

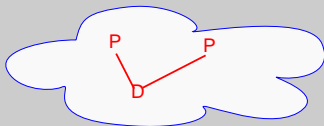
# Network Virtualization Architecture: Proposal and Initial Prototype

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<sup>4</sup>University College London

VISA Workshop 2009, Barcelona

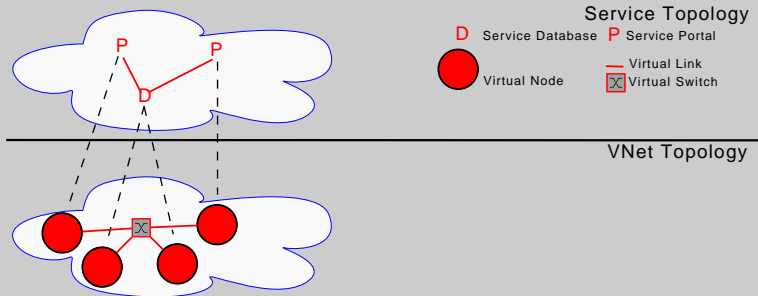
# Virtual Networks (VNETs)



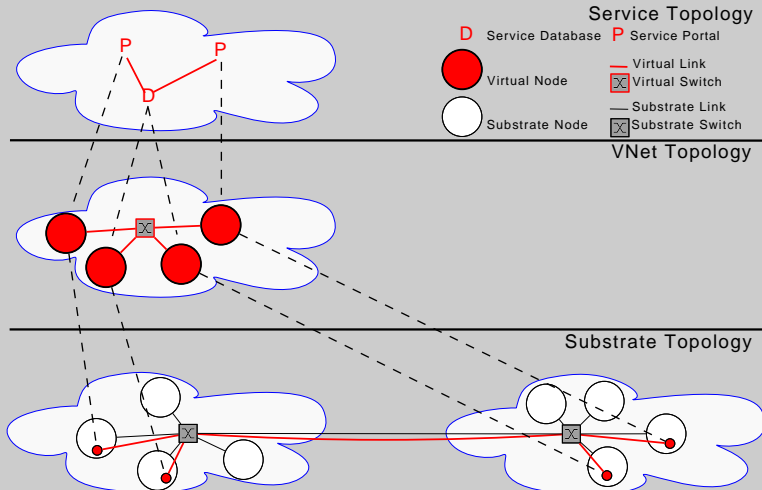
## Service Topology

**D** Service Database **P** Service Portal

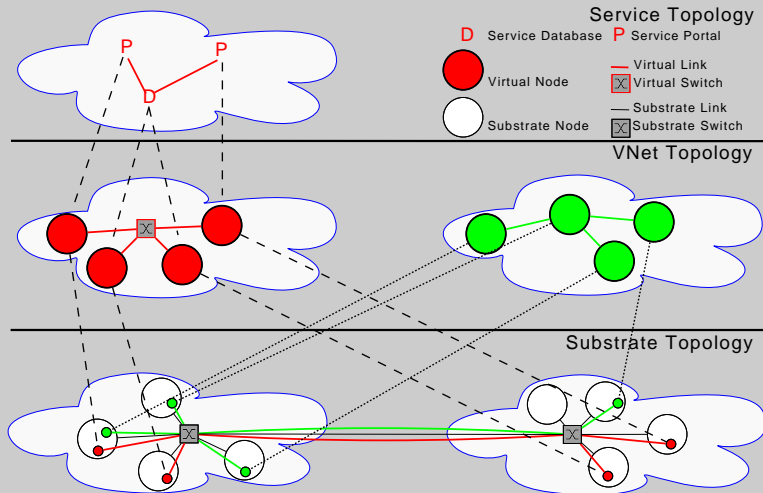
# Virtual Networks (VNETs)



