



भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
उत्तर क्षेत्रीय विद्युत समिति
Northern Regional Power Committee

Date: 12.09.2024

**विषय: Recommendations of Sub-Committee for finalization of SOP at National level
for providing the VOIP connectivity to control/coordination centres of TSPs/
Gencos- reg.**

Reference is invited to 14th NPC meeting wherein it was decided that a Sub-committee may be constituted under chairmanship of Member Secretary, NRPC for finalization of SOP at National level for providing the VOIP connectivity to control/coordination centers of TSPs/ Gencos. Accordingly, NPC Secretariat vide its letter of even no. dated 19.03.2024 (copy enclosed) constituted the sub-committee having representations from RPCs, PCD Division (CEA), RLDCs/GRID-India, CTU, POWERGRID and concerned private entities.

In this regard, it is to apprise that the Sub-Committee convened three meetings for detailed deliberations on all aspects of the VOIP Connectivity on 16th May 2024, 26th June 2024, and 8th August 2024. Based on the deliberations in the aforesaid meetings and inputs received from all committee members, the draft SOP has been finalized by the sub-committee. The enclosed draft is now submitted for further action and deliberation in the upcoming NPC meeting.

सलग्नक: यथोपरि |

Signed by Praveen Jangra

Date: 13-09-2024 12:19:34

प्रवीण जाँगड़ा

कार्यपालक अभियंता (सचार)

Chief Engineer & Member Secretary, NPC, CEA

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**Standard Operating Procedure (SOP)
for Providing VOIP Connectivity to Control and
Co-ordination Centre of TSPs and GENCOs with
VOIP Exchange situated at RLDCs**

**National Power Committee
Central Electricity Authority**

New Delhi

Draft version 3.0

1.0 Background

This Standard Operating Procedure (SOP) is designed to provide a comprehensive and standardized framework for TSPs and GENCOs to follow when applying for VoIP connectivity for their Control Centres/Coordination Centres. It outlines the necessary steps, documentation, and compliance requirements to facilitate the approval and installation of requisite infrastructure to facilitate VoIP connectivity.

Earlier, the first draft SOP was developed by CTU in response to requests from various TSPs and was subsequently approved in the 23rd TeST sub-committee meeting of NRPC held on dated 21.09.2023 and the same was referred to NPC for finalisation for all regions as TSPs in other regions may also come up with such requirements. Subsequently, in compliance of the directions given in the 14th NPC meeting held on 03.02.2024, a sub-committee was constituted under the chairmanship of Member Secretary, NRPC with representations from all RPCs, PCD Division-CEA, NPC Division-CEA, RLDCs/Grid India, CTU, POWERGRID, and concerned private TSPs to finalise SOP at national level for providing the VOIP connectivity to control centres of TSPs.

2.0 Scope

This Standard Operating Procedure (SOP) shall be applicable to Transmission System Providers (TSPs) and Generation Companies (GENCOs) for the purpose of granting Voice over Internet Protocol (VOIP) connectivity with the VOIP system (for Grid Operation purpose) located at Regional Load Dispatch Centres (RLDCs) for their Control Centres and Coordination Centres.

3.0 Objective

To facilitate seamless operational coordination among entities connected to the Regional Load Dispatch Centres (RLDCs) for the continuous, 24x7 operation of TSPs and GENCOs from their respective Control Centres and Coordination Centres for the purpose of supervision and control of grid by NLDC, RLDC and SLDC.

4.0 Effective Date and Amendments

This SOP shall become effective one month from the date of issuance. It may be amended by the National Power Committee (NPC) as and when required. For any amendment, the Central Transmission Utility (CTU) shall take up an agenda in an NPC meeting after thorough discussions in the Regional Power Committees (RPCs) based on the feedback received from users.

5.0 Provision in Regulations

Following are the provisions already made in various CERC Regulations:

- (a) Regulation 28.7 of CERC (IEGC) Regulations, 2023 provides as follows-

“Every generating station, and transmission substation of 110 kV and above shall have a control room manned by qualified operating personnel round the clock.

Alternatively, the same may be operated round the clock from a remotely located control room, subject to the condition that such remote operation does not result in a delay in the execution of any switching instructions and information flow:

Provided that a transmission licensee owning a transmission line but not owning the connected substation, shall have a coordination centre functioning round the clock, manned by qualified personnel for operational coordination with the concerned load despatch centres and equipped to carry out the operations as directed by concerned load despatch centres.”

- (b) Regulation 6(i) of CERC (Communication System for inter-State transmission of electricity) Regulations, 2017 provides as follows-

“The nodal agency for planning, and coordination for development of communication system for inter-State transmission system user shall be the Central Transmission Utility.”

