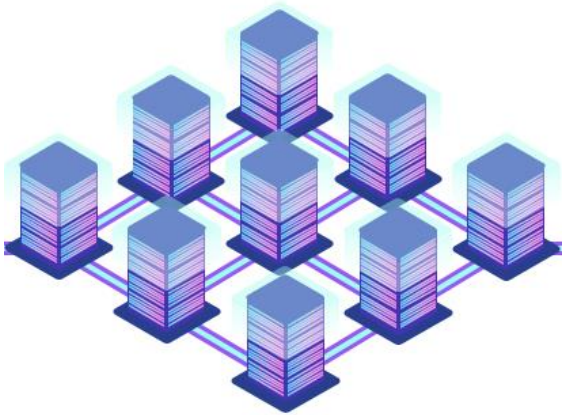
Long Van System

Active-Active Data Centers for Cloud

Tran Van Loi
loitv@longvan.net
www.longvan.net hotline 1800 6070

LONG VAN
System Solution

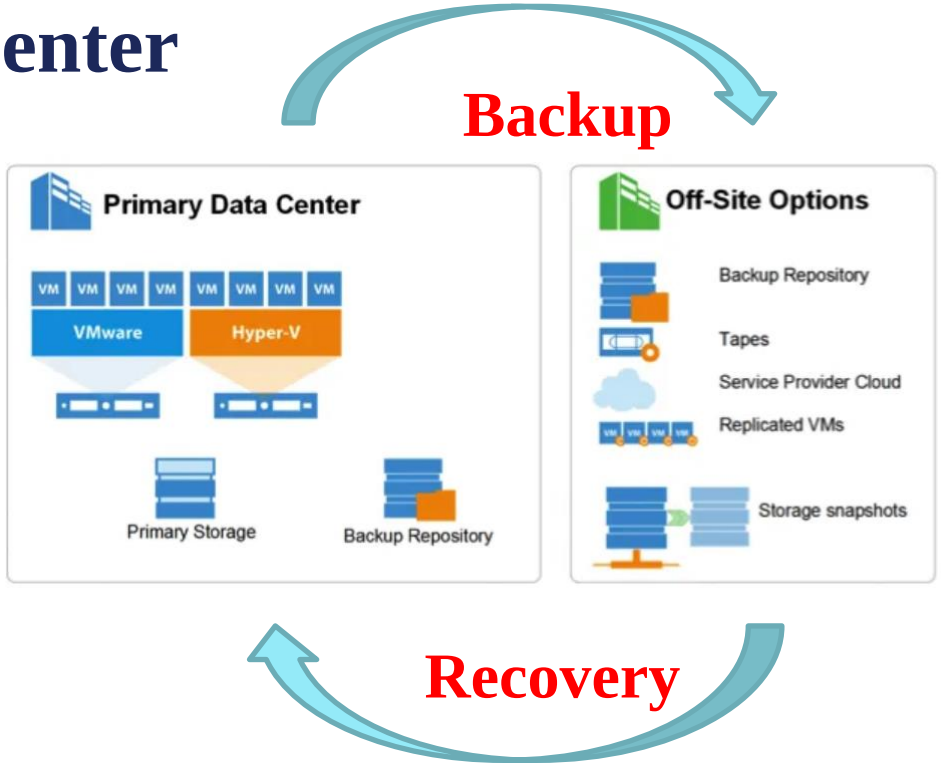
Table of contents



LONG VAN
System Solution

Active-Backup Data Center

1. Availability is not the highest
2. Down time, the recovery time may be longer if DC is complex with many components or DC data to be restored is large
3. Some risks may be encountered during the recovery process

