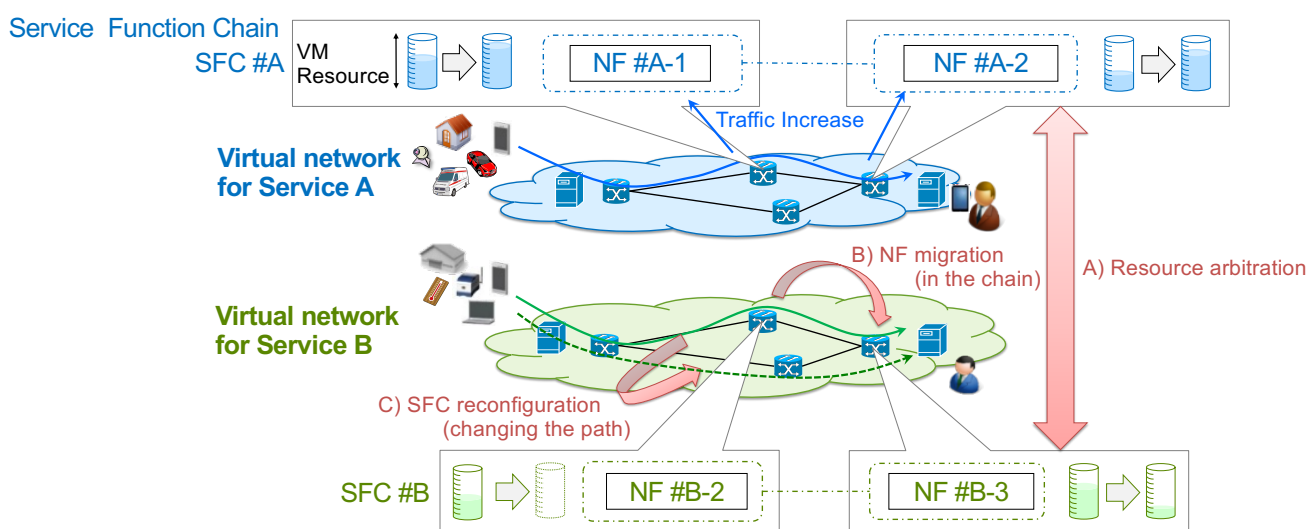


# Autonomic Resource Management for Service Function Chaining Platform

National Institute of Information and Communications Technology (NICT), Japan

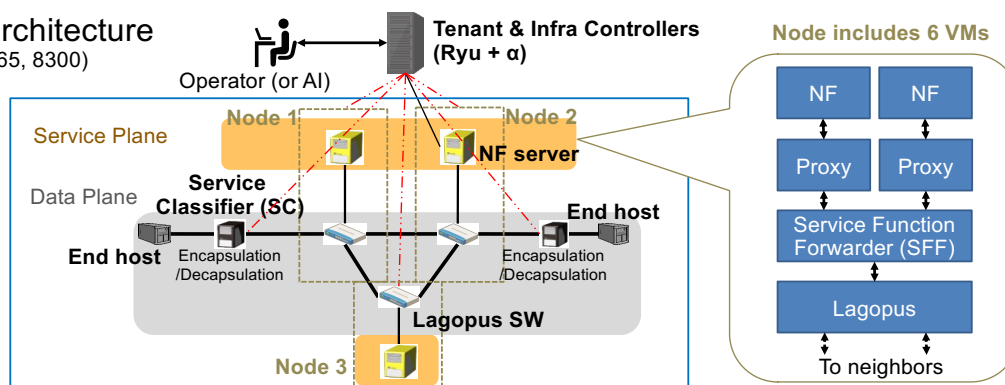
## Autonomic Resource Management (Internetwork scaling)

1. **Resource arbitration** among various functions deployed in the same server node.
2. **Network function (NF) migration** from one server node to another by **keeping** the communication path unchanged.
3. **SFC reconstruction** by migrating functions from one server node to another by **changing** the communication path.