- (c) Regulation 7(ix) of CERC (Communication System for inter-State transmission of electricity) Regulations, 2017 provides as follows-

“The CTU shall provide access to its wideband network for grid management and asset management by all users.”

6.0 Roles and Responsibilities:

6.1 CTU:

- (a) CTU shall examine and review of the connectivity applications of TSPs/ GENCOs in coordination with RLDC and POWERGRID.
- (b) CTU shall issue Grant of Connectivity.
- (c) CTU shall be responsible for managing all proceedings related to the amendment of this SOP, as and when required.
- (d) CTU shall ensure a uniform technical specification adopted for firewall at the user/ applicant end and RLDC/NLDC.
- (e) CTU shall review cyber security documents submitted by applicants in line with CEA cyber security guidelines 2021 and further documents issued by CEA and other regulatory authorities in this regard.

6.2 Implementing Agency:

- (a) POWERGRID shall be Implementing Agency for i.r.o. VOIP system. However, CTU may designate any other organization as Implementing Agency. Any mention of POWERGRID means in this SOP the Implementing Agency.
- (b) POWERGRID shall carry out setup and configuration work along with allotment of VOIP channel to the applicant in coordination with RLDC subject to availability of license in the VOIP system.
- (c) POWERGRID shall undertake maintenance of the VOIP system (including centralized firewall, if installed).
- (d) POWERGRID shall ensure proper functioning of VOIP channel from ISTS station to RLDC VOIP exchange.

- (e) POWERGRID shall resolve any connectivity issues from ISTS station to RLDC VOIP Exchange after grant of connection in coordination with Applicant and RLDC.
- (f) POWERGRID shall prepare Site Responsibility Schedule for equipment (VOIP system and firewall in this case) installed at RLDCs in line with the CEA (Communication Standards), Regulations 2020.

“Regulation 9(1): A site responsibility schedule for every interface point shall be prepared by the owner of the communication interface equipment at the interfacing location.

Regulation 9(2): Site responsibility schedule shall include- bullet (a) schedule of telecommunication interface equipment, their responsibility for access, maintenance, and operation.”

- (g) POWERGRID shall ensure allotment of IP Series in coordination with RLDCs.

6.3 NLDC/RLDC:

- (a) RLDCs shall coordinate with applicant, POWERGRID and CTU as and when required regarding any connectivity issue, installation and maintenance of VOIP system installed (including firewalls)
- (b) RLDC in case of communication failure shall inform the respective user so that the user shall ensure healthiness of its communication system.

6.4 Applicant:

- (a) Applicant shall apply for VoIP connectivity as per SoP along with submission of supporting document and any other relevant document required by CTU during application process.
- (b) Applicant shall coordinate with the RLDC and POWERGRID for setup and configuration of VOIP connectivity.
- (c) Applicant shall ensure compliance of various CERC and CEA regulations as outlined in para 8.1.2(c)
- (d) Applicant shall bear expenses towards leased line communication up to ISTS node/ISGS node/RLDC including suitable Firewalls, Routers etc. at both ends of the link, if required.
- (e) Applicant shall utilize the VOIP system for communication in line with CEA technical standard's Regulation 8 “Design and Planning” bullet (9).

7.0 General Architecture

The typical diagram for VOIP Connectivity to Control/Co-ordination Centers of TSPs & GENCOs with VOIP Exchange at RLDC has been shown in Annexure-I.

POWERGRID shall ensure a provision of centralized firewall in each RLDCs with sufficient ports and throughput that can be shared by TSPs/GENCOs etc. as it would be difficult and cumbersome to accommodate separate physical firewalls of each and every VOIP connection at RLDC's end.

8.0 Procedure

8.1 Application Submission:

- 8.1.1 **Application Form:** Application form shall be available at official website of CTUIL (<https://ctuil.in>) also attached at *Annexure-II*.
- 8.1.2 **Submission of Application Form:** Applicant shall submit duly filled aforesaid application form along with following Supporting Documents:

Supporting Documents:

- a. Network Architecture and General Arrangement diagram of concerned system with clear demarcation for TSPs/ GENCOs scope.
- b. Technical specifications of firewall, communication equipment installed by applicant,
- c. Undertaking for compliance of
 - I. CEA (Technical Standards for Communication System in Power System Operations) Regulations, 2020
 - II. CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022
 - III. CERC (Communication System for inter-State transmission of electricity) Regulations, 2017
 - IV. CEA (Cyber Security in Power Sector) Guidelines, 2021,
 - V. Guidelines on Interfacing Requirements under the CERC (Communication System for inter-State transmission of electricity) Regulations, 2017.
 - VI. Guidelines on Availability of Communication System under the CERC (Communication System for inter-State transmission of electricity) Regulations, 2017
 - VII. Procedure on “Centralized supervision for quick fault detection and restoration” under the CERC (Communication System for inter-State transmission of electricity) Regulations, 2017
 - VIII. “Procedure on Maintenance and testing of Communication System” under the CERC (Communication System for inter-State transmission of electricity) Regulations, 2017
 - IX. and their amendment issued time to time
- d. Undertaking by applicant that connectivity to VOIP system shall be used for Grid Operation purpose.
- e. Applicant shall submit the undertaking stating that it shall bear all the expenses towards communication, cyber security compliance and any other requirements for this purpose.

8.2 Review of Application

- a. **Verification of Documents:** CTU shall verify the completeness and accuracy of the submitted application and supporting documents.
- b. **Preliminary Assessment:** An initial assessment of the proposed VoIP system’s feasibility to be done by CTU in coordination with RLDC and POWERGRID.

- c. **Detailed Technical Evaluation & Review:** Detailed review of the proposed VoIP system's technical specifications, network architecture, and cybersecurity measures would be done by CTU in coordination with RLDC and POWERGRID.
- d. **Approval/Rejection:** Based on the technical evaluation, CTU shall approve/ reject the application. In case of rejection, detailed reasons shall be provided by CTU.
 - a. In case of rejection, the applicant may submit the fresh application form after incorporating the corrective measures/suggestions as informed by CTU during rejection of earlier form.

8.3 Grant of VOIP connectivity

- (i) After approval, a letter regarding grant of connectivity shall be issued by CTU to the applicant with a copy to RPC/ RLDC/ POWERGRID.

8.4 Post-Approval Procedure

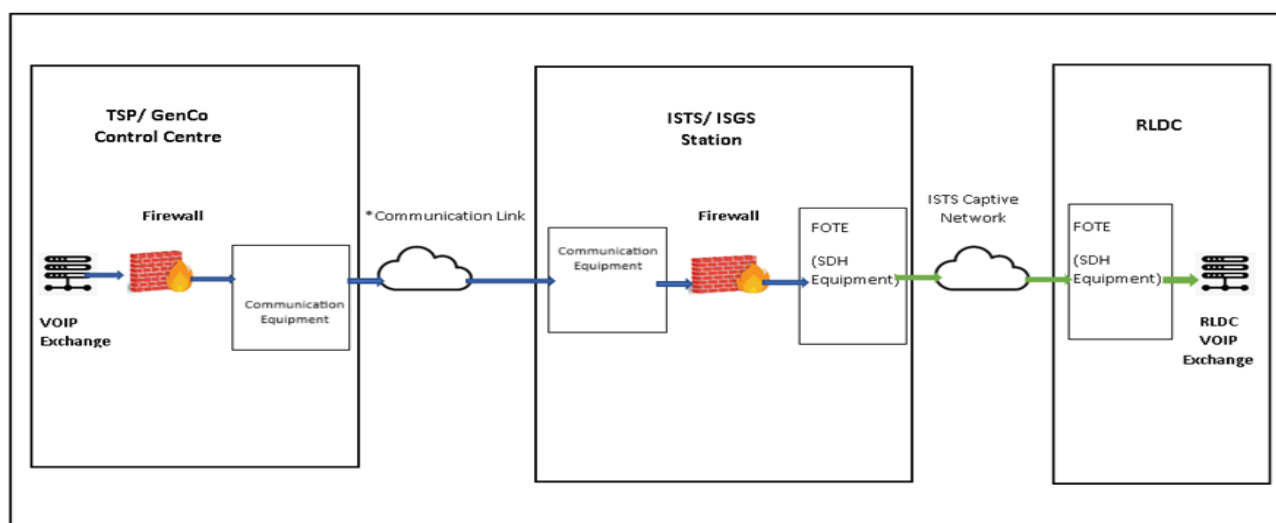
- (i) **Installation and Configuration:** Upon approval, the applicant through POWERGRID can proceed with the installation and configuration of the VoIP system, as per the approved specifications.
- (ii) **Testing and Commissioning:** Applicant shall conduct comprehensive testing to ensure proper functionality and interoperability with RLDC/ISTS systems and submit a report to CTU with copy to RPC for information.
- (iii) **Post Commissioning Activity:** POWERGRID shall ensure proper functioning after configuration of VOIP channel from ISTS station to the RLDC VOIP exchange. Applicant shall ensure proper functioning of VOIP channel from their end to ISTS station.
- (iv) **Confirmation of Connectivity:** Applicant shall confirm the connectivity of their control centre/coordination centre with VOIP system through a letter to CTU and RPC.