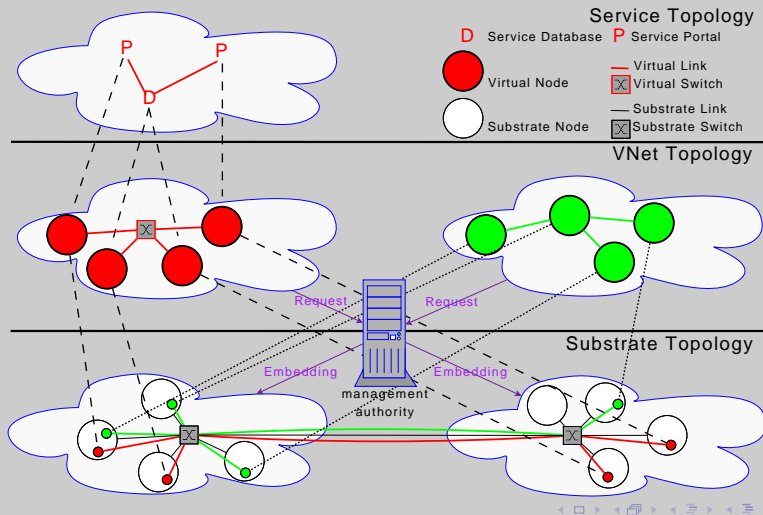
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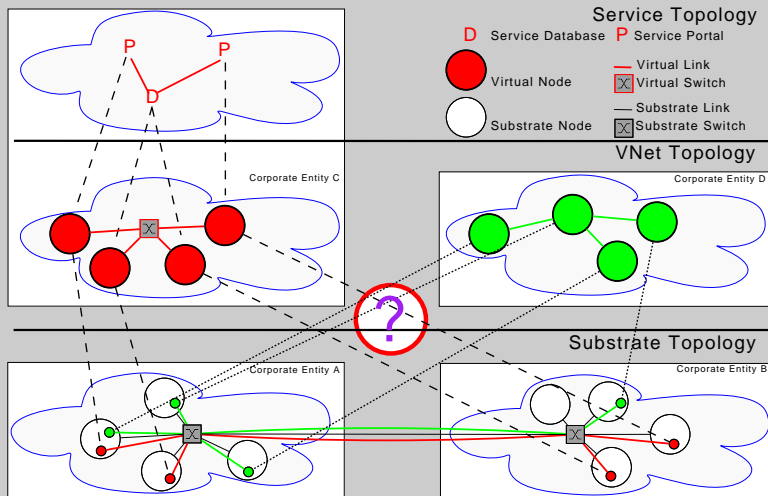
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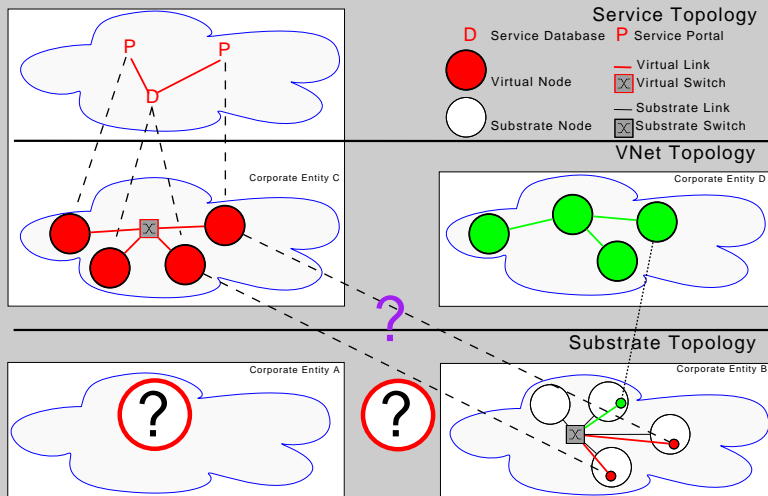
# Virtual Networks (VNETs)



