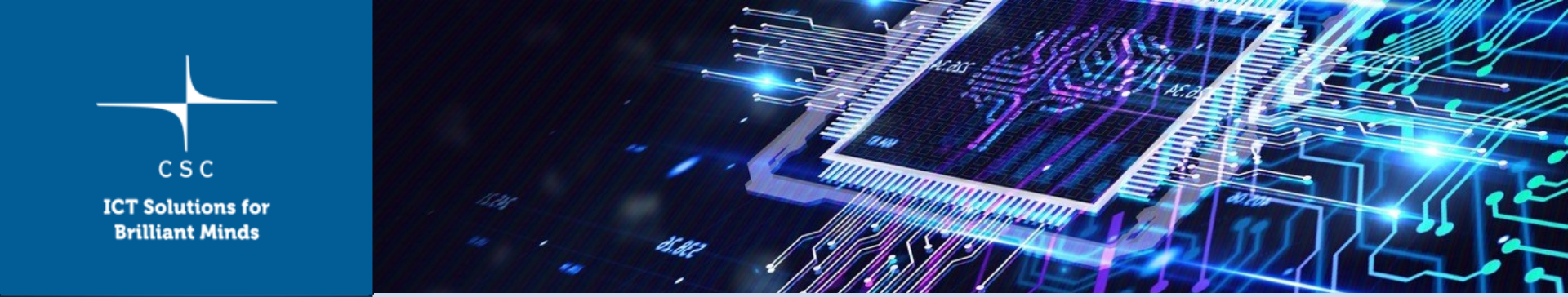
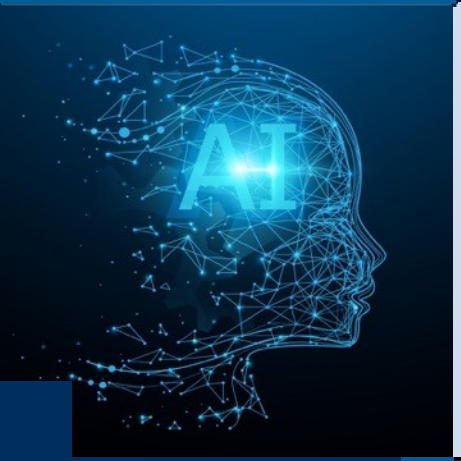
CSC

ICT Solutions for Brilliant Minds





Funet experiences with Kampus service

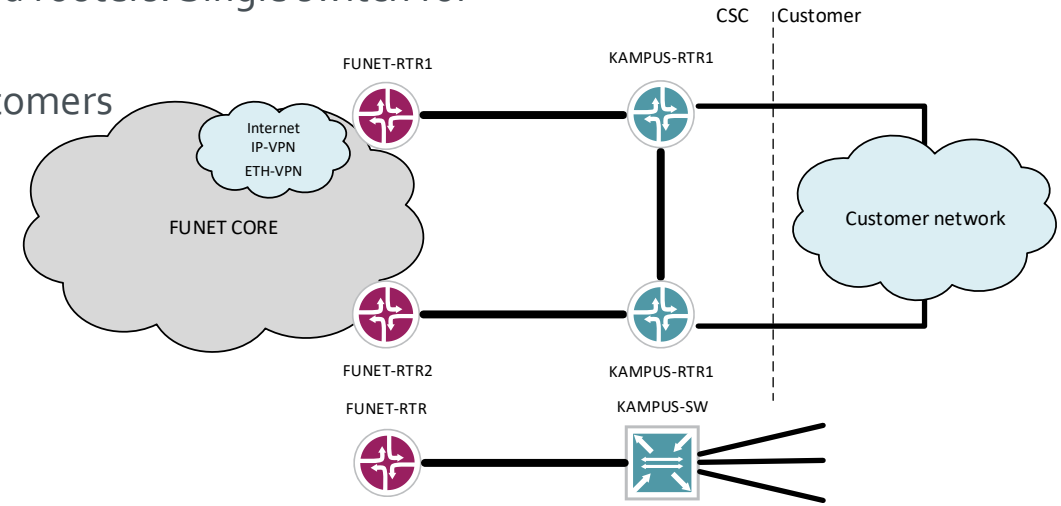
Asko Hakala 04.05.2022

Background

- Replaces old Funet Router Service
  - CPE routers for Funet network connections
  - Launched in 2012
  - 9 customers with 21 routers (Juniper old MX models)
- Funet Kampus Service
  - Launched in 2019
  - 14 customers with 25 Juniper MX routers, 16 Juniper QFX switches and 37 Huawei S series switches
  - 3 person virtual team
  - Ansible automation with Jinja2 templates for Juniper devices

