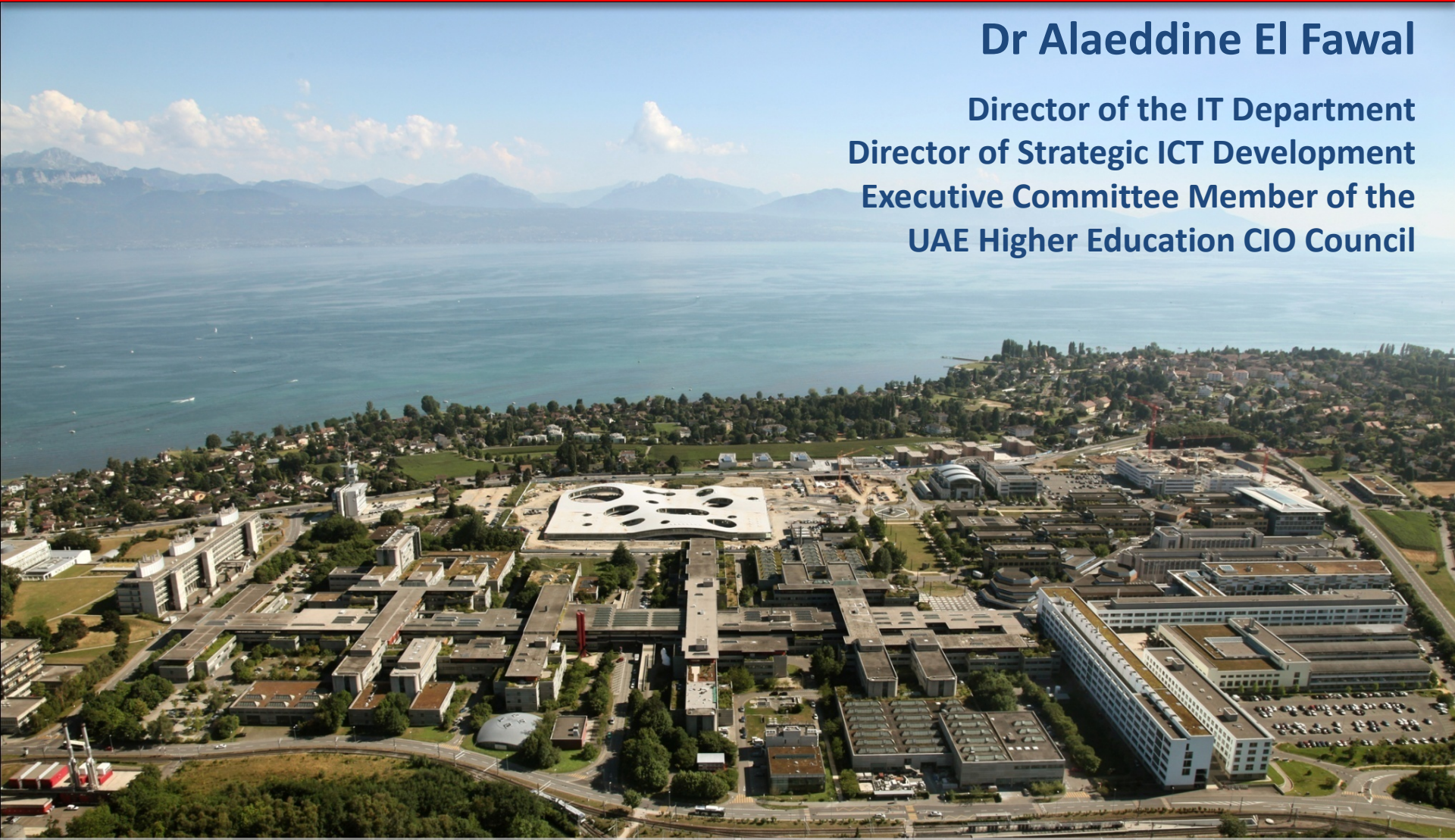


DR Plan for Private-Cloud Based Data Center over Ankabut

Dr Alaeddine El Fawal

**Director of the IT Department
Director of Strategic ICT Development
Executive Committee Member of the
UAE Higher Education CIO Council**

