The challenges of migrating from one vendor to another – a GOC perspective

Darren Clarke
Senior Network Engineer (GOC)

SIG-NOC, Espoo
08/05/2024

Reasons for change

- Nodes in Western Ring running out of capacity/slots to support client's demand
- Low amount of interfaces in the rest of the network, particularly in the Eastern Ring (MIL-VIE-PRA)
- Very long lead times for Hardware
- Even if possible (lead times) is undesirable to invest much on outgoing kit

Migration Strategy

- Start migration from the busier parts (West Ring) and expand toward edges of the network
- Expedited delivery of 6 nodes for the Western Ring incorporated into the tender. This is possible with vendor having already ordered “at risk”
- For T1 (Tier 1 – Western Ring) Introduction of the first set of routing devices to work as “P” (LSR) only for the first period whilst qualification of nodes and experience to support Edge services is ongoing – reduces time to Network/Value
- For T2 (Tier 2 sites) Routing devices can be introduced as “P” and then moved to full “PE” or directly as “PE” depending on status of Qualification timeline
- All other sites are later in the timeline and will be inserted directly as “PE”s
- “P”/”PE” set up allows for re-use of interfaces at “PE” (current MXs) to support growth while qualification of new devices as “PE” is ongoing and Migrations are planned
- All new router deployments will be performed by GEANT’s Automation Platform (GAP)*

