China Telecom CTNet2025

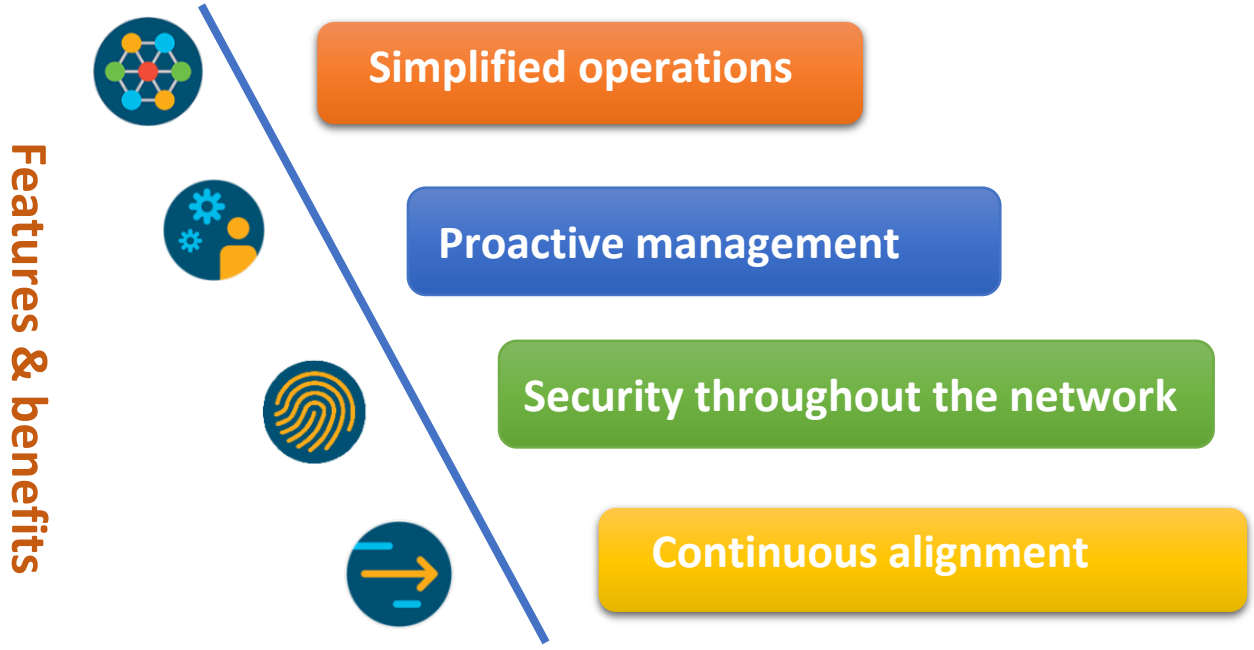
Intent-Based Network

China Telecom

2019 ONS EU

What is IBN and Why IBN

The Intent-Based Network is a closed-loop system that builds and operates networks based on user intent, providing full lifecycle management of network infrastructure, including network design, implementation, configuration and operation, which can improve network availability and agility.