9.0 Compliance and Reporting

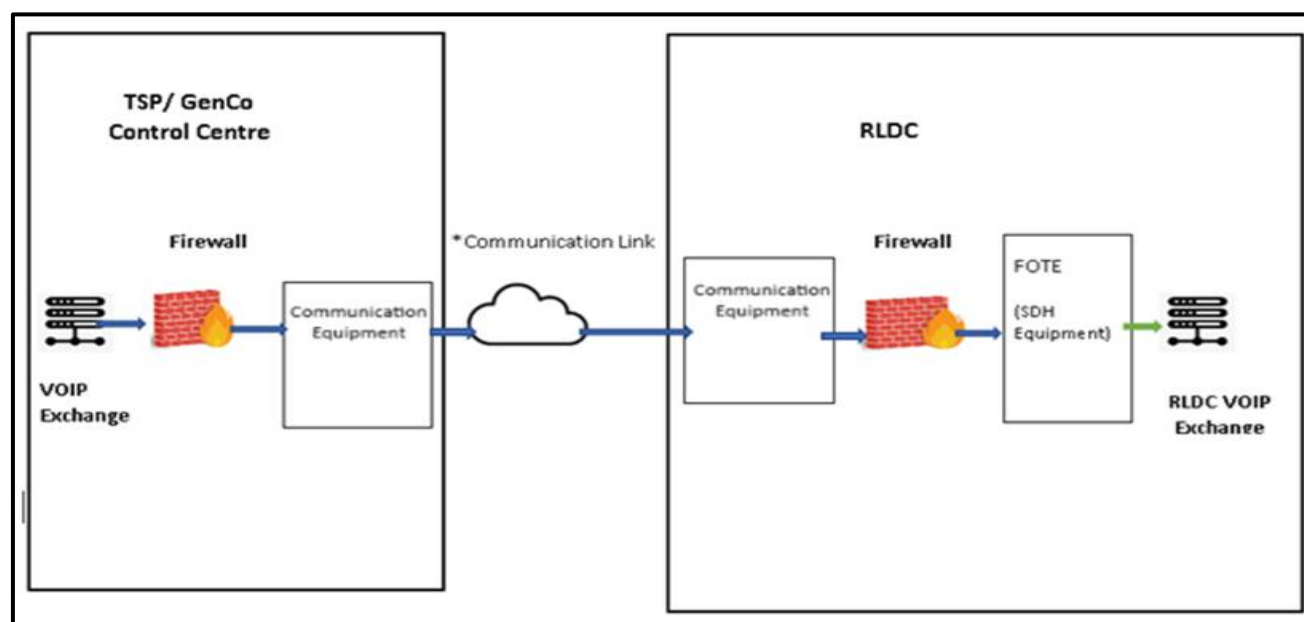
- (i) **Regular Audits:** Adhere to periodic audits and compliance checks as per prevailing regulations for the communication system.
- (ii) **Incident Reporting:** Applicant/ User shall promptly report any incidents or issues related to VoIP connectivity to RLDC for timely resolution in association with POWERGRID.

Typical Connectivity diagram for VOIP connectivity

- A. VOIP Connectivity Diagram for TSP/ GENCO's Control/Co-ordination Centre to VOIP Exchange system at RLDC through ISTS/ISGS Station



- B. VOIP Connectivity Diagram for TSP/ GENCO Control/Co-ordination Centre to VOIP Exchange system at RLDCs directly



(*) For communication link mentioned in the architecture for VOIP connectivity between TSP/GENCO's Control/Coordination Centre to ISTS/ISGS Station/RLDC as the case may be, dedicated point to point links may be preferred. In case of leased line being used, POWERTEL leased lines may be preferred considering security, as mentioned in the CEA (Cyber Security in Power Sector) Guidelines 2021 mentioned below:

"Article 1. Cyber Security Policy. Cardinal Principles: The Responsible entity will strictly adhere to following cardinal principles while framing cyber security policy:

v. Communication between OT equipment/systems is done through the secure channel preferably of POWERTEL through the fibre optic cable."

Application Format for VOIP connectivity

Name of applicant:

Designation:

Contact number and email:

Organisation/ Utility:

Control Centre / Coordination Centre for which VOIP connectivity is required:

Connectivity Required from : RLDC/ ISTS S/s / ISGS G/s

Name of above Location:

No. of VOIP Channels Required:

Cyber Security Compliance Provided : Yes/ No

Proposed Connectivity diagram: