf.sddc.lab
 - esxi-4.vcf.sddc.lab
 - Namespaces
 - VCF-edge_EC-01_ResourcePool...
 - vcenter-wld.vcf.sddc.lab
 - wld-domain01-DC
 - wld-cluster-NFS
 - esxi-10.vcf.sddc.lab
 - esxi-11.vcf.sddc.lab
 - esxi-12.vcf.sddc.lab
 - wld-cluster-vSAN
 - esxi-5.vcf.sddc.lab
 - esxi-6.vcf.sddc.lab
 - esxi-7.vcf.sddc.lab
 - esxi-8.vcf.sddc.lab

vCenter Details

| | |
|-------------------------|-----------------------|
| Version: | 8.0.1 |
| Updates Available: | Updates Available |
| Build: | 21815093 |
| Last Updated: | Feb 1, 2024, 3:29 PM |
| Last File-Based Backup: | Mar 7, 2024, 12:59 AM |
| Clusters: | 1 |
| Hosts: | 4 |
| Virtual Machines: | 18 |

vCenter Health

Overall Health: Good

vCenter HA

| | |
|--------|----|
| Mode: | -- |
| State: | -- |

EXPLORE

Broadcom Proprietary and Confidential. Copyright © 2024 Broadcom. All Rights Reserved. The term "Broadcom" refers to Broadcom Inc. and/or its subsidiaries.

VCF-Site_B @HomeLab (Stretched Consolidated Design)

2024



The image shows a VMware Cloud Foundation SDDC Manager Dashboard and a vSphere Client interface. The SDDC Manager Dashboard includes sections for Solutions, Workload Domains, Host Type and Usage, and CPU, Memory, Storage Usage. The vSphere Client interface shows a tree view of the environment, including vcenter-mgmt.vcf2.sddc.lab, mgmt-datacenter-01, and mgmt-cluster-01 with its constituent ESXi hosts.

SDDC Manager Dashboard

- 0 Solutions
- 1 Workload Domains
- Host Type and Usage
 - Host Types: Hybrid Host, All Flash Host
 - Usage: 8 Used
 - Top Domains in Host Allocation
- CPU, Memory, Storage Usage: 258.62 GHZ Total

vSphere Client

- vcenter-mgmt.vcf2.sddc.lab
 - mgmt-datacenter-01
 - mgmt-cluster-01
 - esxi-1.vcf2.sddc.lab
 - esxi-2.vcf2.sddc.lab
 - esxi-3.vcf2.sddc.lab
 - esxi-4.vcf2.sddc.lab
 - esxi-5.vcf2.sddc.lab
 - esxi-6.vcf2.sddc.lab
 - esxi-7.vcf2.sddc.lab
 - esxi-8.vcf2.sddc.lab
 - mgmt-wit.vcf2.sddc.lab

vCenter Details

| | |
|-------------------------|---------------------------------------|
| Version: | 8.0.2 |
| Updates Available: | Updates Available |
| Build: | 22617221 |
| Last Updated: | Feb 26, 2024, 2:48 PM |
| Last File-Based Backup: | Mar 7, 2024, 12:59 AM |
| Clusters: | 1 |
| Hosts: | 9 |
| Virtual Machines: | 6 |

EXPLORE

Broadcom Proprietary and Confidential. Copyright © 2024 Broadcom. All Rights Reserved. The term "Broadcom" refers to Broadcom Inc. and/or its subsidiaries.

HomeLab Actual State

2024



800 CPU Cores

180 GHz CPU Frequency

20,1 TB RAM

192 TB Flash Capacity

117 TB HDD Capacity

43 physical Servers

17 GPUs (Nvidia & Intel)

3 Storage Arrays

12 Network Switches
(1GbE, 10GbE, 25GbE, 40GbE, 100GbE)

6 Wifi Access Points



30.000 kWh

EXPLORE

Broadcom Proprietary and Confidential. Copyright © 2024 Broadcom.
All Rights Reserved. The term "Broadcom" refers to Broadcom Inc. and/or its subsidiaries.

Wrap-Up:

Is it worth all the effort?

YES, it's all about knowledge and gaining experience.

Does it really made a difference?

Absolutely, otherwise I wouldn't be where I am today!

Should you start with a HomeLab?

Of course! (It doesn't have to be bad ass like mine.....)

EXPLORE

Thank You

Text