PoC: Intelligent Telecom Network Energy Optimization

Liexiang Yue
CMCC
yueliexiang@chinamobile.com

General Information

- **ENI PoC project #10 :** Intelligent Telecom Network Energy Optimization
- **Time Plan:** Approved in Jan 2020, last for one year
- **Host/Team Leader:** 中国移动 China Mobile
- **Team members:** intel, QCT, ASTRI Hong Kong Applied Science and Technology Research Institute

PoC Goals

- This PoC aims to showcase the NFV, AIOps and power saving applied to the core network, with a particular consideration of the Artificial Intelligence / Machine Learning (AI/ML) aspects defined by ENI.
- The proposed PoC intends to test and validate AI-based approaches for network Self-Organization and energy optimization within ENI architecture.

PoC Project Goal #1: Policy-based Network Service Self-Organization. Demonstrate the use of AI on metric data to be able to orchestration and automation of physical or virtual network functions

PoC Project Goal #2: Policy-based Network Service Energy Optimization. Demonstrate the use of ML algorithms to evaluate the use of a policy-based structure for network service energy wise management decisions.

Milestone

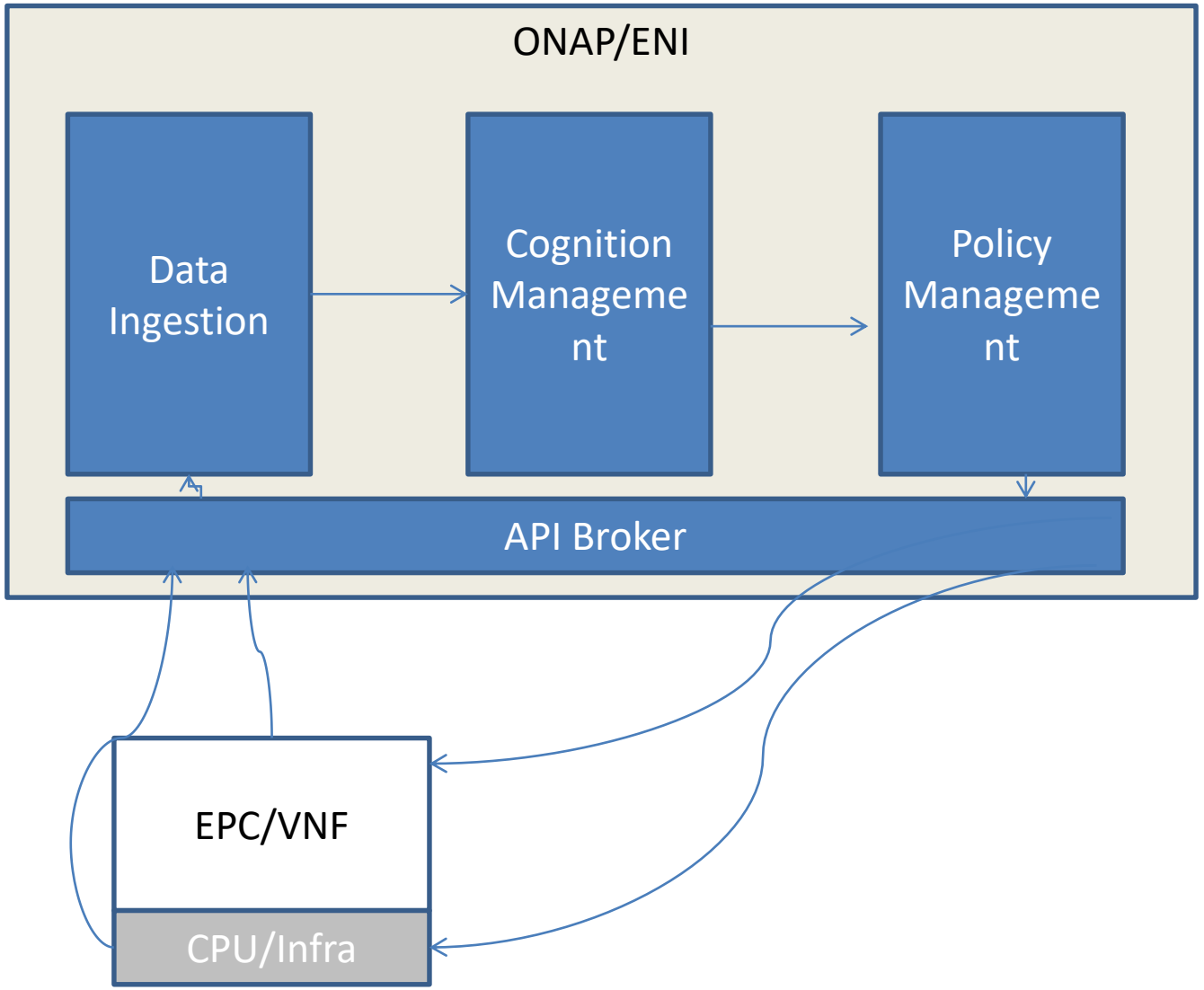
PoC Milestone	Stages/Milestone description	Target Date	Additional Info
P.S	PoC project submission	12/2019	Finsh
P.TP.1	PoC user story finalization	12/2019	Finish
P.TP.1	PoC Test Plan 1	02/2020	Finish
P.D1	PoC Demo 1	03/2020	ENI#13
P.D2	PoC Demo 2	04/2020->07/2020 (Postpone due to COVID-19)	LFN ONES
P.C1	PoC Expected Contribution 1	08/2020	
P.C2	PoC Expected Contribution 2	09/2020	
P.R	PoC Report	10/2020	
P.E	PoC Project End	12/2020	