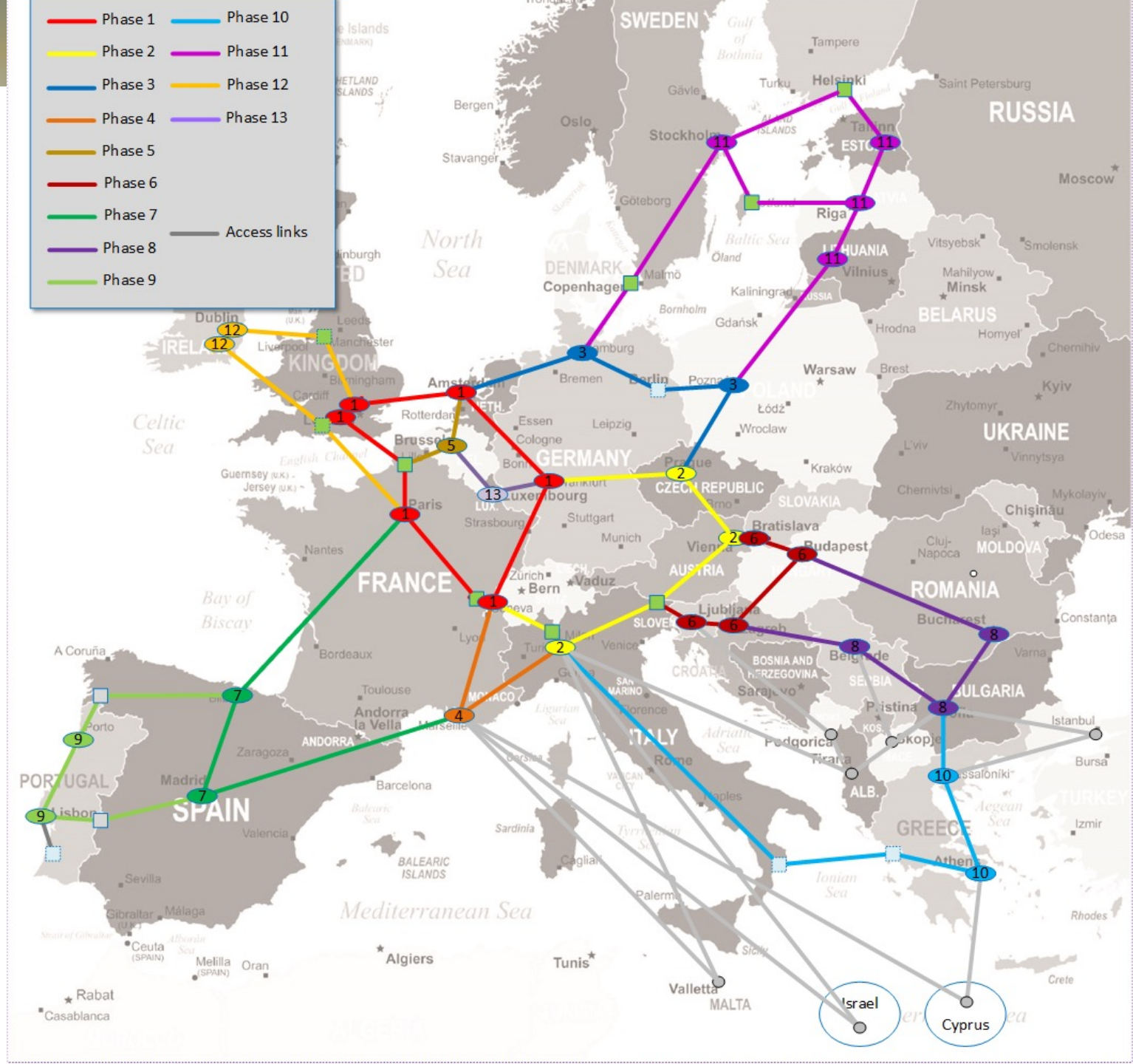
T1 site migration overview

Node																
1			Install	Trunks					Clients							
2				Install	Trunks				Clients							
3					Install	Trunks				Clients						
4						Install	Trunks			Clients						
5							Install	Trunks			Clients					
6								Install	Trunks		Clients					
7									Install	Trunks		Clients				
8										Install	Trunks	Clients				
9											Install	Trunks	Clients			
Month	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Qualification	**P**		**PE**													

- Install and Trunk migrations are bound by only the “P” qualification / integration timeline allowing for earlier deployment of nodes
- Clients can only be migrated to the new devices after full node qualification as Edge services router “PE” which are more complex and have a higher risk of overrun
- As Automation is a big factor within the migration, this timeline will also allow time for GEANT automation tools to be updated to work with the upcoming solution as the full configuration will not be needed until the end of the PE qualification timeline.
- Experience in supporting the new platform will be gained whilst the routers are performing the simpler “P” function. This experience will lead to better customer support from the GOC once the routers are switched to the more complex “PE” functionality – less risk of customer interruption / issues.

