ACCESS 4.0
designed for change

Challenges in the evolving Telco landscape

Fabian Schneider, Head of Development, Engineering and Operations of Access 4.0

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LIFE IS FOR SHARING.

Who’s the guy talking to you?

“Yes, I owned a C64, played computer games on i386 with co-processor, studied computer science, administered SUN workstations, and even compiled a gentoo Linux once.”

⇨ Boring kid born in the late 70s, heh?

“I spend most of my professional life in computer networking research.”

⇨ 4 years Ph.D. Student @ TU Berlin
⇨ 2 years PostDoc @ UPMC Paris
⇨ 6 years Senior Researcher @ NEC Heidelberg

“Dipped into standardization pushing for broader SDN adoption.”

⇨ e.g. IETF, ONF, BBF, MEF, … even ITU-T

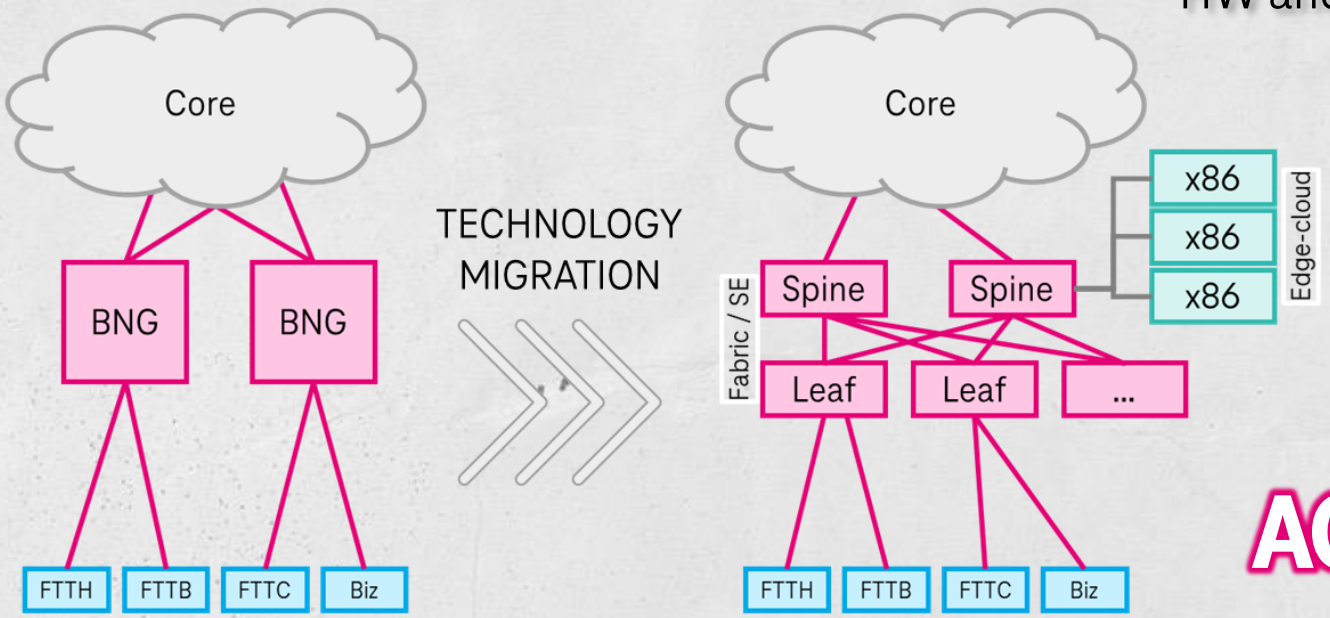
“But I finally realized that I need to get my hands dirty and make my passion happen in real-world deployments for everyone to use.”

