



Network Evolution to Intelligence

China Telecommunications

2016.12.16

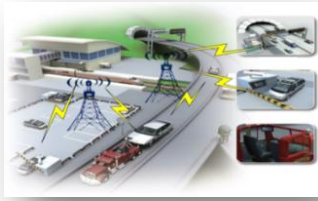
Requirements for Future Network

Diverse requirements from subdivision service scenarios

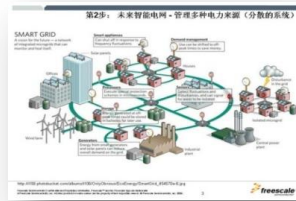
Broadband
Access



Ultra-low
Latency



Massive IOT



Ultra-dense
communication

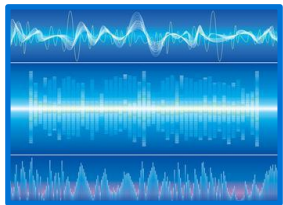


Ultra-high
speed



Requirements from network operation

Higher
efficiency



Lower cost
per bit



Better performance by lower
energy consumption

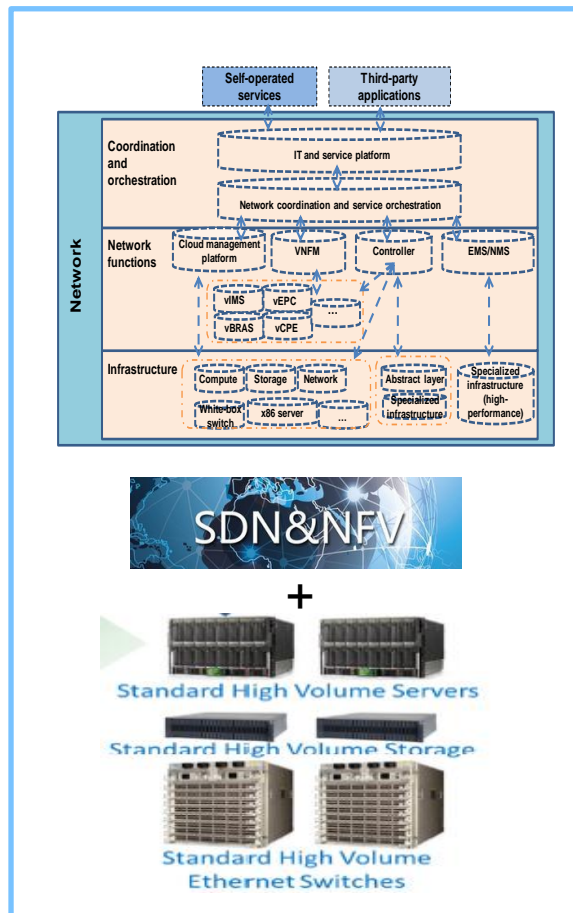
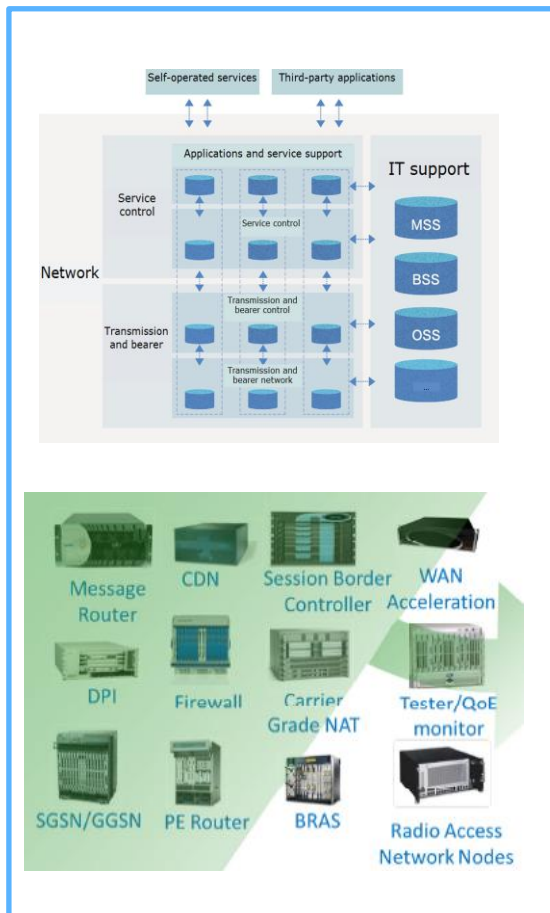


Multi-network
coordination



The future network is designed to be more agile and flexible, adaptable to scenarios.