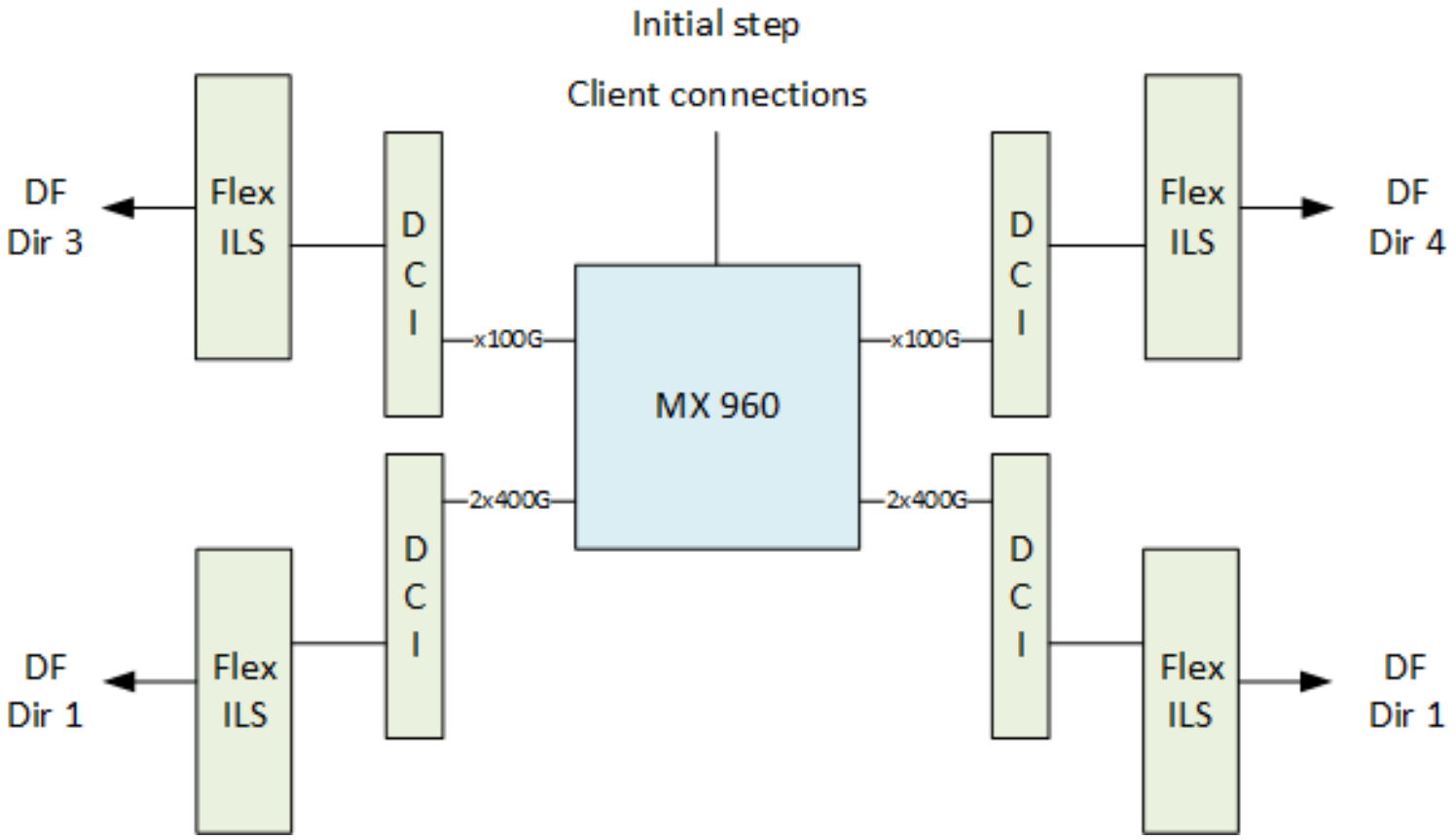
Phases defined

- 12 Phases
- Phase 1 – Western Ring
- Phase 2 – MIL-VIE-PRA
- Phase 3 – HAM-POZ
- ….



