



**Microsoft Skype for Business Server 2015 Interoperability  
Qualification  
Test Report  
for  
OneStream Networks - SIP Trunk**

Submitted to



**Test Dates: 3<sup>rd</sup> August to 2<sup>nd</sup> December 2015**

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## 1 Executive Summary

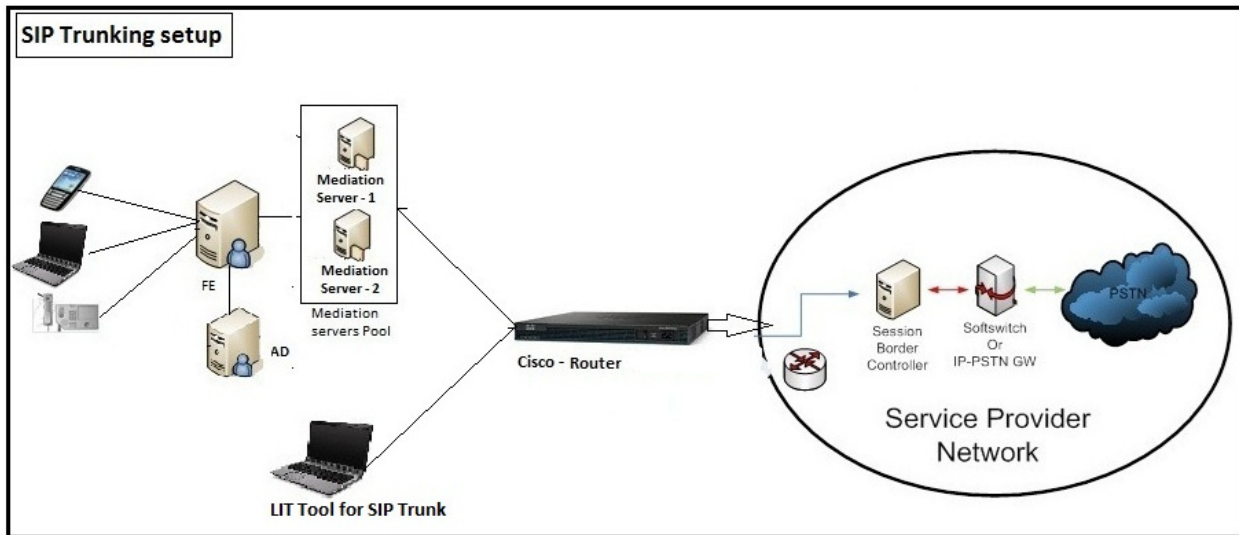
Wipro conducted the SIP Trunking Qualification tests, as part of the Unified Communications Open Interoperability program – MS Skype for Business Server 2015 for the “OneStream Networks” SIP Trunk at Wipro Skype for Business Qualification test facility in Bellevue, USA. Using the Microsoft provided SIP Trunking test plan all the applicable tests have been conducted. The complete test results are provided in section 7 below.

This document also provides the details of the product under test, test plans employed and the summary of the test results.

## 2 Partner Details

<b>Partner</b>	<b>Product</b>	<b>OneStream Networks SIP Trunk</b>
	<b>Device Name</b>	<b>AudioCodes Mediant 9000</b>
	<b>Version#</b>	7.00A.013.006

## 3 Skype for Business Server & SIP Trunk topology



## 4 Qualification Test Procedure

Wipro performed the qualification tests of SIP Trunking utilizing information made available through the “Lync Server 2013 SIP Trunking Test Plan” provided by Microsoft Corporation. This qualification program has been formulated and is governed by Microsoft Corporation.

## 5 Interoperability

Feature	Supported/Not Supported	Additional Info/Comments
911/Emergency Services	Supported	ANI Based e911 services
Virtual DID/DDI Provisioning	Supported	We supply DID/DDI(s) worldwide.
Local Dialing Access	Supported	We provide access to local dialable numbers
Domestic Long Distance Dialing Access	Supported	We provide access to US Domestic, dialable numbers
International dialing access	Supported	We provide access to all International numbers
Domestic inbound toll free	Supported	We can supply Domestic and International inbound numbers
<b>Optional Features</b>		
Outbound Local Dialing based on DID/DDI Rate Center		
SP On-Net Toll Free		
SP On-Net Toll Free w/ TDM		
Management Web Portal – Service Health & Usage	TBD	
E911 Support with Dynamic Location Data Service	Supported	ANI Based e911 services – Caller ID number must be registered to a location