⇨ Joined Deutsche Telekom, led a SDN software dev team, now Head of Engineering and Operations of **Access 4.0**

Fabian Schneider

Access 4.0 in a nutshell

"With A4, Deutsche Telekom introduces a disaggregated, automated platform for access, aggregation and service edge as the next generation German fixed network. It comes with a software-defined network, detaches SW from HW and separates the control-plane from the user-plane."



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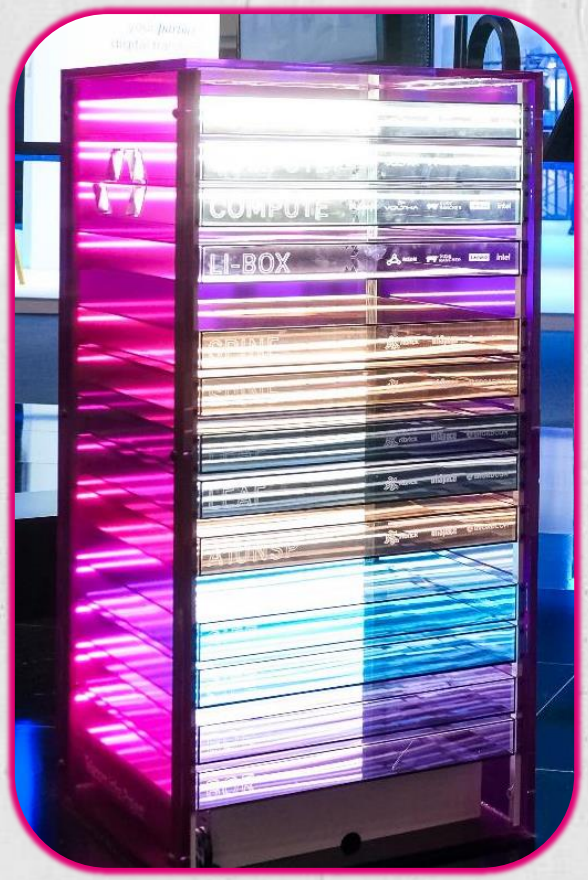
From monolithic systems ... (today)

... to modular, flexible, best-in-class open ecosystems. (tomorrow)



What I want to talk about today

#1

Future ASICs force Telco product change

ASICs are the CPUs of Switches and Routers. The chip makers focus on data centers will cause a rethinking of Telco product portfolio.

#2

It takes more than just Technology …

Coming from a techno-logy focused research career, bringing innova-tion into production requires more than just software and network engineering.

#3

Skills Telcos need today & tomorrow

The software-defined Telco push of course requires more SW-Engineers, but we absolutely also need network expertise.

Visit our booth!