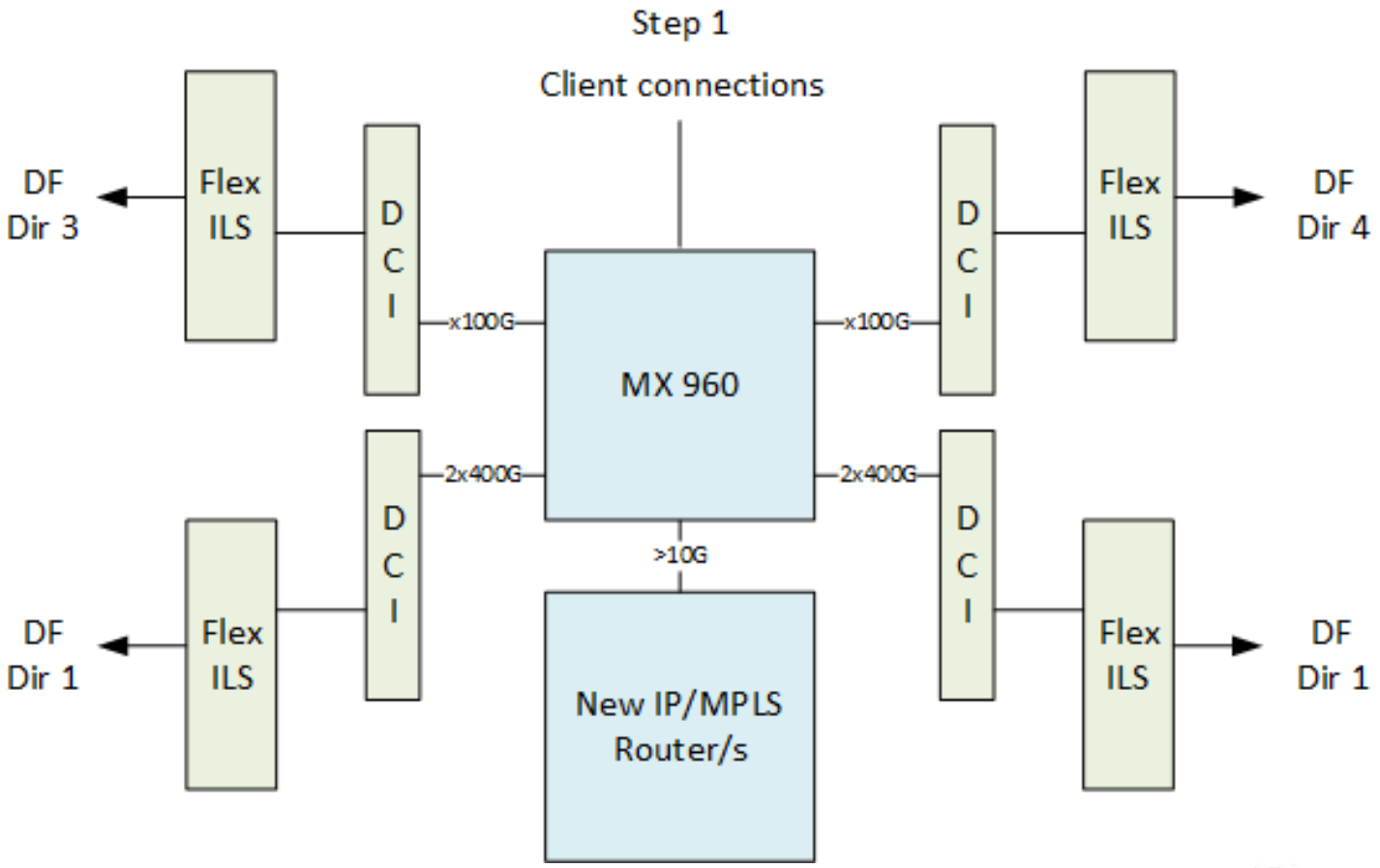
T1/2 site migration overview

- Main ring at 2x400G
- Additional Trunks at x100 (between 6 and 12 100G interfaces)



