

Digital Advisory Services Professional Service Description

SIP SBC with Field Trial Endpoint Deployment Model

1. Description of Services.

1.1 SIP SBC with Field Trial Endpoint Deployment

Verizon will assist Customer with the planning, preparation and implementation of a session initiation protocol (SIP) solution that enables mobile workspaces access to the unified communication (UC) system, leveraging internet protocol (IP) private branch exchange (PBX) to extend voice over IP (VoIP) and UC over the Internet. Verizon will provide Customer with a repeatable methodology that can be used to enable a SIP endpoint deployment over the enterprise.

2. **Scope of Work.** In collaboration with Customer, Verizon will provide technical expertise, oversight and guidance through a logical sequence of activities designed to enable a SIP endpoint deployment for the enterprise.

2.1 **Professional Services Overview.** Verizon will initiate and conduct a kick-off conference call between Customer and applicable Verizon resources. Through collaborative workshop(s) with Customer, Verizon will:

- 2.1.1 Review Customer's stated business requirements and expectations;
- 2.1.2 Establish a Project timeline and develop a master Project plan;
- 2.1.3 Gather pertinent information about the Customer call control system required to create a SIP trunking services design to support the SBC configurations (dial-plan, call-flow, codec, redundancy, etc.);
- 2.1.4 Gather pertinent network infrastructure information (IP addressing, routing, quality of service (QoS), etc.) required to deploy the SBC devices;
- 2.1.5 Gather SIP trunk services (IP trunk or IP contact center) information from Customer's service provider (simultaneous calls, features, authentication, protocols, etc.) required to deploy the SBC devices;
- 2.1.6 Lead technical discussions during the planning, design and migration process to help mitigate issues associated with the integration between the Customer call control system (Ex. UC, PBX, voice gateway), SBC devices and SIP trunk services;
- 2.1.7 Create the SBC and SIP trunk low-level-design document;
- 2.1.8 As part of the proof of concept, will configure the SBC to test different SIP user agents models, including integrated access devices (IAD), IP phones, etc.;
- 2.1.9 Perform SIP traces within the SBC devices as deemed necessary by Verizon to validate interoperability;
- 2.1.10 Provide a commercially reasonable effort to assist Customer with troubleshooting interoperability issues encountered;
- 2.1.11 Perform tests to ensure that the expected (in scope) SIP trunk features are working properly; and
- 2.1.12 Create the proof of concept document which includes analysis about the tested scenarios and recommendations.

2.2 Low-level Design. Once Customer has reviewed and approved the proof of concept document, Verizon will create a low-level-design document based on the mutually agreed final solution. Once the low-level-design document is approved, Verizon will assist Customer with the configuration, implementation and testing of the solution in the final environment.

Verizon will perform the activities:

- 2.2.1 Remotely configure the SBC devices to support the final solution;
- 2.2.2 Remotely conduct the field trial;
- 2.2.3 Validate the SIP user agents models tested as part of the pilot; and
- 2.2.4 Document the test results

Verizon will perform the following tasks:

- 2.2.5 Consultation related to SIP design, implementation, configuration and testing of up to the number of ACME Packet, Cisco CUBE or Sonus SBC devices, as specified in the Engagement Letter, to enable access to the unified communication system for mobile workspaces, leveraging IP PBX to extend VoIP and unified communications (UC) over the Internet to remote SIP user agents (remote IP phones, IADs, soft phones, and Wi-Fi/dual-mode phones);
- 2.2.6 Implement SBC features required to support network address translation (NAT) and endpoint registration;
- 2.2.7 Implement basic SBC security mechanisms, required by the Customer, in order to mitigate risks related to access from devices in the internet or extranet;
- 2.2.8 As part of the proof of concept, work with Customer to test up to 5 different scenarios;
- 2.2.9 In all scenarios the remote SIP user agents will be integrated to a single Customer call control system;
- 2.2.10 Each remote SIP user agents model (remote IP phones, IADs, soft phones, and Wi-Fi/dual-mode phones) is a different scenario; and
- 2.2.11 Support testing of up to 5 SIP user agent models and up to 10 total user agent devices.