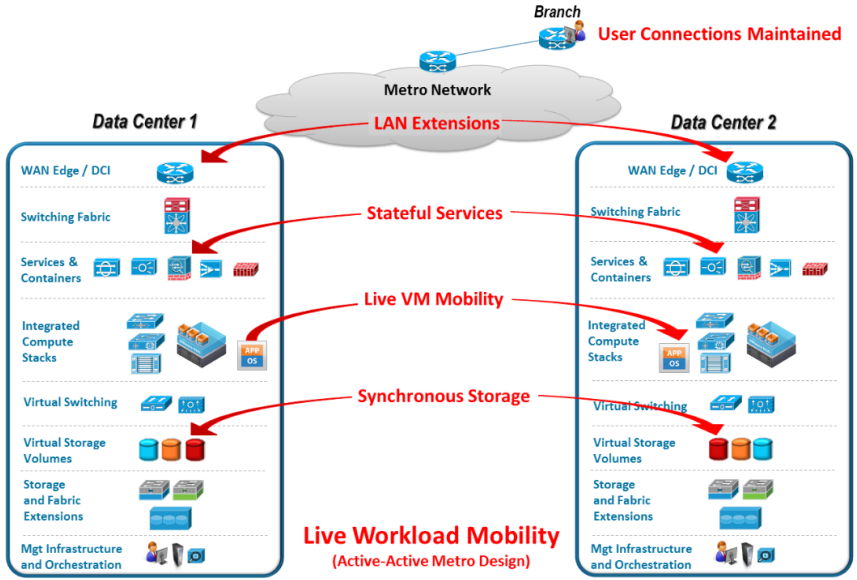


LONG VAN
System Solution

Active-Active Data Center

1. Active-active data center design refers to the configuration where two or more data centers operate simultaneously, sharing the load and providing redundancy for critical systems and applications. Unlike traditional active-passive setups, where one data center operates in standby mode, the active-active design ensures that both are fully active and capable of handling the entire workload.

- Network of independent processing systems
- Databases kept synchronized in a geographically distributed
- Managed through a unified interface

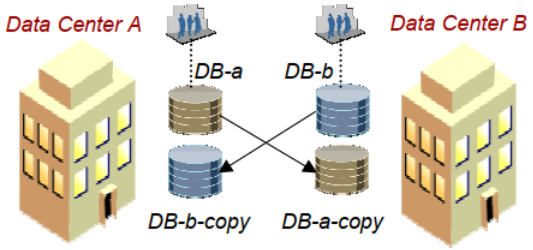


Active-Active Data Centre Infrastructures

Active-Active Data Center

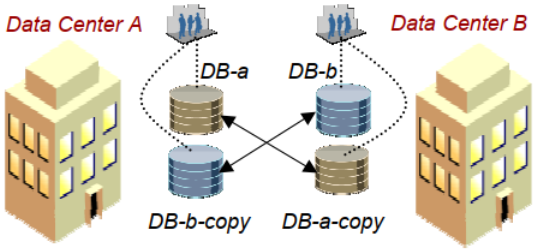
1. Active-active data centers – ones which host copies of the same database that are actively accessed by various apps
2. The copies are kept synchronized through some me

Not active-active



- Database copies not accessed
- Some utilization of data center assets

Active-active

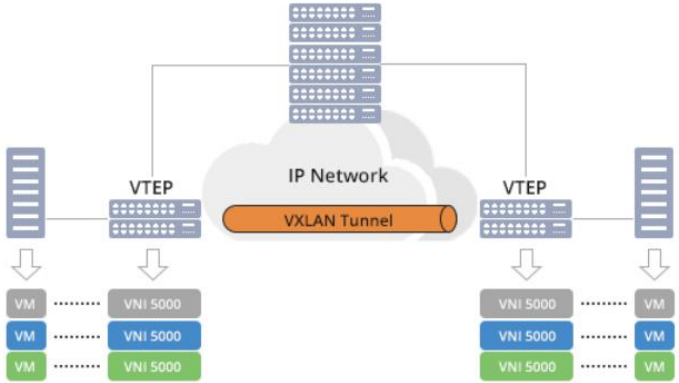


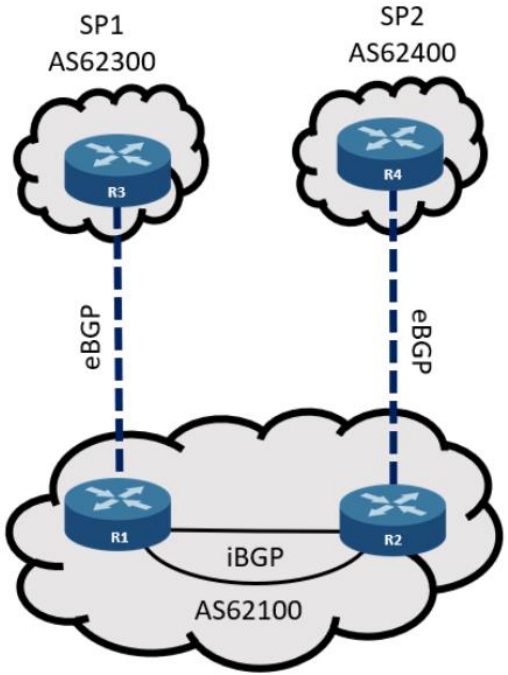
- Database copies actively accessed
- Full utilization of data center assets

What technology should be used?