## 6 Tools

1. LyncIT Tool (Version: 5.0.8736.1) – To run & validate the SFB interoperability – SIP Trunking automated test cases.
2. Snooper – Skype for Business logging tool
3. Skype for Business Server 2015 Logging tool – to validate the SIP call flow at SFB end.
4. Wireshark – to validate the SIP/call flow between SFB & SPP

## 7 Test Summary

Total Test Cases	TCs Passed	TCs failed	Optional and not Supported TCs	Exempted	Result of the Qualification test
115	115	0	0	0	PASS

## 8 Test Results

SIP-T TestID	Test Name	Test Status	Comments
408487	PSTN End Point calls Lync End Point with Caller ID set to 'Anonymous' on Device	Pass	
408491	Lync End Point calls PSTN End Point with a call duration longer than 32 seconds	Pass	
408492	Device generates 603 Decline response for a call rejected by PSTN End Point	Pass	
408493	Lync End Point calls IVR number and navigates through the IVR menu before call Connection	Pass	
408494	Device correctly handles non-E.164 number in outbound Request URI	Pass	
408495	Lync End Point calls PSTN End Point and hangs up before receiving 200 OK from Device	Pass	
408496	PSTN End Point displays Lync End Point Caller ID for Outbound	Pass	

	Call		
408497	PSTN End Point disconnects established call to Lync End Point	Pass	
408498	PSTN End Point disconnects established call from Lync End Point	Pass	
408499	PSTN End Point calls Lync End Point and hangs up while Lync End Point is still ringing	Pass	
408500	Device processes phone-context in Request and To URI from Lync End Point	Pass	
408501	Lync End Point sends INVITE with E.164 number and extension in Request and To URI	Pass	
408502	Device processes call from Lync End Point with E.164 number in FROM Header URI	Pass	
408503	Lync End Point response to PSTN End Point is delayed due to network delay	Pass	
408504	Device is able to disconnect a call that is forked to Lync End Points set to 'Do not disturb'	Pass	
408505	Device sends single media description line for a call from PSTN End Point to Lync End Point	Pass	
408506	Lync End Point calls an IVR number and navigates through the IVR menu after call connection.	Pass	
408507	Device handles call from Mediation Server with an alias name in the FROM header	Pass	
408508	PSTN End Point1 calls Lync End Point that is set to simultaneous ring to Lync End Point and PSTN End Point2 answers	Pass	
408509	Inbound call to Lync End Point from PSTN End Point with a very long Request-URI in the INVITE	Pass	
408510	Mediation Server renegotiates an existing voice session with a different IP address	Pass	
408514	Device establishes call to Lync End Point with configured value of ptime	Pass	
408515	Lync End Point makes a call to PSTN End Point with G.711 A-law and/or G.711 U-law codecs	Pass	
408516	Device negotiates Comfort Noise in a call from Lync End Point to PSTN End Point	Pass	
408517	Device sends Comfort Noise packets to Lync End Point when a call is muted	Pass	
408518	Device sends Comfort Noise packets to Lync End Point when secure call is muted	Pass	
408519	PSTN End Point is able to establish a call with Lync End Point using G.711 A-law codec	Pass	
408521	Lync End Point is able to establish a call with PSTN End Point using G.711 A-law codec	Pass	
408522	Device handles multiple RTP streams for a call to Lync End Point	Pass	
408523	Device handles multiple SRTP streams for a secure call to Lync End Point	Pass	
408526	Device sends RTCP packets when Lync End Point places call on hold	Pass	
408527	Lync End Point makes a secure call to an IVR number and navigates through the IVR menu after receiving 200 OK from Device	Pass	
408528	Device with RTP only setting rejects call from Lync End Point that requires SRTP	Pass	
408529	Device does not change the SSRC of an established outbound RTP session	Pass	
408530	Device offers DTMF payload type in the range of 96-127 to Mediation Server	Pass	
408531	Device supports RTP payload for redundant audio data for an inbound call	Pass	
408532	Device sends RTCP sender and receiver reports	Pass	
408533	Device does not change the SSRC of an established inbound RTP session	Pass	

408534	Device sends RTCP sender and receiver reports for a secure call	Pass	
408535	Lync End Point hears Early Media for a call to PSTN End Point	Pass	
408536	Lync End Point hears Early Media for a secure call to PSTN End Point	Pass	
408537	Lync End Point hears Early Media for a secure call to PSTN End Point when Media Bypass OFF	Pass	
408538	Device disconnects a forked call if PSTN End Point hangs up while phones are ringing	Pass	
408539	Device disconnects a forked secure call if PSTN End Point hangs up while phones are ringing	Pass	
408540	PSTN End Point1 calls Lync End Point that is set to simultaneous ring to IVR number on a PSTN endpoint	Pass	
408541	Device sends PRACK for reliable Early Media for a call from PSTN End Point to Lync End Point	Pass	
408542	Device sends PRACK for reliable Early Media for call from PSTN End Point to Lync End Point with SRTP Optional	Pass	
408543	Lync End Point makes a call to PSTN End Point with G.711 U-law codec	Pass	
408544	Mediation Server that requires SRTP rejects call from Device that supports RTP only	Pass	
408545	Device that supports SRTP only rejects call from Lync End Point that supports RTP Only	Pass	
408546	Device handles 488 Not Acceptable Here response from the Mediation Server operating in RTP only mode	Pass	
408547	Device sends its own FQDN in contact header for TLS call from Lync End Point to PSTN End Point	Pass	
408548	Lync End Point receives a call from PSTN End Point with G.711 U-law codecs	Pass	
408549	Lync End Point receives a secure call with G.711 U-law codec with Media Bypass OFF	Pass	
408551	Lync End Point makes a secure call to PSTN End Point and PSTN End Point later hangs up	Pass	
408552	Device does not change the SSRC of an established outbound SRTP session	Pass	
408553	Device sends Crypto attributes in SDP for call from PSTN End Point to Lync End Point	Pass	
408554	PSTN End Point calls Lync End Point with security enabled and Lync End Point later hangs up	Pass	
408555	Device does not change the SSRC of an established inbound SRTP session	Pass	
408556	Device adds at least one "crypto" attribute for each media description line in the SDP	Pass	
408558	Lync End Point makes a secure call to PSTN End Point	Pass	
408559	Lync End Point makes a secure call to PSTN End Point with call duration more than 32 seconds and SRTP set to Optional	Pass	
408634	PSTN End Point1 makes a secure call to Lync End Point that has call forwarded to PSTN End Point2	Pass	
408635	PSTN End Point1 makes a secure call to Lync End Point that forwards the call to PSTN End Point2 with Media Bypass OFF	Pass	
408629	3rd Party Presence headers do not cause Device failure.	Pass	
408636	PSTN End Point1 calls Lync End Point that forwards all calls to PSTN End Point2 when Media Bypass OFF	Pass	
408642	Lync End Point1 calls Lync End Point2 and escalates the call to a conference, inviting PSTN End Point and later removing it	Pass	
408643	PSTN End Point establishes a call with the Conference Auto Attendant	Pass	
408644	Conference call involving two Lync End Points and PSTN End Point, Lync End Point puts the call on hold	Pass	
408651	Device disconnects a call that is on hold when Lync End Point hangs up	Pass	