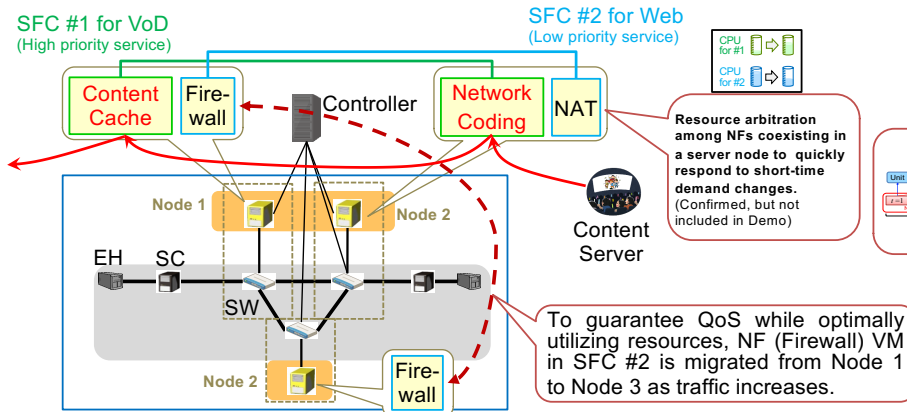


## SFC platform PoC

- SFC platform architecture (referred from RFC 7665, 8300)

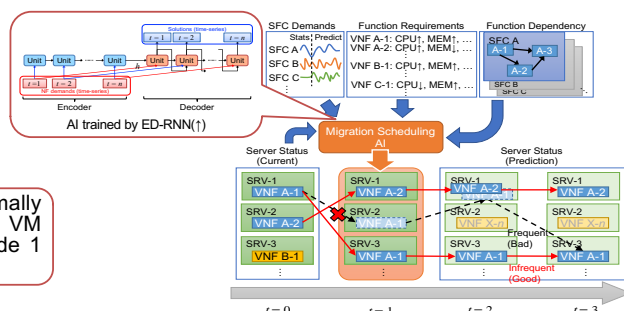


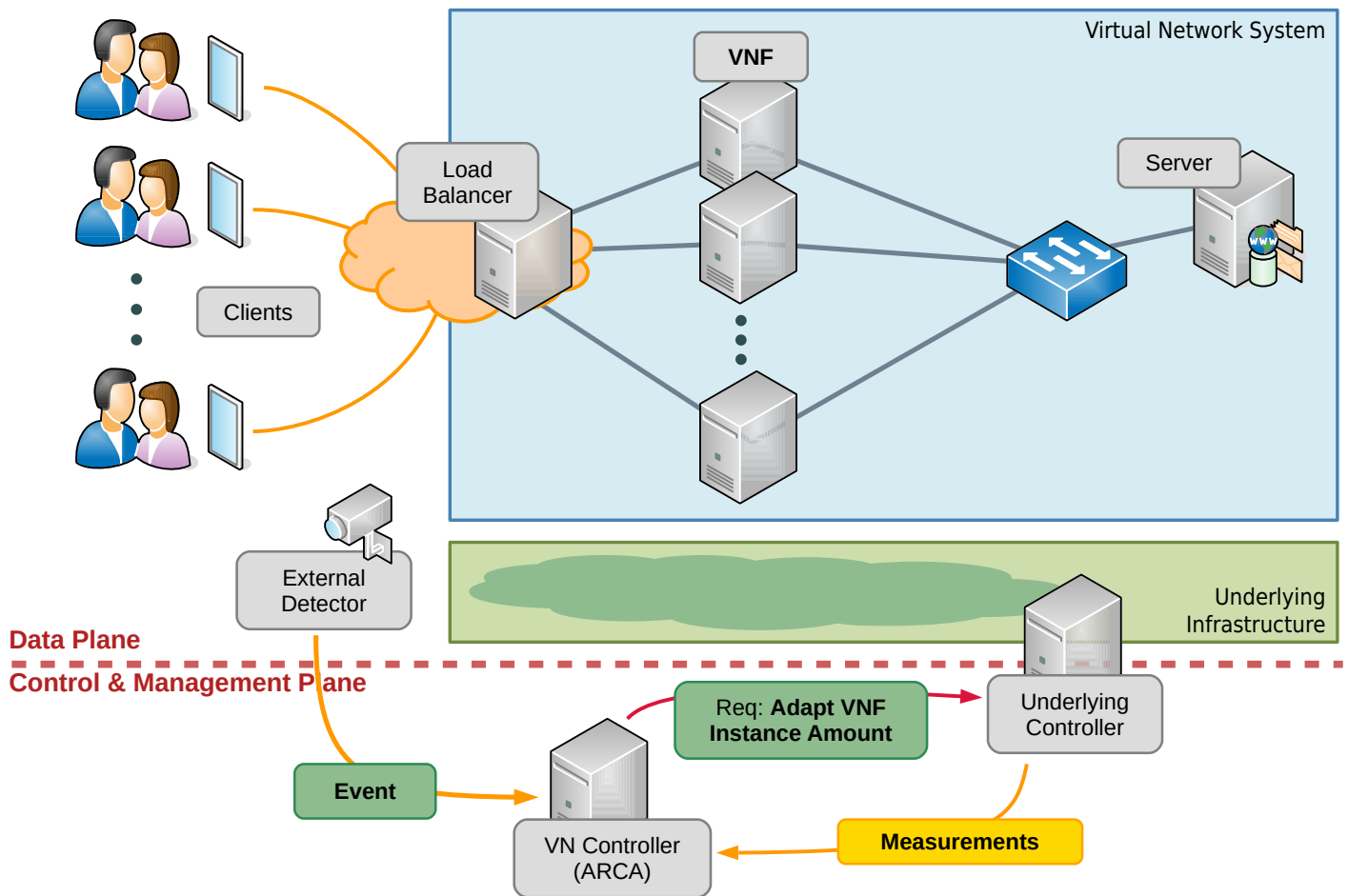
- Demonstration (NF migration)