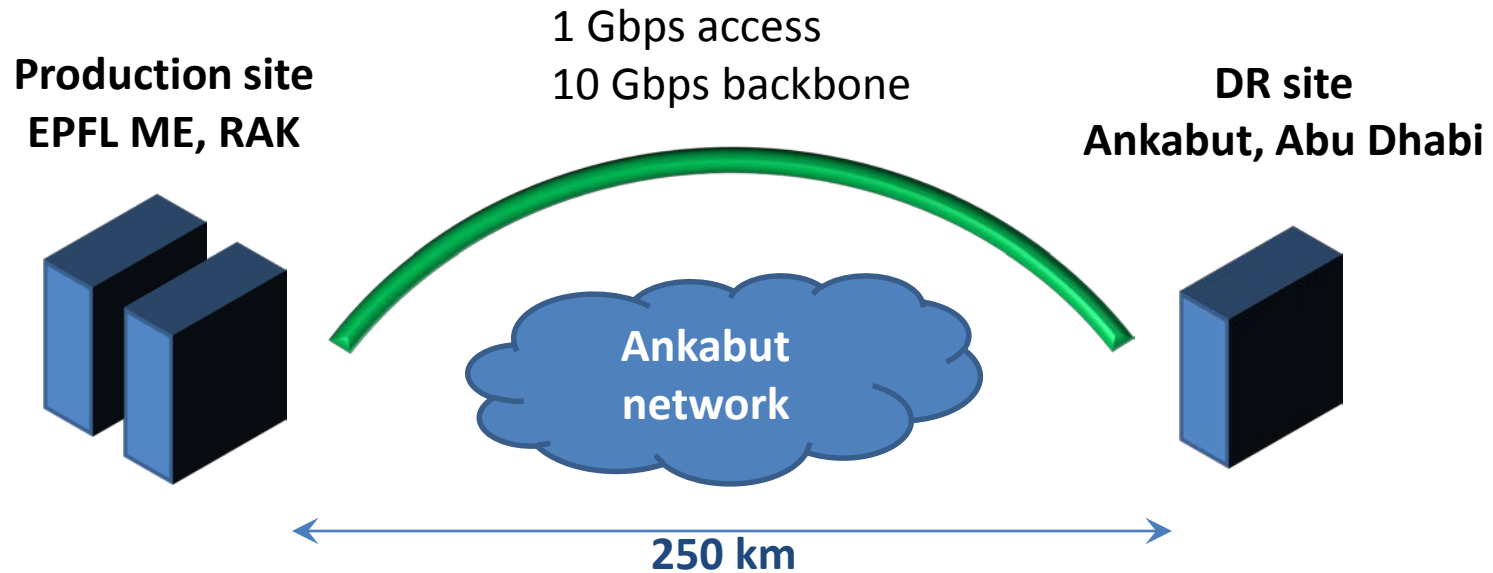


- **Close collaboration between Ankabut and University IT Departments**
- **UAE Higher Education CIO Council:**
 - Ankabut service Board: for inter-communication and manage common working groups
- **Project examples:**
 - Disaster Recovery (DR): implemented by EPFL ME and supported by Ankabut, which put to use its network and data center.
 - eduroam: TERENA, Ankabut and EPFL ME. Implemented within a working group of the CIO Council.

