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Europe 2020

Virtual

Enabling E2E Observability via Open Source in 5G Telco CNFs

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The journey



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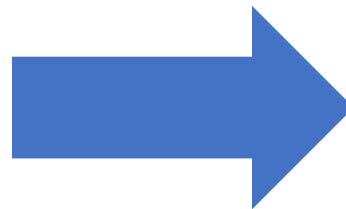
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Extensive experience
building platforms
(HW acceleration, ASICs, custom OS,
kernel modules, etc.)

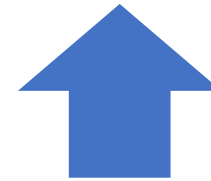


Application
Development
Framework
(PaaS)

(CNCF projects, upstream first,
fully modular, runs on K8s)



(Open Network Application Platform)
to make apps fit into
the target environment

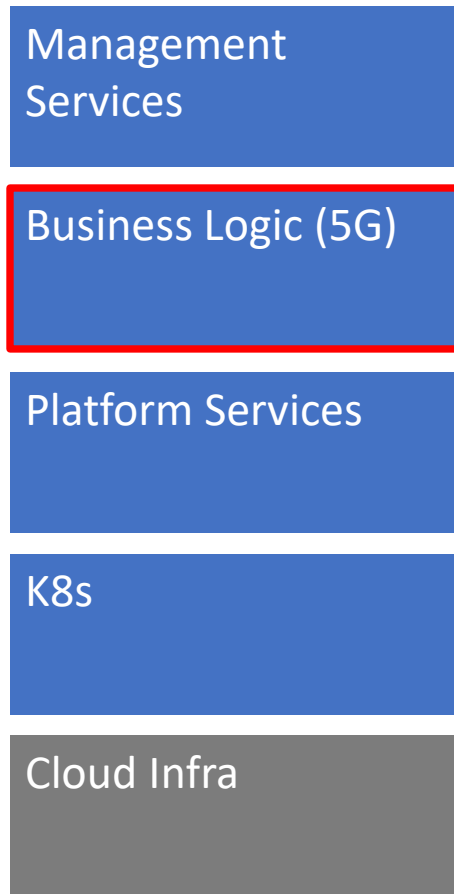


Applications
and CNFs for
demanding use cases
(5G Core, vRAN, OSS, BSS, 6G testbed)

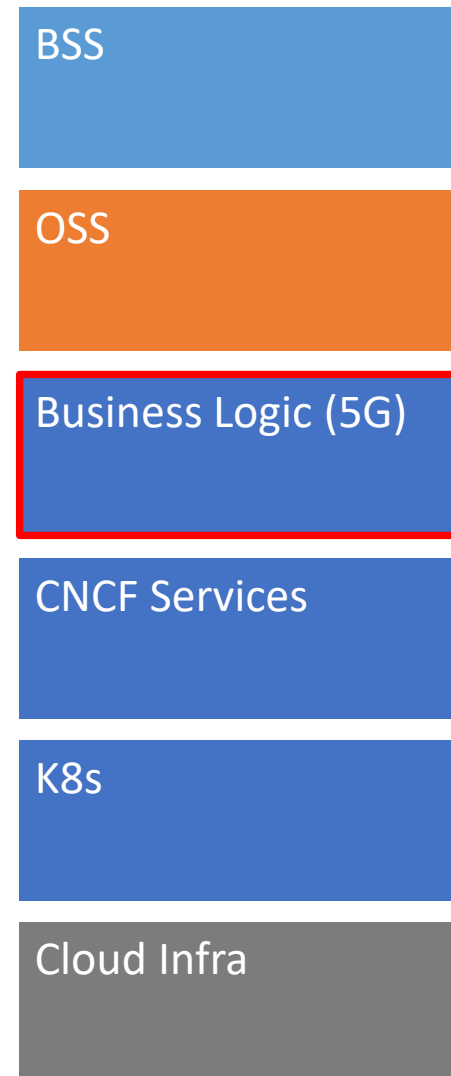
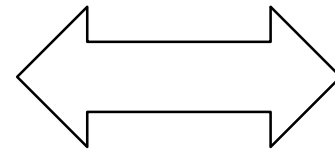
Use case examples:

- User Plane for Mobile Broadband
- Management of a complete radio network (thousands of elements)
- Radio equipment
- Private networks
- Edge applications