Design decisions

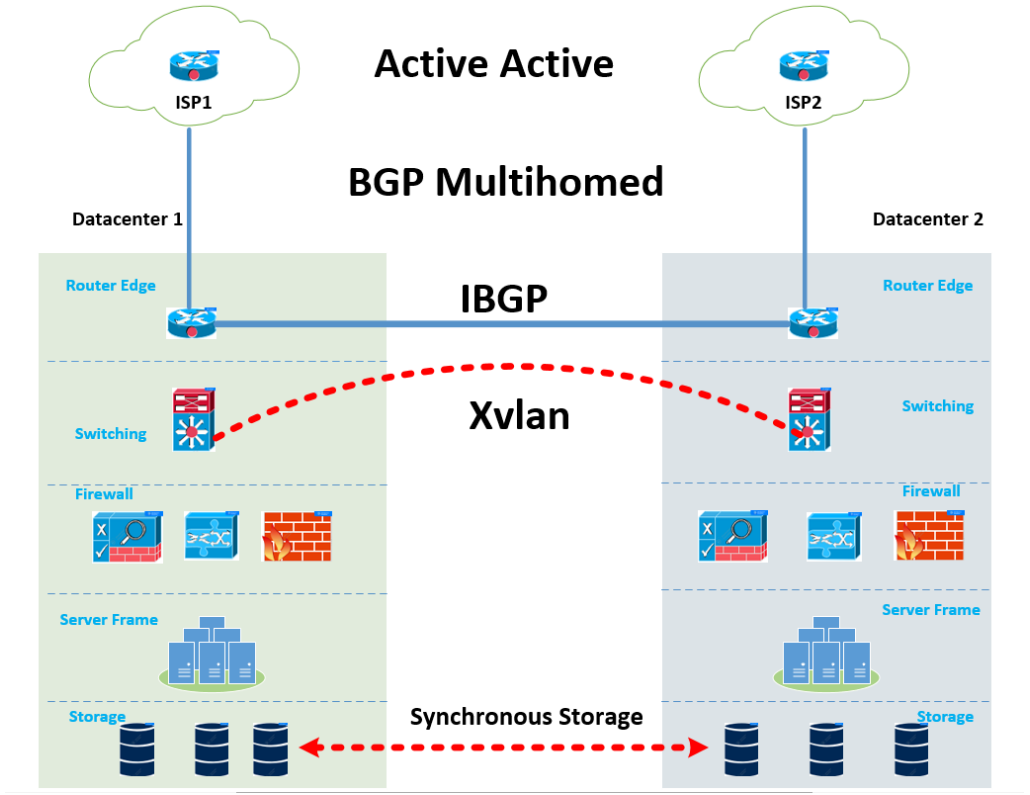
- ✓ Choosing right network – latency, bandwidth implications
- ✓ Choosing right replication protocol – distance limitation