National First Level Radius in the UAE

Some issues for universities having abroad main campuses

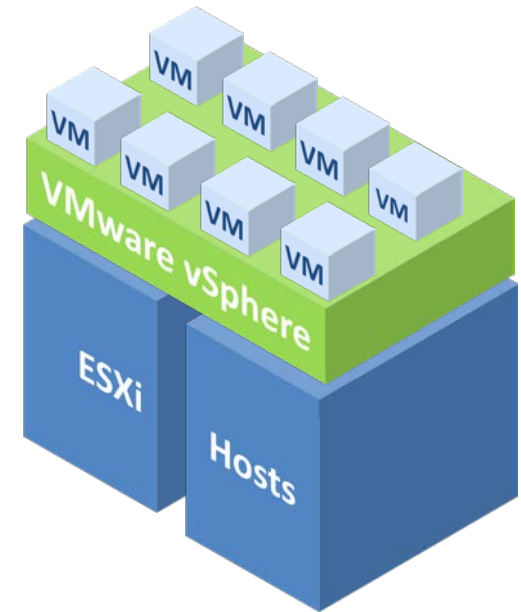
DR Plan: Objective



In case of a disaster:

- Recover data
- Recover IT services and applications
- Low RTO (Recovery Time Objective): **less than 10 minutes**

- Private cloud: Vmware vSphere
- Microsoft Machines: Domain Controller, SQL, Sharepoint...

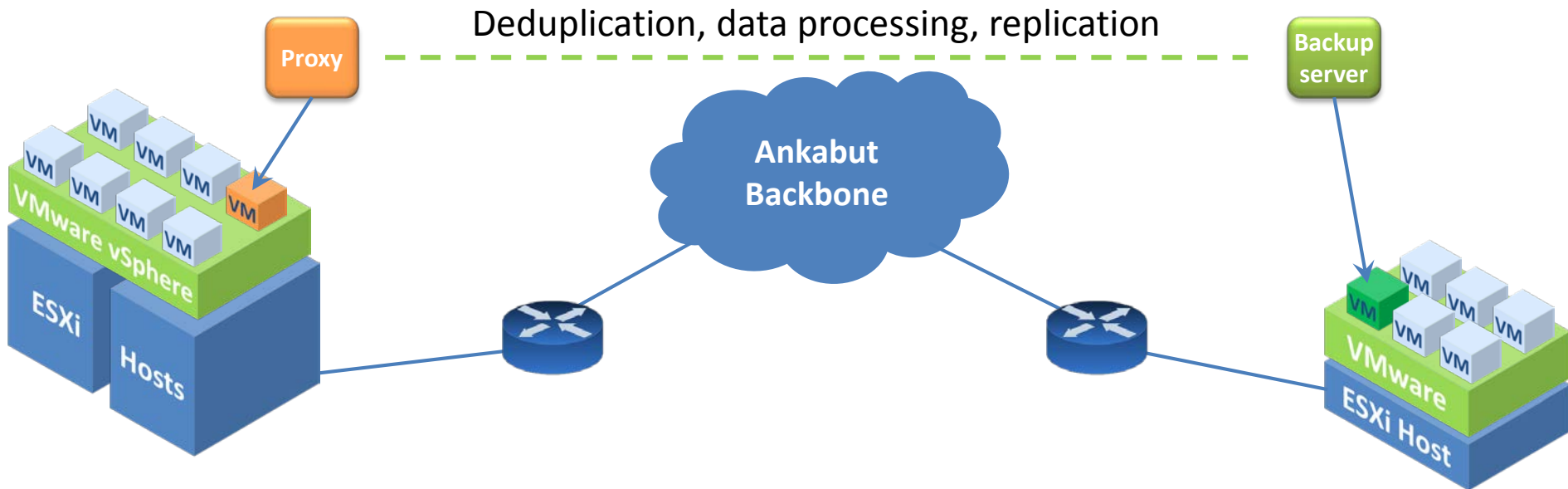


- **Veeam** is our choice:
 - Dedicated to Virtual Environment, in particular VMware
 - Full support to Microsoft Virtual Machines
 - Transactionally Consistent backup image **on live** of Domain controller, Exchange, SQL... it uses the **VSS** feature of Microsoft machines