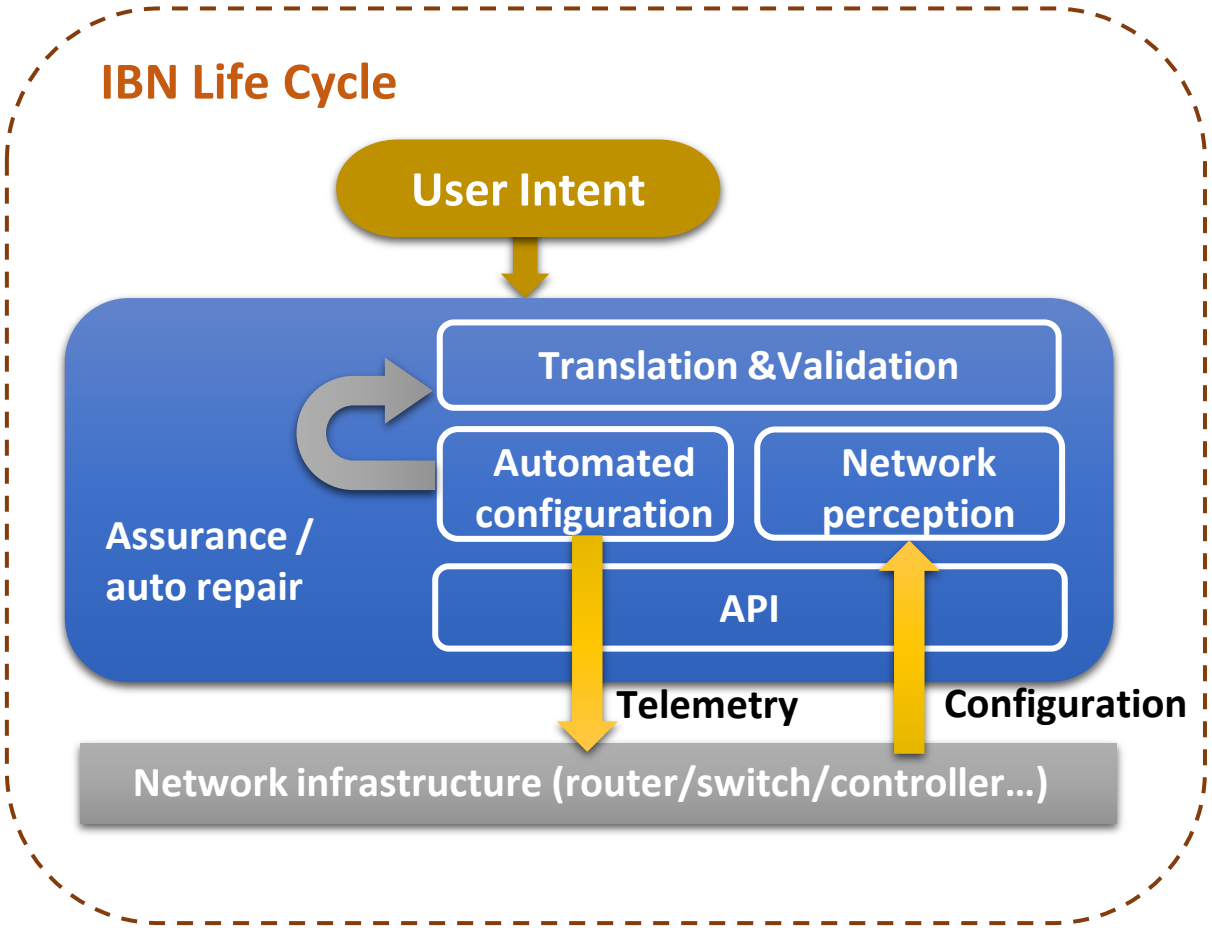


CTNet2025 Networking Transformation Scope

- On-demand
- Self-service
- Elastic
- **Closed-loop automation**
- **Intent driven**

IBN can bridge the gap between what your business needs and what your network delivers.

IBN Design Ideas and Key Functions



- **Translation &Validation**

  Obtain the business intent, converts it into a network configuration, and verify whether the configuration can satisfy the business policy on the network model.

- **Automated configuration**

  Complete network infrastructure configuration through network automation or network orchestration.

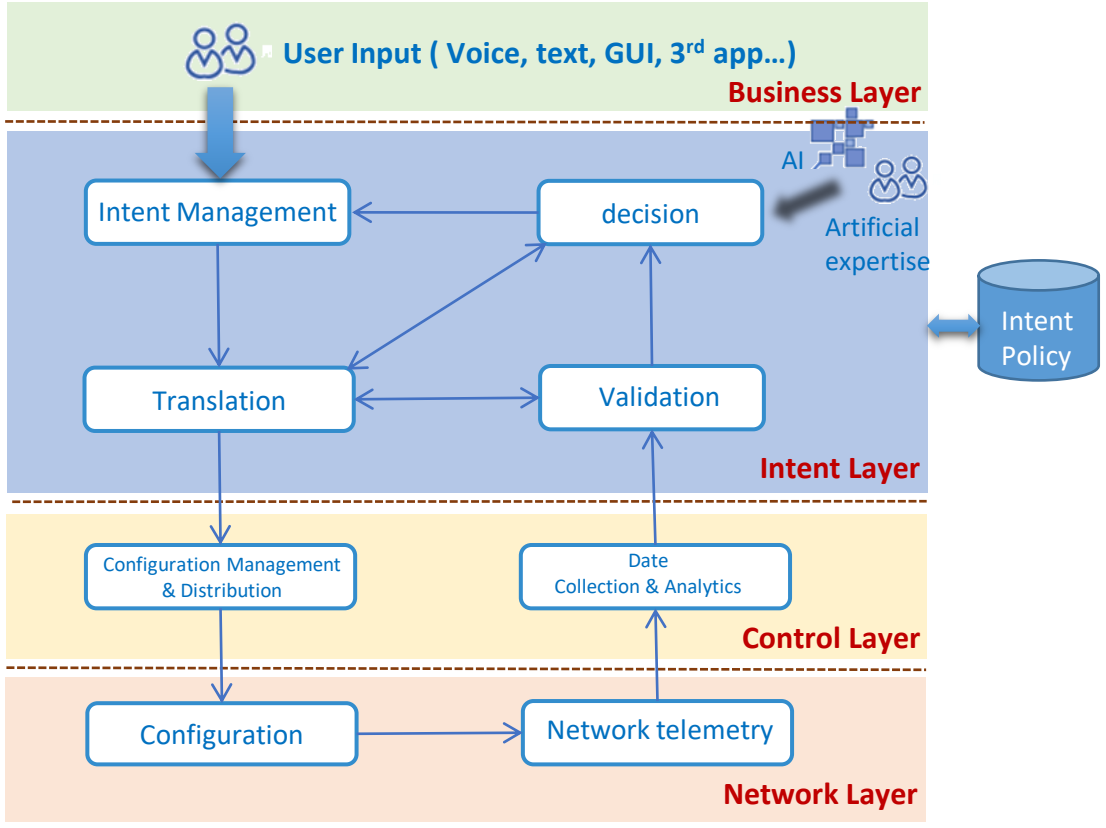
- **Network perception**

  Get network running status in real time.