# VNets and Business Reality - Embedding Authority?

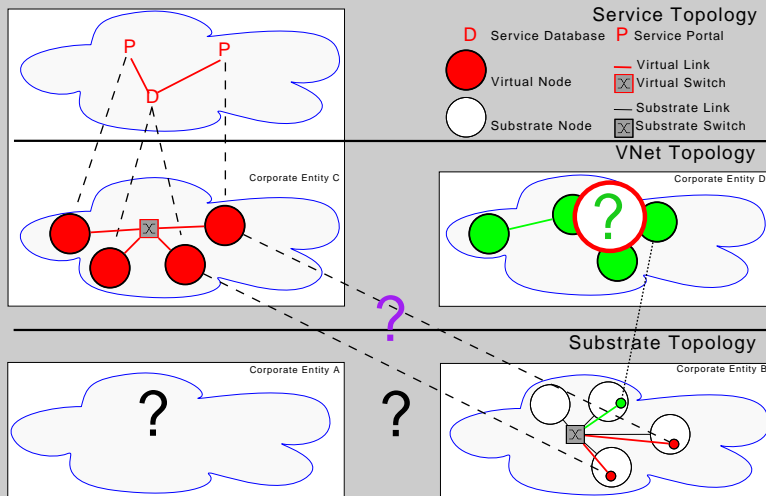


# VNets and Business Reality - Topology Hiding?

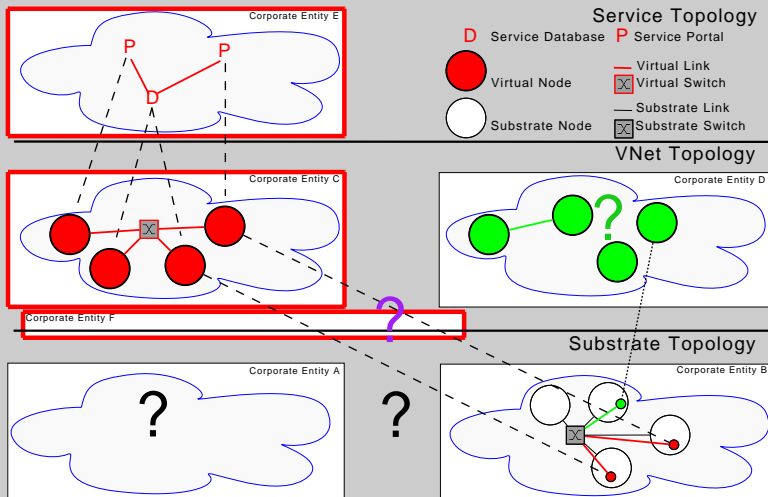




# VNets and Business Reality - Topology Hiding?



# VNets and Business Reality - Outsourcing?



# Architecture

## Challenges

- Distributed Management
- Limited Information Exchange
- Migration
- Flexibility (Role Splicing/Duplication)

## Approach

- Role Definition
- Interfaces between Roles

# Roles - Current Wellknown Players

## Service Provider

- Provides Service on the Internet

## Internet Service Provider

- Owns and operates Hardware

# Virtual Network Management Roles

## Service Provider (SP)

- Provides Service on the VNet

## Virtual Network Operator (VNO)

- Operates the VNet

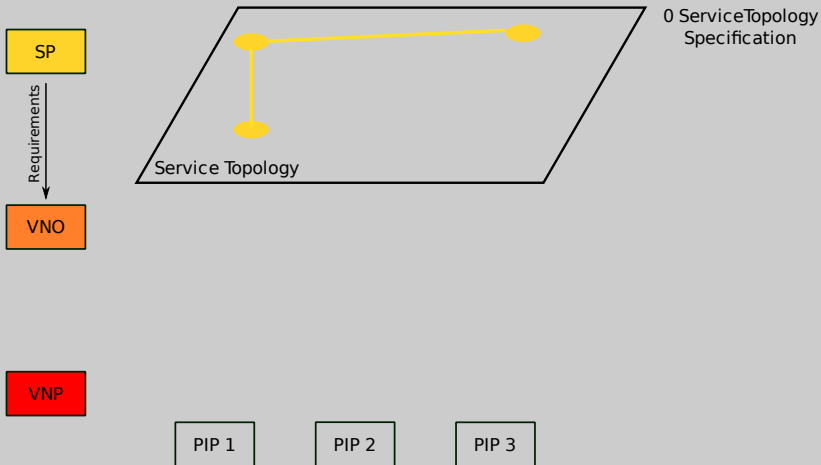
## Virtual Network Provider (VNP)