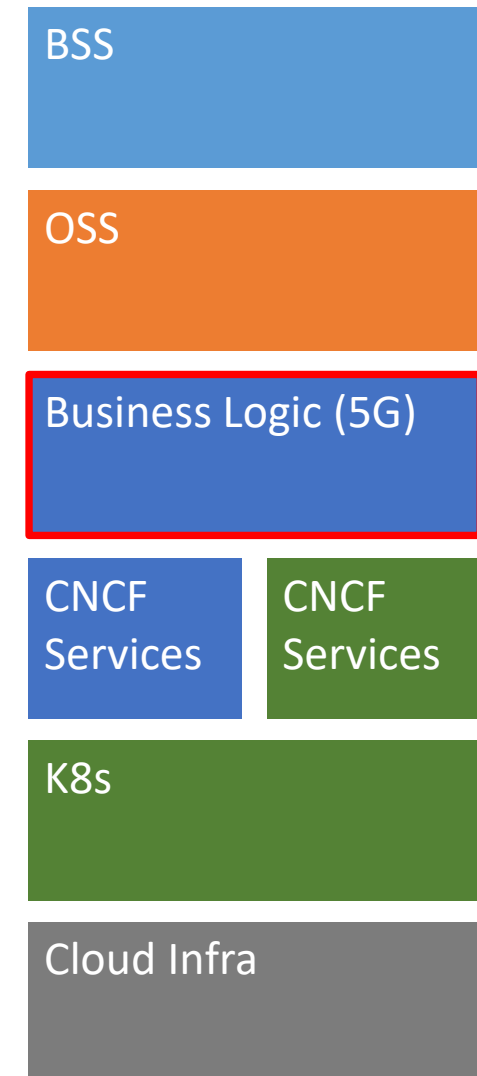
One operator, many vendors



Typical cloud native stack

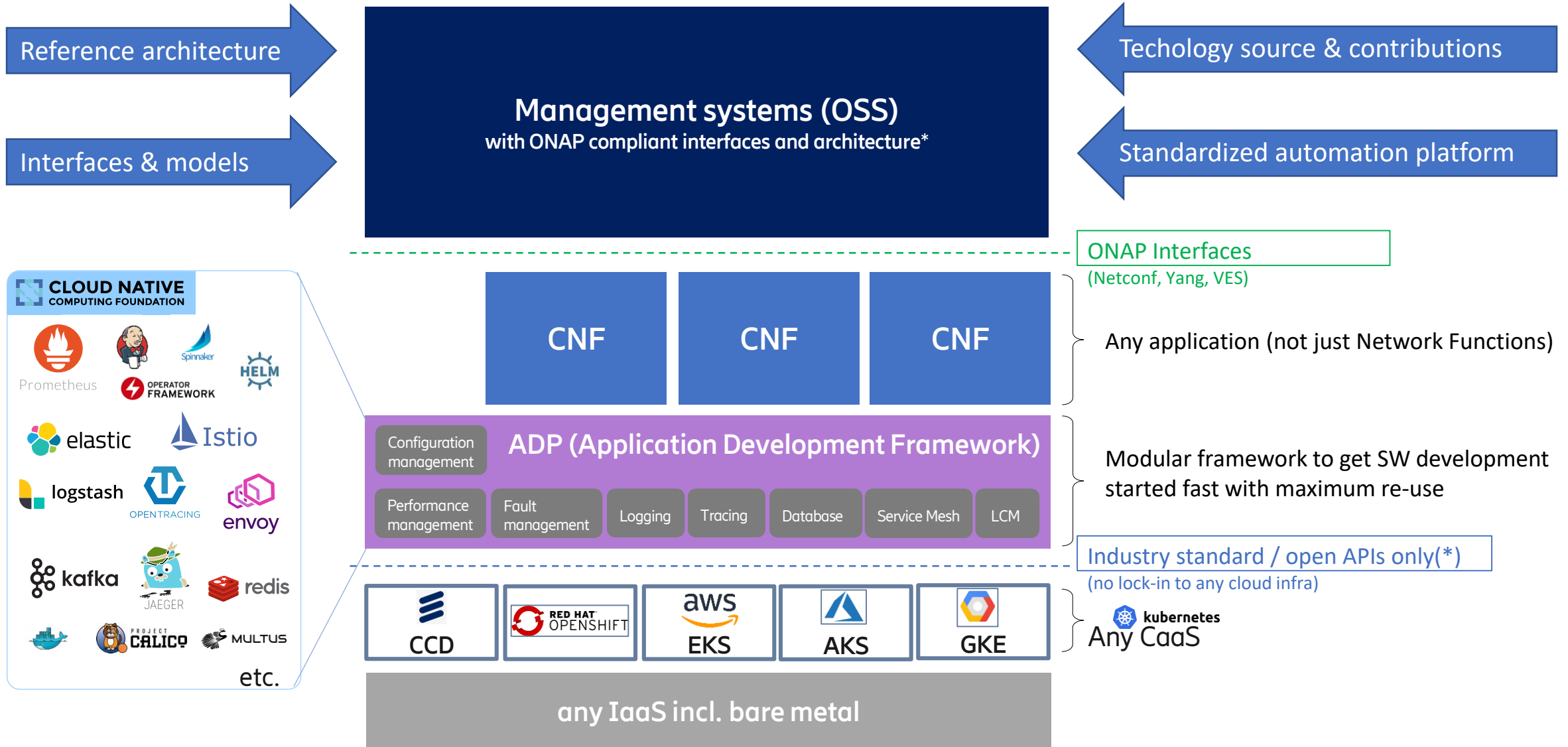


Telecom stack:
Typical case scenario



Telecom stack:
Worst case scenario

Portability via open source



*note: ONAP also aims at managing CNFs, transport and cloud infrastructure at the same time

Complexity and abstraction



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Telecom vendors develop Network Functions (NF) and telecom operators operate NFs

- One NF can be up to 100 microservice types
- One network is many NFs



Standard exists since before



Expectations on how CNFs can be managed

