ETSI
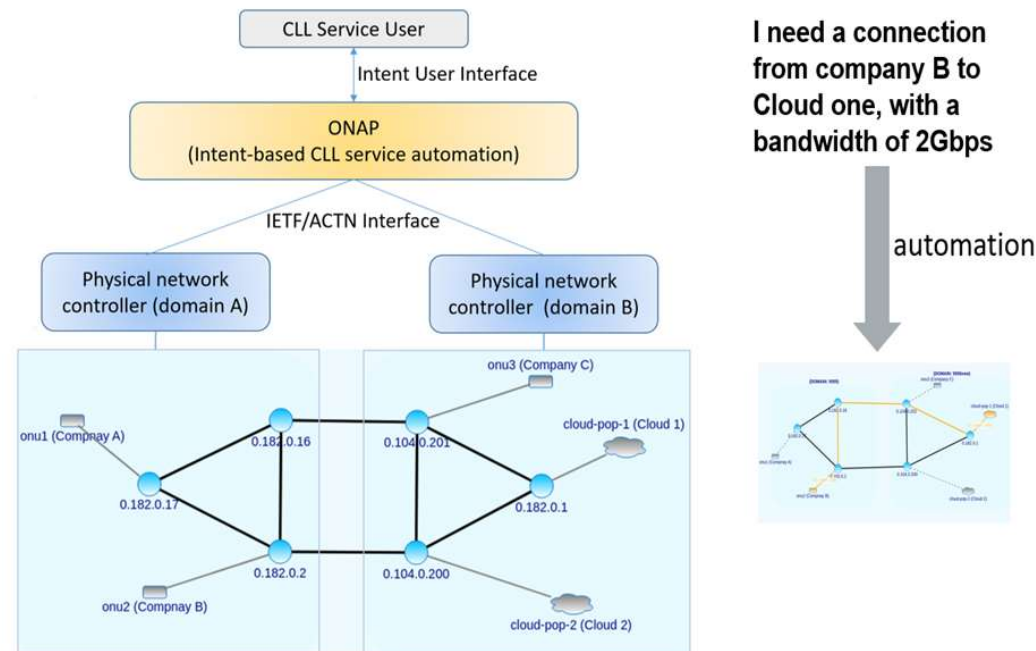
ENI PoC #18

Intent-driven Operating for User-Centric Cloud-Network Convergence Services

Rapporteur: China Telecom,
              Huawei
              AsiaInfo
              BUPT
              Xidian University
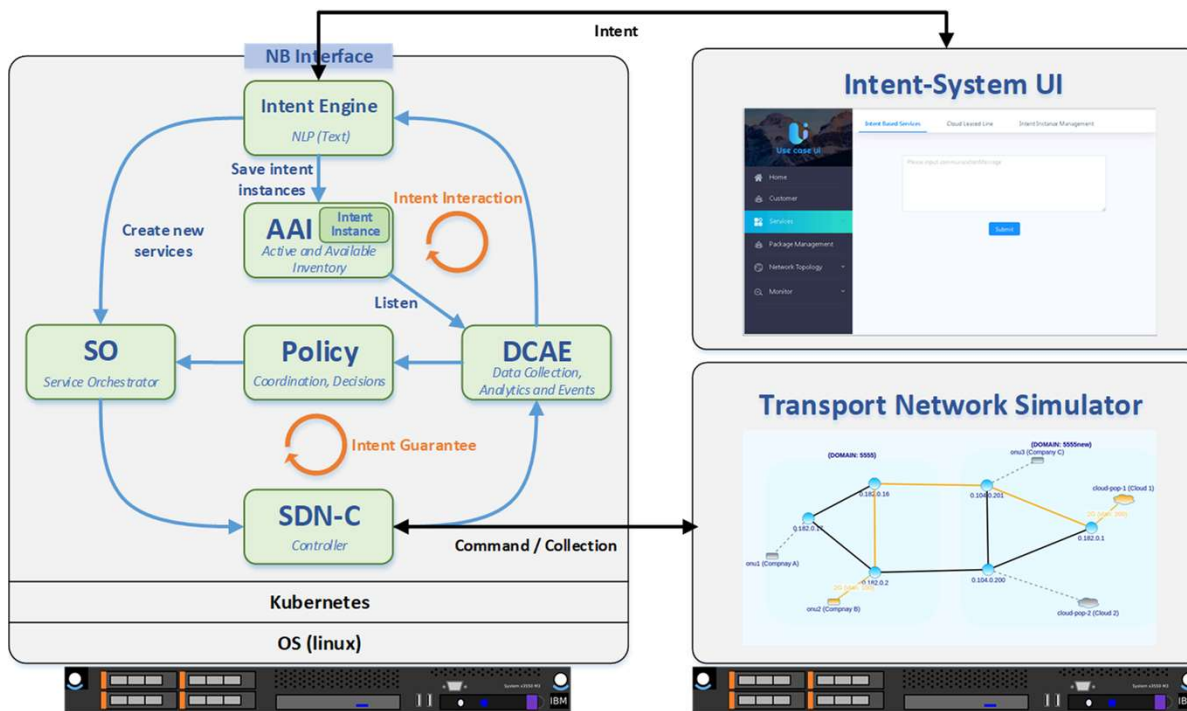
PoC Background

