

SIP Trunking

Managed acceptance testing

The following tests are to be undertaken in commissioning of customer premises equipment (CPE) that is connecting to the O₂ SIP Trunking service. Managed acceptance testing service will include the following tests and test results will be passed to CFOMT@o2.com. On successful completion of the tests O₂ will complete the service provisioning and the service will be passed into support.

If managed acceptance testing is excluded from the contract, the customer's PBX maintainer will be responsible for the following service acceptance testing and the test results should be passed to CFOMT@o2.com. Should O₂ not receive a response or sign off to this document after 10 working days from handover to confirm testing has been completed, O₂ will assume that the service is working as per required and live. All SIP Trunking product details can be viewed at the following location www.o2.co.uk/business/sip-trunking

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Traffic on the following ports must be forwarded through the relevant routers and firewalls on the customer network.

Signalling: UDP port 5060 egress / ingress to:

Media: All UDP ports between 6000-40000 egress / ingress to:

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Test 1 – 9: Inbound and outbound calls

Test 1 – O₂ SIP Trunkings call – SIP clear

Description	
Name:	Successful call – user A calling PSTN user. PSTN user clears
Preconditions:	Valid PSTN / mobile in place, that can be called and verified

Test 1 steps

Step	Description	Expected result
1	Place a call to the PSTN number using SIP service	Ring tone and answer
2	Answer the call	Speech
3	Wait approx 10 secs	
4	Clear the line on the caller side	PSTN side receives call clear down

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Test 2 – SIP call – PSTN clear

Description	
Name:	Successful call – user A calling PSTN user. PSTN user clears
Preconditions:	Valid PSTN / mobile in place, that can be called and verified

Test 2 steps

Step	Description	Expected result
1	Place a call to the PSTN number using SIP service	Ring tone and answer
2	Answer the call	Speech
3	Wait approx 10 secs	
4	PSTN clears call down	
5	Wait 120 Seconds	
6	Caller receives clear down	Called party

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Test 3 – PSTN call – PSTN clear

Description	
Name:	Successful call – PSTN user calling user A. PSTN user clears
Preconditions:	Valid PSTN / mobile in place, that can place a call

Test 3 steps

Step	Description	Expected result
1	Place a call from the PSTN line calling the SIP assigned geo number	Ring tone and answer
2	User A answers the call	Ringling before answer
3	Wait approx 10 secs	
4	Clear the line on the caller (PSTN) side	Called side receives call clear down

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Test 4 – SIP call – SIP user release without answer

Description	
Name:	Calling party release before answer – calling party is user A1.
Preconditions:	Valid PSTN / mobile in place, that can be called

Test 4 steps

Step	Description	Expected result
1	Place a call on the SIP line calling the PSTN number	Ring tone
2	Release the call without answer	Ringings stops

Test 5 – SIP call – PSTN user release without answer

Description	
Name:	Calling party release before answer – calling party is PSTN user
Preconditions:	Valid PSTN / mobile in place, that can place a call

Test 5 steps

Step	Description	Expected result
1	Place a call on the PSTN line calling the SIP assigned O ₂ geo number	Ring-back (Ring tone)
2	Release the call without answer	Ringings stops

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Test 6 – Invalid number call test

Description	
Name:	Invalid number – user A calling from O ₂ SIP Trunkings
Preconditions:	

Test 6 steps

Step	Description	Expected result
1	Call the invalid number	Number unobtainable tone or not recognized prompt.

Test 7 – Incoming call – PSTN busy

Description	
Name:	Incoming call – user busy. PSTN busy
Preconditions:	Valid PSTN / mobile in place, that has no answering machine or call waiting feature installed and a third phone number (user C) which can answer a call

Test 7 steps

Step	Description	Expected result
1	Call the third phone number (user C) from the PSTN line, wait until it gets answered	
2	Place a call on the SIP line calling the PSTN number	Busy tone

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Test 8 - Incoming call – SIP user busy

Description	
Name:	Incoming call – user busy. user A busy
Preconditions:	Valid PSTN / mobile in place, and a third phone number which can answer a call

Test 8 steps

Step	Description	Expected result
1	Call the third phone number from the SIP line, wait until it gets answered	
2	Place a call on the PSTN line calling the SIP number	Busy tone

Test 9 - Address incomplete

Description	
Name:	address incomplete – user A calling
Preconditions:	

Test 9 steps

Step	Description	Expected result
1	Call the following incomplete number from the SIP line: 654321	Fast busy or service announcement

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Test 10 – 13: CLI presentation

In order to successfully present an 'A number' we expect this to be sent to O₂ in either of the following formats in the FROM header of the SIP INVITE:

10 Digits without leading zero

From: <sip:1625827748@83.245.6.117>;tag=3541226335-339769

E164 Format (+44)

From: <sip:+441625827748@83.245.6.117>;tag=3541226335-339769

The A-number is checked against a database on the O₂ network of geographic numbers that are allocated to the SIP endpoint. If the number presented does not meet the above criteria, the A-Number CLI presented will be a default CLI, which is the first number in the O₂ allocated geographic DDI range.

Test 10 - CLI Presentation test - PSTN > SIP

Description	
Name:	CLIP – PSTN calling end. Confirm A-end phone rings and number is displayed
Preconditions:	Valid PSTN / mobile in place which has present CLI setting enabled, and CLI capable phone set connected to SIP line

Test 10 steps

Step	Description	Expected result
1	Place a call on the PSTN line calling the SIP assigned O ₂ geo number	Ring-tone and correct CLI

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Test 11 - CLIR test PSTN > SIP

Description	
Name:	CLIR – PSTN calling end. Confirm A-end phone rings and number is withheld.
Preconditions:	Valid PSTN / mobile in place which has CLI setting set to withheld, and CLI capable connected to SIP line.

Test 11 steps

Step	Description	Expected result
1	Place a call on the PSTN line calling the SIP assigned O ₂ geo number	Ring-tone and no CLI or withheld shown as CLI

Test 12 - CLI presentation test - SIP > PSTN

Description	
Name:	CLIP – A-user calling end. Confirm that PSTN phone rings and caller number is displayed
Preconditions:	Valid PSTN / mobile in place which is capable showing CLI , and SIP CPE set to enable CLI sending

Test 12 steps

Step	Description	Expected result
1	Place a call on the SIP line calling the PSTN number	Ring-tone and correct CLI own with leading zero

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Test 13 - CLIR test SIP > PSTN

Description	
Name:	CLIR – A-user calling end. Confirm PSTN phone rings and caller number is withheld.
Preconditions:	Valid PSTN / mobile in place which is capable showing CLI , and SIP CPE set to privacy full (hide CLI)

Test 13 steps

Step	Description	Expected result
1	Place a call on the SIP line calling the PSTN number	Ring-tone and no CLI or

Test 14 - 15: Fax

The O₂ SIP Trunking service will support fax and modem transmission subject to the following constraints. Fax and modem transport in band using G.711 a-law codec is supported. Renegotiation to T.38 is supported (subject to interoperability testing). The use of G.729 for in-band faxes is not supported, as its compressed nature may cause tones and messages to be lost.

Test 14 - CLI presentation test - PSTN > SIP

Description	
Name:	Fax call – from PSTN (G.711)
Preconditions:	Fax equipment connected to PSTN line, second fax machine connected to SIP line, SIP Service CPE set to g.711 fax pass through.

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Test 14 steps

Step	Description	Expected result
1	Send a 5 page fax call on the PSTN line calling the SIP assigned O ₂ geo number	Ring-tone, training and answer
2	Check fax transmission	Fax machines should train and send all pages with no errors

Test 15 - Fax call to PSTN (If configured for Fax support)

Description	
Name:	Fax call – from fax user in 'A' domain (G.711)
Preconditions:	Fax equipment connected to PSTN line, second fax machine connected to SIP line, SIP Service and CPE can negotiate the codec to g.711

Test 15 steps

Step	Description	Expected result
1	Send a 5 page fax call on the PSTN line calling the SIP assigned O ₂ geo number	Ring-tone, training and answer
2	Check fax transmission	Fax machines should train and send all pages with no errors.

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Test 16 - 17: Call barring

Test 16 - Call barring – If requested to be set up on the SIP account

Description	
Name:	Call barring – confirm that prohibited numbers are blocked.
Preconditions:	Provisioning of call barring SIP service should be requested and completed.

Test 16 steps

Step	Description	Expected result
1	Call a number which is barred from the SIP line (premium, mobile, international)	Fast busy signal or barred prompt

Test 17 – Call international number (if no international bar is in place)

Description	
Name:	Call barring – confirm international numbers can be dialled
Preconditions:	International call barring = No

Test 17 steps

Step	Description	Expected result
1	Call the following number from O ₂ SIP Trunkings (Paris, France): 0033170758109	Ring-tone, will be unanswered

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Test 18 - 24: Shortcode dialling

As part of the provisioning process the endpoint is automatically configured to a range of short codes for emergency services and directory enquiries.

Test 18 – Dial 999 shortcode

Description	
Name:	Dial 999 shortcode
Preconditions:	Confirm that a valid End user 999 address is provisioned against the calling party number (All 999 calls without EU address details are reported to OFCOM)

Test 18 steps

Step	Description	Expected result
1	Place a call to 999 via SIP line	Ring-tone
2	B party answers call	Speech
3	Confirm to B party that test call is being made and terminate call	Clear down (BYE message on SIP)

Test 19 – Dial 100 shortcode

Description	
Name:	Dial 100 shortcode
Preconditions:	Call 100 from the SIP line

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Test 19 steps

Step	Description	Expected result
1	Place a call to 100 via SIP line	Ring-tone
2	B party answers call	Speech
3	Confirm to B party that test call is being made and terminate call	Clear down (BYE message on SIP)

Test 20 – Dial 101 shortcode

Description	
Name:	Dial 101 shortcode
Preconditions:	Call 101 from the SIP line

Test 20 steps

Step	Description	Expected result
1	Place a call to 101 via SIP line	Ring-tone
2	B party answers call	Speech
3	Confirm to B party that test call is being made and terminate call	Clear down (BYE message on SIP)

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Test 21 – Dial 111 shortcode

Description	
Name:	Dial 111 shortcode
Preconditions:	Call 111 from the SIP line

Test 21 steps

Step	Description	Expected result
1	Place a call to 111 via SIP line	Ring-tone
2	B party answers call	Speech
3	Confirm to B party that test call is being made and terminate call	Clear down (BYE message on SIP)

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Test 22 – Dial 112 shortcode

Description	
Name:	Dial 112 shortcode
Preconditions:	Call 112 from the SIP line

Test 22 steps

Step	Description	Expected result
1	Place a call to 112 via SIP line	Ring-tone
2	B party answers call	Speech
3	Confirm to B party that test call is being made and terminate call	Clear down (BYE message on SIP)

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Test 23 – Dial 195 shortcode

Description	
Name:	Dial195 shortcode
Preconditions:	Call 195 from the SIP line

Test 23 steps

Step	Description	Expected result
1	Place a call to 195 via SIP line	Ring-tone
2	B party answers call	Speech
3	Confirm to B party that test call is being made and terminate call	Clear down (BYE message on SIP)

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Test 24 – Dial 123 shortcode

Description	
Name:	Dial 123 shortcode
Preconditions:	Call 123 from the SIP line

Test 24 steps

Step	Description	Expected result
1	Place a call to 123 via SIP line	Ring-tone
2	B party answers call	Speech
3	Confirm to B party that test call is being made and terminate call	Clear down (BYE message on SIP)

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Test 25: DTMF

The following methods will be supported to transport DTMF tones:

The core network will support the generation of 'In-band' or 'RFC2833' DTMF transport based on end to end negotiation.

- RFC2833 is the preferred method for the transport of DTMF tones. Support of RFC 2833 is dependent on successful codec negotiation and requires the payload type 101 to be assigned. RFC2833 will be used with both G.711.and G.729 codecs.
- In band over G.711 codec only. If a G729 codec is being used then DTMF tones should not be sent in-band, O₂will not guarantee the delivery of in-band DTMF over a G729 codec.

Test 25 – DTMF

Description	
Name:	Test DTMF
Preconditions:	Call 08081788000

Test 25 steps

Step	Description	Expected result
1	Place a call to 08081788000 via SIP line	Ring-tone
2	Connect to IVR	Speech
3	Press 1 to navigate menu	Tone recognised, forwarded to next stage of IVR

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SIP header configuration

Request-URI Header

The number within the request-URI is used for routing calls and should contain the called number. The format of this number can either be UK national format (with leading zero), UK international format (with two leading zeros and a country code), or full e.164 format (with leading +).

Examples

Option	Format	SIP header
1	E.164	INVITE sip:+441618777148@100.100.100.29 SIP/2.0
2	International format	INVITE sip:00441618777148@100.100.100.29 SIP/2.0
3	UK format	INVITE sip:01618777148@100.100.100.29 SIP/2.0

TO header

Header must contain SIP Trunking SIP gateway address and the called number. The format of this number can either be UK national format (with leading zero), UK international format (with two leading zeros and a country code), or full e.164 format (with leading +).

Examples

Option	Format	SIP header
1	E.164	To: <sip:+441618777148@100.100.100.29>
2	International format	To: <sip:00441618777148@100.100.100.29>
3	UK format	To: <sip:01618777148@100.100.100.29>

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FROM Header

The user part of the SIP URI within the 'From' header must contain the calling line identity of the originating device. This identity must be a number registered to the endpoint. The format of this number can either be national significant (with or without a leading zero), or in full e.164 format. The domain part of the SIP URI within the 'From' header can contain either the IP address of the public facing interface or a customer-defined FQDN. O₂ will not use this FQDN for any purpose

Examples

Option	Format	SIP header
1	E.164	From: <sip:+441618777148@100.100.100.29> or using FQDN From: <sip:+441618777148@your.domain.local>
2	International format	From: <sip:01618777148@100.100.100.29> or using FQDN From: <sip:01618777148@your.domain.local>
3	UK format	From: <sip:1618777148@100.100.100.29> or using FQDN From: <sip:1618777148@your.domain.local>

PAID Header

The format of the PAID number can either be national significant (with or without a leading zero), or in full e.164 format. If no PAID header is provided, O₂ will insert a PAID header with the default network CLI.

Examples

Option	Format	SIP header
1	E.164	P-Asserted-Identity: <sip:+441618777148@100.100.100.29>
2	International format	P-Asserted-Identity: <sip:01618777148@100.100.100.29>
3	UK format	P-Asserted-Identity: <sip:1618777148@100.100.100.29>