Access 4.0

Tech Talk

Working@Telekom

Job Opportunities

#1 Subscriber termination vs. data center switching

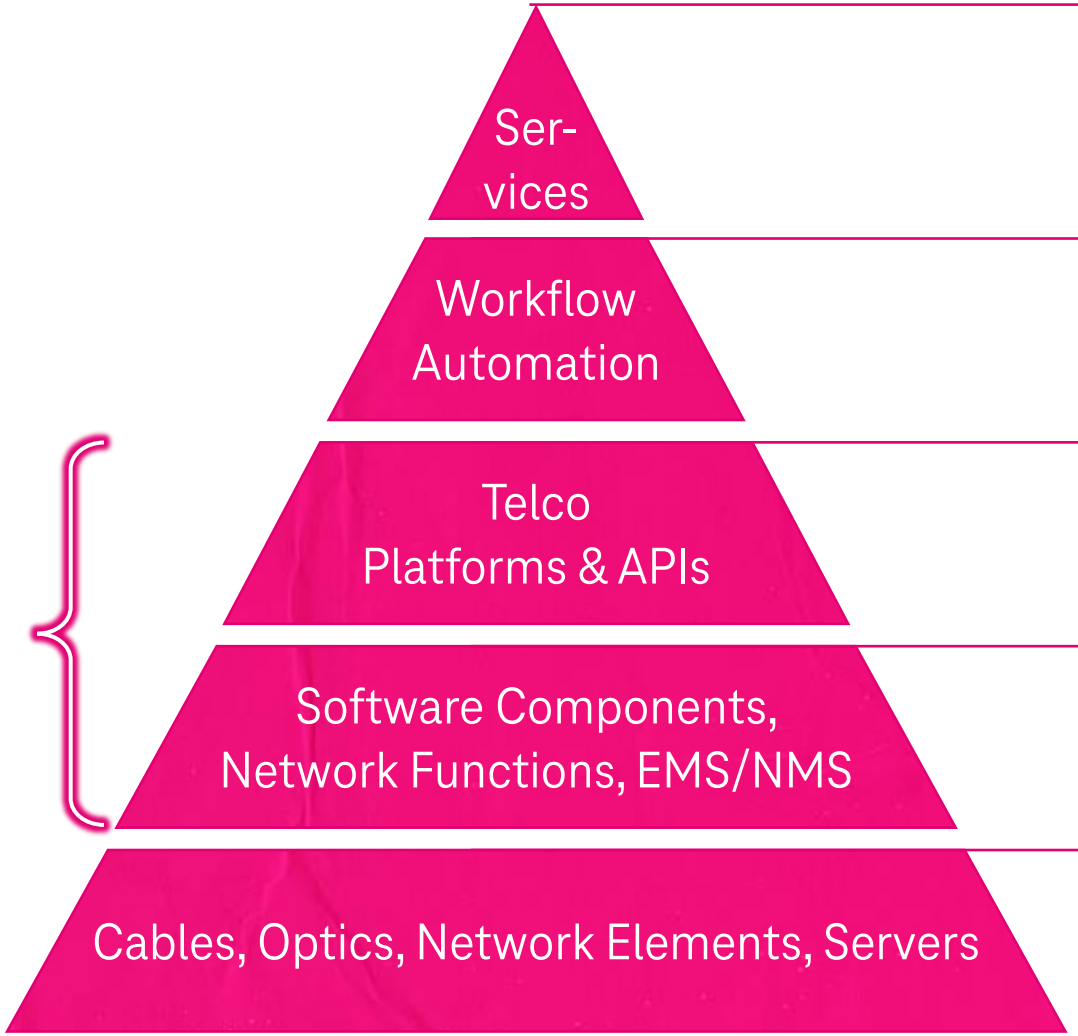
BRAS/BNG	Match?	DC Switch
>10k subscribers (incl. ACLs, priority assignment)	☐ ☐ ☐	>100 tenants
4-8 queues/services per subscriber	■ ■ ☐	2-4 queues per tenant
4+ counters per queue/service	☐ ☐ ☐	Why counters? Maybe volume per tenant
Shaping/Policing down to 256kbps	☐ ☐ ☐	Slow down? I want all the speed I can get!
Bandwidth range from 256kbps to 10Gbps	☐ ☐ ☐	10G to 100G
Hierarchical QoS with 4-5 levels	☐ ☐ ☐	It's all best effort anyway
Full priority propagation through all QoS levels	☐ ☐ ☐	Ok, maybe one priority class

#1 Future ASICs force Telco product change

BRAS/BNG	Match?	DC Switch
>10k subscri	High numbers still needed, e.g. 25 million in Germany ➔ Reduce needed flows, e.g. ACLs/subscriber	tenants
4-8 queues/s	Less differentiation, Hyperscalers succeed with BE only ➔ Reduce queues per subscriber, e.g. L4S	r tenant
4+ counters p	Embrace flat-rate in fixed access networks ➔ Stop per service/queue accounting	r tenant
Shaping/Policing down to 256kbps	Kbps shaping needed mainly for DSL ➔ Build fibre & switch subscribers to FTTH/B	Slow down? I want all the speed I can get!
Bandwidth range from 256kbps to 10Gbps		10G to 100G
Hierarchical QoS with 4-5 levels	Required primarily to avoid network overload ➔ Determine easier ways to ensure customer SLAs	It's all best effort anyway
Full priority propagation through all QoS levels		Ok, maybe one priority class

#2 It takes more than just Technology …

Focus of research and innovation, easy to change in software. What you learn in university.