PoC Overview

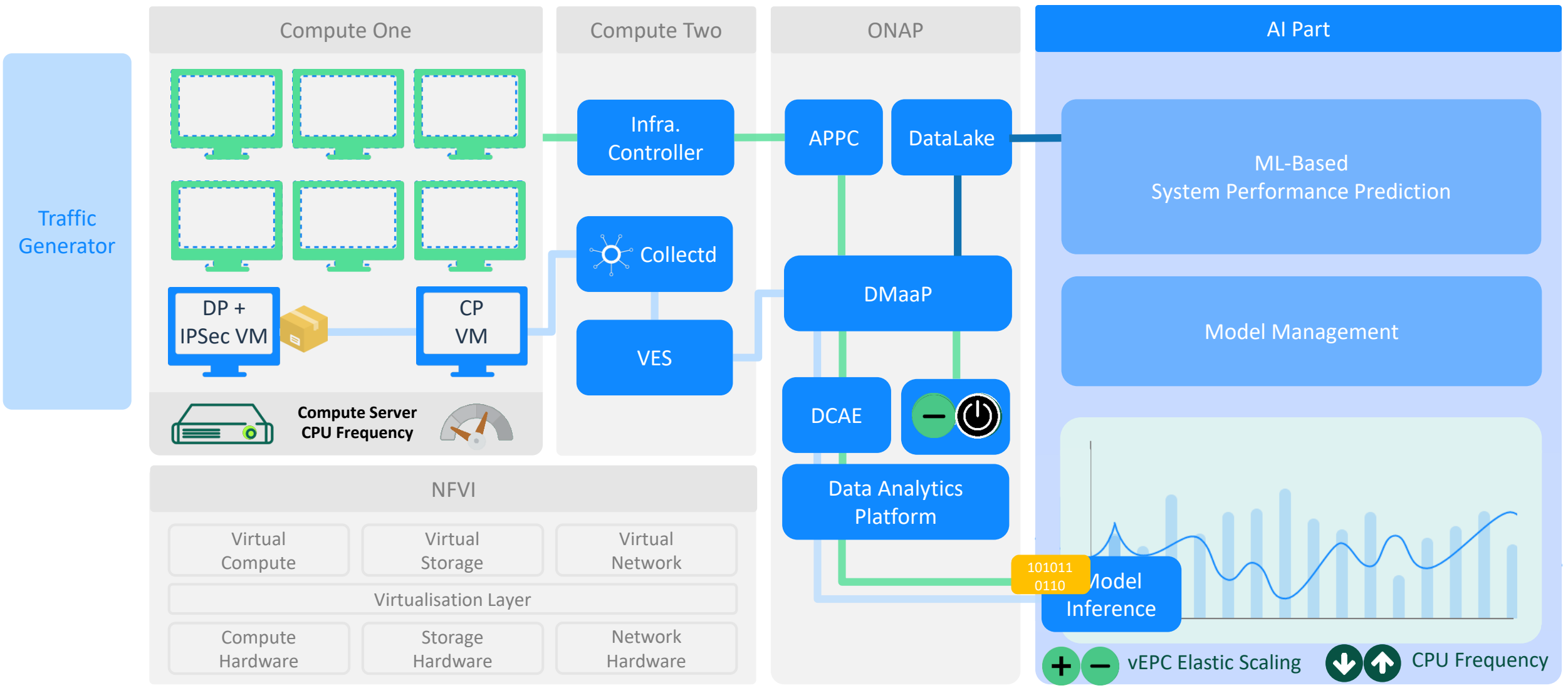
This PoC consists of two scenarios:

The first scenario demonstrates that the AI/ML-based approach enables VNF to be scaled horizontally and vertically , as well as PNF on and off ,etc.

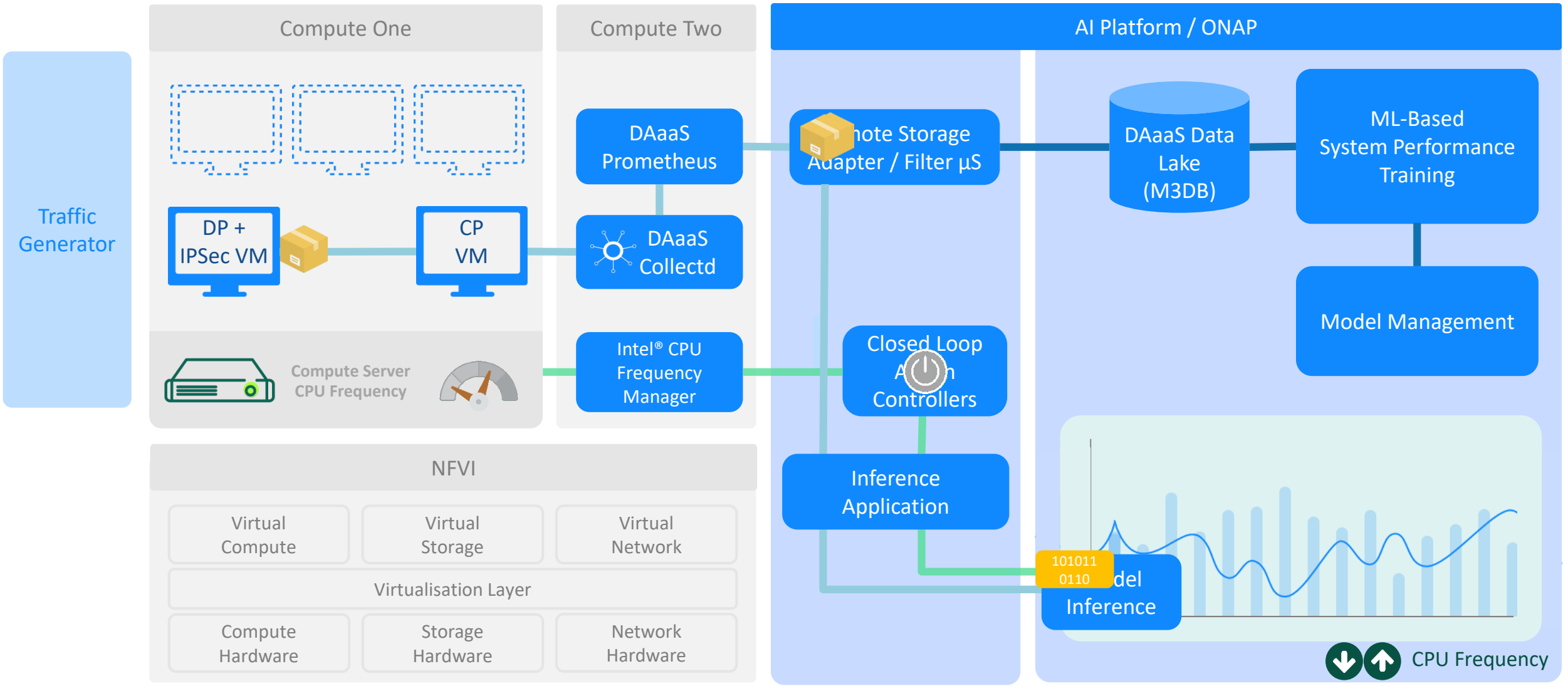
The second scenario shows that CPU frequency can be adjusted up and down to save CPU power, etc.