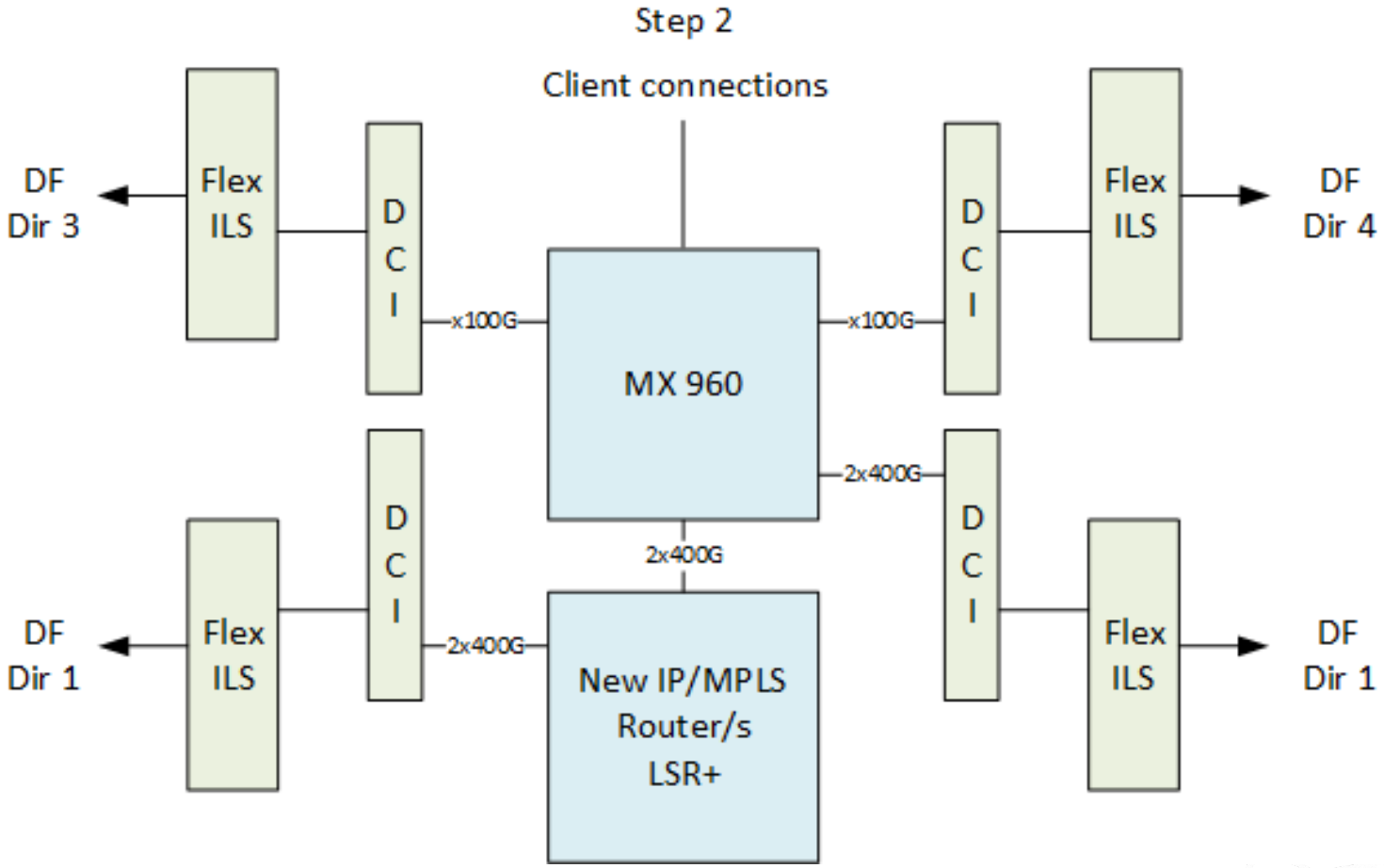
T1/2 site migration overview

- Installation of the new IP/MPLS router
- Connection “on stick” via low capacity interface
- Integration of the box with GEANT tools, IGP etc…