- Assembles VNet Resources

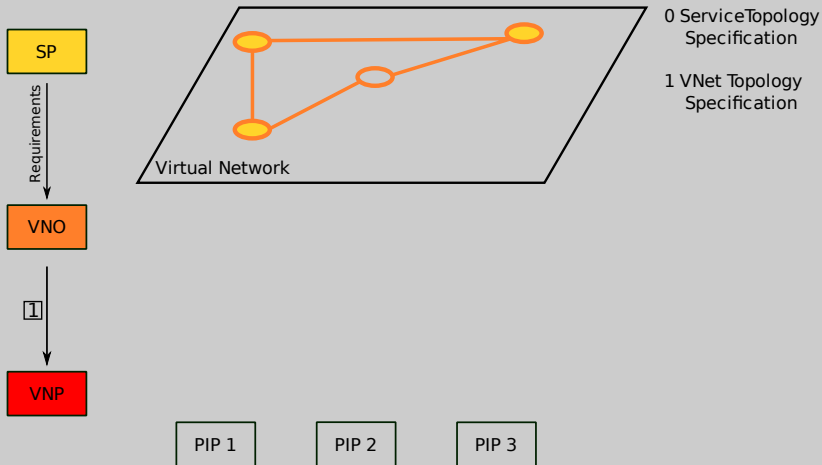
## Physical Infrastructure Provider (PIP)