Scenario #1 –Policy-based Network Service Self-Organization



Scenario #2 – Policy-based Network Service Energy Optimization



Other information

Conclusion

It can be seen from the figures that the tendency of the data curves of the traffic and the data curves of the CPU frequency are basically the same, so we could assume that measure of CPU power can be equally replaced by the traffic throughput .

Other information

Performance Model

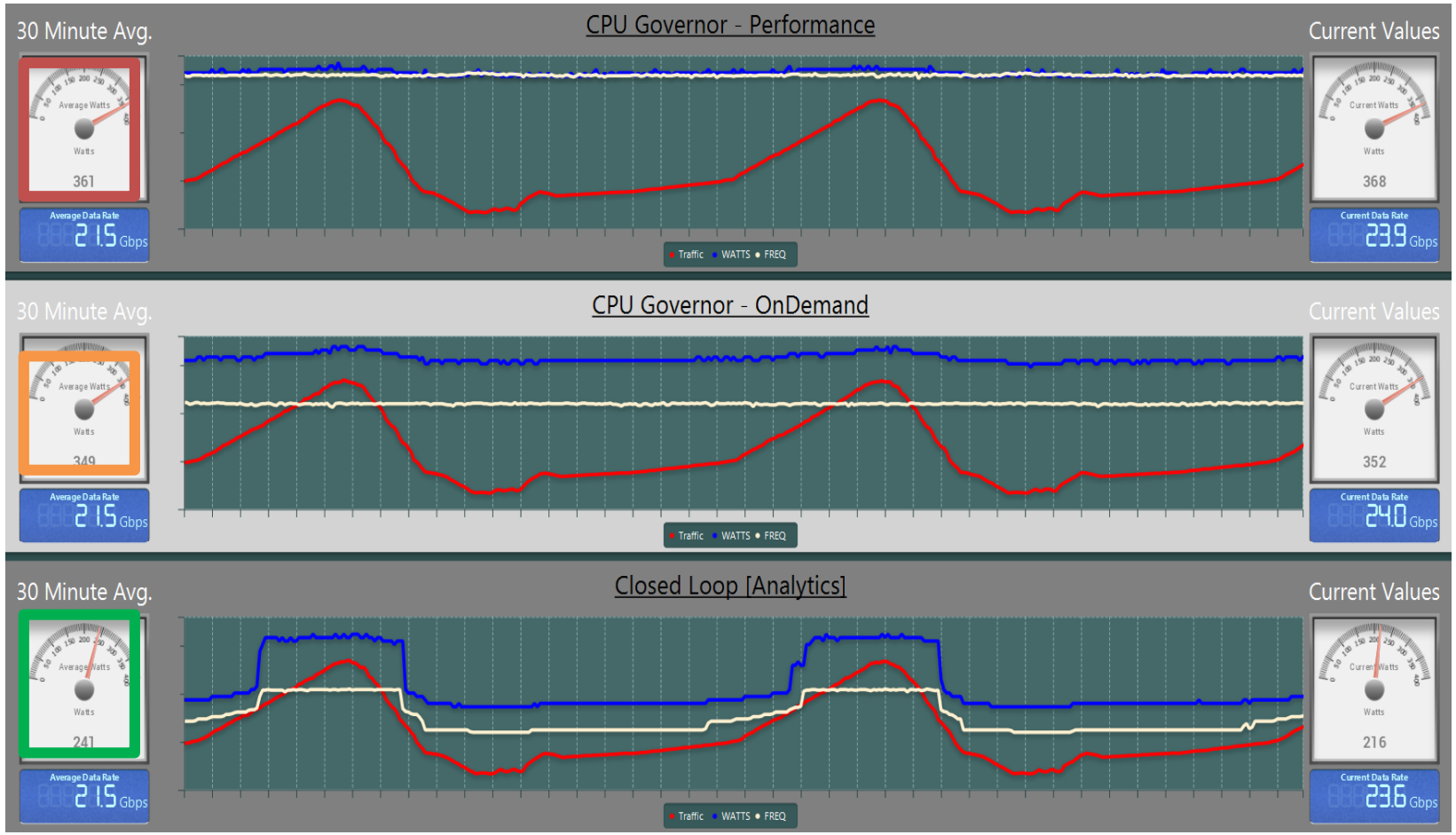
Average traffic throughput within 30 Mins : 215Gbps
Average power within 30 consumption :361Watts