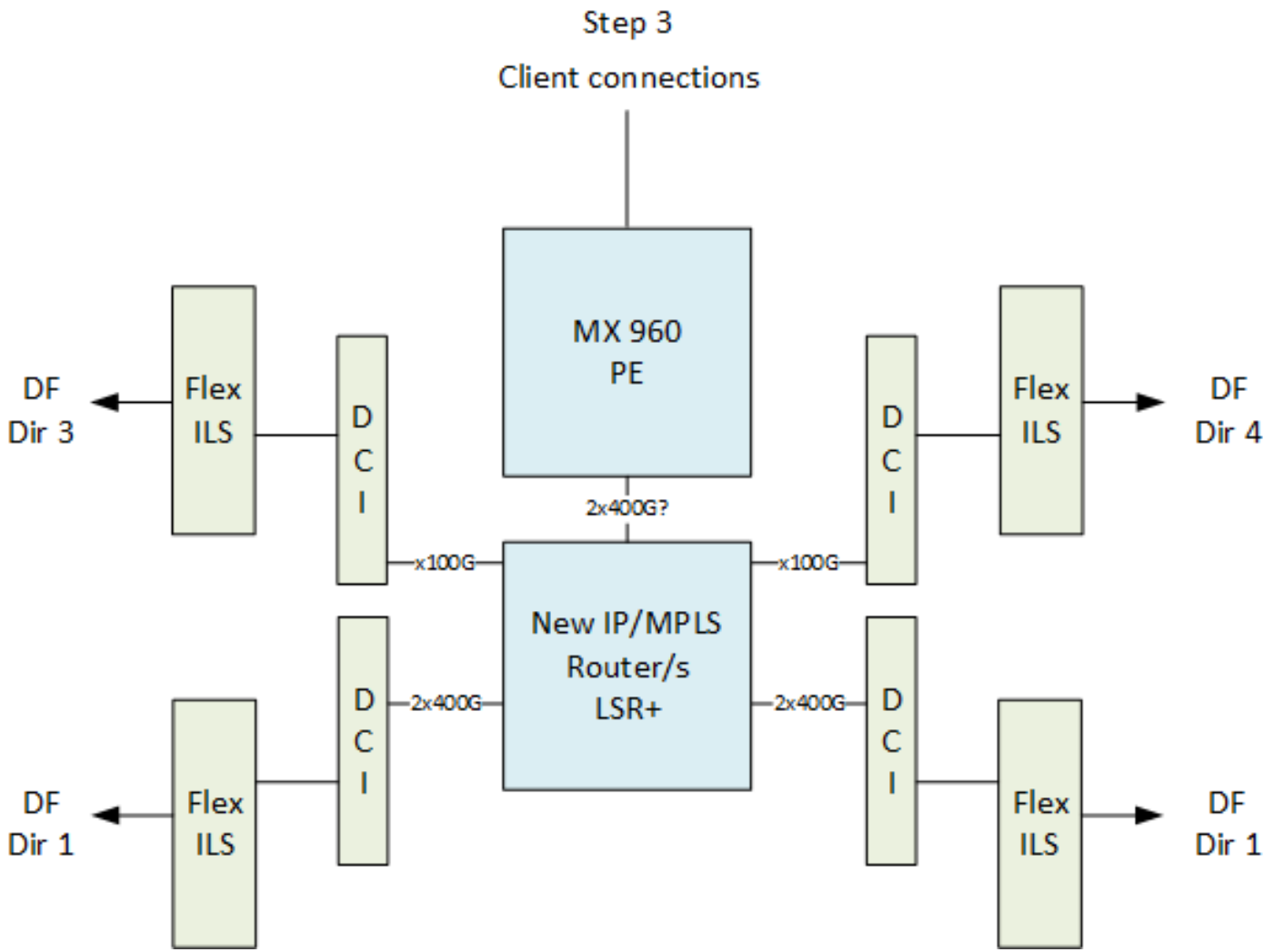
T1/2 site migration overview

- Trunks are migrated to the “P”/LSR freeing interfaces on the MX for use as “P”-”PE” trunk and to fulfill client’s growth