- **Assurance and auto repair**

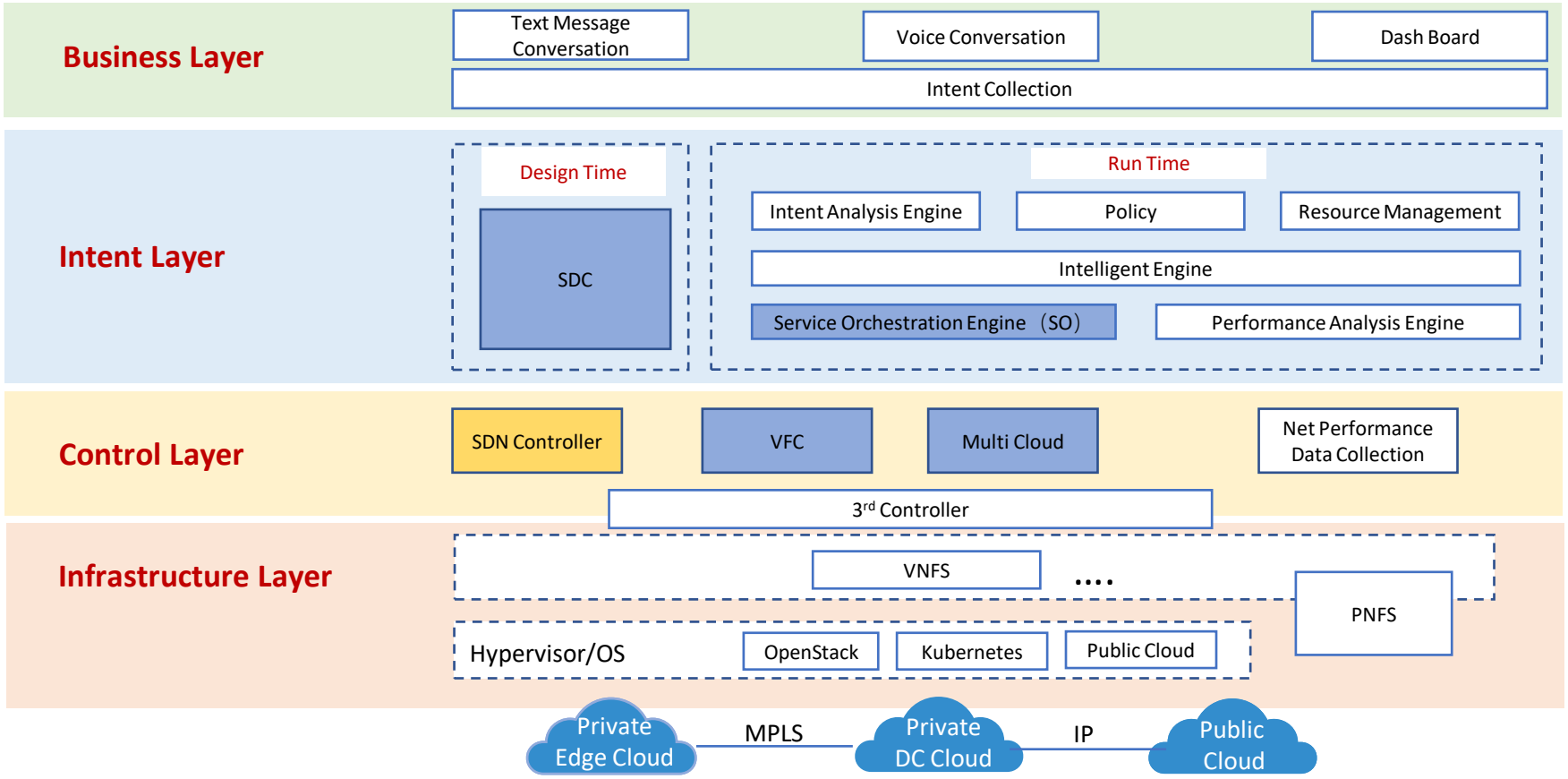
  Verify whether the business intent is met in real time and automatically fix or notify the user when the intent is not met.

Intent-Based Network Target Architecture



- **Business Layer**
  provide various interfaces for different input such as text, voice, GUI, etc.
- **Intent Layer**
  Enforce the intent of user to be implement according to user's input and adjusting for negative feedback
- **Control Layer**
  Responsible for configuration management, distribution and network status feedback
- **Network Layer**
  Consists of some network element devices such as switches, routers, controllers and so on. Responsible for specific implementation of configuration . Collect network topology information, network traffic information and business flow path information.