Complexity of Future Network



By introducing technologies like SDN, NFV, network slicing, etc., the network becomes more flexible and powerful. But the complexity of the future network is not reduced, but transferred from hardware to software, from network itself to management and operation, from equipment to people.

How can we further reduce the complexity?



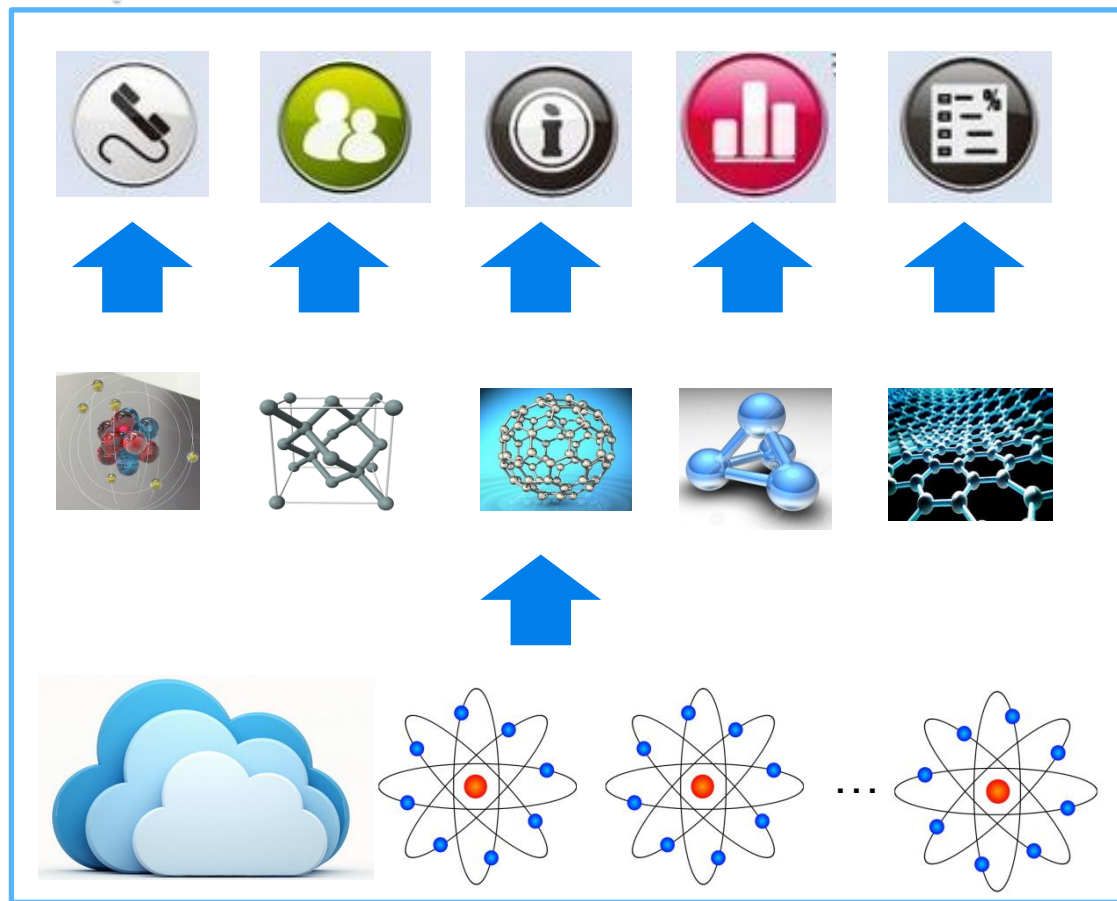
Intelligence

Intelligent Service Orchestration

Top down design and deployment of independent dedicated systems