Replication Process and Characteristics

Production Site
(Ras Al Khaimah)

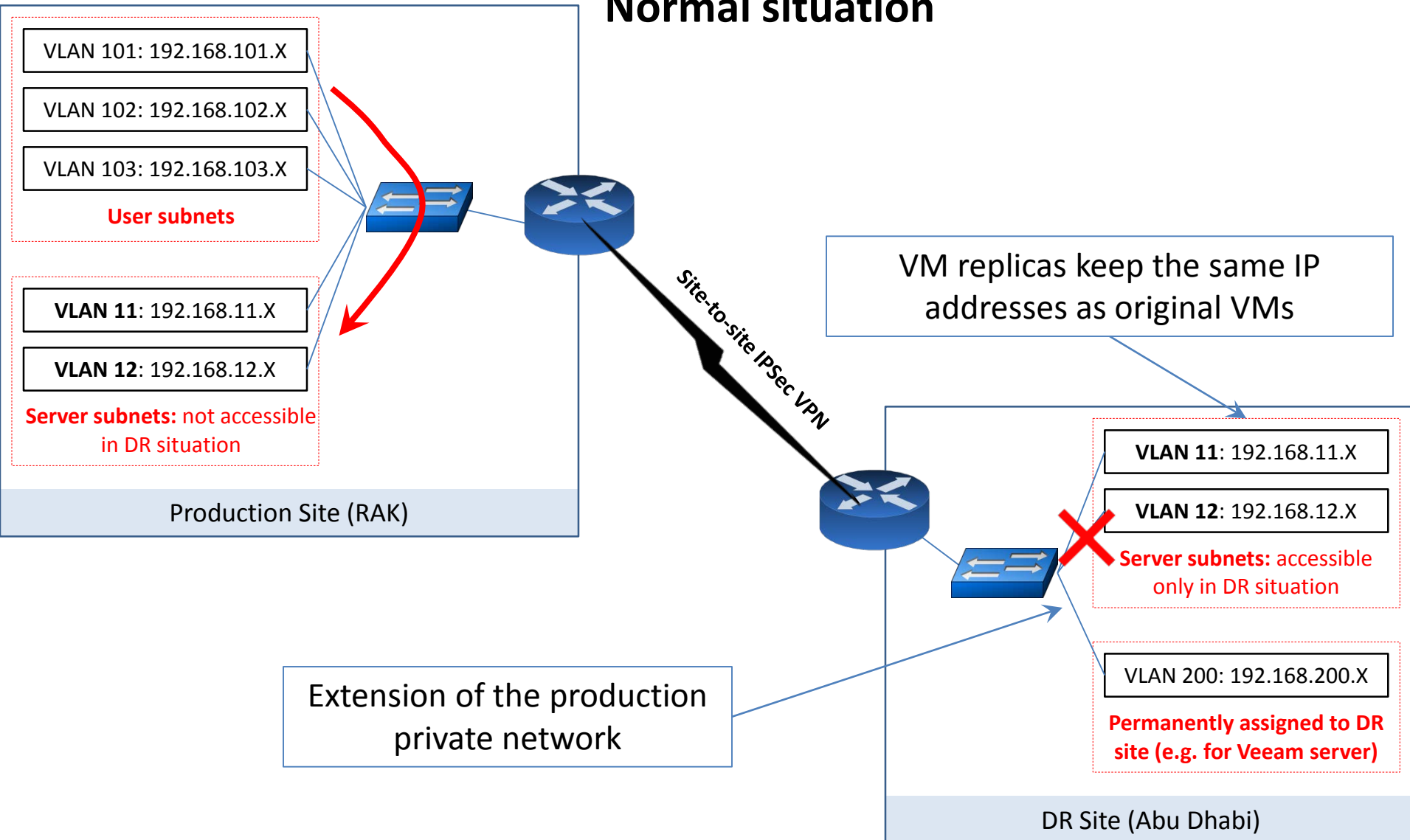
DR Site
(Abu Dhabi)