Software Implementation of IBN Demo System



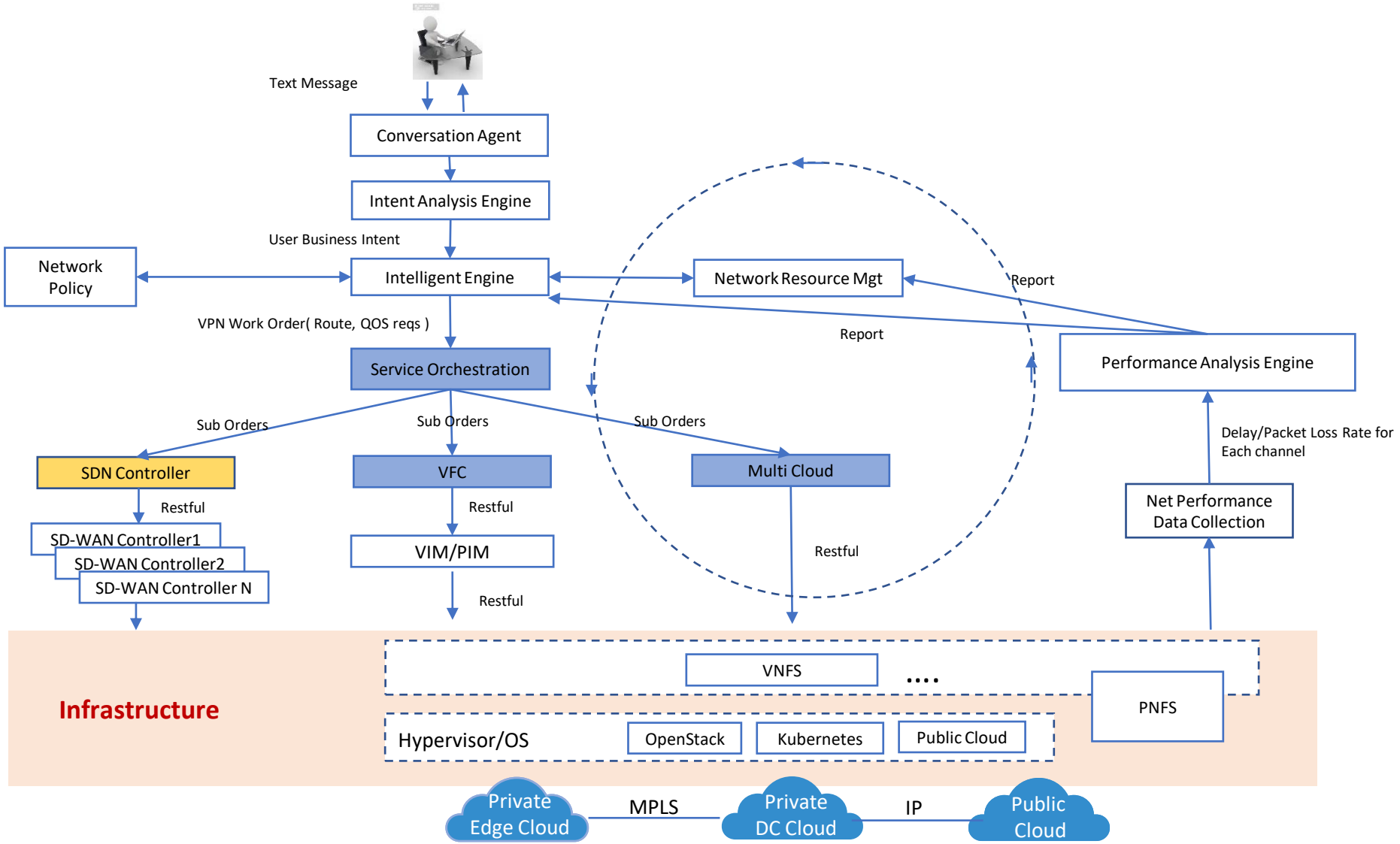
Open Source Components：

ONAP
OPEN NETWORK AUTOMATION PLATFORM

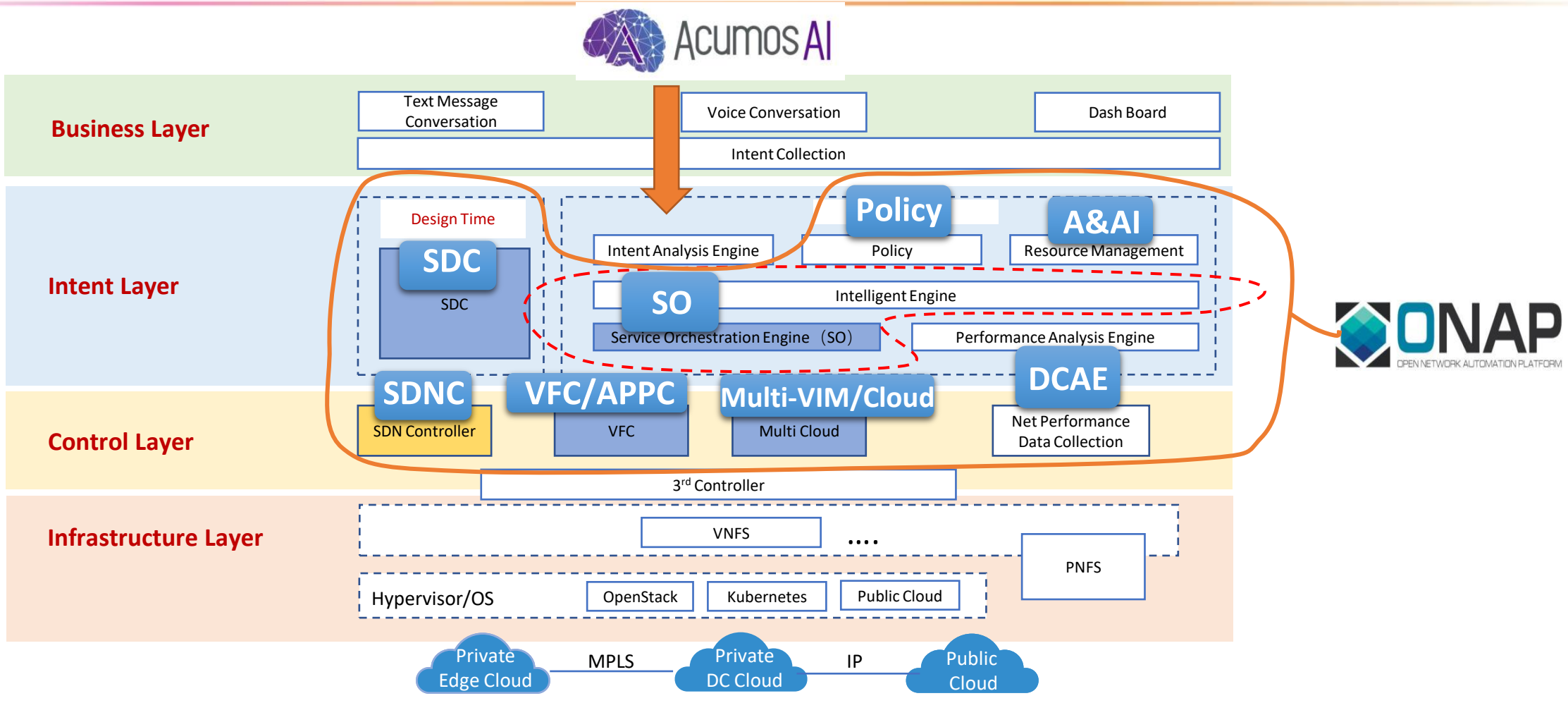
OPEN DAYLIGHT

IBN Demo System has Realized the intent based network automation (including intents translation, intents verification, intents decision making and intents delivered).