Short Description： This PoC will provide an intent-based cloud private line (CPL) service, which can connect cloud service users to edge or cloud data centres, and edge or cloud data centres to each other, with deterministic connection performance. In this PoC, we will demonstrate intent translation (NLP models) and intent instance creation to fulfil users' intent. In particular, in the proposed CPL service, this PoC aims to verify that when the network state changes or the users' intent changes, the intent requirements can still be satisfied by the ENI system. The closed-loop automation mechanism continuously validates and monitors the conditions of the network against the intent specification to ensure compliance with the intent.

PoC goals and PoC member

	Organization name	ISG ENI participant (yes/no)	Contact (Email)	PoC Point of Contact (see note 1)	Role (see note 2)	PoC Components
1	China Telecom	yes	Zhen Li liz779@chinatelecom.cn Dong Wang wangd5@chinatelecom.cn	X	network operator	Design, development and integration of intent-driven user-centric cloud-network convergence services
2	Huawei	yes	Henry Yu henry.yu1@huawei.com		infrastructure provider	Design and development of cloud-network convergence environment
3	AsiaInfo	yes	Lei Shi shilei8@asiainfo.com		infrastructure provider	Deployment of demo environment
4	Beijing University of Posts and Telecommunications (BUPT)	yes	Xiqing Liu liuxiqing@bupt.edu.cn Shi Yan yanshi01@bupt.edu.cn Yaohua Sun sunyaohua@bupt.edu.cn		university	Enhancement of network AI model and algorithm for network optimization
5	Xidian University	no	Chungang Yang cgyang@xidian.edu.cn		university	Design of intent-driven services and enhancement of intent translation based on NLP model.

- **PoC Project Goal #1:** The PoC will demonstrate that the intent instance can be created to meet the intent requirements of the users.

- **PoC Project Goal #2:** The PoC will demonstrate that the ENI system can still meet the intent requirements of the user, when the network state changes or the users' intents changes.

PoC Architecture

- **Intent translation and intent instance creation.** The user expresses an intent of creating a cloud-network convergence service. This intent is then automatically fulfilled by provisioning the corresponding services and allocating the required resources.

- **Intent interaction.** The already fulfilled intent can be modified by the user. The new intent can be automatically fulfilled by provisioning the corresponding services and allocating the required resources.

- **Intent guarantee.** The Intent-based system monitors the parameters of the cloud-network convergence service (e.g., bandwidth usage), and automatically triggers the closed-loop actions (e.g., increase max bandwidth) in order to guarantee the intent.