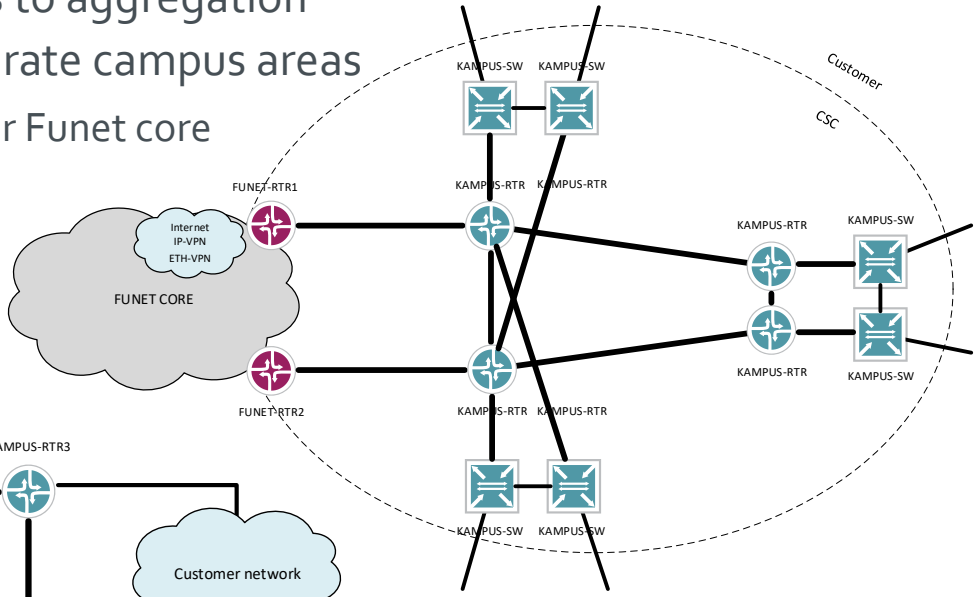
Use case: CPE

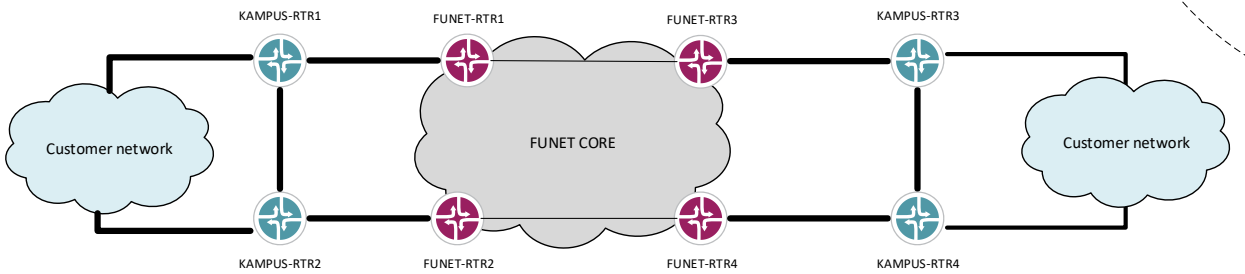
- Unified and standardized connection to all Funet services
  - Uplinks up to 100 G
  - Internet, L3VPNs and L2VPNs using the same connections
  - Normally redundant connections and routers. Single switch for some smaller customers
  - Most common use case with 16 customers