IBN Demo System Run Time Workflow



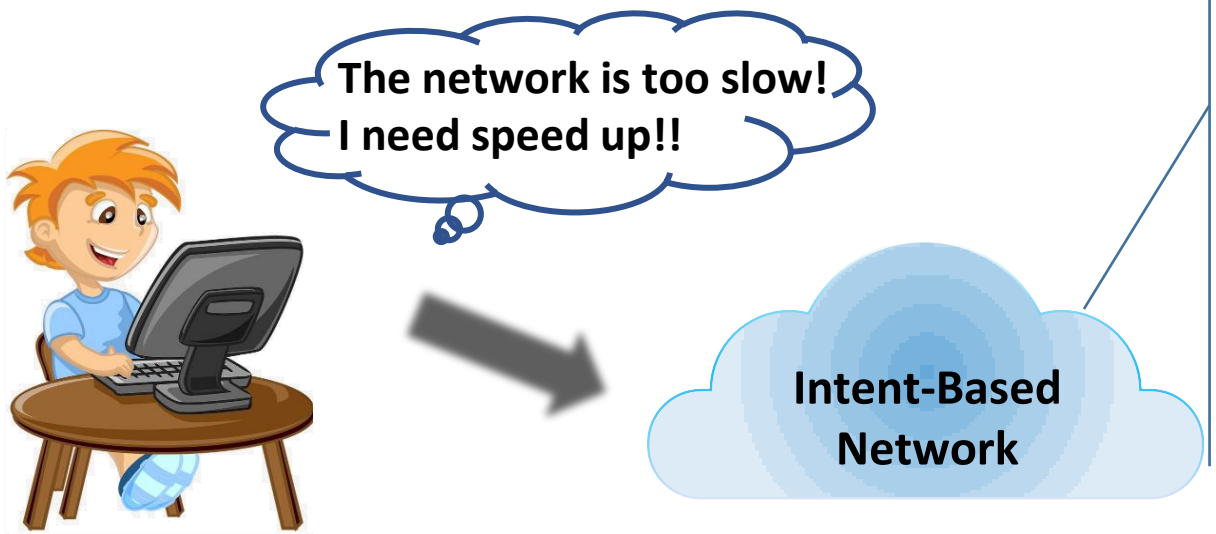
Future Plan of IBN with Open Source Projects



IBN application scenario

Switch Lanes

Intent-Based Network help end users switch to a more suitable low-latency channel according to their request.