- Owns and operates (part of) the Substrate

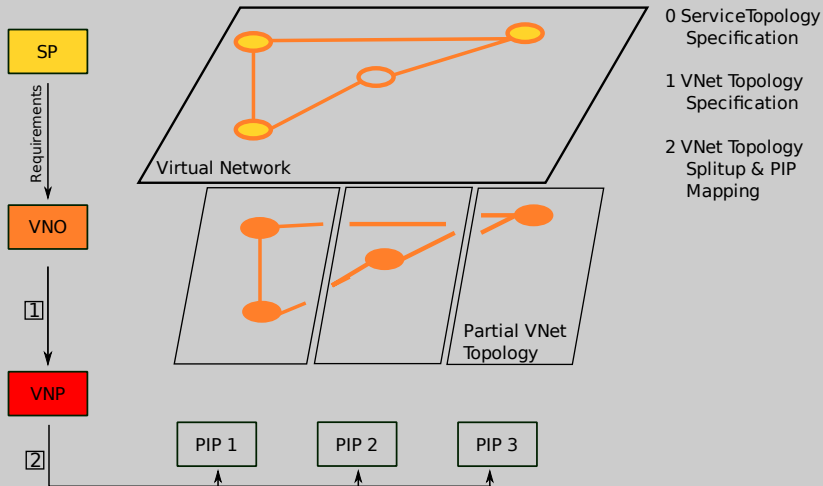
# Instantiation and Interfaces



# Instantiation and Interfaces

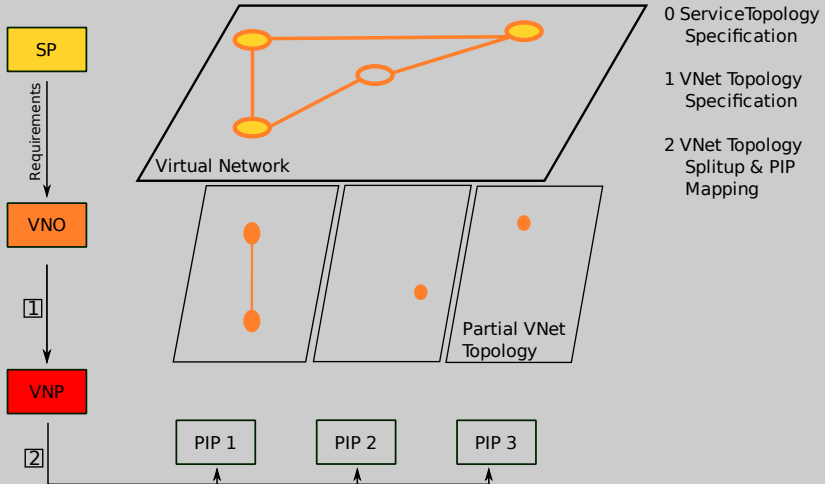


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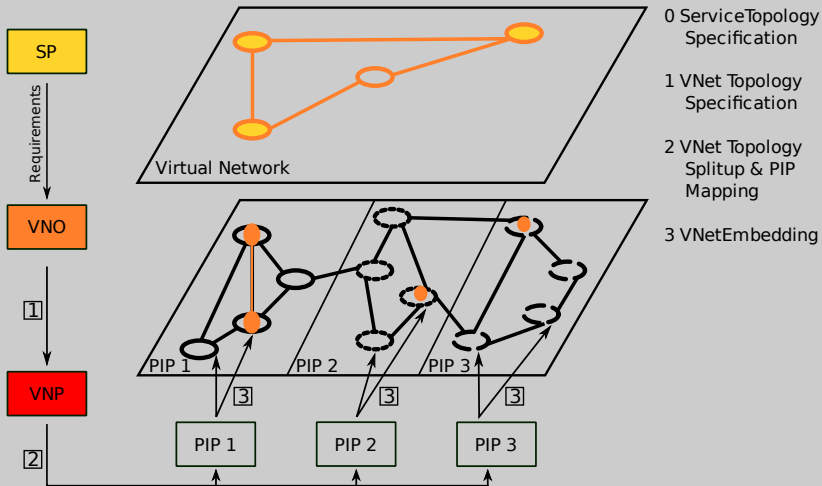