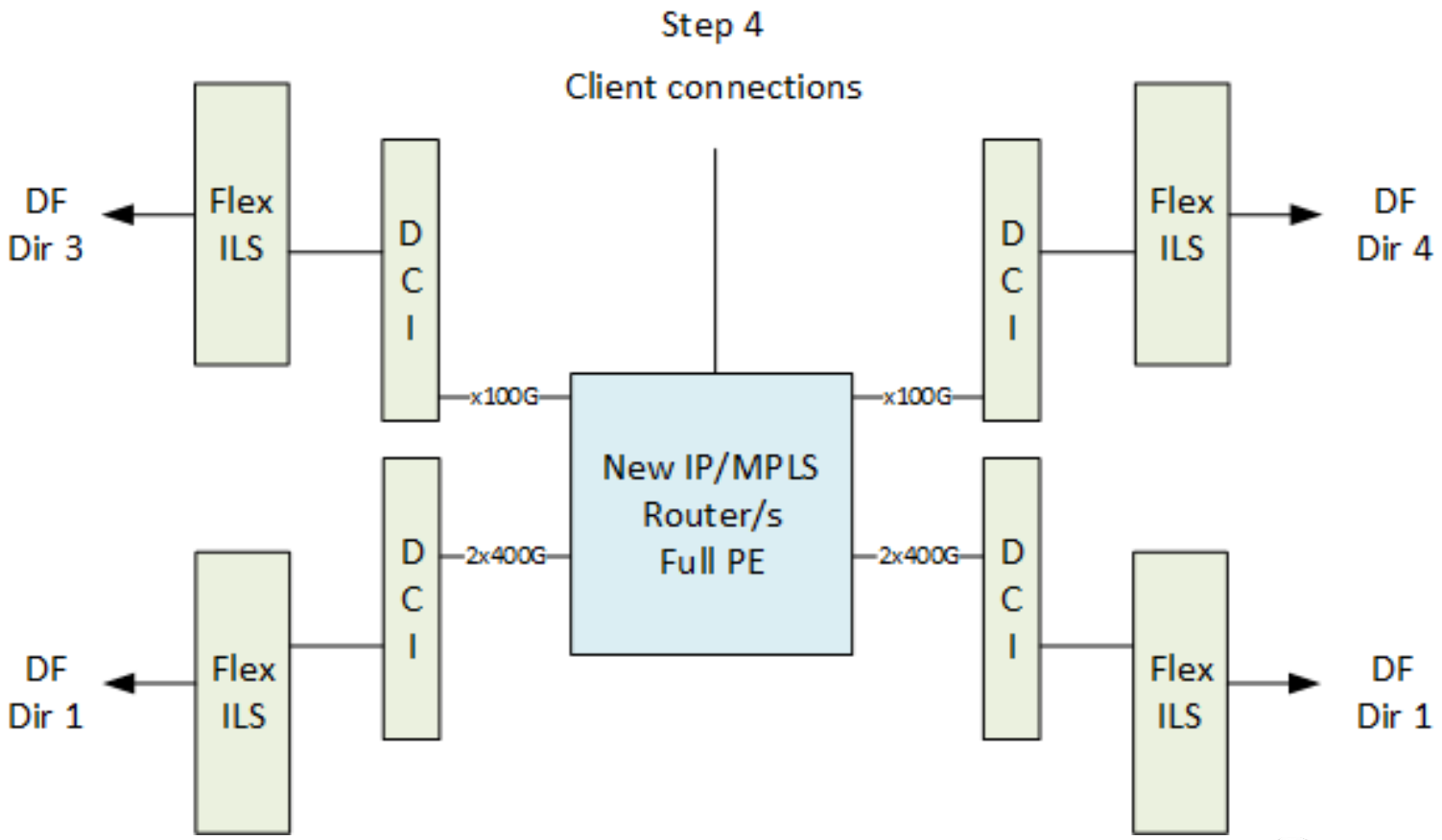
T1/2 site migration overview

- Once Trunks are migrated the MX is “on stick” with all trunks now on the “P”/LSR
- A large number of interfaces (2x400G + 6 - 12 100G) are now available for clients connections or upgrade of the trunk “P”/”PE”



T1/2 site migration overview

- Once the full qualification of the new IP/MPLS device is complete, clients can be migrated and the old MX decommissioned



GOC Support Challenges

- GOC staff will need to be proficient in both platforms once the “P” and “PE” deployments are live
- Troubleshooting is quite different between JunOS (Juniper) and SR OS (Nokia). Need to find some common strategy in troubleshooting procedures and how to understand the combined outputs of two very different platforms.
- Historically, all GEANT routers have been “PE” devices. No experience of supporting “P”-only
- Not all current GOC tools will work with the Nokia platform, therefore GOC staff will also need to familiarise themselves with new tools and the GAP toolset.
- Parallel router deployment strategy - GOC staff will need to support the GEANT network with devices in one of four possible router states (current Juniper “PE”, new Nokia “P”, transitioning “P” to “PE” and new Nokia “PE”).
- The GOC comprises of the Tier-1 service desk (SD) and the Tier-2 in-house network management (NM) staff. All procedures for both tiers will need to be updated / issued from new.

Deployment Strategic Options – How they affect the GOC

- Early in the development of the Nokia deployment strategy, a crucial decision needed to be made regarding how to migrate the customer services from Juniper to Nokia. Two main pathways were considered
  - Translate current configuration directly from Juniper to Nokia
    - Less risk of missing “corner-case” configurations
    - Risk of migrating historical configuration stanzas that are no longer relevant or required
  - Deploy customer services from scratch by carefully defining what each customer currently has and building a set of service definitions
    - Increased risk of missing a “corner-case” configuration that was in operation but not well understood
    - No old configuration brought over. Everything deployed onto the new devices is done so from a well-known service definition
- Given the decision to use the automation (GAP) platform to deploy all Nokia configuration, it made sense to use the latter approach
- For the GOC however, this poses two potential issues:
  - There will be no direct before-after comparison possible. The GOC staff will need to familiarise themselves with the new service definition derived configuration
  - There may be an increased number of customer issues to deal with during each router migration

Thank You

Any questions?

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As part of the GÉANT 2020 Framework Partnership Agreement (FPA), the project receives funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 856726 (GN4-3).