Bottom up combination of service atoms on cloud infrastructure



Intelligent Network Resource Orchestration

Planning done by people

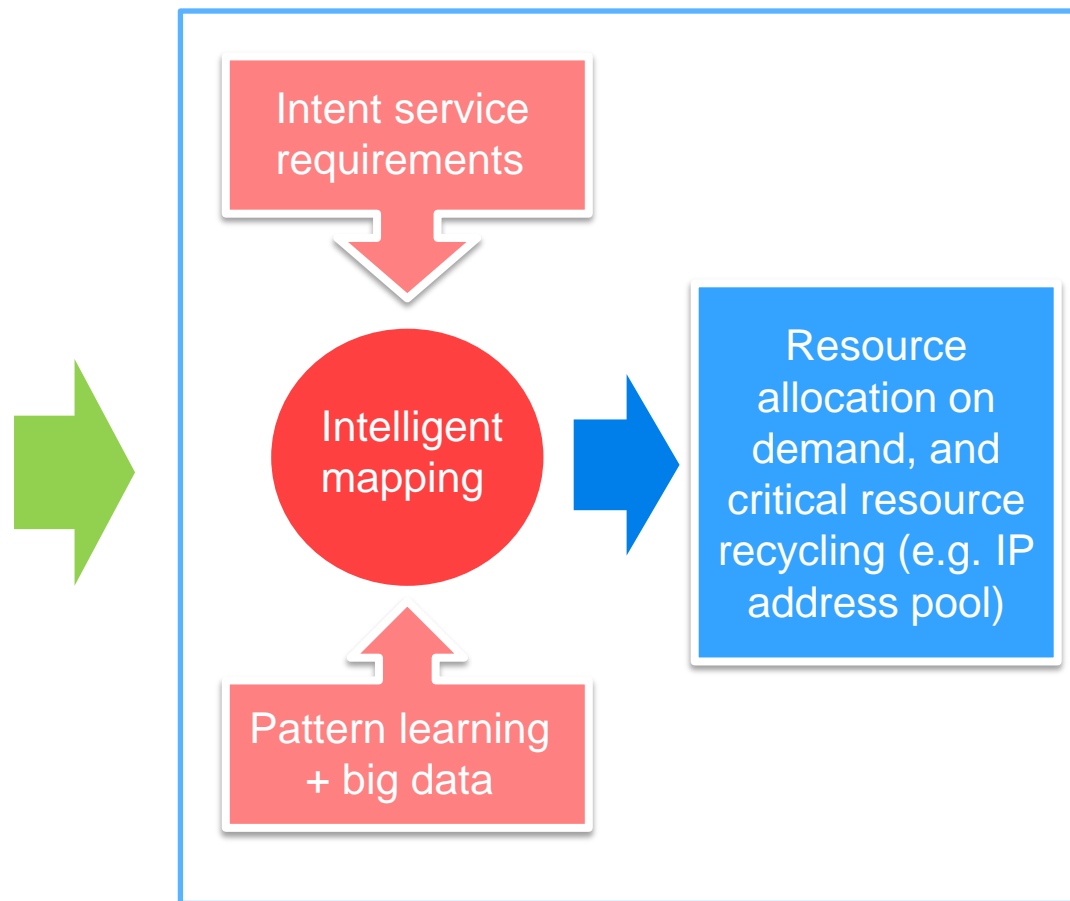
Pre-defined levels of deployment flavor options in the templates

Level	CPU	Memory	Storage
Small	2	1028MB	1GB
Medium	4	2048MB	2GB
Large	8	4096MB	4GB

Pre-defined automatic scale in/out policies in the templates

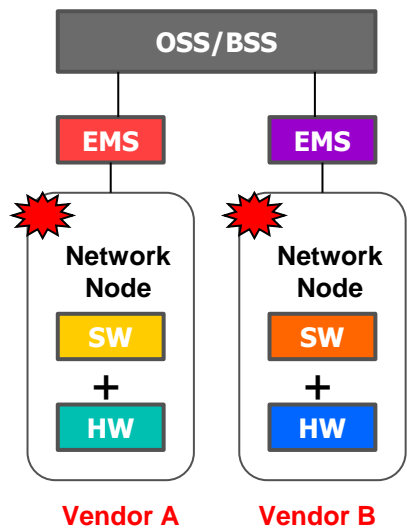
Policy	Trigger	Action
1	Time	Scale to level
2	CPU usage threshold	Scale to level
3	Memory usage threshold	Scale to level