- Configuration (NETCONF/YANG)
- How data is exposed towards the management system

Complex and costly to configure and manage each individual microservice

- Too much internal architecture details
- Focus is on how to manage and configure the different NFs provided
- An aggregated view from the NF point of view helps

Observability capabilities from cloud native adds value

- Transformation will not happen over night
- Standard and cloud native de facto will coexist for a long time

Performance Management

Same core, different exposure



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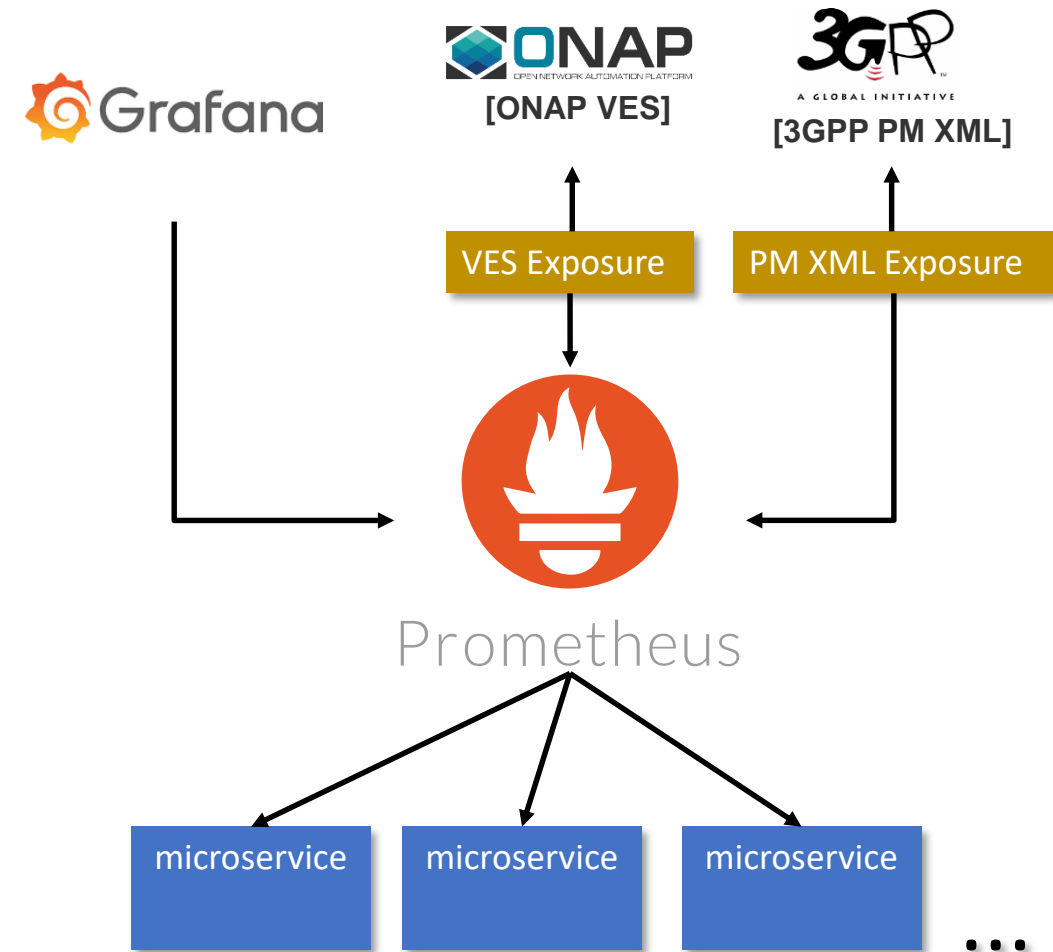