Consumer & Business Products

Customer Relationship Management
Product design & retirement

Business & Production Processes

Operations/Business Support Systems

Business logic, Telco differentiators

Orchestration, platform management

Configuration, Bring-in-service

CI/CD, Connectivity, Lifecycle, ZTP

Things you can touch

Inventory, Field Force Management

#3 Software becomes crucial for Telcos success,

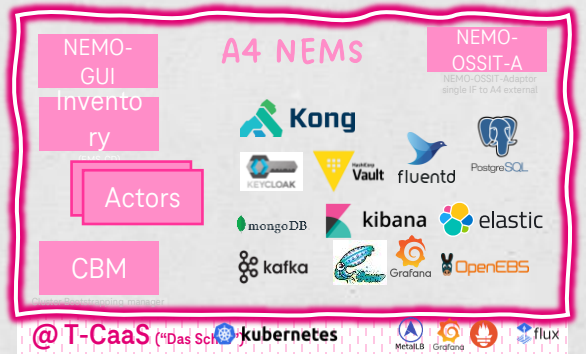
in company strategy ...

Software-defined

Modular services, data & open APIs

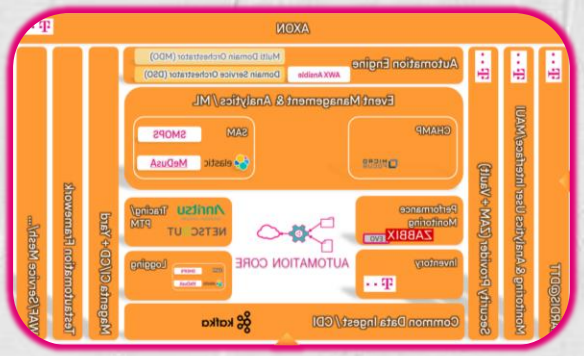
... and engineering ...

Access 4.0 Control & Management Plane

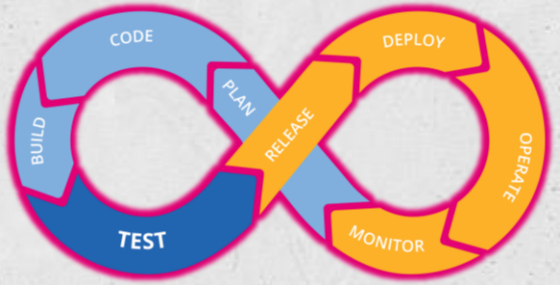


... as well as operations.

