

1. SIP Carrier

Qwest



1.1.1 Warnings

Check the *SIP 3rd Party SIP Carrier Matrix* for certification status, and supported features. More info about the *SIP 3rd Party SIP Carrier Matrix* can be found in the SIP Carrier section of the web site(s) below:

<http://testlab.inin.com>

1.1.2 Vendor Contact

Vendor Web Site: <http://www.qwest.com/business/>

1.1.3 Versions Verified

SIP Carrier status as of 5/10/2011.

1.1.4 PreInstall

Qwest will provide the customer with public IP's for the SIP line configuration and a list of registered/assigned phone numbers for the SIP Trunk. These must be obtained before setup can begin.

1.1.5 Install

Qwest has three requirements that must be met to allow calls to go through their SIP Trunks:

1. Calls must be sent to Qwest's provided IP address,
2. Calls must be originated from an IP that Qwest has included in their IP authentication list
3. Qwest registered numbers must exist in either the From field or Diversion header.

1.1.6 Required Post Installation Steps

Confirm capacities and capabilities of purchased service.

2. IC Configuration Guide

2.1 Line Configuration

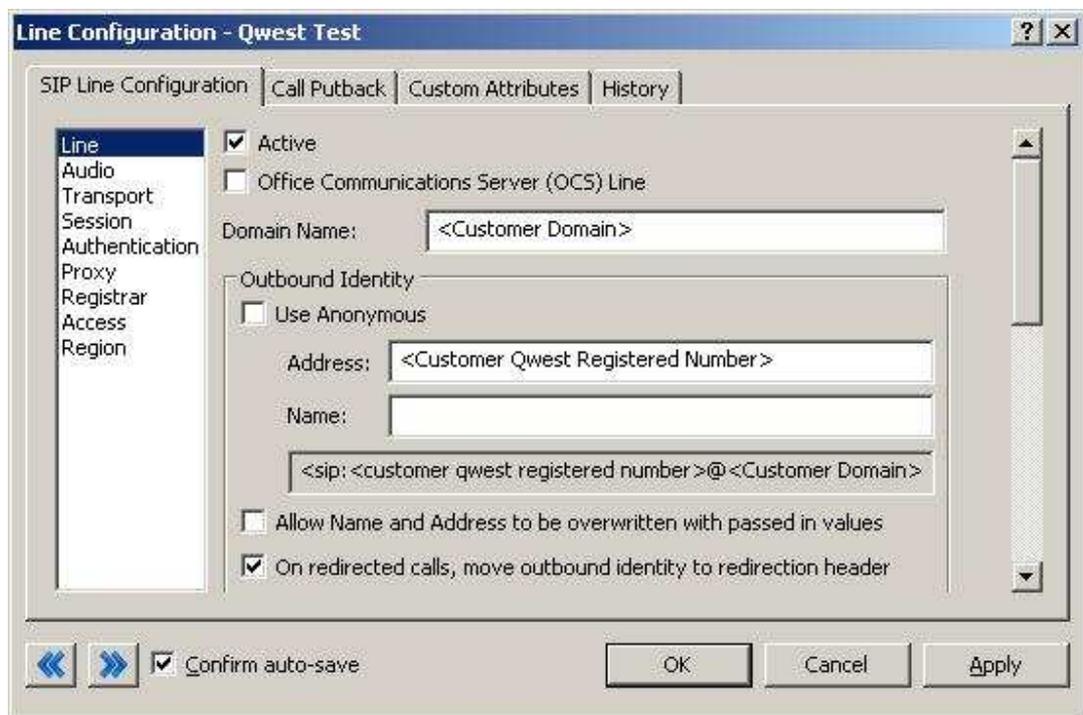
The line page has a vast majority of the configuration options required for SIP Carrier setup. This is the section that configures the connection to the carrier's servers and basic configuration needs.

For this document, the Qwest connection line will be referred to as *Qwest Test*, and the station line will be referred to as *stations*. Also, any reference to a menu, while talking about the line configuration, will refer to the options on the left side of the line configuration page, and tabs will refer to the standard tab interface across the top of the line configuration page.