Planning done by network



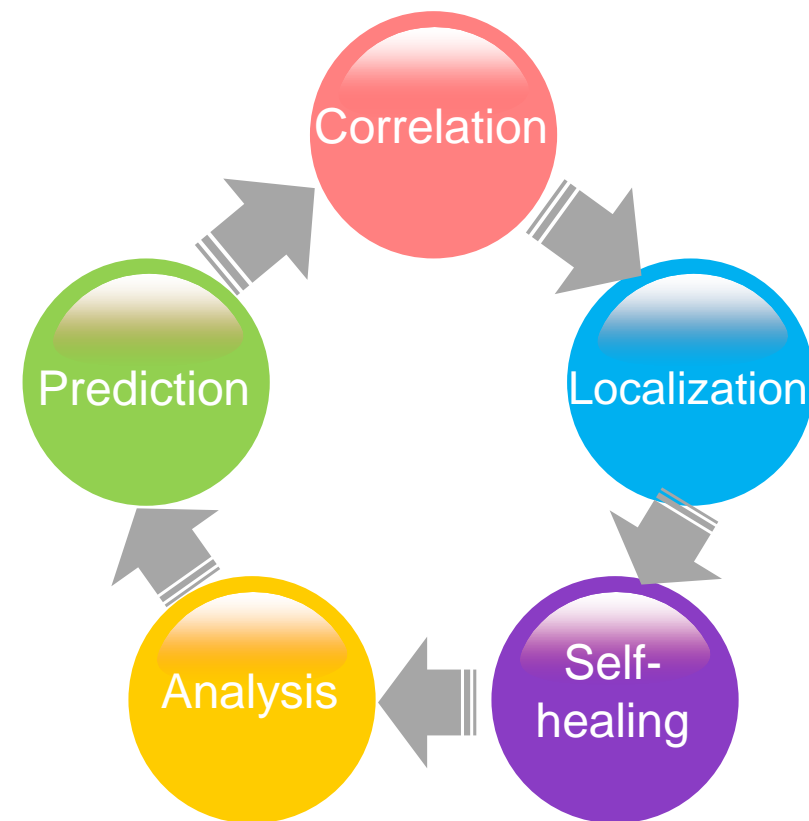
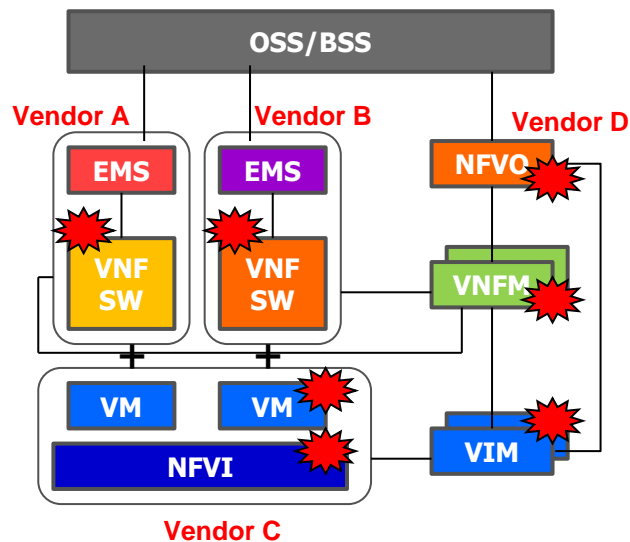
Intelligent Operation

Traditional Network



 : Potential fault point

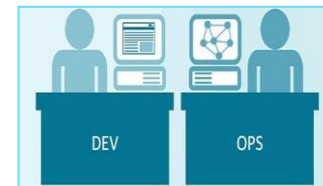
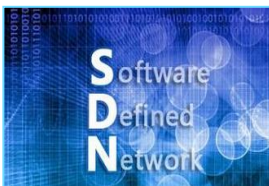
NFV Network



After evolving to NFV network, operators are facing more potential fault points from more layers and more vendors. Trouble shooting becomes extremely complex and takes much longer time.

CTNet2025 and Transition 3.0 to Intelligence

CTNet2025 Network Restructure Plan: Concise, Agile, Open, Intensive



Transition 1.0

- Telecom full service provider
- Internet application aggregator
- Enterprise ICT service leader

Transition 2.0

- Smart pipe leader
- Integrated platform provider
- Content application participant

Transition 3.0

- **Intelligent network**
- **Service ecology**
- **Intelligent operation**

Integrated Intelligent ISP

2004 Internet Era 2011 Mobile Internet Era 2016 Intelligent Service Era

Thank you!