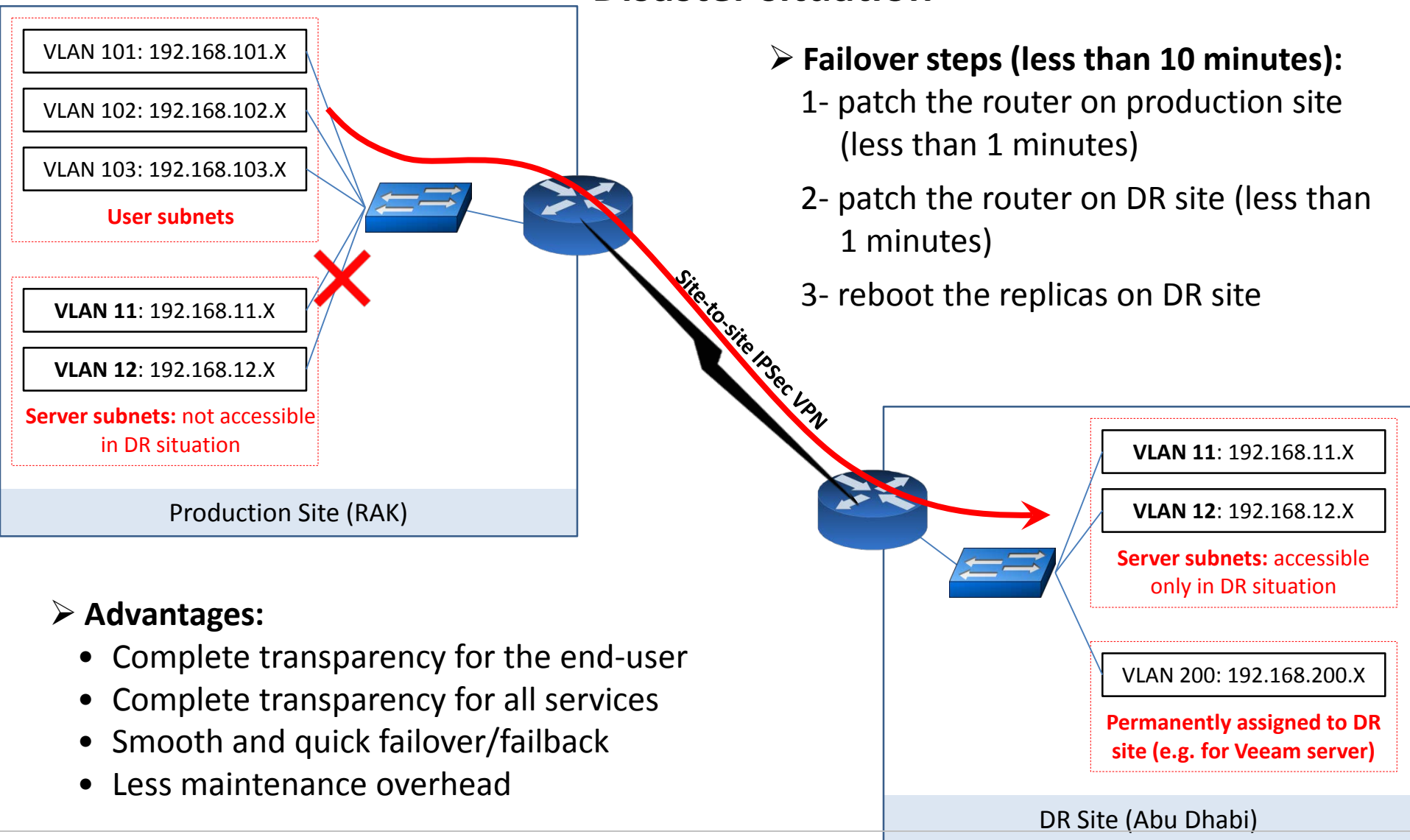
- **Bare-metal backup**: VM-based replication
- HW independent
- Easy testing without service disruption
- Centralized Solution
- Standardized for all applications
- Low cost
- **Low RTO**: booting time