2.1.1 Line Menu

2.1.1.1 Active

The active box should be checked. This activates the line. If this box is not checked, the line will not be available for any function. This can also be affected by right clicking on the line in Interaction Administrator, dropping to the *Set Active* menu option, and selecting *Yes*.



The screenshot shows a window titled "Line Configuration - Qwest Test" with a tabbed interface. The "SIP Line Configuration" tab is active. On the left, a tree view shows "Line" selected. The main area contains the following settings:

- Active
- Office Communications Server (OCS) Line
- Domain Name: <Customer Domain>
- Outbound Identity section:
 - Use Anonymous
 - Address: <Customer Qwest Registered Number>
 - Name: [Empty field]
 - Preview: <sip: <customer qwest registered number >@<Customer Domain >
- Allow Name and Address to be overwritten with passed in values
- On redirected calls, move outbound identity to redirection header

At the bottom, there are navigation arrows, a checked "Confirm auto-save" checkbox, and "OK", "Cancel", and "Apply" buttons.

Figure 1: Qwest Line Configuration Page

2.1.1.2 Phone Number

The phone number provided by Qwest should be entered into this box. The number entered is used in the "From" header in outbound SIP calls. Incorrect numbers can lead to some functionality not working as expected or at all.

2.1.1.3 Domain Name

This box should contain the Fully Qualified Domain Name (FQDN) of the customer's domain.

2.1.1.4 Disable T.38 Faxing

Qwest SIP Carrier service supports the T.38 faxing protocol by default. Leave this box unchecked if you do not have (or wish to use) an analog to SIP capable FXS type device to connect an analog fax machine to the system.

2.1.1.5 Redirection

Qwest does require 'On redirected calls, move outbound identity to redirection header' to be checked in the Line menu of Line Configuration. 'Allow Name and Address to be overwritten with passed in values' can be left checked OR may be unchecked. If left checked, each user's individual Outbound ANI **must** be a registered phone number.

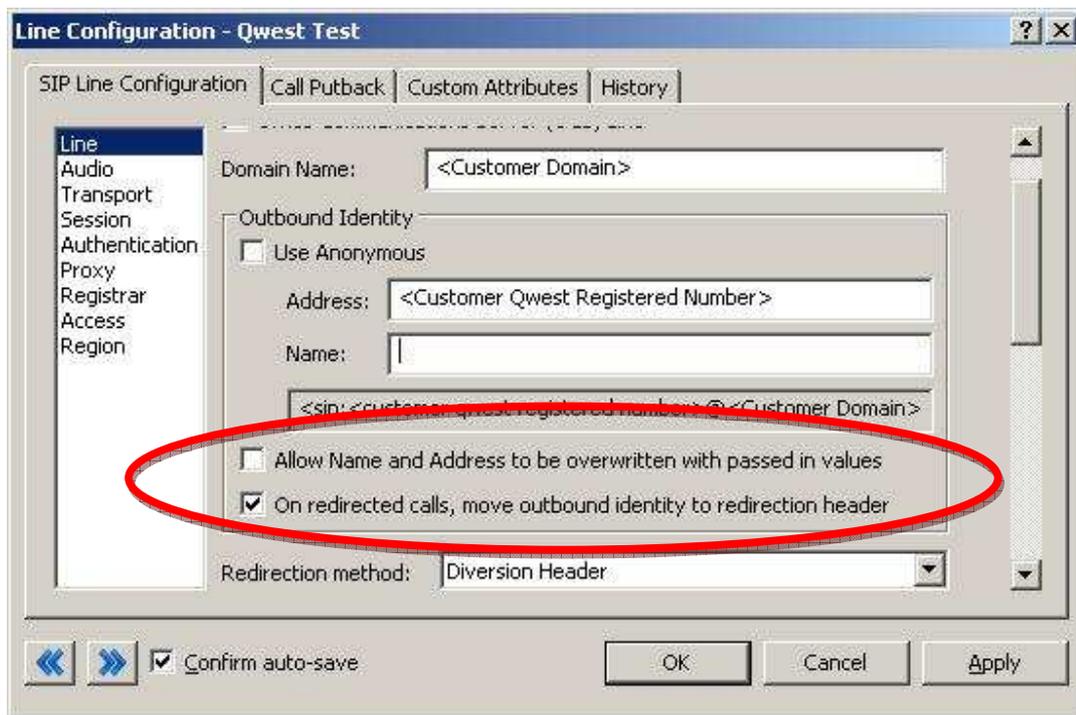


Figure 2: Qwest Line Outbound Identity Settings

2.1.2 Audio Menu

2.1.2.1 Audio Path

This is for the most part, the choice of the client with respect to the business being done on the server. However, there are **several important caveats**.

