
ENI ISG PoC Report Template

B.1 General

The following normative disclaimer shall be included on the front page of a PoC report:

Submission of this ENI ISG PoC Report as a contribution to the ENI ISG does not imply any endorsement by the ENI ISG of the contents of this report, or of any aspect of the PoC activity to which it refers.

B.2 ENI ISG PoC Report

B.2.1 PoC Project Completion Status

Indicate the PoC Project Status. Can the PoC be considered completed? If this is a multi-stage PoC project, indicate the Reported Stage status and plans for future Project Stages/Milestones:

- Overall PoC Project Completion Status: _____ **Completed** _____
- PoC Stage Completion Status (Optional - for Multi Stage projects only): _____

B.2.2 ENI PoC Project Participants

Specify PoC Team; indicate any changes from the ENI ISG PoC Proposal:

- PoC Project Name: Space-Ground Cooperative Network Slicing
- Network Operator/Service Provider: China Telecom Contact: Yu Zeng (zengyu@chinatelecom.cn)
- Academic Member: NDSC Contact: Dan Li(pkulidan@163.com) , Bo Chen(ndscshen@163.com), Juan Shen(ndscshen@163.com), Le Tian(xxgctianle@163.com)
- Manufacturer A: Asiainfo Contact: Shoufeng Wang(wangsf11@asiainfo.com)
- Manufacturer B: Huawei Contact: Aldo Artigiani (Aldo.Artigiani@huawei.com)
- Additional Members: CAICT Contact: Zhiruo Liu (liuzhiruo@caict.ac.cn)

B.2.3 Confirmation of PoC Event Occurrence

To be considered as complete, the PoC should have been physically demonstrated with evidences extracted from the demonstration, i.e. the following information should be provided:

- ETSI ENI #30 Plenary meeting, Sophia Antipolis, 3rd June, 2024

The PoC progress was presented by China Telecom and NDSC in the ESTI ENI #30 Plenary meeting, introducing the space-ground cooperative network slicing demonstration.



ETSI ENI #30 meeting ENI PoC #19: Space-Ground Cooperative Network Slicing Progress Update

- ✓ PoC Project Goal #1: Network Slice Data Plane Adaptation Mapping. Demonstrate how to support identity resolution such as VLAN and IP address on the data plane, support precise identification and control for user services, and realize the slicing adaptation between mobile communication network and satellite network.
- ✓ PoC Project Goal #2: Space-Ground Network Slice Cooperative Control. Demonstrate how to exchange the slicing control information with the control plane of ground mobile communication network and satellite network (SDC and SNOCC), optimize the global service quality of network slicing, and ensure the consistency and continuity of slicing service in space-ground cooperative network environment.

Innovation point 1: Space-ground slicing session collaboration (PDU session establishing)



The space-ground cooperative slicing control system interacts with the space and ground network slicing control planes respectively to maintain the mapping relationship between ground-based PDU sessions and space-based PDU sessions. By the establishing, modifying and releasing sessions of ground-based network and space-based network can be cooperated with each other. The programmable slicing gateway receives configuration policies and establishes PDU session channels from UE to ground-based 5G mobile communication network, space-based satellite network and up to data network.

Innovation point 2: Space-ground slicing mobility management (satellite movement)



For the satellite movement events, the space-based mobility management module informs the space-based network in advance of the deployment of a new slicing channel, which is based on a new satellite communication link, and then performs the satellite switching process to open the new space-based slicing channel and the old ground-based slicing channel. When the space-based network receives the old space-based slicing channel and receives related resources.

Innovation point 3: Space-ground slicing mobility management (UE movement)



For the UE movement events, the ground-based mobility management module manages network slices across by ground-based and space-based networks in a unified way to realize cross-network slicing and mapping of network slices flows, including establishing network slices and global IP address for accessing data networks. In the same time, a network gateway is deployed behind the ground-based UPE network at the satellite base station. The translation gateway is managed by the ground-based mobility management module and performs the identity resolution operation.