Customer is responsible to design and configure the call control system.

2.3 SIP Architecture and Design. Verizon will coordinate and lead technical discussions with Customer about the SIP integration and migration. The discussions will cover the following topics:

- 2.3.1 Verizon IP trunk functionalities and integration, such as alternate route recovery service (ARRS), unscreened automatic number identification (UANI), Verizon wireless internet playback and eCommerce reporting, and failover;
- 2.3.2 The SBC features included in the Project scope:
 - 2.3.2.1 Customer call control system integration with Verizon SIP trunks (IP trunk and IP Contact Center);

- 2.3.2.2 SBC network design and connectivity (IP addressing, local area network (LAN) connectivity, and IP routing);
- 2.3.2.3 Call-flow, codec, redundancy, and failover requirements; and
- 2.3.2.4 Dial-plan design and digit manipulation requirements to integrate between IPPBX, SBC, and carrier SIP trunks.

Verizon will evaluate Customer's existing dial plan and make recommendations on integration with the SBCs. Verizon will assist Customer to determine a method for porting existing and new direct inward dial (DID) telephone numbers.

2.4 Proof of Concept and Pilot. Verizon will coordinate and lead technical discussions with Customer to determine the best design for the Customer by:

- 2.4.1 Working with Customer to define different scenarios to be tested in the Customer environment for the proof of concept phase;
- 2.4.2 Working with Customer to define the applications, protocols and voice features that needs to be validated for each scenario;
- 2.4.3 Verizon and Customer will conduct tests based on the defined scenarios (validation); and
- 2.4.4 After the proof of concept conclusion, Verizon will document the scenarios and deploy the pilot sites.

2.5 SIP Security Consulting. Verizon will perform the following tasks:

- 2.5.1 Define the protocols that need to be opened in the Customer "firewall system" (if required);
- 2.5.2 Discuss and implement authentication and encryption between SBC and peering devices, such as UC systems;
- 2.5.3 Discuss and implement topology hiding, the mechanism where a border element removes sensitive topology information;
- 2.5.4 Discuss and implement basic SBC configuration to mitigate distributed denial of service (DDoS) attacks; and
- 2.5.5 Documentation of the SBC security features deployed.

2.6 Mobility and SIP Trunking. Verizon will perform the following tasks:

- 2.6.1 Discuss and document the remote SIP user agent requirements for extranet and internet connectivity;
- 2.6.2 Discuss and document the requirements related to SIP Hosted NAT Traversal (HNT); and
- 2.6.3 Discuss SIP user agent registration process and define overall requirements (authentication, etc.).

2.7 Device Implementation and Integration. Verizon will perform the following tasks:

- 2.7.1 Implement and configure SBC devices based on design engineer design documents;
- 2.7.2 Provide SBC configuration for "inside", "outside", and management network connections;

- 2.7.3 Provide SBC configuration to integrate to SIP trunk services (IP trunk or IP contact center);
- 2.7.4 Provide SBC configuration to integrate to the Customer call control system;
- 2.7.5 Configure SBC for basic call routing related to SIP trunk locations;
- 2.7.6 Test basic calls through the Verizon SIP trunk call path;
- 2.7.7 Provide failover testing for SBC integration with the Customer call control system; and
- 2.7.8 Configure SIP trunking on the SBC device at the Customer premise to integrate with the Customer call control system and SIP trunk services.

The SBC device implementation will be conducted at a day/time agreed to by both Parties.

2.8 Testing and Validation. Verizon will assist Customer to define a comprehensive set of test cases designed to validate the solution design and will lead Customer through the test cases. Customer will perform various tests using such test cases. Customer will require access to at least two IP endpoints during the testing. Verizon will document the test results performed during the testing.

Verizon will perform the following tasks:

- 2.8.1 Assist Customer with the execution of the test cases, but Customer will perform the tests;
- 2.8.2 Document test case results;
- 2.8.3 Work remotely with Customer during the testing to monitor the SIP traffic within the Verizon network and answer questions that may arise during testing; and
- 2.8.4 Use commercially reasonable efforts to provide guidance to Customer regarding how to correct the issues, in the event any issues arise during testing.

Verizon will communicate to Customer any mitigation and interoperability issues encountered with the Customer call control system after completion of the Services along with re-testing requirements.

2.9 Engagement Management. Verizon will designate an “Engagement Project Manager” who will act as the single point of contact throughout the Engagement. The Engagement Project Manager is also responsible for managing the change control process. Should the Engagement’s requirements change during the course of the Engagement, the Engagement Project Manager will ensure that any modifications to the SIP SBC with Field Trial Endpoint Deployment are agreed to and documented in writing.

Customer will appoint a single point of contact that is responsible to: coordinate the Engagement activities, interact with Verizon, and ensure timely data flow and exchange of information required for execution of the Engagement within the agreed time frame.

Verizon will work with Customer to schedule a kick-off discussion to initiate the Engagement. Verizon and Customer will collaborate to determine required stakeholders and other attendees, agenda, and meeting location (i.e. on site or virtual). At or before the kick-off discussion, Customer shall provide a list of appropriate contact personnel with contact numbers, and appropriate on-site authorization documentation (where applicable). As an output of the discussion, Verizon will confirm the resources, date, time, and location for the SIP SBC with Field Trial Endpoint Deployment with the Customer.

All Engagement Management activities and duties will be delivered remotely.

3. **Deliverables and Documentation to be produced by Verizon.** Deliverables are intended for Customer and Verizon use only. Customer may disclose a Deliverable to a third party pursuant to the Agreement's confidentiality terms. Verizon will provide:
 - 3.1 Project timeline;
 - 3.2 Master Project plan;
 - 3.3 Low-level design document; and
 - 3.4 Solution test case results.
4. **Documentation to be produced by Customer and Customer Obligations.** Delivery of the SIP SBC with Field Trial Endpoint Deployment Professional Services by Verizon is dependent on Customer's performance of the following:
 - 4.1 Provide the necessary commitment of resources and timely response to requests for information to achieve the delivery of the SIP SBC with Field Trial Endpoint Deployment within the mutually agreed timeframes.
 - 4.2 Designate, prior to start of the Engagement, a project manager who will function as the single point of contact ("SPOC") to Verizon and must be involved throughout the duration of the Engagement.
 - 4.3 Actively participate in all Engagement related meetings and discussions and mutually collaborate with the SPOC designated by Verizon to resolve issues and changes to plan.
 - 4.4 Make available, as required, all necessary contacts and stakeholders for input and participation in this Engagement.
 - 4.5 Provide the assistance as defined under Customer Obligations section of the SOW.
 - 4.6 **Customer's Third Party Vendors.** Unless otherwise stated in the Engagement Letter, Customer's Project lead will coordinate all activities between Verizon and any third party vendors used to fulfill Customer's responsibilities set forth herein. This includes, but is not limited to, third party vendors used for:
 - 4.6.1 Upgrade of Customer PBX/IPPBX;
 - 4.6.2 Electrical power systems;
 - 4.6.3 Data/voice cabling systems;
 - 4.6.4 Carrier services;
 - 4.6.5 Equipment (software and hardware);
 - 4.6.6 Implementation and professional services; and
 - 4.6.7 Maintenance services.
 - 4.7 **Field Trial Test Requirements.** Customer is responsible to provide the following in their call control system in order to enable Verizon to perform the field trial tests.

4.7.1 Phone call types.

4.7.1.1 Phones able to receive inbound calls with Caller ID:

- 4.7.1.1.1 Ability to call a number that is not registered;
- 4.7.1.1.2 Ability to call a number that does not answer;
- 4.7.1.1.3 Ability to call a number that is busy; and
- 4.7.1.1.4 Phone on public switched telephone network (PSTN) able to make these calls.