The executions of the IBN:

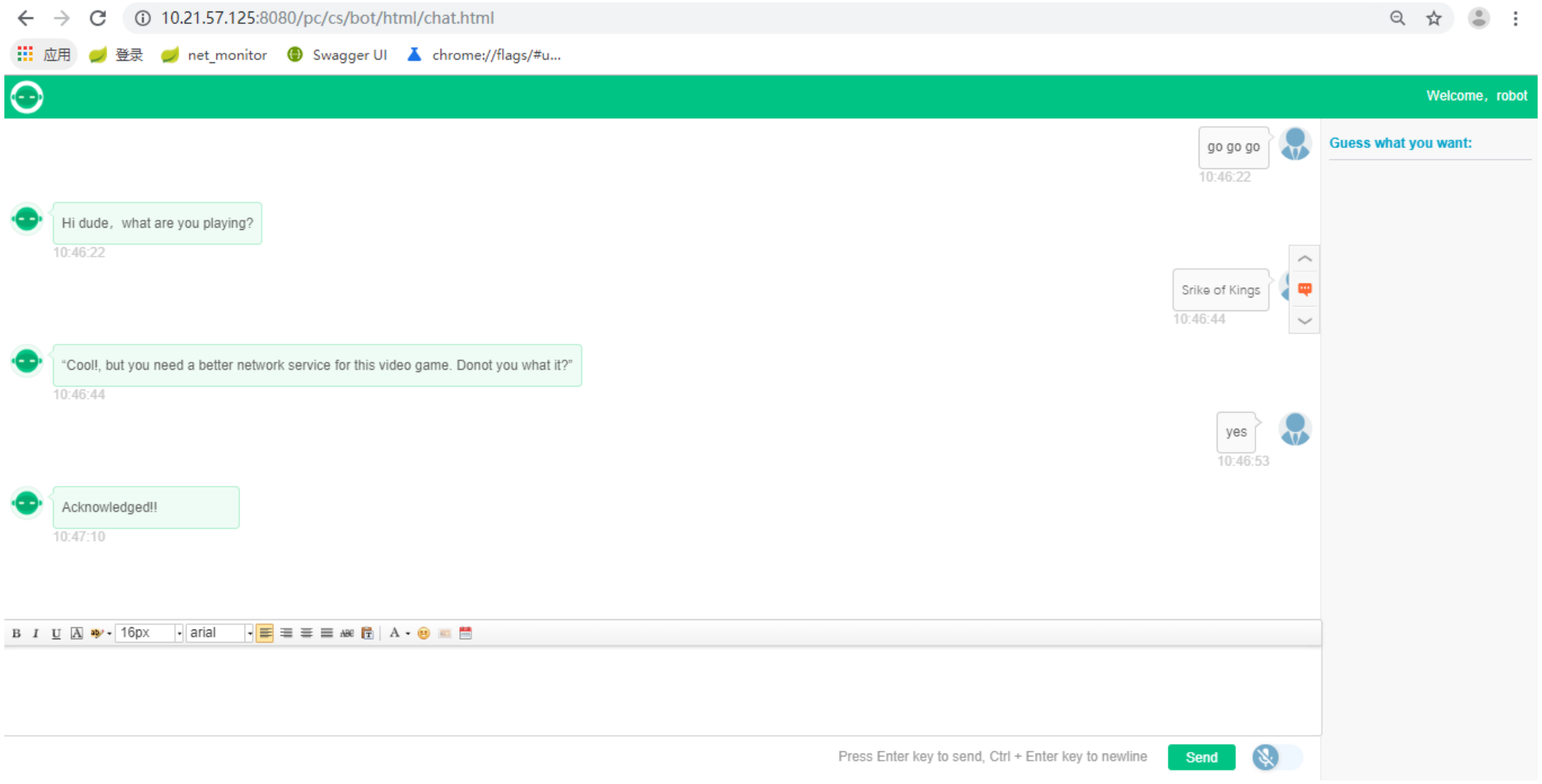
1.Intent Collection: User feel the network is too slow, need accelerate .

2.Inent Translation: Analyze and process the intent, translation the data into the corresponding configuration ,including bandwidth, delay, jitter, etc.