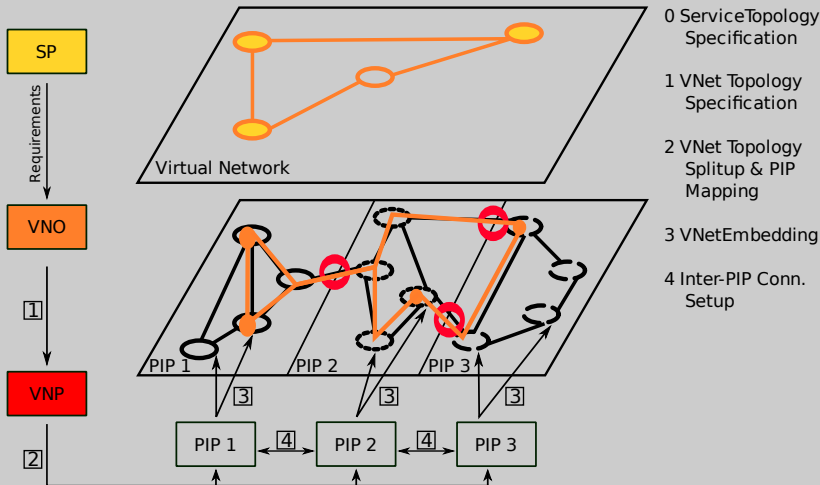
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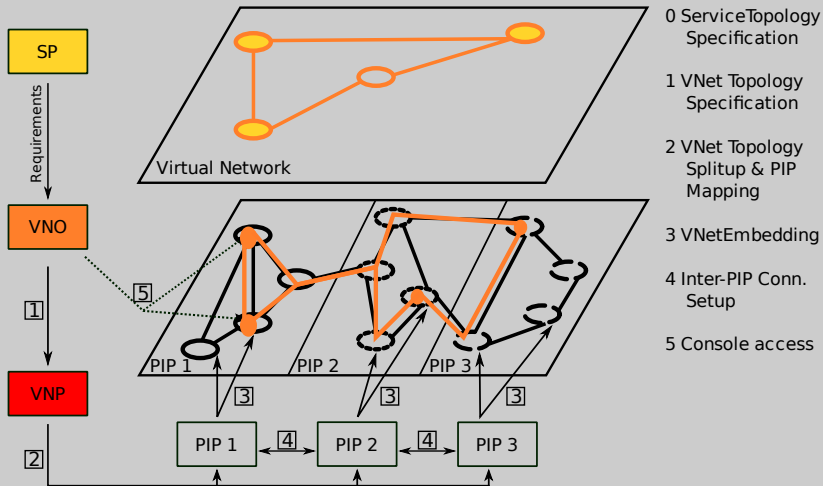
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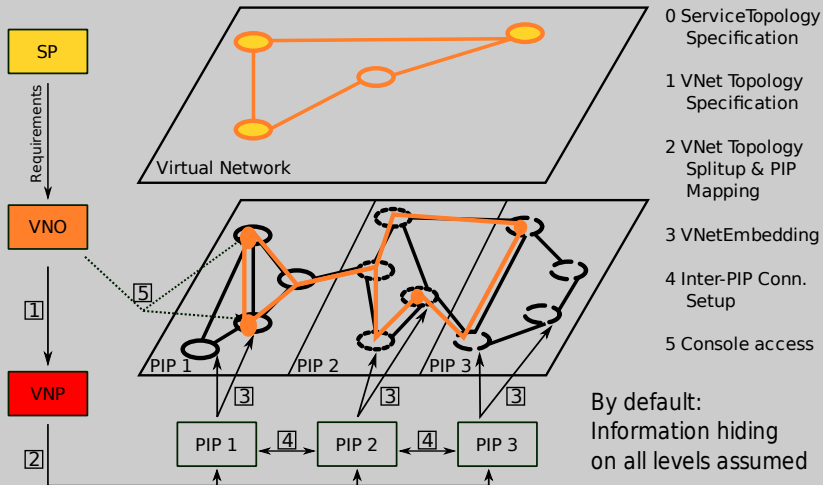
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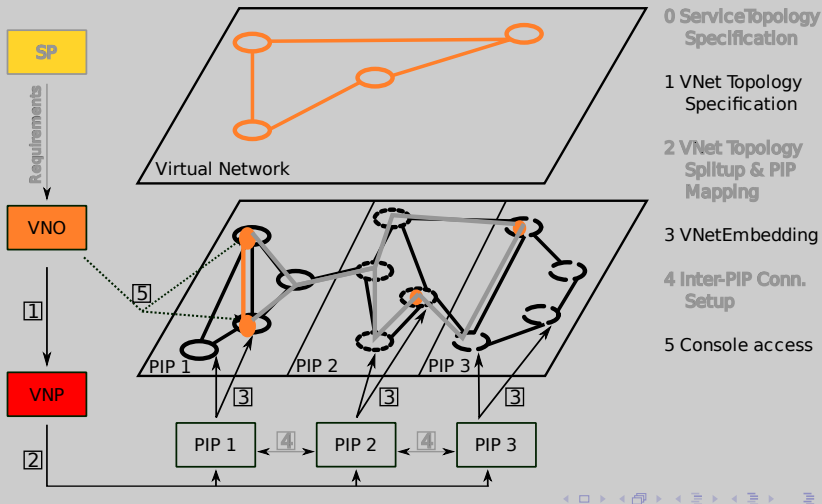


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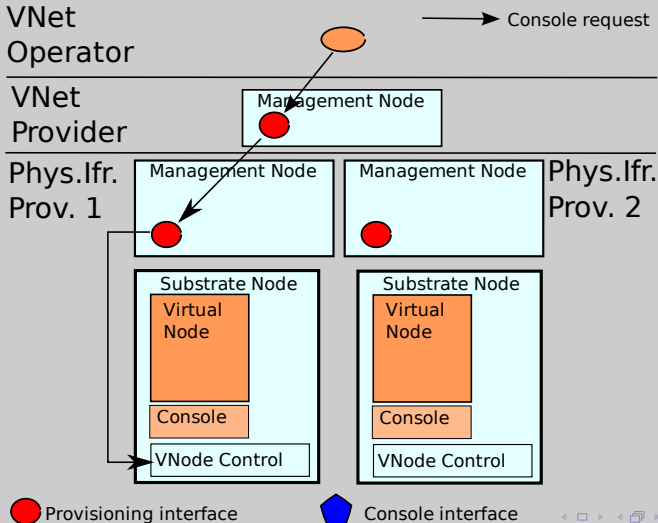


