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Request for Quotation

1. Project Overview

As part of the MeitY-funded India Open Source for 5G Networks project, we are initiating procurement to establish field/lab infrastructure. We invite qualified vendors to submit quotations to set up a pre-deployment testbed to do outdoor survey, installation of 5G core, RAN, SMO and IMS. The vendor has to integrate the 5G devices and the verification of the working setup as per the requirement.

2. RFQ Details

RFQ Number: FSID/IOSMCN/15-01
RFQ Issue Date: 05th Dec 2024
RFQ Deadline: 18th Dec 2024
Delivery Date: 30th Dec 2024
Delivery Location: IISc, Bangalore
Contact Person: Chethan (+91 6363672928)

3. Scope of Work:

The RFQ involves providing a comprehensive deployment solution to meet current market demands for 5G network testing. This includes precise product dimensioning to align with project scale, establishing robust entry criteria, and defining a solution architecture tailored to IOS-MCN requirements. The deployment process begins with an outdoor site survey, followed by the installation of essential 5G components such as RAN, Core, IMS, and SMO. Integration of 5G devices into the pre-deployment test bed will be required to simulate realistic conditions. Finally, the complete setup must undergo thorough verification to ensure it operates in compliance with the User and Configuration Guide provided in the Release Notes, enabling seamless pre-deployment testing and validation of the IOS-MCN release.

1. **Comprehend market requirement for deployment solutioning**
   a. Product Dimensioning
   b. Entry Criteria
   c. Solution Architecture

2. **Deployment of the pre-deployment of the testbed**
   a. Indoor Lab Config/Plan and Outdoor Site Survey
   b. Installation of the 5G RAN, Core, IMS, SMO

      c. Integrate 5G devices to the Testbed
      d. Verification of the Setup is working as per the steps in User & Configuration Guide in the Release Notes

3. Customer Specific Acceptance Testing
      a. Acceptance testing of the features using the 5G devices available
      b. Validation the performance and scalability based on actual HW available
      c. Use case Integration

If the vendor has not responded to the TOR, https://ios-mcn.org/ please provide your input/response to the TOR also. This is a mandatory input for the technical evaluation.

4: Technical Requirements and Milestones:

Phase	Timeline	Technical Requirements	Deliverables	Milestones
Phase 1: Initial Milestone for Defining Entry criteria and finalizing the hardware dimensioning	Month 1 and 2	**Entry Criteria**: From SMO, Core and Distributed RAN perspective define the minimum required feature set and configuration provisioning **Hardware Dimensioning:** Based on the functional specification and traffic planned at the deployment define hardware resources and deployment plan.	1. IOS MCN SMO list of functional, configuration and integration scenarios that are required for the deployment. 2. IOS-MCN 5G Core list of functional, configuration and integration scenarios that are required for the deployment. 3. IOS-MCN 5G RAN list of functional, configuration and integration scenario that are required for the deployment. 1. Bill of Quality definition of all Hardware and Software required	Entry criteria document for the following components: 1. IOS-MCN SMO 2. IOS-MCN Core 3. IOS-MCN RAN Hardware dimensioning document for a. Private 5G deployment for Universities b. Private 5G deployment for small and

			for the deployment. 2.BoQ definition for planned different deployment scenario 2a. BoQ for Private 5G Lab deployment for university 2b. BoQ for Private 4G Deployment for small and medium industries	medium industries
Phase 2:	Month 3 to 6	Indoor and Outdoor Testing at IISc, Bengaluru **Site Preparation: 1:** Indoor lab configuration/plan and testing. Identify and survey outdoor locations at IISc for testing. **2:** Ensure necessary permissions and logistical support. **Infrastructure Deployment: 1:** Set up network nodes and power sources. **2:** Configure the IOS-MCN solution for indoor/outdoor testing. **Test Case Development: 1:** Define test scenarios for key KPIs like latency, throughput, and	1: Site readiness report. 2: Initial deployment of network infrastructure. 3: Test case documentation. 4: Initial field trials and debugging logs. 5: Midpoint KPI optimization report. 6: Updated configurations and testing plans 7: Comprehensive testing and optimization report. 8: Recommendations	1: Completion of planning and initial deployment. 2: Execution of preliminary indoor/outdoor tests. 3: KPI optimization for use cases. 4: Final report submission and readiness for next phase.

