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Look behind the scenes -
Technology Updates from
DE-CIX



DE CIX

Where networks meet

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Look behind the scenes

→ Peering Platform Developments in 2017/2018

- Nokia Satellite Deployments, what is it and what is it for?
- Route Server Development in a Nutshell
- The Challenges of GlobePeer Remote
- Examples of location projects,
DE-CIX Hamburg, DE-CIX New York, DE-CIX Madrid

→ The Move of DE-CIX FRA 12



Look behind the scenes – Peering Platform Developments in 2017/2018



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Improvements for customer connectivity



Apollon Production Platform in a Nutshell

- Edge nodes are used for service termination/presentation to customer
- Core nodes provide interconnection capacities between Edges, as a Backbone
- Backhaul nodes present
 - smaller capacity interfaces (e.g. not available on big Edge nodes, common in DE-CIX Frankfurt) OR
 - are present in distant locations (e.g. common in DE-CIX New York)
 - or both



Nokia Satellite Deployments

→ So what is a Satellite?

- New type of network node, formal name Nokia 7210 SAS-SX
- integrates seamlessly into an Edge and presents virtual ports
- DE-CIX Provisioning system will provision an Edge port
- Available in 2 different versions



Nokia Satellite Deployments

→ Satellite Applications



7210 SAS-Sx 1/10 GE 48 port fiber



7210 SAS-Sx 10/100GE 64 port fiber

Route Server Development in a Nutshell

- Dedicated project team
- New features in 2017/2018
 - Do you ...
 - ... already use our route origin BGP communities?
 - ... already use (selective) path prepending?
 - ... already know our new LG? Do we filter routes from you?
- More features in the pipeline
- Talk to us!



The Challenges of GlobePeer Remote

- Conditions
- Quality Standards
- Finding paths



DE-CIX New York Growth and Expansion

→History of DE-CIX New York, first technical setup

- starting with two Edge sites in 60 Hudson and 111 8th Avenue
- all other PoP with connected Backhaul nodes from Edges
- Metro connectivity based on Dark Fiber, passive MUX/DEMUX, DWDM-colored SFP+, scaled from 1x10GE up to 16*10GE (single)



DE-CIX New York Growth and Expansion

- Growth seen in DE-CIX New York, customers, ports, traffic
- NYC6, NYC8, NYC5 NYC3 were upgraded to Edge sites, Nokia SR7
 - NYC6 was upgraded again, to SR12e
 - NYC5 is in planning to upgrade to SR12e, NYC4 is planned to be upgrade



DE-CIX New York Growth and Expansion

→ Growth in interconnection bandwidth

- Using dark fiber and adding colors was the right strategy to grow
- Future interconnects will also be DWDM colors, but need to scale to $n \cdot 100\text{GE}$
- We will introduce a small form factor DWDM system to scale to up to $12 \cdot 100\text{GE}$ on 1HU. We will deploy Infinera CX1200



DE-CIX New York Growth and Expansion

→ Growth in interconnection ports

- More Edge sites distribute the service function
- Rapidly growing Interconnect ports are filling up the Edge nodes in NYC1 and NYC2
- At this stage, we will build two Core nodes in NYC for Platform Interconnects
- Tests/PoC have started recently



DE-CIX Hamburg

- SR12e Upgrade
- Additional PoPs
- Multiple 100GE to Frankfurt



DE-CIX Madrid

- Fastest growing IXP
- Hardware upgrades
- Multi-Site setup



Look behind the scenes – The Move of DE-CIX FRA 12



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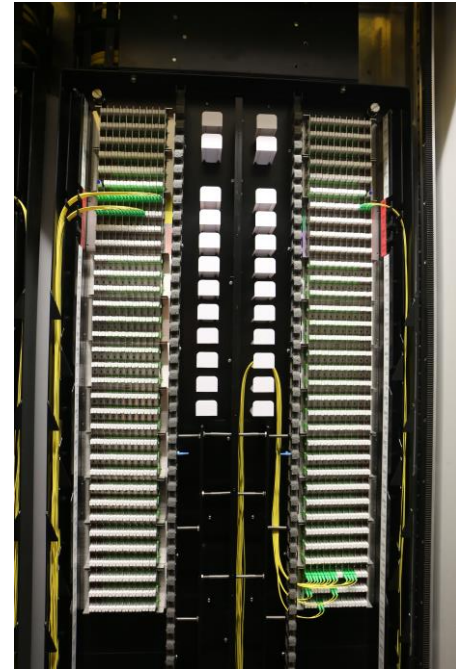
Need for changes in DE-CIX Frankfurt 12

- DE-CIX Frankfurt 12 takes over the functionality of DE-CIX Frankfurt 7
- Located in the biggest fiber PoP in Frankfurt
- Handling connections to 7 different data centers
- High rate of new and upgraded connections



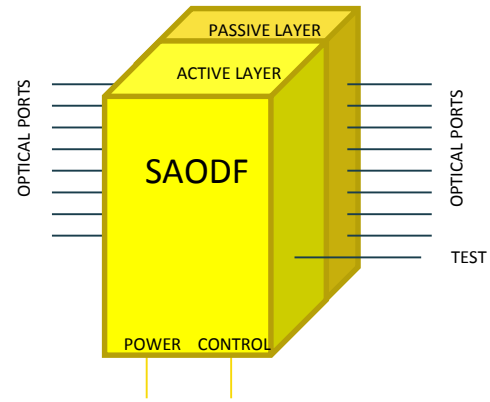
Implementing ODF

- DE-CIX Frankfurt 12 first PoP with an Optical Distribution Frame instead of Standard-Rack and Patchpanels for Customer-Interconnecting
- Small footprint along a wall with a high density and integrated simple overlength management



Adding intelligence

- Adding an active (automated) layer in front of the ODF, without the need to extend the footprint
- Manual intervention is still possible at all time
- Remote Interconnection between each Customer presentation and Equipment port provides greater flexibility



Increasing speed and density

- Customer presentation can be provided within minutes
- Provisioning or upgrading a port can be completed within 6 minutes
- Regularly maintenance concentrates technicians work times

- Capacity increased to 2300 customer connections on a small footprint (1,6m²)
- Each customer port can connected to each datacenter presentation



More flexibility

- All router-ports are fully precabled to the ODF
- ad-hoc and scheduled jobs to extend the Port to the MMR of desired data center
- Port-Moves and Upgrades can be performed without intervention by any field-technician (except on customer side)



A look into the future

- System starts with a base set of functionality (patching, removing, upgrade)
- Future deployment for faster troubleshooting and provisioning
 - providing red light to troubleshoot connections
 - using light-level measurement to ensure the correct polarity