Milestones

Task	Project Milestones	Target Date	Completion Status
P-1	PoC project kick-off meeting	2022/02/28	Completed
P-1.1	PoC Task Plan 1	2022/03/02	Task completed and starting
P-1.2	PoC Phase 1	2022/03/02	Initiation phase of the PoC project
P-1.3	PoC Phase 2	2022/03/02	Task
P-1.4	PoC Phase 3	2022/03/02	Task
P-1.5	PoC Phase 4	2022/03/02	Task
P-1.6	PoC Phase 5	2022/03/02	Task
P-1.7	PoC Phase 6	2022/03/02	Task
P-1.8	PoC Phase 7	2022/03/02	Task
P-1.9	PoC Phase 8	2022/03/02	Task
P-1.10	PoC Phase 9	2022/03/02	Task
P-1.11	PoC Phase 10	2022/03/02	Task
P-1.12	PoC Phase 11	2022/03/02	Task
P-1.13	PoC Phase 12	2022/03/02	Task
P-1.14	PoC Phase 13	2022/03/02	Task
P-1.15	PoC Phase 14	2022/03/02	Task
P-1.16	PoC Phase 15	2022/03/02	Task
P-1.17	PoC Phase 16	2022/03/02	Task
P-1.18	PoC Phase 17	2022/03/02	Task
P-1.19	PoC Phase 18	2022/03/02	Task
P-1.20	PoC Phase 19	2022/03/02	Task
P-1.21	PoC Phase 20	2022/03/02	Task
P-1.22	PoC Phase 21	2022/03/02	Task
P-1.23	PoC Phase 22	2022/03/02	Task
P-1.24	PoC Phase 23	2022/03/02	Task
P-1.25	PoC Phase 24	2022/03/02	Task
P-1.26	PoC Phase 25	2022/03/02	Task
P-1.27	PoC Phase 26	2022/03/02	Task
P-1.28	PoC Phase 27	2022/03/02	Task
P-1.29	PoC Phase 28	2022/03/02	Task
P-1.30	PoC Phase 29	2022/03/02	Task
P-1.31	PoC Phase 30	2022/03/02	Task
P-1.32	PoC Phase 31	2022/03/02	Task
P-1.33	PoC Phase 32	2022/03/02	Task
P-1.34	PoC Phase 33	2022/03/02	Task
P-1.35	PoC Phase 34	2022/03/02	Task
P-1.36	PoC Phase 35	2022/03/02	Task
P-1.37	PoC Phase 36	2022/03/02	Task
P-1.38	PoC Phase 37	2022/03/02	Task
P-1.39	PoC Phase 38	2022/03/02	Task
P-1.40	PoC Phase 39	2022/03/02	Task
P-1.41	PoC Phase 40	2022/03/02	Task
P-1.42	PoC Phase 41	2022/03/02	Task
P-1.43	PoC Phase 42	2022/03/02	Task
P-1.44	PoC Phase 43	2022/03/02	Task
P-1.45	PoC Phase 44	2022/03/02	Task
P-1.46	PoC Phase 45	2022/03/02	Task
P-1.47	PoC Phase 46	2022/03/02	Task
P-1.48	PoC Phase 47	2022/03/02	Task
P-1.49	PoC Phase 48	2022/03/02	Task
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P-1.64	PoC Phase 63	2022/03/02	Task
P-1.65	PoC Phase 64	2022/03/02	Task
P-1.66	PoC Phase 65	2022/03/02	Task
P-1.67	PoC Phase 66	2022/03/02	Task
P-1.68	PoC Phase 67	2022/03/02	Task
P-1.69	PoC Phase 68	2022/03/02	Task
P-1.70	PoC Phase 69	2022/03/02	Task
P-1.71	PoC Phase 70	2022/03/02	Task
P-1.72	PoC Phase 71	2022/03/02	Task
P-1.73	PoC Phase 72	2022/03/02	Task
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P-1.76	PoC Phase 75	2022/03/02	Task
P-1.77	PoC Phase 76	2022/03/02	Task
P-1.78	PoC Phase 77	2022/03/02	Task
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P-1.80	PoC Phase 79	2022/03/02	Task
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P-1.94	PoC Phase 93	2022/03/02	Task
P-1.95	PoC Phase 94	2022/03/02	Task
P-1.96	PoC Phase 95	2022/03/02	Task
P-1.97	PoC Phase 96	2022/03/02	Task
P-1.98	PoC Phase 97	2022/03/02	Task
P-1.99	PoC Phase 98	2022/03/02	Task
P-1.100	PoC Phase 99	2022/03/02	Task
P-1.101	PoC Phase 100	2022/03/02	Task

PoC member



- ISG ENI #31 Plenary meeting, Beijing, 9th, September, 2024

The PoC#19 team demonstrated some further results on simulation results on intelligent slice mapping based on spatial-temporal correlation.