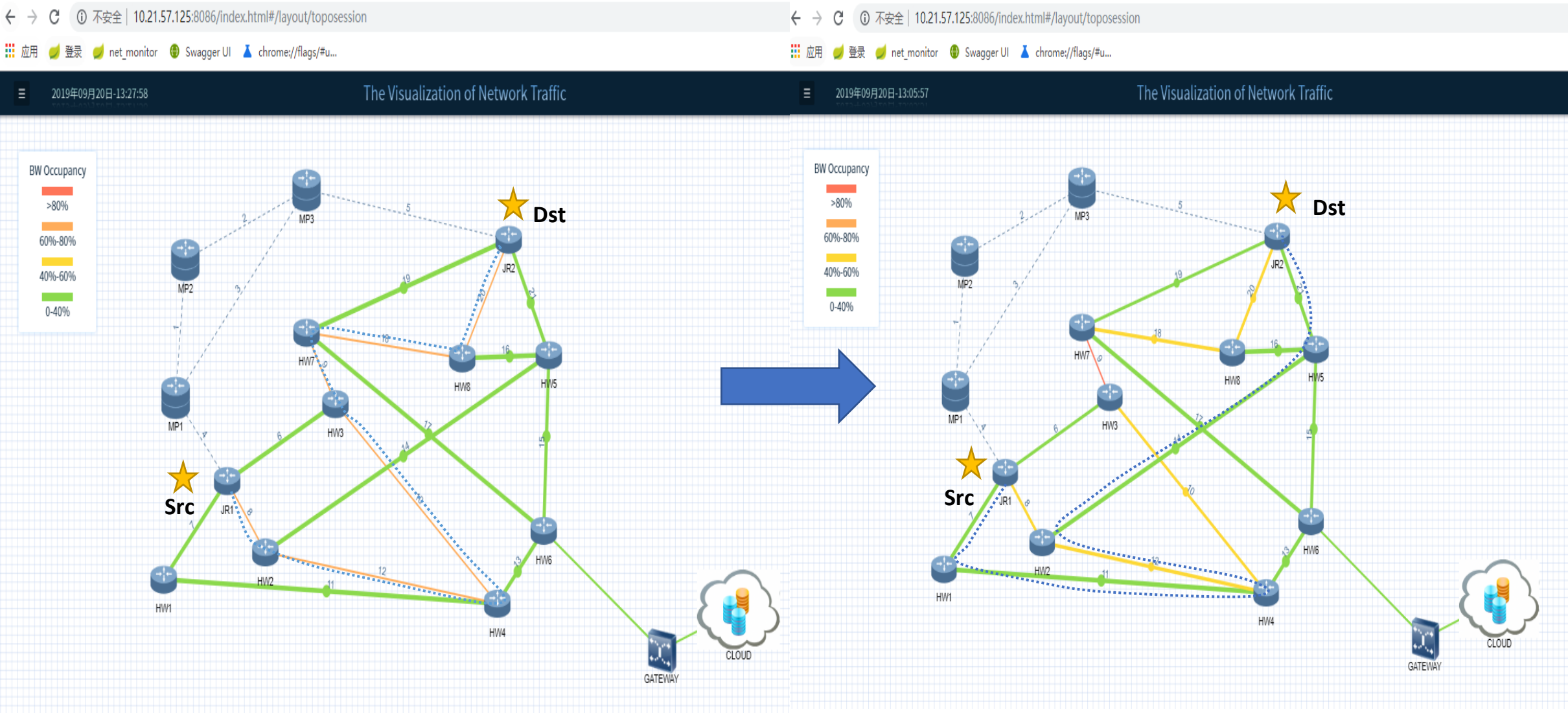
3.Intent Execution: Calculate the status information of the network, including bandwidth, delay of each link , Send the path information of the traffic to the controller and network device to select different transmission paths for specific traffic.

4.Post-Assessment: Measure bandwidth delay for users in real time, and feedback the service quality