On-Demand Model

Average traffic throughput within 30 Mins : 215Gbps
Average power within 30 consumption :349Watts
Better but not enough

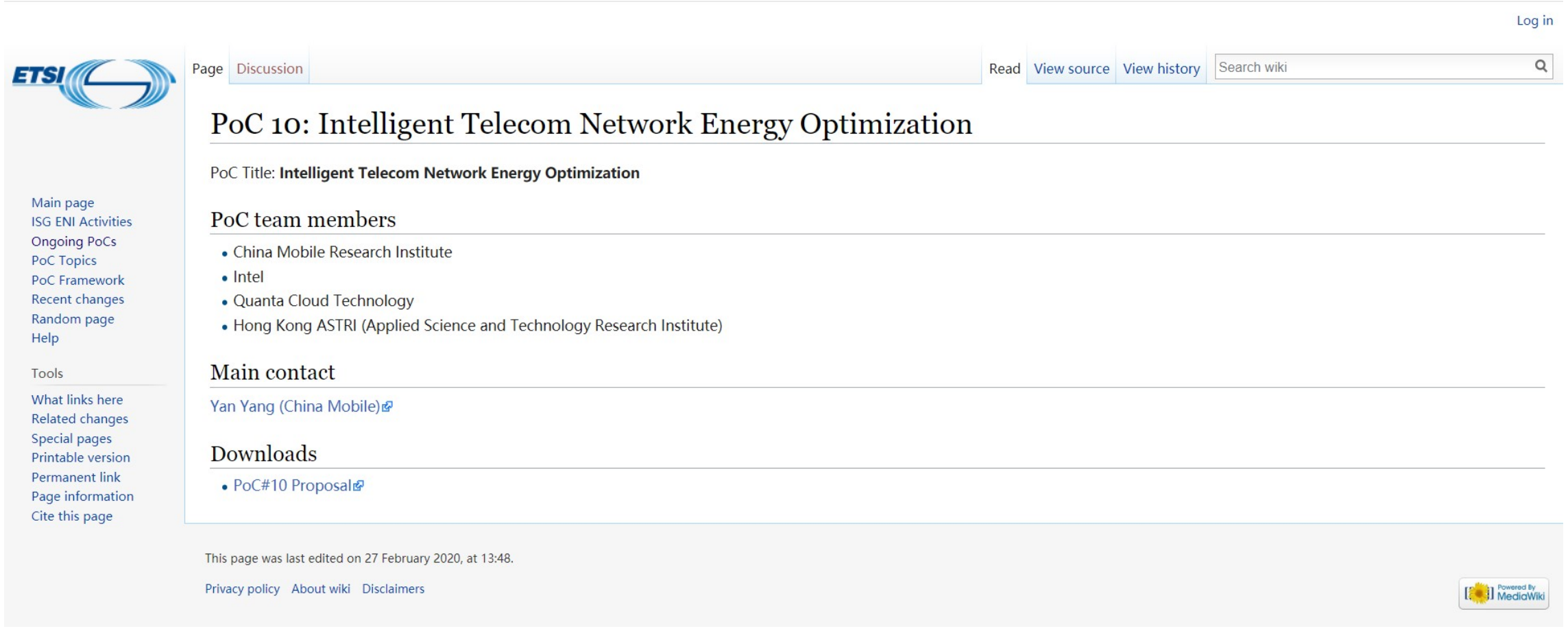
AI Close Loop Model

Average traffic throughput within 30 Mins : 215Gbps
Average power within 30 consumption :241Watts
Best choice