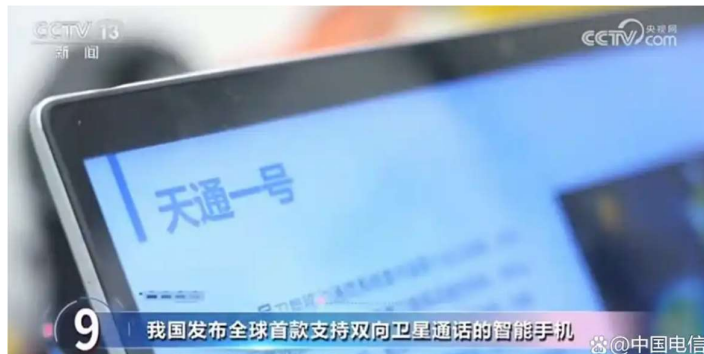
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Other

PoC 19 Space Ground Cooperative Network Slicing Progress Update

- Launch of Direct Mobile Satellite service, 8th September, 2023

China Telecom officially launched its mobile direct satellite service on September 8 2023 together with Huawei mobile device (Mate 60 series), provide communication service directly connecting consumer smartphones to satellites. This marks a gradual expansion of the satellite mobile communication industry Users can enjoy integrated communication services without changing their devices, SIM cards, or phone numbers, significantly lowering the threshold and cost for the public to use satellite communication services.



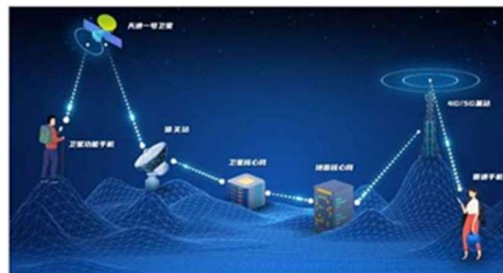
Li Jun, Deputy General Manager of China Telecom, attended China Telecom's Digital Technology Ecology Conference held in Guangzhou Dec 2024, promote collaborative innovation in artificial intelligence, 5G and satellite communications



The "Global 6G Development Conference" with the theme of "Striving for a New Journey - Looking at the Frontier of 6G Standards" opened in Shanghai. Zhang Chengliang, President of the Research Institute of China Telecom gave a keynote report entitled "Thinking and Prospecting of the Integration of 6G Space-Earth " Dec. 2024



On Jan 2025, China Telecom plans to work with partners to develop direct-connected satellites applications to be integrated with 5G, AI, Internet of Things



B.2.4 PoC Goals Status Report

Specify PoC Goals from ENI ISG PoC Proposal (clause A.1.2). Identify any changes from the original ENI ISG PoC Proposal with an explanation as to why the changes were made. Indicate the extent that each goal was met. Provide sufficient information for those not familiar with the PoC goals to understand what has been achieved and/or learned.

- PoC Project Goal #1: Network Slice Data Plane Adaptation Mapping. Demonstrate how to support identity resolution such as VLAN and IP address on the data plane, support precise identification and control for user services, and realize the slicing adaptation between mobile communication network and satellite network (Demonstrated/Met?) Demonstrated
- PoC Project Goal #2: Space-Ground Network Slice Cooperative Control. Demonstrate how to exchange the slicing control information with the control plane of ground mobile communication network and satellite network (5GC and SNOCC), optimize the global service quality of network slicing, and ensure the consistency and continuity of slicing service in space-ground cooperative network environment. (Demonstrated/Met?) Demonstrated

B.2.5 PoC Feedback Received from Third Parties (Optional)

Where applicable, provide in a free text, feedback received from potential customers, Ecosystem partners, event audience and/or public.

B.3 ENI PoC Technical Report (Optional)

B.3.1 General

PoC Teams are encouraged to provide technical details on the results of their PoC using the PoC Scenario Report template below.

B.3.2 PoC Contribution to ENI ISG

Use table B.1 to list any contributions to the ENI ISG resulting from this PoC Project.

Table B.1

Contribution	WG	WI/Document Ref	Comments
ENI(25)034_041r2_Update_to_RGS_ENI-001v411_Use_Cases_V4_0_5_PoC_19_related_.docx	ENI	ETSI GS ENI 001	Add "5.3.14 Use Case #2-14: Space-Ground Cooperative Network Slicing" into ENI 001 for reference.
ENI(25)034_043_update_to_RGS_ENI-002v411_Requirements_4_0_3_5_4_of_PoC_19.docx	ENI	ETSI GS ENI 002	Add "5.4 Network planning and deployment NPD.11-NPD.15" in ENI 002.

B.3.3 Gaps identified in ENI standardization

None.

B.3.4 PoC Suggested Action Items

None.

B.3.5 Additional messages to ENI

ENI may explore more use cases for space-ground cooperative network slicing related applications.

B.3.6 Additional messages to Network Operators and Service Providers

This PoC demonstrates space-ground cooperative network slicing to enable interconnection between 5G and satellite networks, solving slicing protocol mismatches via AI/ML-driven adaptation. Benefits include end-to-end slicing continuity via programmable gateways, intelligent resource orchestration with GCN+GRU models for dynamic mapping, enablement of vertical industries like aviation and disaster relief, and collaboration in ENI standardization to lead next-gen network, enhance service agility and co-shape integrated networks.