408652	Device disconnects a call that is on hold when PSTN End Point hangs up	Pass	
408653	PSTN End Point places a secure call to Lync End Point on hold and resumes after 15 minutes	Pass	
408654	PSTN End Point places a call with Media Bypass OFF from Lync End Point on hold for 15 minutes and then resumes	Pass	
408655	PSTN End Point puts Lync End Point on hold and resumes after 15 minutes for a secure call	Pass	
408657	Lync End Point plays music on hold when it holds a secure call from PSTN End Point to Lync End Point	Pass	
408658	Lync End Point places a call to PSTN End Point on hold and resumes after 12 minutes	Pass	
408659	Lync End Point places a secure call to PSTN End Point on hold and resumes after 12 minutes	Pass	
408660	Lync End Point plays music when it holds call from PSTN End Point to Lync End Point	Pass	
408661	Lync End Point places a secure call from PSTN End Point on hold and resumes after 15 minutes	Pass	
408662	Lync End Point places a call from PSTN End Point on hold for 15 minutes and then resumes	Pass	
408663	PSTN End Point places a secure call from Lync End Point on hold and then resumes	Pass	
408664	PSTN End Point places a secure call to Lync End Point on hold and then resumes	Pass	
408683	PSTN End Point1 calls Lync End Point and Lync End Point Blinds Transfers the call to PSTN End Point2	Pass	
408684	PSTN End Point1 makes a secure call to Lync End Point and Lync End Point Blinds Transfers the call to PSTN End Point2	Pass	
408689	PSTN End Point1 calls Lync End Point and Lync End Point Consultative Transfers to PSTN End Point2	Pass	
408690	PSTN End Point1 makes a secure call to Lync End Point and Lync End Point Consultative Transfers to PSTN End Point2	Pass	
408691	Device does not drop the call when Consultative Transfer by Lync End Point to second PSTN End Point fails	Pass	
408710	Device utilizes 'pool' certificates for a secure call	Pass	
408713	Device uses load balancing to distribute inbound calls among Mediation Servers in a cluster	Pass	
408714	Device responds to OPTIONS as keep alive to Mediation Server over TCP	Pass	
408715	Device sends periodic OPTIONS message as keep alive to Mediation Server	Pass	
408716	Device responds to OPTIONS as keep alive to Mediation Server over TLS	Pass	
408717	Device resumes sending calls to Mediation Server when it starts receiving OPTIONS response from that Mediation Server	Pass	
408719	PSTN End Point establishes a call with Lync End Point when interface of Mediation Server1 goes down	Pass	
408721	Device fails over incoming call to Mediation Server when the first Mediation Server times out	Pass	
408734	Device utilizes failover and does not offer new calls to a failed Mediation Server	Pass	
408737	Device distributes new calls among DNS configured Mediation Servers	Pass	
408739	Device honors TTL when distributing new calls among DNS configured Mediation Servers	Pass	
408743	Device sends 414 Request-URI Too Long when unable to handle very long Request URI	Pass	
408744	Device times out after 180 seconds of no response from Lync End Point following 100 Trying	Pass	
408745	Device processes 488 Not Acceptable Here response for unsupported codec from Mediation Server	Pass	



408749	Device disconnects call when Mediation Server sends 408 Request Timeout for call from PSTN End Point	Pass	
408750	Device processes 603 Decline from Lync End Point for a secure call	Pass	
408751	Device processes 603 Decline response from Lync End Point	Pass	
408752	Device handles call from Lync End Point to a user that does not exist in the domain	Pass	
408753	Device generates 486 Busy Here response from a busy PSTN End Point	Pass	
408754	Device processes 486 Busy Here response from a busy Lync End Point.	Pass	
408755	Device disconnects call when Mediation Server sends 501 Not Implemented for call from PSTN End Point	Pass	
408756	Device disconnects call when Mediation Server sends 606 Not Acceptable for call from PSTN End Point	Pass	
408757	Device responds with 488 Not Acceptable Here when Mediation Server offers a codec unsupported on the device	Pass	
408775	Lync End Point receives a call from PSTN End Point with G.711 A-law and/or G.711 U-law codecs	Pass	
408776	PSTN End Point1 calls Lync End Point that forwards the call to PSTN End Point2	Pass	
408777	PSTN End Point1 calls Lync End Point that escalates the call to a conference by inviting PSTN End Point2	Pass	
408778	Device fails over incoming call to Mediation Server2 when Mediation Server1 sends 503 Service Unavailable response	Pass	
408779	PSTN End Point places a call from Lync End Point on hold for 15 minutes and then resumes	Pass	

## 9 Conclusion

This SIP Trunking test plan execution cycle has been carried out for the partner **OneStream Networks**. Wipro team successfully ran all the relevant manual tests using the E2E Skype for Business 2015 environment (IPv4). And all the automated tests have been carried out with Lync IT tool.

As documented in the Test Results section of this report, the required SIP Trunking test cases have passed. And the **OneStream Networks** SIP Trunk conforms as per the criteria set forth by Microsoft for UCOIP – Skype for Business 2015.

**OneStream Networks** supports **TLS**. All the require TLS automated and manual test cases are PASS. Along with TCP.

Wipro team thanks Microsoft Partner Engineering group for providing the technical documentation, the tools for the test pass and also for providing timely clarifications on a few tests.

Wipro thanks **OneStream Networks** for using Wipro's services to test its SIP Trunk for the Skype for Business qualification and also for the support extended during the test pass. Wipro looks forward to working with **OneStream Networks** again in future.



## 10 References

- Microsoft Lync Server 2013 Open Interoperability SIP trunking Test Plan
- Microsoft Lync Server 2013 SIP trunking Spec

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