1. *Dynamic* audio for SIP carriers has significantly less delay as compared to *Always In* audio (~100ms).
2. The audio will be brought into the IC server when set to *Dynamic Audio* for any call that is recorded (just for that call, not permanently). If using a Media Server recorded calls will not travel through the IC server, and very little, if any, latency will be added.

2.1.2.2 DTMF Type

Qwest supports both Inband and RFC2833.

2.1.2.3 Remainder of Audio Menu Options

These have no major direct impact on the SIP carrier configuration, and should be addressed according to business needs.

2.1.3 Transport Menu

The screenshot shows the 'Line Configuration - UDP' dialog box. The 'Transport Protocol' dropdown is set to 'UDP'. The 'Receive Port' is set to '5060'. The 'Audio Protocol' is 'RTP', 'Security' is 'Minimal', and 'Address to use' is 'Local Area Connection 2'. The network interface is 'Broadcom NetXtreme Gigabit Ethernet #2'. The 'Connect Timer (ms)' is '3500', 'Maximum Packet Retry' is '10', 'T1 Timer (ms)' is '500', 'Maximum Invite Retry' is '6', 'T2 Timer (ms)' is '4000', 'Reinvite Delay (ms)' is '750', and 'Retryable Reason Codes' are '480, 500-599'. The 'Confirm auto-save' checkbox is checked. Buttons for 'OK', 'Cancel', and 'Apply' are at the bottom right.

Figure 3: Transport Menu Line Configuration Page

2.1.3.1 Transport Protocol

This option should be set to UDP, unless an agreement for TCP or TLS support has been agreed upon with the SIP Carrier. As of 5/10/2011 Qwest has support for UDP by default. TCP and TLS are not currently supported.

2.1.3.2 Receive Port

This option should be set to 5060 (the standard SIP port), unless an agreement for an alternative port has been agreed upon with the SIP Carrier. As of only has support for port 5060 in the standard offering.

2.1.3.3 Remainder of Transport Menu Options

These have no major direct impact on the SIP carrier configuration, and should be addressed according to business needs.