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- Prometheus
 - Core infrastructure to provide performance management
- Extending by consuming Prometheus provided API
 - Implementing needed external exposed formats in independent services
 - ONAP VES / Streaming
 - 3GPP ROP
- Allow direct exposure of Prometheus
- Enable different scope of metric consumption



Configuration Management



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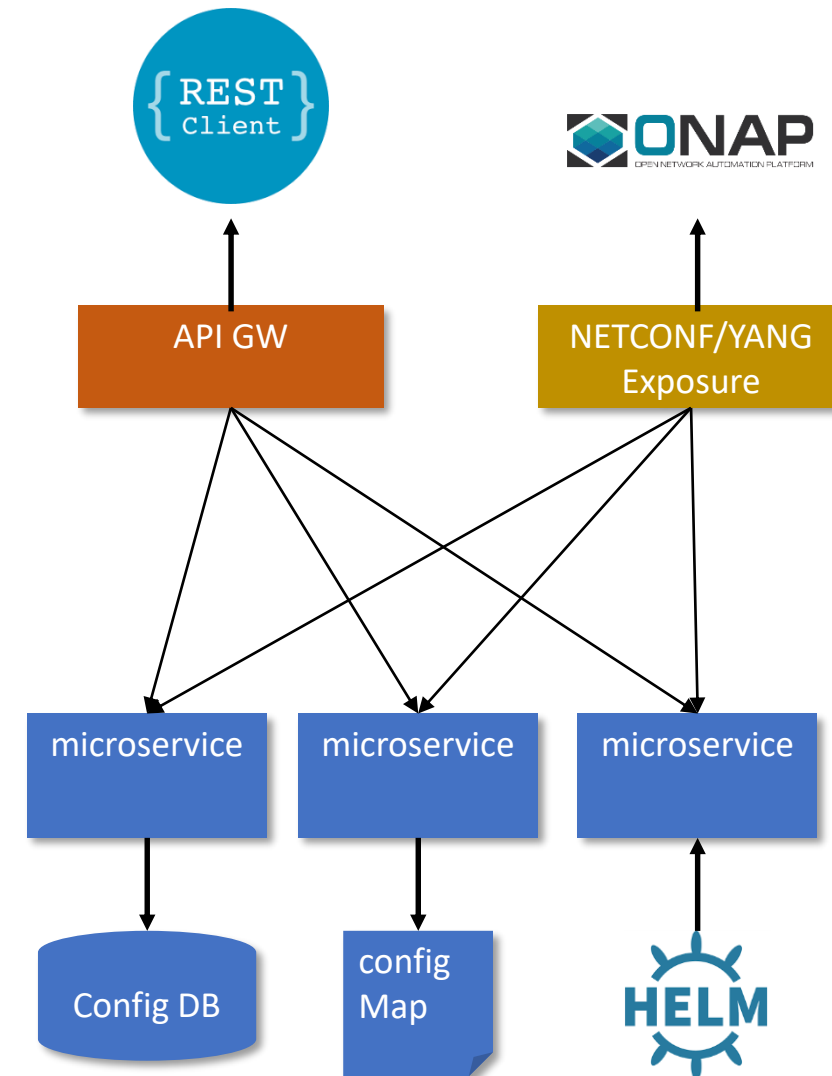


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- Clear separation between internal and external configuration model
 - Internal driven from microservice point of view
 - External in many cases driven from standards, like IETF YANG
- De-centralized approach to allow internal configuration to be as simple as possible
 - Following microservices architecture pattern
 - Focus on the service owner of the configuration
- System (aggregated) configuration point
 - Brings different services together
 - Focus on the different Network functions provided
 - YANG model with NF centric resource model
 - Configuration of one NF typically would require configuring a number of microservices
 - Distributing configuration (even same configuration) to individual microservices





- There is tremendous value in the CNCF ecosystem for telecom
- We have built a modular PaaS to bring that value to 5G (and more)
- Management complexity is extreme
 - ONAP drives simplicity and alignment
- Open source helps “standardizing” interfaces for modularity
 - Allows supporting existing and new needs with different independent exposure services



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