Use case: campus core/interconnection

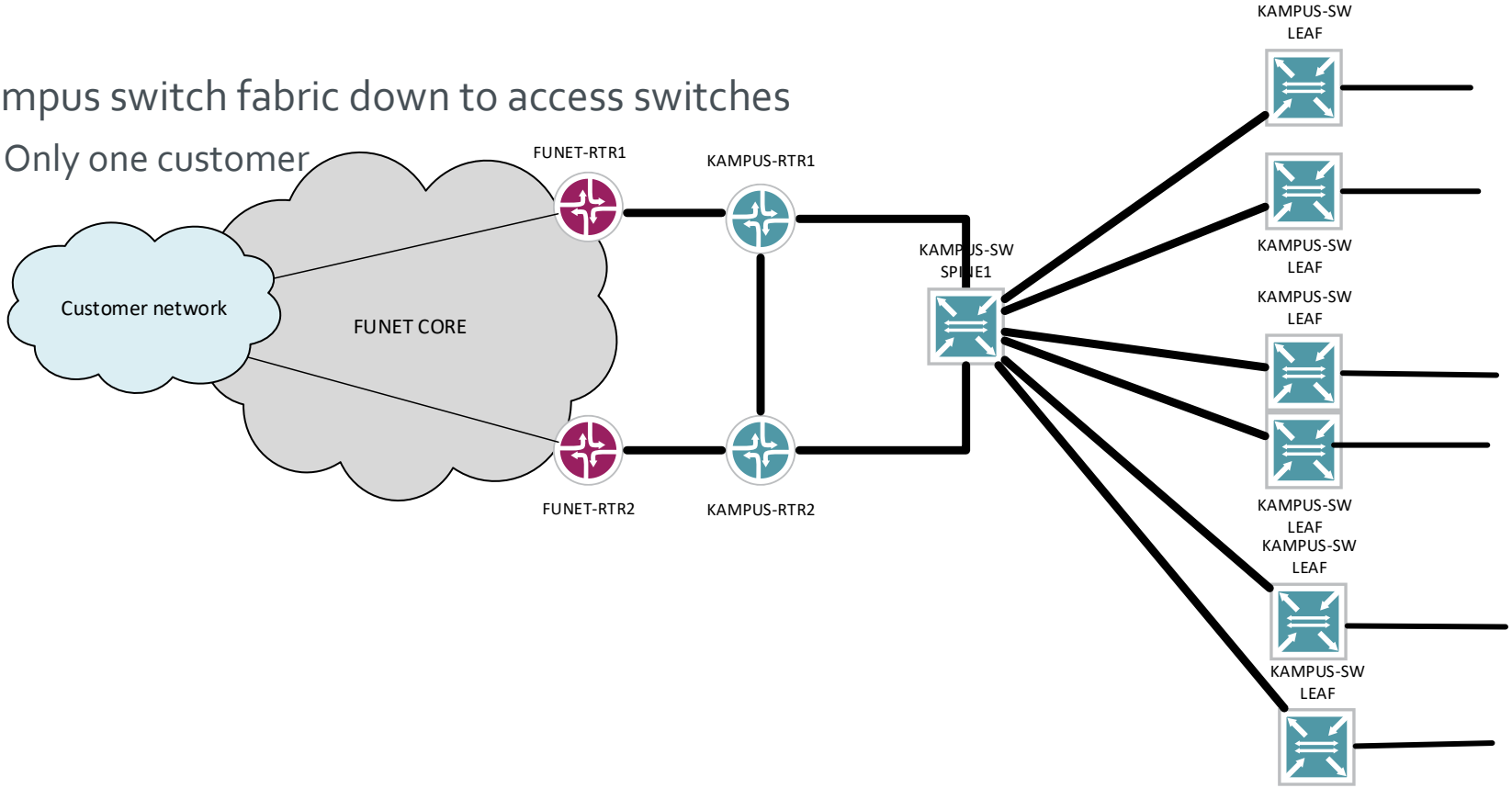
- Customers' own core from edge routers to aggregation switches or connecting customers' separate campus areas
  - Uses dedicated links or L2 or L3 VPNs over Funet core
  - 6 customers





Use case: switch fabric

- Campus switch fabric down to access switches
  - Only one customer



Experience

- Not a full campus service – just routers and switches
  - no APs, DHCP, Tacacs, firewalls …
- Biggest demand for CPE and campus interconnection type setups
  - Both L3 and L2 connections are needed between campus sites and e.g. to CSC services in our data centers
- Every customer case is different
  - Even with automation tools very much expertise and work are needed
  - A lot of co-ordination with customers and their 3rd parties

Equipment in use and its shortcomings

- SP level routers
  - + Rich feature set
  - - Pricey -> Sub-optimal network design
  - - Small port density –> Requires a separate aggregation layer
- Low level switches
  - + Cheap
  - - Model specific feature sets -> Can’t grow with customers’ needs
  - - Hard to automate – no full commit configuration change

Looking for a new equipment

- ”Cheapish” 1U switches with routing capabilities
  - Two roles: IP/MPLS router and L2 switch
    - L2 switch can be combined into IP/MPLS router
  - IP fabric and L2 overlay between the sites
  - L3 with MPLS VPNs (not needed for L2 switches)
  - L2 with EVPN
  - LACP towards customers’ access switches
  - Automation support
    - Devices with different port setups and roles support same APIs
    - Full commit configuration change with confirmed option

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