		reliability.	for further refinement of the IOS-MCN solution.	
Phase 3: Deployment specific functional, performance and use case deployment along with IMS over VoNR and ViNR	Month 7 to 9	**Functional Testing:** Define the functional deployment setup, configuration of the setup for optimal usage of the featues. Configuration would involve all equipment defined in the BoQ **Performance Testing:** The traffic pattern at the deployment site needs to be studied and the required test conducted to ascertain the end-to-end functionalities are working at the deployment site **Use Case Testing:** Different type of user equipment's that are part of the BoQ should be completely tested including the required configuration at the device, Core, RAN and SMO cluster in which the backend application for the device is installed	1. Deployment specific functional Test cases and execution status with required log reports 2. Deployment specific performance Test cases and execution status with required log reports 3. Deployment specific use case Test cases and execution status with required log reports. 4: Fully operational IMS core with VoNR and ViNR. 5: Testbed for end-to-end VoNR/ViNR trials.	1: Deployment specific test case definition and test case execution report. 2: VoNR/ViNR feature enablement. 3: QoS testing and optimization along with field trials and final validation.

		along with the integration of voice and video services and end to end QoS handling for real time communication. It also includes the tools for VoNR and ViNR performance validation.		
Phase 4: User specific use case driven deployment-based testing	Month 10 to 12	**User Focused Approach:** Interactions and scenarios that users have with the system are the main focus of testing. It places a strong emphasis on verifying the system's response to user input and activities. **Scenario-Based Testing:** Use case scenarios, which depict common or important interactions between users and the system, serve as the framework for organizing testing. This strategy helps in making sure that the system lives up to user expectations in practical settings. **Requirements Validation:** Use Case Testing verifies that the	1:Detailed use case document – List of configurations, features, flow diagrams etc for each use case. 2:Defining functionality, quantitative and qualitative criteria for each use case 3: Document for the traceability from Market Requirements to Use-cases to test cases and pass/fail criteria	Test results – including functionality, what if scenarios, boundary conditions, performance, reliability, repairability etc.

		system satisfies the specifications given in the use cases. Testing makes ensuring that the functional requirements are implemented correctly, as each use case usually reflects a particular functional requirement. **Testing, both positive and negative:** Positive testing (valid inputs and expected behavior) and negative testing (invalid inputs and error handling) are both included in use case testing. This broad method assists in identifying flaws in a variety of situations. **Testing, both positive and negative:** Positive testing (valid inputs and expected behavior) and negative testing (invalid inputs and error handling) are both included in use case testing. This broad method assists in identifying flaws		

| | | in a variety of situations.

Integration Testing: Integration testing, which verifies how various parts or subsystems interact within the framework of a use case, is frequently a part of use case testing. | | |
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5. Submission Requirements:

The quotation should be submitted in the form of 2 separate documents as specified below:

1. TECHNICAL EVALUATION DOCUMENT: This should contain the following:

a. A detailed workplan based on the technical requirements based on the section (Please check any deviation from requirements).

b. Detailed specifications of any tools that will be required for the execution of the work plan.

c. Detailed description of additional resources (including human resources) that will be needed for the execution of the work plan.

d. Specify any dependencies, known risks and mitigation plans.

e. If the vendor has not responded to the TOR, https://ios-mcn.org/ please provide your input/response to the TOR also. This is a mandatory input for the technical evaluation.

2. COMMERCIAL BID DOCUMENT:

a. Quotations should include detailed pricing, including unit prices, taxes, and any additional fees.

b. Provide information on warranty terms, technical support services, and maintenance agreements.

c. Include company profile, relevant experience, and references from past projects.

d. Quotes for the product must be enclosed in a password protected PDF file format.

e. Quotations must be addressed to

Director,
Foundation for Science Innovation and Development
Innovation Centre, IISc Campus Near Maramma Circle gate
Bengaluru 560012 GSTIN: 29AAECF1802E1Z1

3. Evaluation Criteria:

The evaluation criteria include for considering the quote and awarding with the purchase order includes,

- Compliance with RFQ requirements and specifications.
- Price competitiveness.
- Vendor experience, and track record.
- Warranty and support offerings.
- Technical capabilities and compatibility with existing infrastructure

4. **Important Notes**:

   ● The lowest-priced quotation may not necessarily be selected; quality, reliability, and vendor reputation will also be considered.
   ● IOS MCN reserves the right to reject any or all quotations and to award the purchase order on its own evaluation criteria.
   ● Any clarifications or questions regarding this RFQ should be directed to the contact person listed above.