# Prototype

# Status

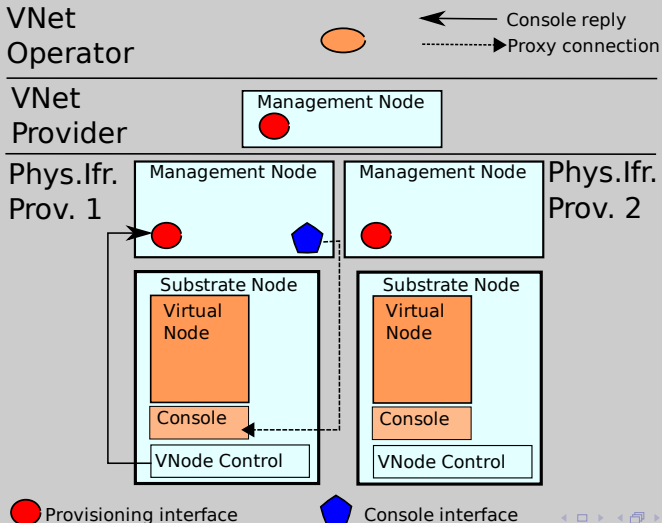


# Console Access

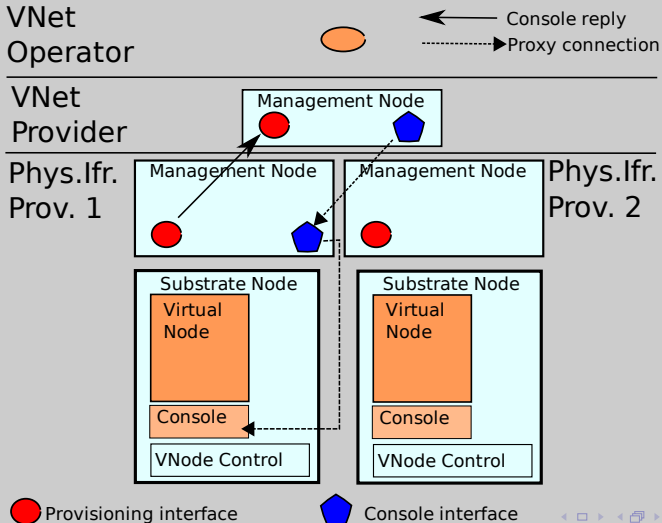




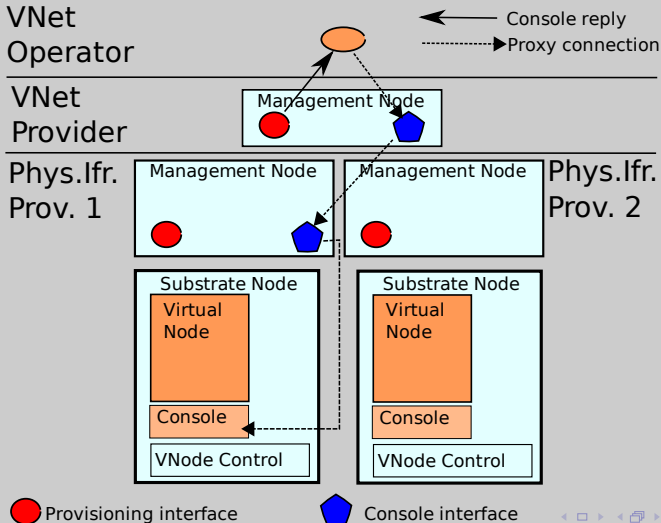
# Console Access



# Console Access



# Console Access



# Next Steps

## Conceptual Side

- Topology Description Language

## Practical Side

- Testbed interconnection
- Management script extension (VNet Data Plane and Migration)

# Questions?

Thank you for your attention!