

## **GN3+ SA3T3 / Multi-Domain-VPN service: Collaboration of NREN's NOC**

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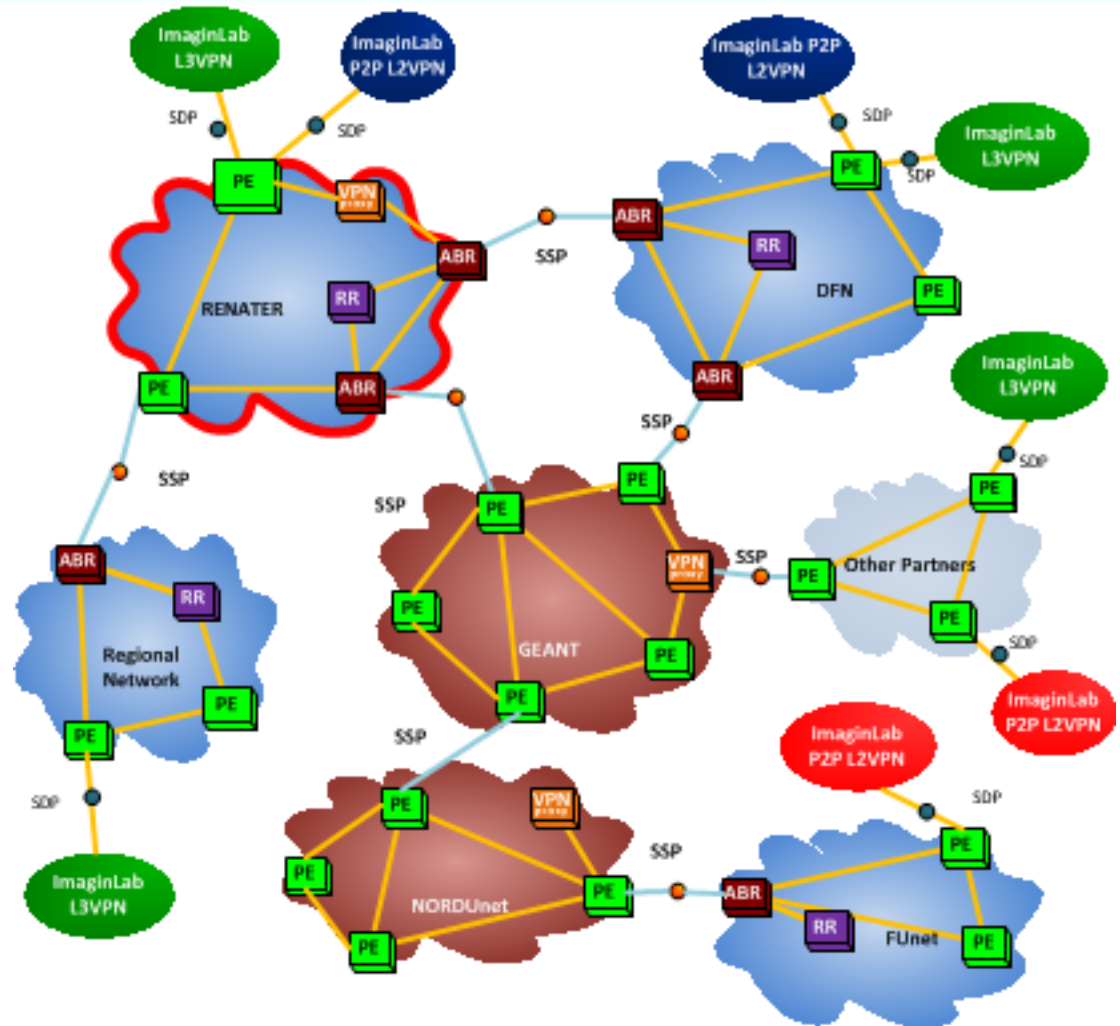
- MDVPN a seamless infrastructure for delivering VPN services to end users
- Role of the NOCs
- MDVPN service operation
  - monitoring
- MDVPN deployment roadmap and footprint
- Conclusions on MDVPN operation