Other information

- PoC project wiki:



Log in

Page | Discussion | Read | View source | View history | Search wiki

PoC 10: Intelligent Telecom Network Energy Optimization

PoC Title: **Intelligent Telecom Network Energy Optimization**

PoC team members

- China Mobile Research Institute
- Intel
- Quanta Cloud Technology
- Hong Kong ASTRI (Applied Science and Technology Research Institute)

Main contact

Yan Yang (China Mobile)

Downloads

- PoC#10 Proposal

Main page
ISG ENI Activities
Ongoing PoCs
PoC Topics
PoC Framework
Recent changes
Random page
Help

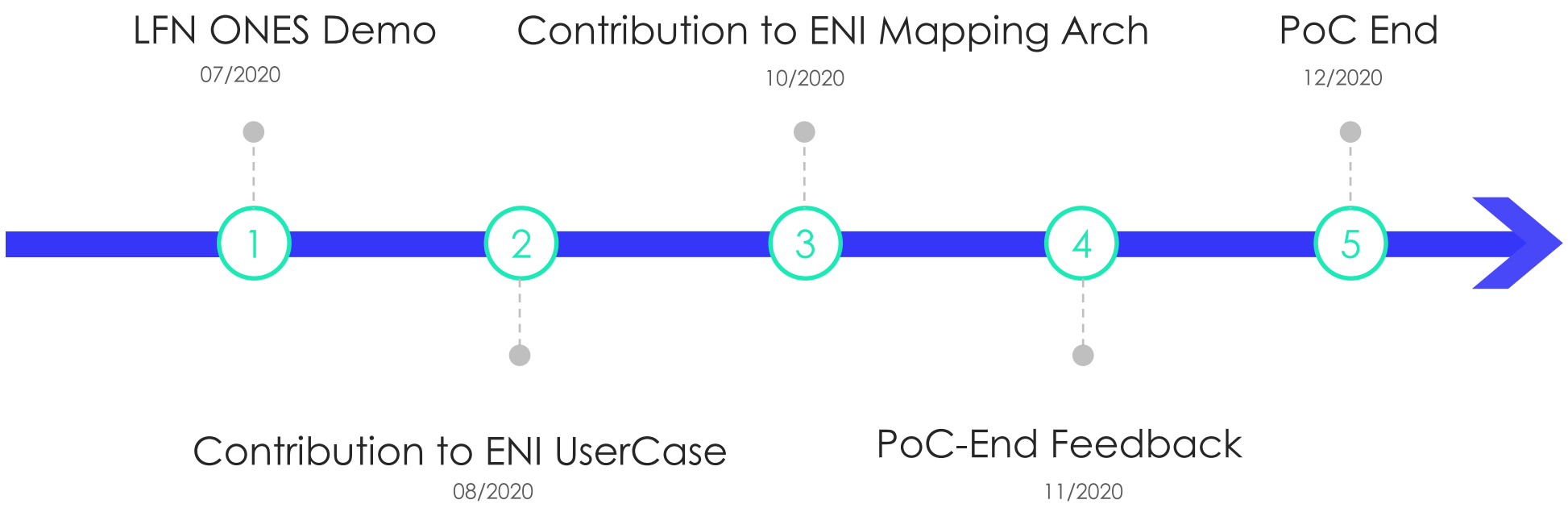
Tools

What links here
Related changes
Special pages
Printable version
Permanent link
Page information
Cite this page

This page was last edited on 27 February 2020, at 13:48.

Privacy policy About wiki Disclaimers

Next


LFN ONES Demo
07/2020
Contribution to ENI Mapping Arch
10/2020
PoC End
12/2020
1
2
3
4
5
Contribution to ENI UserCase
08/2020
PoC-End Feedback
11/2020

Demo time

中国移动 China Mobile

THANK YOU