PoC Milestones and Current Progress

PoC Milestone	Stages/Milestone description	Target Date	Additional Info
P.S	PoC Project Start	June 2023	Presentation at ENI#26 plenary meeting
P.TP.1	PoC User Story finalization	July 2023	Finalization of the high-level description of the scenario.
P.TP.2	PoC Test Plan 1	September 2023	AI based Intent translation and intent instance creation of the cloud-network convergence scenario.
P.D1	Poc Demo	September 2023	Demo at TMF Catalyst meeting
P.C.1	PoC Expected Contribution 1	September 2023	Contribution to ENI 015
P.TP.3	PoC Test Plan 2	December 2023	Users' intent modification and fulfilment of the scenario.
P.C.2	PoC Expected Contribution 2	January 2024	Contribution to ENI terminology
P.D2	Poc Demo	February 2024	Demo at LFN Developer & Testing Forum
P.TP.4	PoC Test Plan 3	February 2024	Closed-loop to meet network state changes of the scenario.
P.C.3	PoC Expected Contribution 3	February 2024	Contributions to ENI requirement
P.C.4	PoC Expected Contribution 4	March 2024	Contributions to ENI use case
P.D3	PoC Demo	March 2024	Demo at an ENI plenary meeting.
P.R	PoC Report	May 2024	PoC-Project-End Feedback
P.E	PoC Project End	June 2024	Presented to ISG ENI for information

Current → (points to P.D3 row)