# MDVPN: seamless infrastructure for delivering VPN services to end users



## MDVPN objective

Deliver multi-domain VPN as easily and as quickly as you do in your own domain



SSP = Service Stitching Point  
SDP = Service Demarcation Point

VPN provider

VPN provider and  
VPN transit provider

VPN transit provider

VPN transport provider

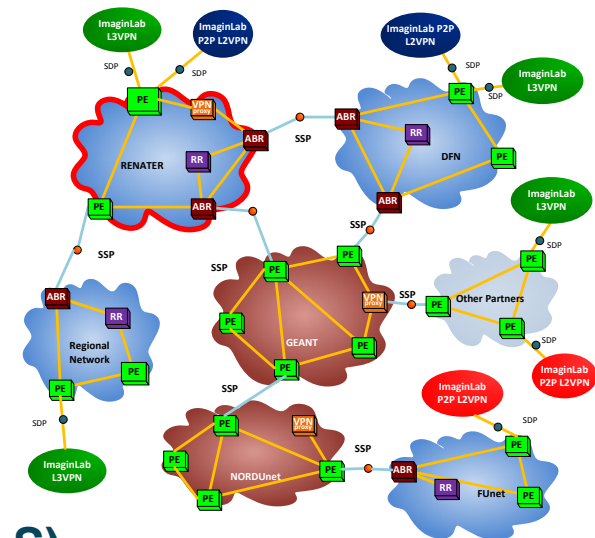
# MDVPN: seamless infrastructure for delivering VPN services to end users



- A joint service delivered by GEANT-NRENs
  - **GEANT provides VPN transport service**
  - **NRENs subscribe once to the VPN transport service then get as many as you want VPNs.**