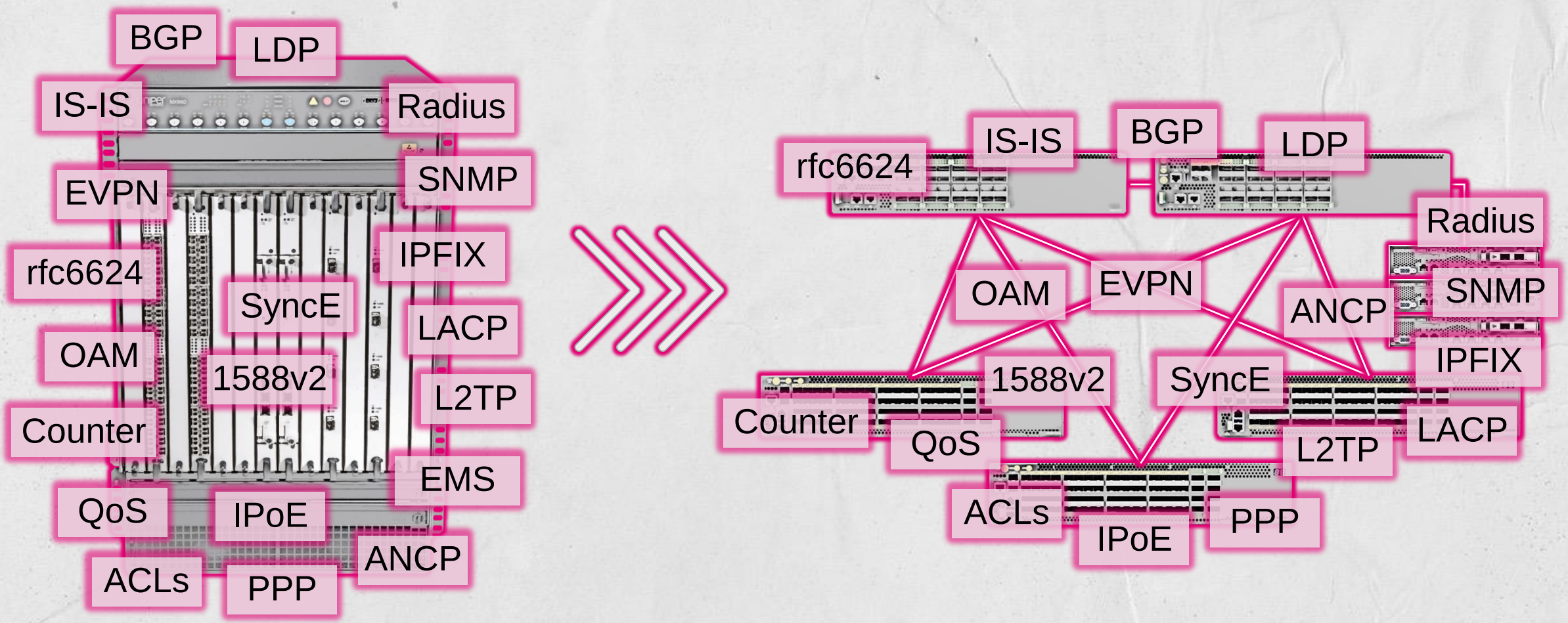
Automation Core



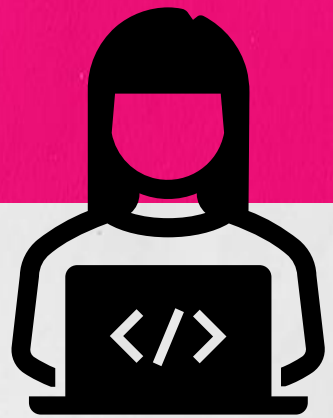
CI/CD



#3 Disaggregation means network expertise insourcing

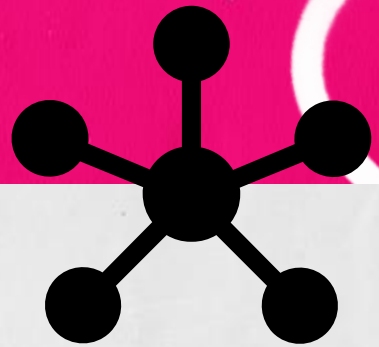


#3 Skills Telcos need today & tomorrow



Software Engineers, BUT:

- Willingness to embrace and understand domain specific problems is mandatory
- Job is not complete after writing code: Unit tests, Documentation, …



Network Engineers, BUT:

- Don’t forget cables! 😉
  Air is not the only medium
- Disaggregation requires more understanding of packet processing pipelines
- Need more graduates!

Integration & Validation

- Telcos cannot develop everything on their own
- 100s of systems need to interwork for service delivery
- Test setup & planning, error pinpointing, root causes

THANK YOU

JOIN OUR TEAM
TO REVOLUTIONIZE
THE TELCO INDUSTRY !

Openings for:
NETWORK ENGINEERS
SDN SW DEVELOPERS
TESTING EXPERTS