4.7.1.2 Phones able to make outbound calls to (country dependent):

- 4.7.1.2.1 Local;
- 4.7.1.2.2 Long distance/national fixed and mobile;
- 4.7.1.2.3 International fixed and mobile;
- 4.7.1.2.4 Local Services;
- 4.7.1.2.5 Emergency services;
- 4.7.1.2.6 Operator assisted / directory assistance calls;
- 4.7.1.2.7 Privacy enabled calls; and
- 4.7.1.2.8 Phone on PSTN able to receive these calls.

4.7.1.3 Fax machine on the PSTN able to send an outbound fax.

4.7.1.4 Fax machine on the PSTN able to receive an inbound fax.

4.7.1.5 Transfers (REFER or REINVITE or both):

- 4.7.1.5.1 Two phones on SIP side able to transfer to each other and PSTN;
- 4.7.1.5.2 Two phones on PSTN side able to take calls and be transferred;
- 4.7.1.5.3 Ability to test attended transfer type;
- 4.7.1.5.4 Ability to test semi- attended transfer type; and
- 4.7.1.5.5 Ability to test blind transfer type.

4.7.1.6 Features:

- 4.7.1.6.1 Ability to place a call on hold;
- 4.7.1.6.2 Ability to place music on hold;
- 4.7.1.6.3 Ability to conference two callers together;
- 4.7.1.6.4 Ability to test dual-tone multi-frequency signaling (DTMF) in both directions; and
- 4.7.1.6.5 Ability to test alternate caller ID (ACID) feature.

4.7.1.7 Hardware and Configuration Support:

- 4.7.1.7.1 Ability to test failover capabilities by disabling SBCs, private branch exchanges (PBXs), routers and/or switches;
- 4.7.1.7.2 Ability to test all types of endpoints including any voice gateways and voice mail servers where required;
- 4.7.1.7.3 Ability to test G.711 and G.729 calls; and
- 4.7.1.7.4 Ability to test with ambient background noise.

4.8 Provide internet access that will enable Verizon to access external systems using VPN capability, if necessary.

4.9 Provide remote VPN access to applicable systems.

4.10 Provide relevant supporting documentation, as requested by Verizon including without limitation, system management and administrative documents.

4.11 Rack and stack and connect all equipment to the network.

4.12 Acquire, install, and configure any client software on any PCs (for example Wireshark) within the scope of the Engagement.

4.13 Procure, design, install, configure troubleshoot, manage, and support all Customer-owned CPE. The applicable CPE may include, but is not limited to, the call control device (PBX/IP PBX), SBCs, LAN switches, routers/gateways, and telephony devices.

4.14 Confirm that all CPE devices are configured, installed and tested prior to the start of the field trial testing.

4.15 Additional Customer responsibilities consist of:

4.15.1 Connecting the PIP circuit and configuring applicable CPE devices to support the IP connectivity and IP/SIP Trunk(s); and

4.15.2 Customer will perform packet captures of the SIP traffic during the field trial testing, using WireShark. Upon completion, the Customer will provide the WireShark packet capture files to Verizon.

5. **Assumptions.** In addition to the (i) above-stated obligations, policies, and parameters and (ii) the assumptions stated in the Assumptions section of the SOW, the following assumptions and considerations shall apply. Should any of these assumptions prove to be incorrect or incomplete then Verizon may modify the price, scope of work, or milestones:

5.1 SIP SBC with Field Trial Endpoint Deployment will be performed during the hours defined in the Engagement Letter.

5.2 Any Assumptions under the applicable Engagement Letter will also apply to the SIP SBC with Field Trial Endpoint Deployment.

5.3 Customer's network will be "stable" during the data gathering period, which means no fundamental changes and/or equipment deployments during the discovery window as agreed upon between Verizon and Customer prior to field trial commencement.

5.4 The dial plan design for the Engagement is specifically to allow for SBC integration with the Customer's IPPBX.
Any dial plan design outside of this integration is not included in the Engagement.