→ Only configuration at edge is required

- MDVPN service is an 'umbrella':  
→ **L3VPN, P2P-L2VPN, MP-L2VPN (VPLS)**



VPN provider

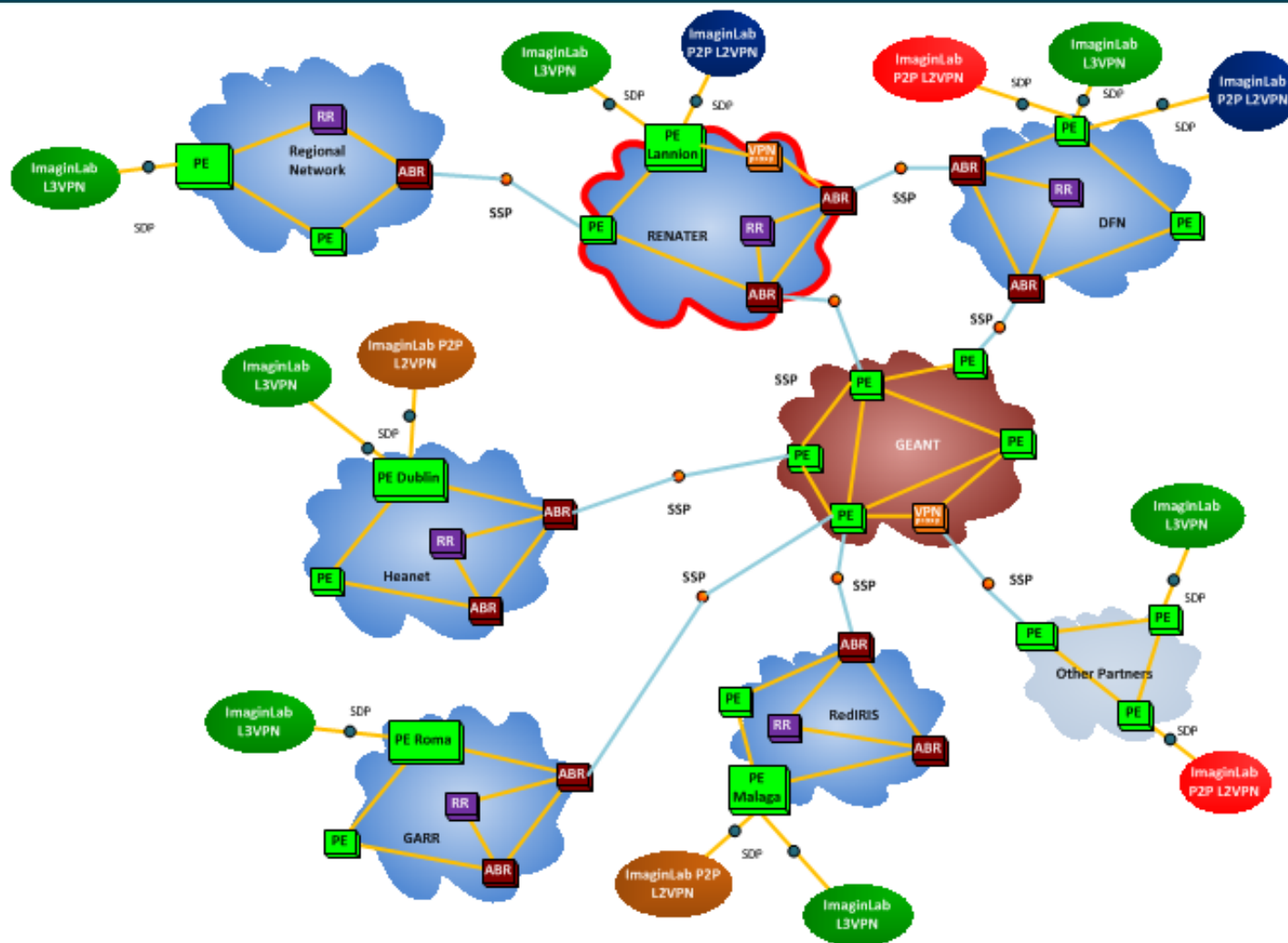
VPN transit provider

VPN provider and  
VPN transit provider

VPN transport provider

# One Use case: XiFi project

<https://www.fi-xifi.eu/about-xifi/what-is-xifi.html>



XiFi is a project of the European Public-Private-Partnership on Future Internet

# MDVPN a efficient solution ...



- A set of services **useful for end users**
  - Cover a wide scope of user needs: from the long-term infrastructure with intensive network usage to quick point-to-point for a conference demonstration
  - Scientist DMZ concept
    - *Cost Reduction for international collaboration at site level*
  - VPN is deployed much more faster
- Based on MPLS and BGP standard
  - Easy to configure
  - It's flexible and quick to deploy
  - No investment, no Cost in terms of CAPEX
  - CAPEX saving thanks VPN multiplexing (no dedicate interface, ....)
- OPEX cost reduction for NREN and DANTE
- A service that you can not find in commercial ISP offer/portfolio because multi-domain

# Role of the NOCs



- Provision the VPN on end-user requests

- Support end-users
- Communication with partners DANTE, NRENs, Regional Net...

- Provide efficient communication channel

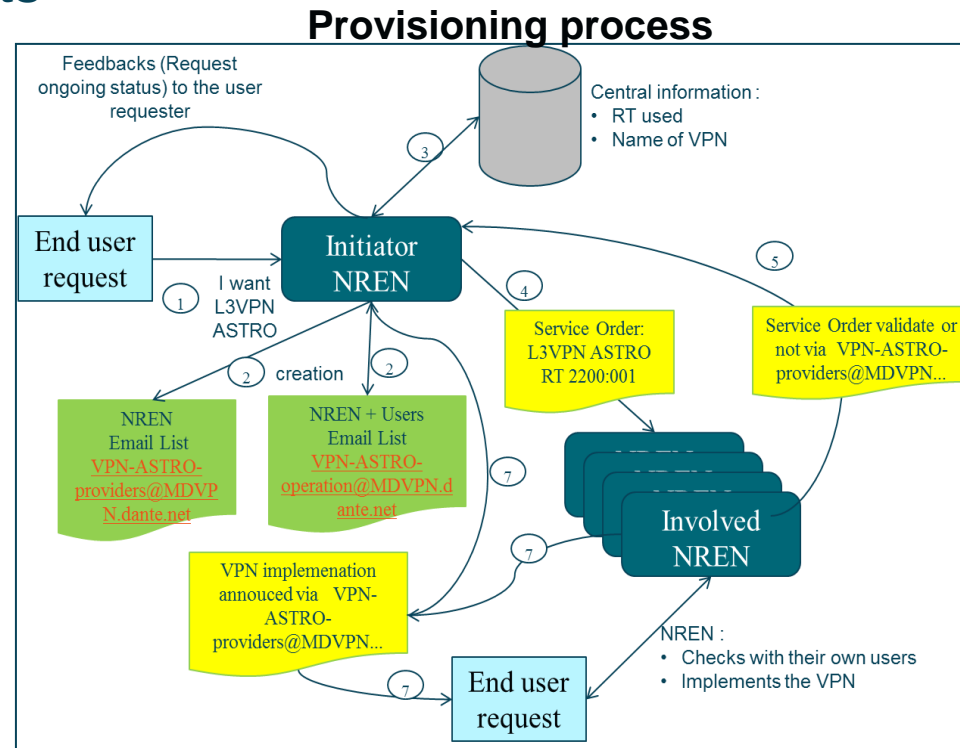
- VPN-ASTRO-providers@ ...
- VPN-ASTRO-operation@ ...

- Ensure the day-to-day working

- monitor the service
- Troubleshooting

- Provide statistics monitoring to end-users and to partners

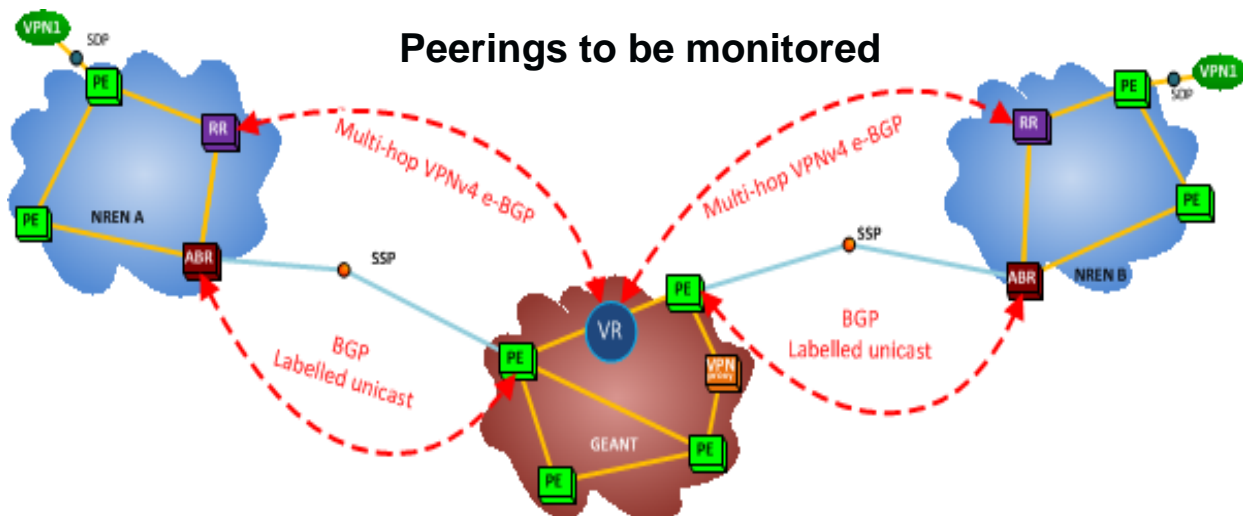
- Ensure OLA commitment are achieved



- Underlying principle behind this Multi-Domain VPN technology
  - The LSP is extended from a PE up to the remote PE in another domain

## Monitoring is decentralized:

- monitor SDPs and SSPs state
- Labeled unicast BGP peering
- Multi-hop BGP VPNv4 peering





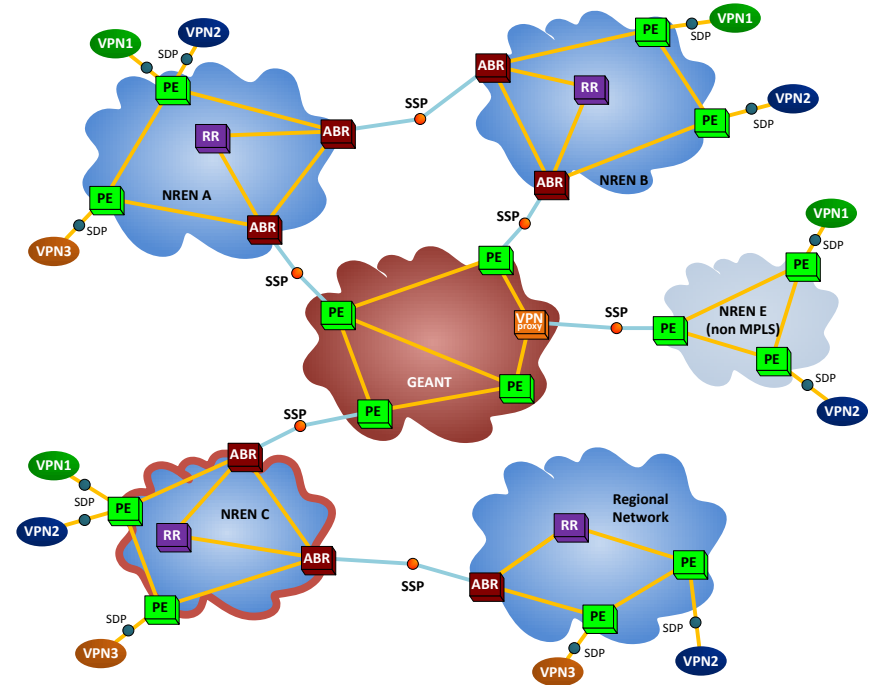
# Day-to-day monitoring



- **Objective: detect problems** that may affect the service level specification.

## 1. Availability of each PE

- A specific L3 VPN instance (**'ping\_VPN'** instance) will be setup on all PEs for diagnostic purposes
- A central tool (kind of smokeping) to check the availability of the PE through the 'ping\_VPN'.



- ## 2. A Looking Glass service for the VPN Reflector will help to troubleshoot the VPNs signalling (route announcement and reception).

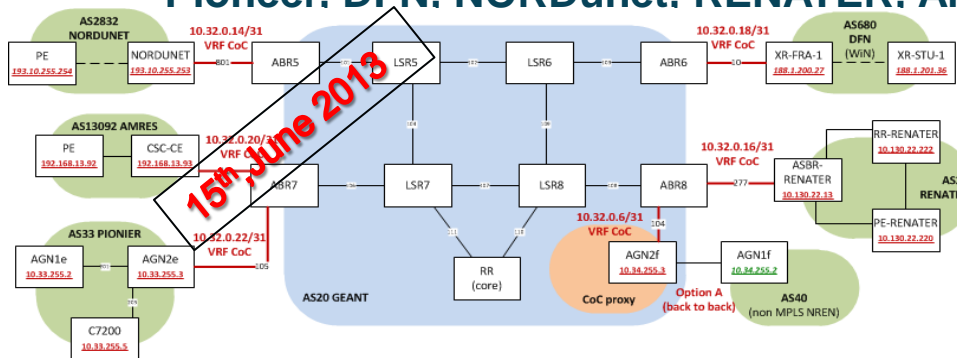
- The VPN transport provider (GÉANT) **is not able to distinguish the different VPNs.**
  - At GÉANT level, only SSP availability and usage (throughput statistics) will be provided.
- The traffic carried by a particular VPN instance can be monitored, at least at interface (SDP) level. It is up to the NREN to provide statistics on their SDP
- **NRENs and GÉANT cannot provide a general view of VPN usage, so it will be on the responsibility of end users to manage this.**
- The list of the different statistics that should be collected at SSP level and at SDP level is not totally specified.

# SA3T3: MDVPN work status



## ● Prove of concept demonstrated on SAT3 testbed

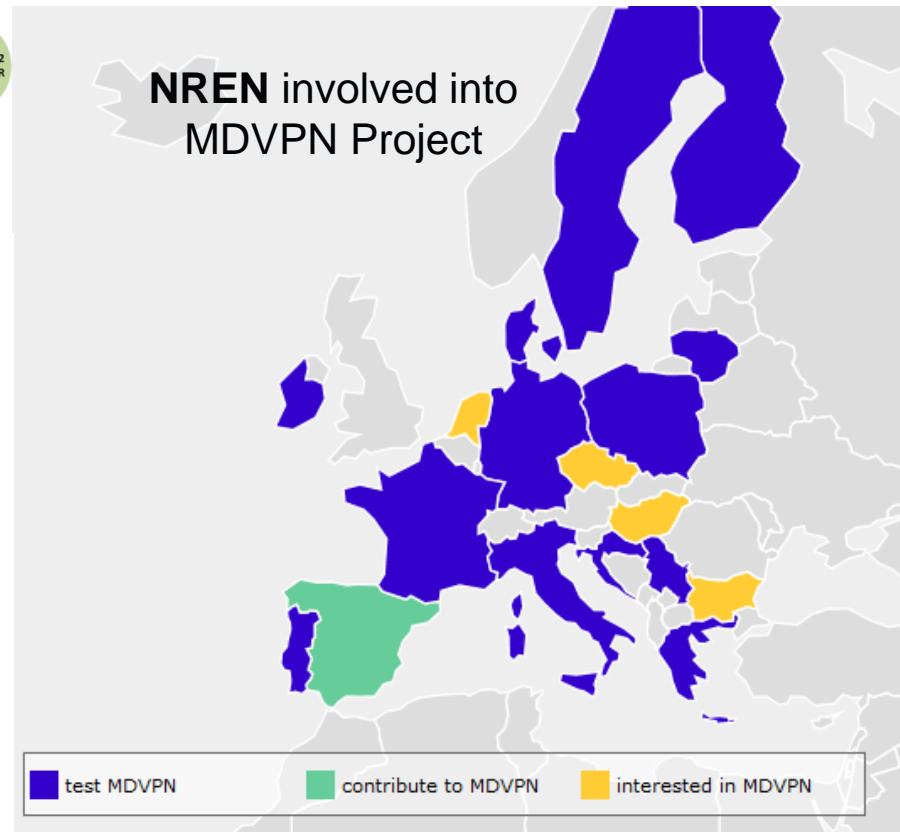
Pioneer, DFN, NORDunet, RENATER, AMRES, LITnet, FCCN, FUnet...



## ● Current state → Deployment phase

1. Multi-domain operation validation  
(4th quarter 2013 – end of 1st quarter 2014)
2. Technical Pilot Phase
  - a. Setting-up GEANT pilot  
(1st quarter 2014)
  - b. Pilot generalization phase  
(2nd and 3rd quarter 2014)
3. MDVPN service officially added to GEANT portfolio

NREN involved into MDVPN Project



# Conclusions on MDVPN operation



- **Service description:**  
[https://intranet.geant.net/SA3/Shared%20Documents/Deliverables/D7.1\\_DS%203%203%201-MDVPN-service-architecture.pdf](https://intranet.geant.net/SA3/Shared%20Documents/Deliverables/D7.1_DS%203%203%201-MDVPN-service-architecture.pdf)
- **Operation is a key point for the deployment of MDVPN**
  - Lake of coordination could endanger the rolling-out process of MDVPN
- **Crucial points**
  - Dissemination toward NREN's NOC
  - Coordination between DANTE, NRENs, Regional Network (communication channel)
  - NOC training
    - *Technical cookbook / configuration for different stuff vendors*
    - *Operational cookbook*
- **Would it be possible to collaborate on this MDVPN operation topic?**
  - Improve and implement an innovative operational model
    - *Reuse but new points (incorporation of regional network ....)*
  - Dissemination toward NREN's NOC



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