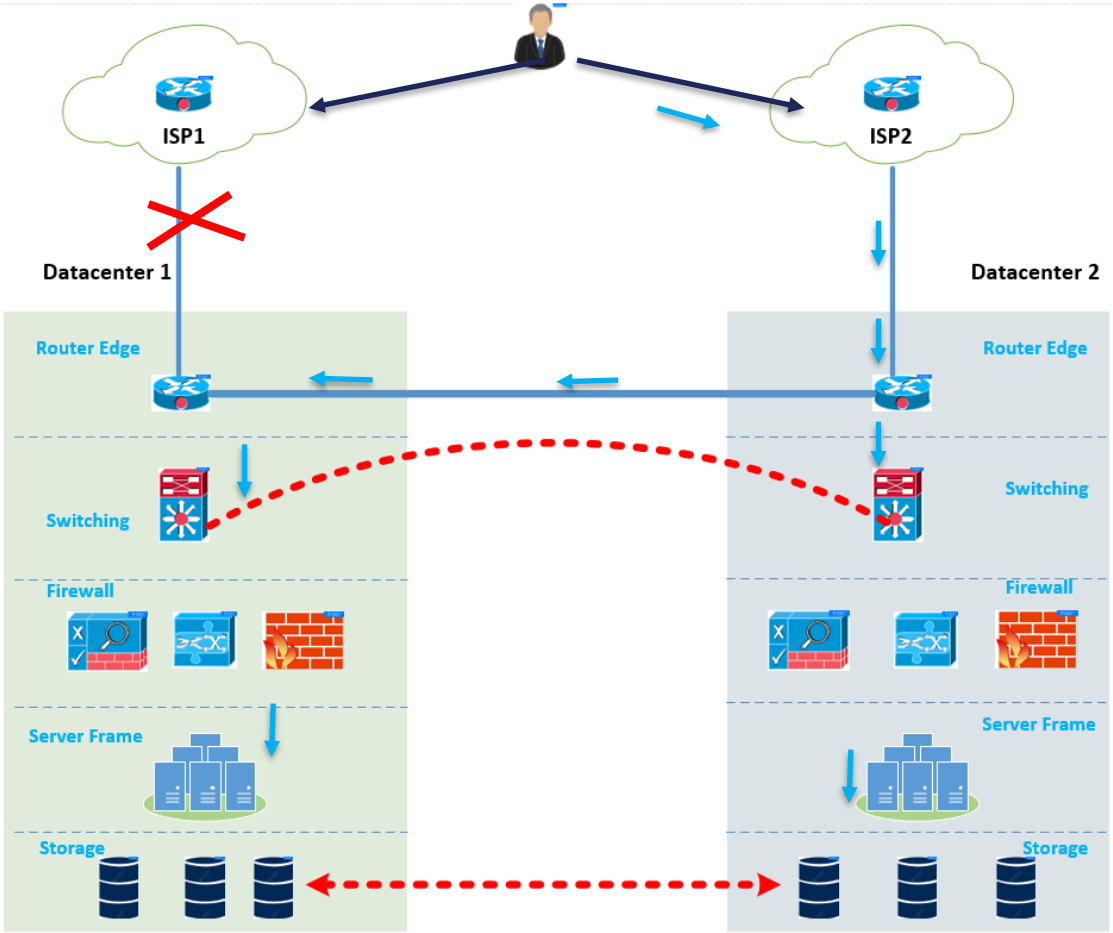
Active-Active DC

1. Using BGP multihomed Layer 3, improve redundancy and optimize traffic
2. Using vxlan layer 2 technology (transmits data on layer 2 over layer 3 with large frames, low delay)



What is Benefits

1. Enhanced Redundancy : Service is less affected when a DC fails
2. Improved Performance and Scalability : Flexible for expanding multiple systems, expanding DC, less dependent on DC location
3. Reduced Downtime : Minimizes the impact on end-users and organizations
4. Traffic is optimized through ISPs, minimizing the impact of DDoS attacks



Disadvantages

- Need operational personnel with high expertise in routing protocols, BGP, Xvlan...

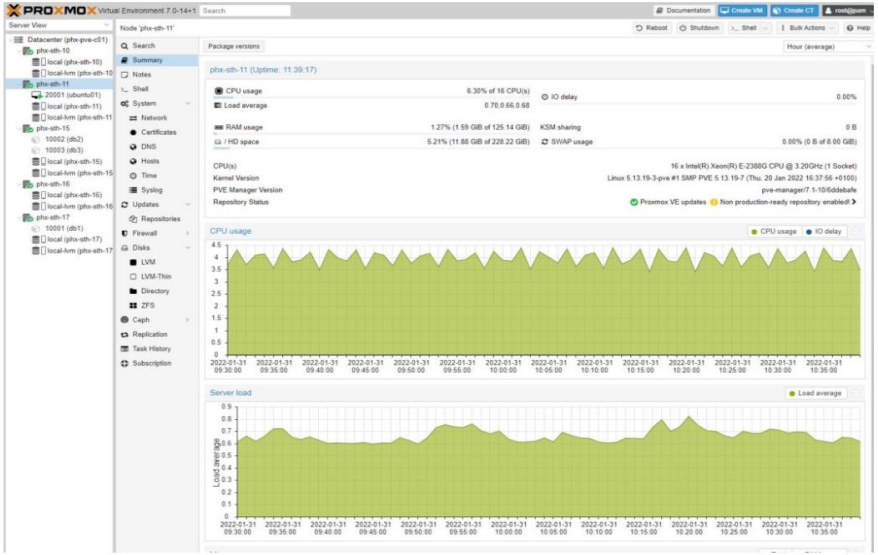
- Implementation is more complex, Higher backup requirements So the cost is higher than one DC system

- Resources for the system, in terms of equipment and materials, will also be more than one DC,
  Needs many transmission lines connecting DCs,
  Large connection bandwidth