2.1.4 Session Menu

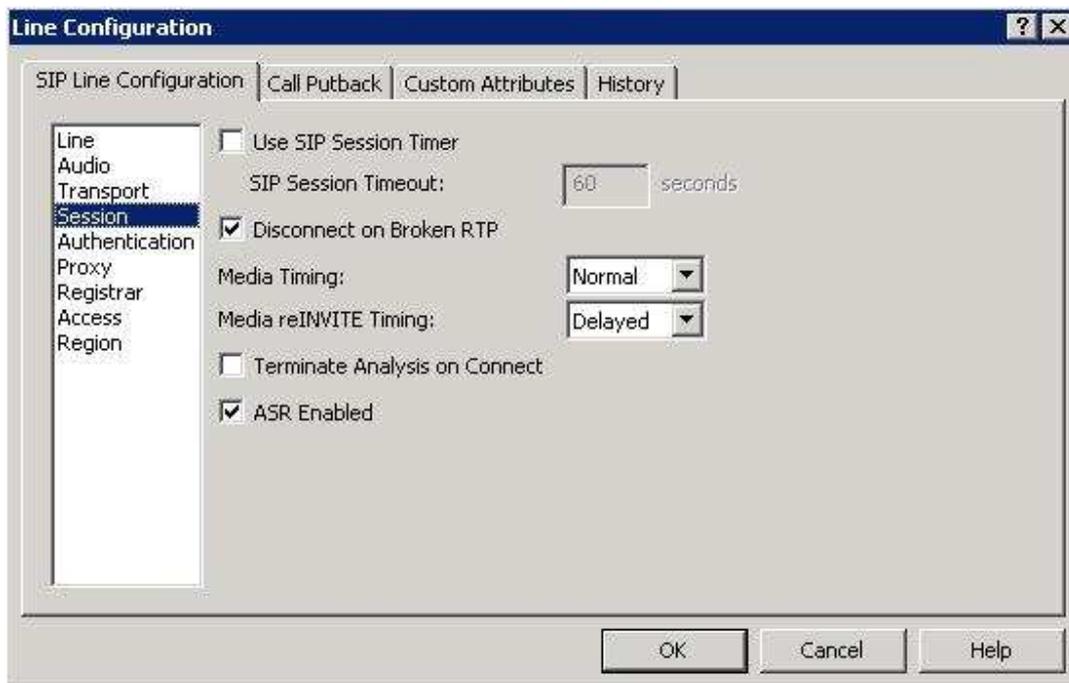


Figure 4: Session Menu Line Configuration Page

2.1.4.1 Media Timing/Media reINVITE Timing

Qwest supports both Normal and Delayed Media Timing. During our tests we only changed Media Timing default during our testing.

2.1.4.2 Remainder of Session Menu Options

These have no major direct impact on the SIP carrier configuration, and should be addressed according to business needs.

2.1.5 Proxy Menu

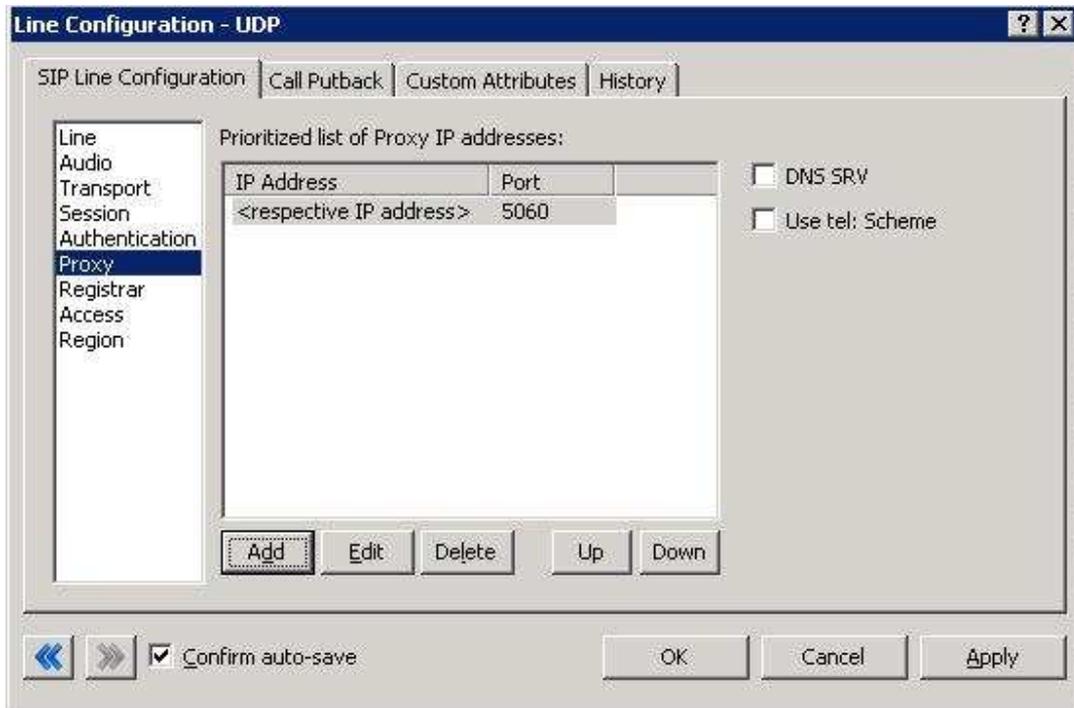


Figure 5: Proxy Menu Line Configuration Page

2.1.5.1 Prioritized list of Proxy IP addresses

List the IP address(es) of Qwest connecting devices such as SBC (Session Border Controller) device.

This box is somewhat of a misnomer in the case of some SIP Carriers. In the case of Qwest, there may not be a single IP that is needed. Instead they may provide a Fully Qualified Domain Name (FQDN) to a machine or cluster that handles the requests*. When configuring the proxy under these circumstances for Qwest, this **FQDN** must be entered completely with the port (generally 5060 unless otherwise directed) to enable the service to work properly**. If a resolved IP address is entered the service may not work as advertised, if at all due to the random port selection of the carrier.