- Future work (in progress)

- Integrating AI-assisted controller and SFC platform
  - AI-assisted resource arbitration mechanism
  - SFC migration (reconstruction) scheduling by Encoder-Decoder Recurrent Neural Network (ED-RNN)

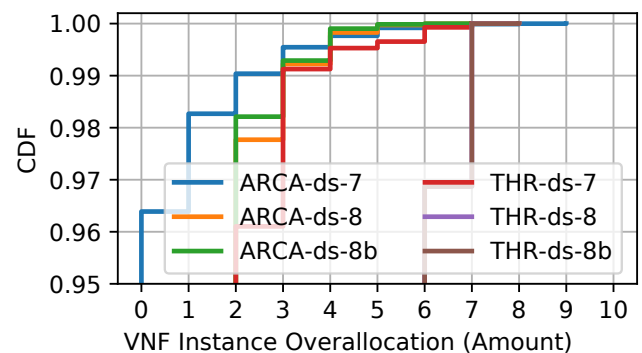
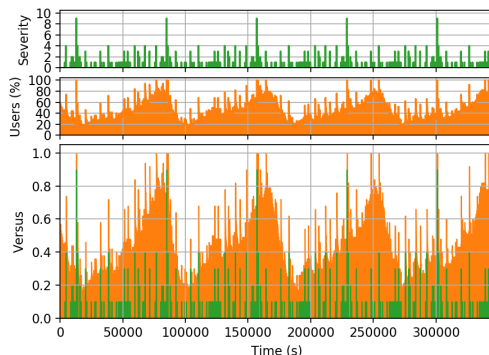




## Key Features of ARCA<sup>(a)</sup>:

- ▶ External events are analyzed together with network telemetry
- ▶ Required amount of VNF instances is anticipated to prevent failures
- ▶ Required amount of VNF instances is anticipated to prevent failures

## Evaluation:



**Model dataset:** Exhibits daily periodicity and dynamic responses to external events.

**Results:** Compared to a threshold-based algorithm, overallocations go from 3 to 2 in  $> 97\%$  cases.