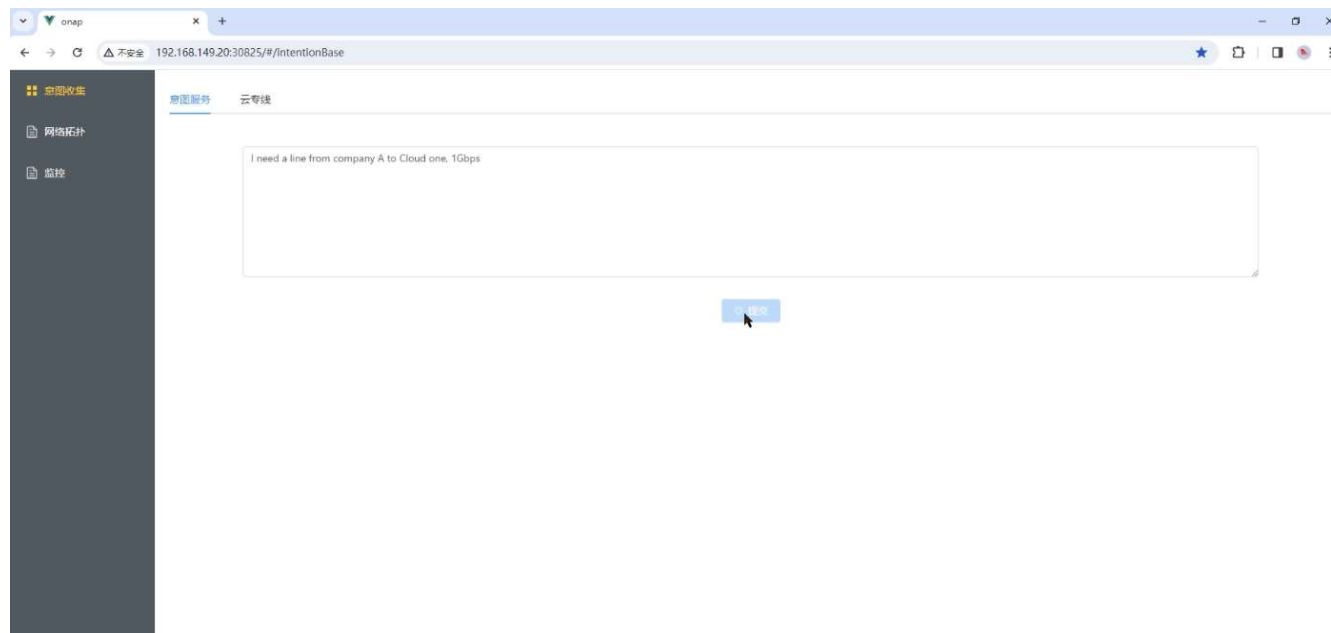**Show demo at ENI #29**

PoC Milestones and Current Progress

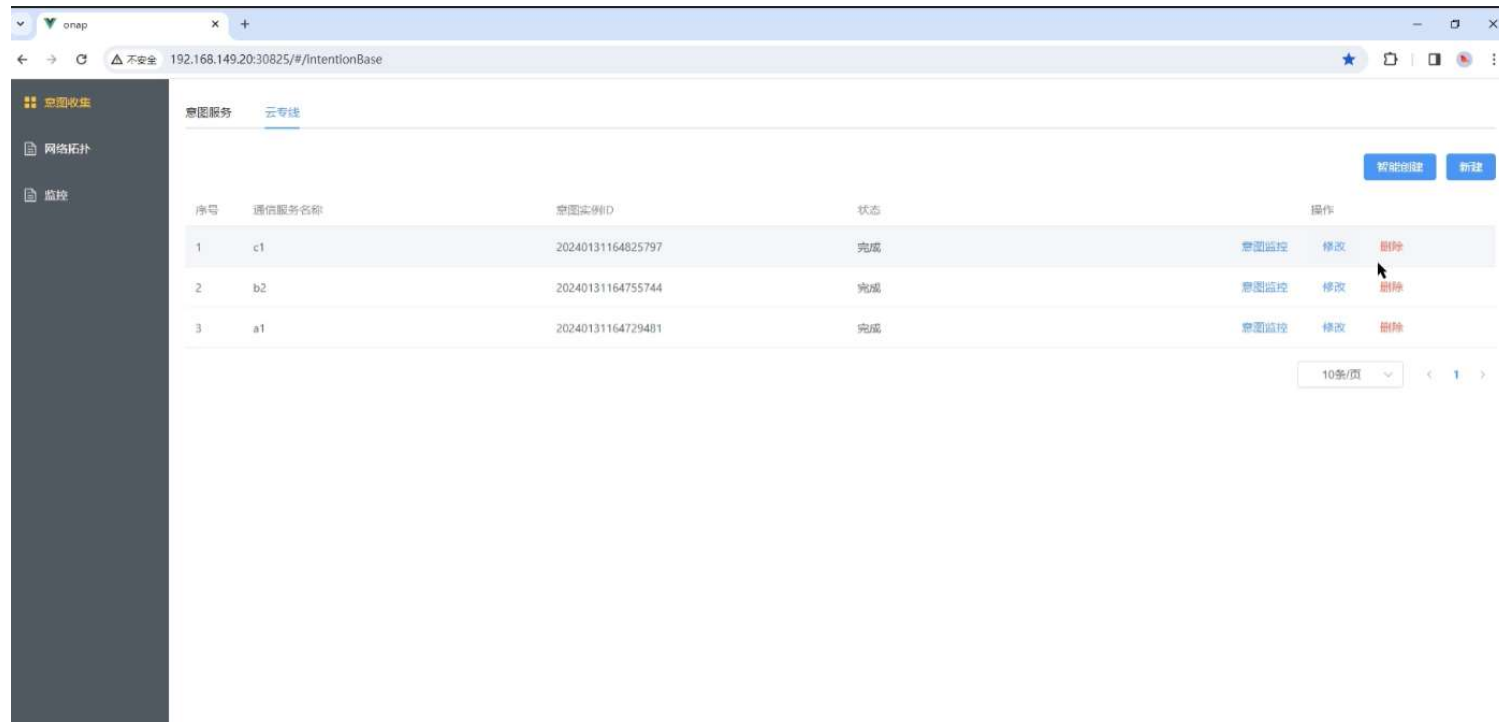**Intent Input and Translation (create user intent service)**

- Using natural language processing (NLP) techniques, the user's intent gets translated into a so-called intent records. The user's input is: "I need a service from Company X to Cloud X, with bandwidth of X Gbps".

PoC Milestones and Current Progress

Intent Management

■ **Show the intent life-cycle management by creating, deleting, and modifying user's intent. The user (or intent consumer) expresses an intent of creating a cloud-network convergence service. The already fulfilled intent can be modified by the user.**

PoC Milestones and Current Progress

Intent Guarantee(closed-loop action)

- The Intent-based system monitors the parameters of the cloud-network convergence service (e.g., bandwidth usage), and automatically triggers the closed-loop actions (e.g., increase max bandwidth) in order to guarantee the intent.

Thanks!