*DNS SRV is a common method that SIP Carriers use to create a cluster of proxy IP addresses. This does not require checking the DNS SRV checkbox however, due to providing the FQDN as the proxy address and the SIP Carrier handling the resolution.

**A FQDN must be used because a NAT firewall located between the IC server and the carrier will create an MD5 hash mismatch when authenticating to the SIP carrier. The NAT firewall replaced the IP address of the proxy with an external IP address to create the MD5 hash. This will be a different IP address the carrier used when creating their version of the MD5 hash.

2.1.5.2 Remainder of Proxy Menu Options

These have no major direct impact on the SIP carrier configuration, and should be addressed according to business needs.

2.1.5.3 Qwest SIP Line

For the access menu, the radio button should be shifted to the value:

*By default, all computers will be: **Denied Access**.*

In the access list below the radio button, the resolved IP address for each proxy server **MUST** be added. The "add menu" has a DNS lookup option if the only information provided by the carrier were FQDNs. This allows the IC server to talk to all the required elements of the SIP carrier.

2.1.5.4 Stations Line

In the case of the stations line, this is up to the discretion of the user. It is possible to enter in single IP's, IP groups (using subnet masks), or allow everything. The user has several options based on business needs and security requirements. However note that only one line can be selected to "Granted Access" per port per IC server.

The reason why the SIP Carrier Line was selected to be **Denied Access** was because it has far fewer and less complicated entries than the line that will be supporting all the local endpoints.

2.1.5.5 Region Menu

This should be set at the user discretion. However the user should take care to assure the location supports the proper codecs supported by the SIP Carrier.

In the case of Qwest, only G.711 (mu-law), and G.729 are supported, so selecting a location that does not have any of these as an option would cause the line not to function properly. Qwest does not have a particular business model preference for either codec, so this is up to the discretion and needs of the user.

3. SIP Proxy Support

Note: If using a NAT/PAT type solution, a SIP Proxy can only be used in conjunction with a SIP Carrier that supports a static IP proxy (on their side, the same thing entered into the proxy menu on the lines page, not the SIP proxy). If this is not supported, the SIP Proxy can not properly pass its return address through to the carrier.

If a SIP Proxy is to be used in a NAT/PAT environment, then the externally facing IP of the **SIP Proxy** must be entered in the following places in the Qwest SIP Line configuration.

- On the proxy menu, in place of those provided by the Carrier
- On the registrar menu, in places of those provided by the Carrier

Also, the SIP Proxy (in a non NAT/PAT environment, or the NAT/PAT externally facing IP) must have the IP address provided to Qwest. Otherwise it will reject messages coming to it from an unknown IP.

The information regarding the SIP Carrier is then transferred to the appropriate places in the SIP Proxy. The SIP Proxy then feeds the required info back to the SIP Carrier. It is required to put the SIP Proxy information in the IC server. This is due to the fact that it is no longer directly talking to the SIP Carrier, and all information coming and going must be relative to the SIP Proxy.

4. Fax Caveats

Qwest supports useable and functioning T.38 faxing. However if the customer would like to use an analog fax machine connected to the network, or if T.38 faxing is not an option, the way to circumvent this problem is with an analog to SIP FXS device connecting an analog fax machine to the IP network. The FXS device will pass the SIP information on allowing for G.711 pass-through (which is the carrying of the fax signal through the voice packets on the network). This has been tested using an AudioCodes Media Pack.

Note: In the case of Qwest it may be possible to use G.729 to do the pass-through faxing, however due to the compression used by the codec, and the sensitivity of fax communications, it is not recommended (and not tested) by Interactive Intelligence.

Note: Interactive Intelligence does not support T.38 SG3 faxing at the time this document was created. It does however, support G3 faxing, and a vast majority of fax SG3 machines will revert to G3 in the negotiation process.

5. E911 Support

Qwest currently supports E911 support via giving registered numbers of customers directly to the local E911 authority. This does not allow for dynamic updates. This is fairly standard. However those using a large number of remote clients should be aware and take the proper measures to ensure proper coverage. If a purely remote number is requested, Qwest will make this known and may ask for an alternate solution or a waiver option.