Network Design for Smooth Failover/Failback

Normal situation



Disaster situation

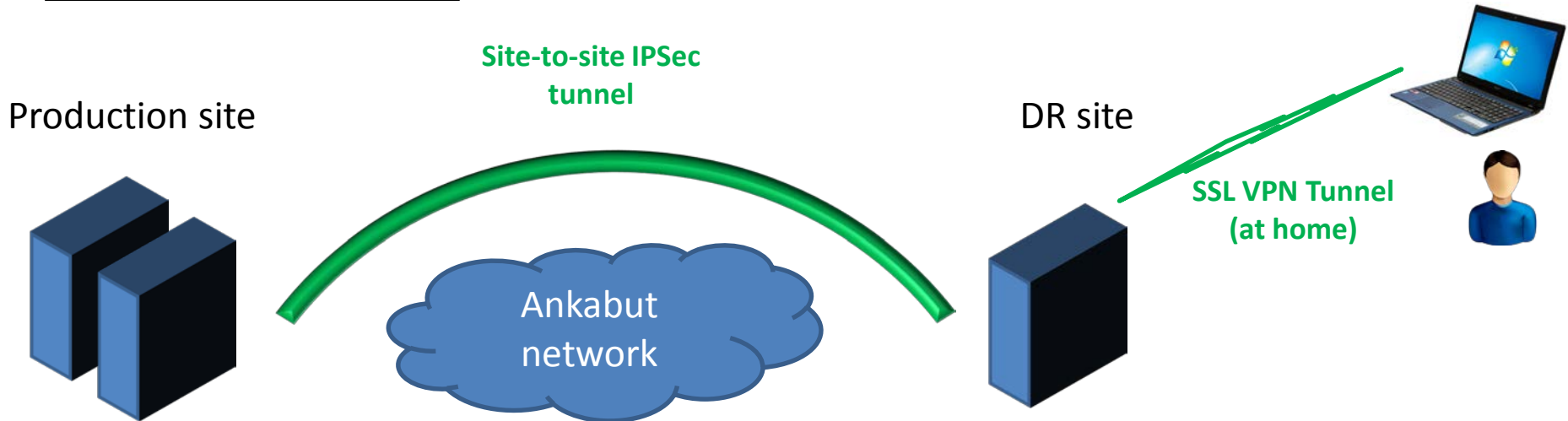


- **Failover steps (less than 10 minutes):**
 - 1- patch the router on production site (less than 1 minutes)
 - 2- patch the router on DR site (less than 1 minutes)
 - 3- reboot the replicas on DR site

➤ **Advantages:**

- Complete transparency for the end-user
- Complete transparency for all services
- Smooth and quick failover/failback
- Less maintenance overhead

Secure Communications:



Secure Storage: we deploy SED (Self-Encrypted Discs) for storage at the DR site

- Secure virtual environment (OS)
- Secure storage (VMs)
- Transparent for users
- Does not entail considerable overhead (hardware-based)

- **Remote** monitoring and management of the physical server (even booting it in case it was shutdown: [click here](#)): Our server is a PowerEdge DELL server with iDRAC7
- **Remote** access to the DR site: IPSec and SSL VPN tunnels
- **Remote** control and monitoring of the whole environment: administration, failover, failback.

- DR plan over the Ankabut backbone and hosted by the Ankabut data center
- DR for Private Cloud based data center:
 - Centralized,
 - standardized,
 - secure,
 - flexible,
 - cost-effective
 - low RTO
- Generic and complete solution: extendable for larger settings

White paper available upon request