LONG VAN
System Solution

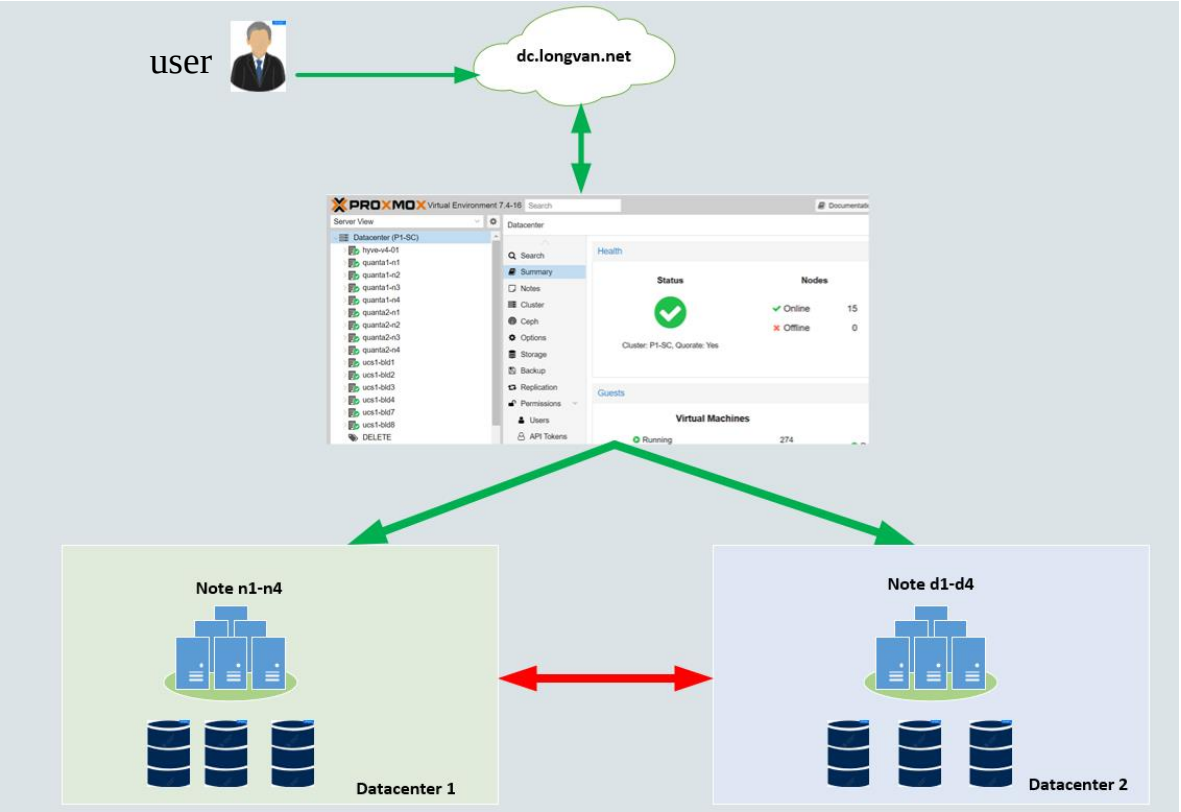
LV Cluster deploy AC DC

1. Deploy on the platform Promox EV virtualization with HCI
2. Multi-connection WAN to multi DC . HA connection
3. Nodes in the DC cluster are deployed evenly across 2 DCs, running actively and dynamically at the same time
4. The database is evenly distributed across the nodes, ensuring that if one DC fails, the data will still be fully backed up on the remaining DC nodes
5. User management is common through an interface that can be a web portal

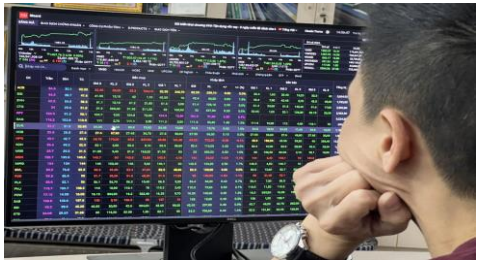


LV Cluster deploy AC DC

1. Managed through a unified interface with web portal
2. Databases kept synchronized in a geographically distributed configuration
3. Migrate a VM from DC1 to DC2



For Customer



Banking and financial institutions need high requirements for availability and safe of data

Organizations require continuous operational data and real-time updates 24/7

Organizations that have many companies and need flexibility in terms of connection to DCs, require flexibility in DC deployment

Document reference

- ✓ Oracle DC: https://docs.oracle.com/cd/E52734_01/oam/AIAAG/GUID-4277B309-7E65-40AB-82BA-58DB45EFA689.htm#AIAAG88863
- ✓ Dell EMC Technical : https://education.dell.com/content/dam/dell-emc/documents/en-us/2020KS_Wu-Multiple_Active_DataCenters_Solution.pdf
- ✓ Cisco : https://network-insight.net/2014/08/12/data-center-design-active-active-design/

LONG VAN
System Solution

Thanks!

Do you have any questions?

loitv@longvan.net
18006070
https://longvan.net

LONG VAN
System Solution