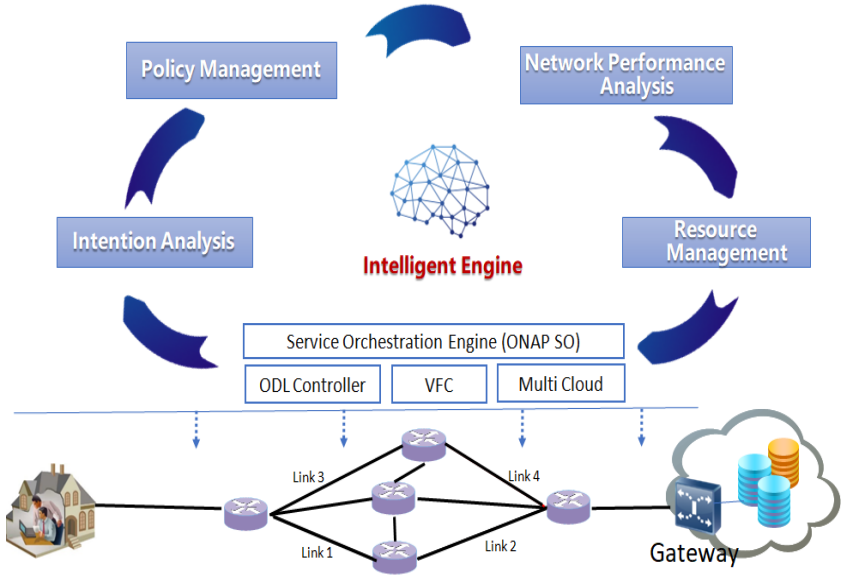
Demo System ---- User Portal



Demo System ---- Real-time topology monitoring



Demo System ----- System log



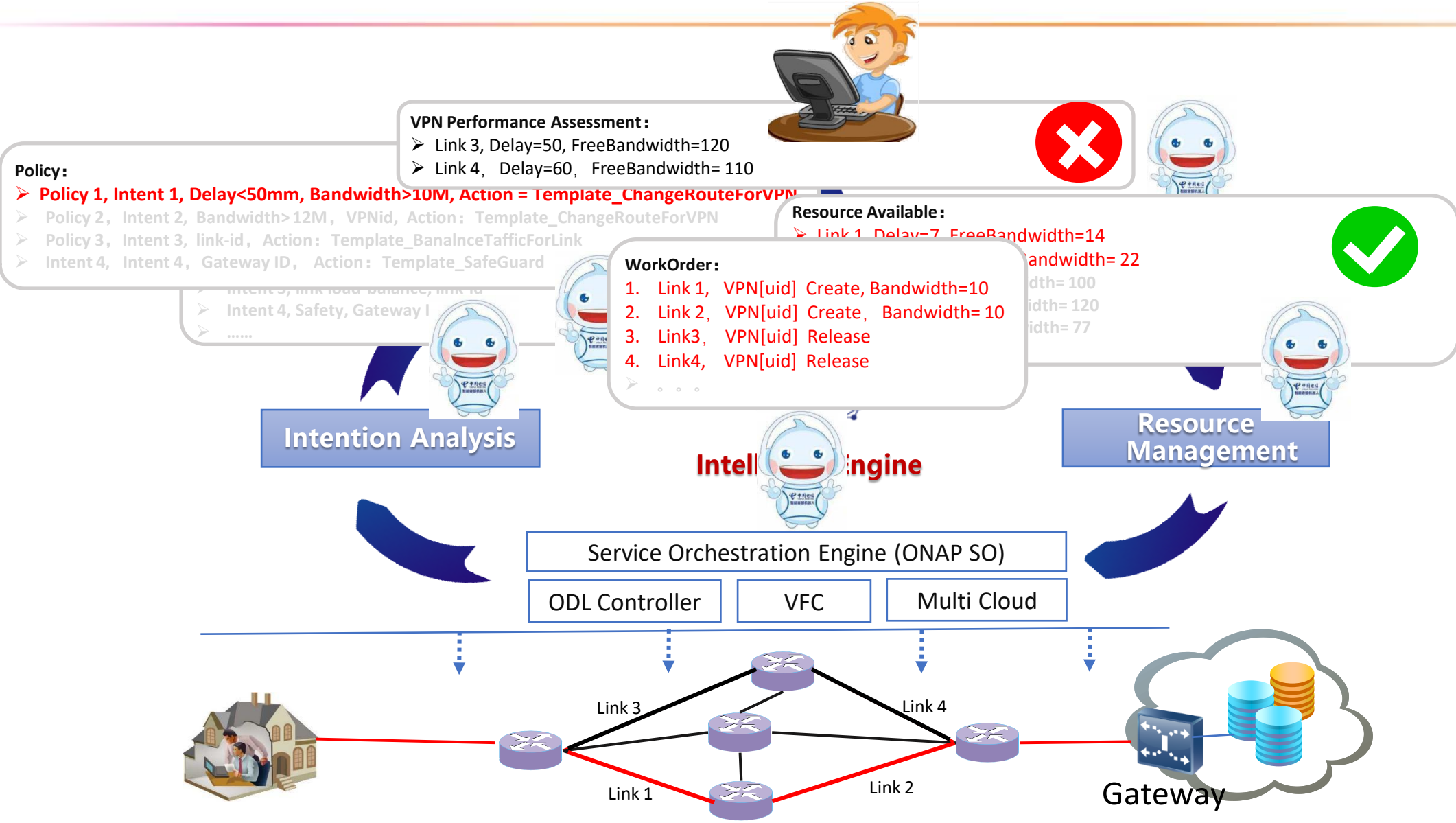
不安全 | 10.21.57.125:8086/index.html#/layout/log

应用 登录 net_monitor Swagger UI chrome://flags/#u...

2019年09月20日-13:07:29 The Visualization of Network Traffic

Sep 20, 2019 10:46	Step #1 Intent Analysis Engine：Find the business intend in dialogue
Sep 20, 2019 10:46	Step #2 Policy Management：Match a solution for a specific intent.
Sep 20, 2019 10:46	Intelligent Engine: Workflow[1] started according to TemplateChangeRouteForVpn
Sep 20, 2019 10:46	Step #3 Performance Analysis Engine：Evaluate current VPN status, and find what hamper user experience.
Sep 20, 2019 10:46	Problem Found: Delay=555 (Reality) > 500 (Intent)!!!
Sep 20, 2019 10:46	Step #4 Resource Management：Find the route and network resource supporting the solution.
Sep 20, 2019 10:46	Route Planning in Progress following intent requirement.....
Sep 20, 2019 10:47	Found a new route and resources，which meet user intent requirement， successfully!!
Sep 20, 2019 10:47	Step #5 Intelligent Engine: Create a workorder for the policy deployment
Sep 20, 2019 10:47	A WorkOrder is created successfully!!
Sep 20, 2019 10:47	Step #6 Service Orchestration Engine: Workorder fulfillment
Sep 20, 2019 10:47	Route for VPN[1] Changed Successfully！！
Sep 20, 2019 10:47	Step #7 Performance Analysis Engine：Evaluate the network performance after the change.
Sep 20, 2019 10:47	Intelligent Engine: Workflow[1] stop. Mission Accomplished

Demo 1： Switch Lanes



More Intelligent !

Less Complexity !