

## Fusion360: Static SIP Trunk Programming Guide



**Contents:**

SIP Trunk Programming Guide ..... 4

    Step 1: Gather the Following Information from the Carrier ..... 4

    Step 2: ECS Database Programming ..... 4

    Step 3: VTRUNK Carrier Information Programming ..... 5

    Step 4: SIP Trunk Programming ..... 6

    Step 5: ENUM Programming ..... 7

    Step 6: General trunk programming ..... 7

    Step 7: Network programming ..... 8

    Step 8: Alternative Programming (Not Required) ..... 9

Notes ..... 9

Disclaimers ..... 10

This document was written for Iwatsu Enterprise-CS systems with version 8.x software. In some cases, available feature operations may differ from those listed in this document, depending on the hardware, software, and programmed functions in your ECS. Fusion has used its best effort to ensure that the information in this manual was accurate at the time of printing. Fusion makes no warranty of any kind, expressed or implied, with regard to the contents of this manual. This information is subject to change without notice.

Fusion shall not be held responsible for any representation made regarding this information by any individual.

Iwatsu is a registered trademark of Iwatsu Electric Co., LTD.

This document is for reference only and any information contained within is superseded by the latest version of Engineering Bulletin EBA-2010-19 – ECS Software Version 8.0.



## SIP TRUNK PROGRAMMING GUIDE

Follow the programming steps below for SIP trunk direct connection to the ECS:

### Step 1: Gather the Following Information from the Carrier

1. Register Domain (Carrier terms: Proxy Server, Register Server, etc.)--This is the Registrar Primary Server setting.
2. Invite Domain (Carrier terms: Proxy Server, Invite Server, etc.)--This is the Invite Primary Server.
3. Username (This is usually the first DID phone number)--This is the User ID-1.
4. Password (If authentication is necessary)--This is the Password-1. Note: Generally this is only required if the trunk requires registration.
5. Incoming Domain in To: header (This is usually your customer's static public IP address)--This is the Domain Name.
6. How many total calls? This will determine how many SIP licenses you need and how many SIP trunks need to be programmed.
7. What are the DNIS numbers? These must be programmed in the DNIS table. Also, the main DNIS number is usually used for User ID-1 and the CNIS entry.
8. Do the calls have to be sent as ENUM? (i.e., +12145551212)

Sample:

- Proxy server - 216.86.41.166
- username – 2145551212
- DIDs - 2145551212, 2145551213

### Step 2: ECS Database Programming

#### System > Hardware

1. Create the VTRUNK Card.
  - Set the card **Type** to **VTRUNK** (The number is automatically programmed).
  - Upload Hardware (Communication > Upload Database to System).
  - Disconnect (Communication > Disconnect).
  - Wait 10 seconds.
  - Reconnect to the ECS and download Hardware (Communication > Download Database from System).
  - 8 Trunk ports are created for you.

2. Configure the **SIP Trunk Ports**.

- **Parameter 1:** This is the DTMF mode. ECS software version 7.0 and higher supports all three modes (In-band, RFC 2833, and SIP Info Event).
- **RFC 2833** is most common.
- **Parameter 3:** VPN or Non-VPN.
  - **Non-VPN** assumes the trunks will use public IP addresses. This setting is used for direct connections to the SIP carrier. This mode is only supported in ECS software version 8.0 or higher.
  - **VPN** assumes that the trunks will use private IP addresses. This setting is used for the SPA 3102, the Ingate Separator or the carrier uses a private IP address for connection.

Cards							
#	Type	1	2	Sys.	Remote VCIF	Remote Card	Sys. Na
▶ 33	VTRUNK	1		0			Main
34	VTRUNK	2		0			Main
35	VTRUNK	3		0			Main
36	VTRUNK	4		0			Main
37	VTRUNK	5		0			Main

Ports							
#	Type	Logical	Definition	Function	1	2	3
▶ 225	Trunk	29	IP Trunk	SIP Trunk	RFC2833 Eve	SIP	Non-VPN
226	Trunk	30	IP Trunk	SIP Trunk	RFC2833 Eve	SIP	Non-VPN
227	Trunk	31	IP Trunk	SIP Trunk	RFC2833 Eve	SIP	Non-VPN
228	Trunk	32	IP Trunk	SIP Trunk	RFC2833 Eve	SIP	Non-VPN
229	Trunk	33	IP Trunk	SIP Trunk	RFC2833 Eve	SIP	Non-VPN
230	Trunk	34	IP Trunk	SIP Trunk	RFC2833 Eve	SIP	Non-VPN
231	Trunk	35	IP Trunk	SIP Trunk	RFC2833 Eve	SIP	Non-VPN
232	Trunk	36	IP Trunk	SIP Trunk	RFC2833 Eve	SIP	Non-VPN

**Step 3: VTRUNK Carrier Information Programming**

**Trunks > SIP Settings**

1. Set the **Protocol 1** parameter to **SIP** for each of the SIP Trunk Ports.
2. If required, set the **DNS Server** table number. Note: If the Invite or Registrar Primary Server is a name, then DNS server is required.

SIP Virtual Trunk Cards						
VTrunk Card #	Protocol 1	DNS Server	Invite Primary Server	Invite Secondary Server	Registrar Primary Server	Registrar Secondary Server
1	SIP	0	216.86.41.166			

3. Program the **Invite Primary Server**. This is the **Invite Domain** setting from **Step 1**.

SIP Virtual Trunk Cards						
VTrunk Card #	Protocol 1	DNS Server	Invite Primary Server	Invite Secondary Server	Registrar Primary Server	Registrar Secondary Server
1	SIP	0	216.86.41.166			



4. This trunk does not require registration. Set Register to Disable.
5. If the IP trunk requires a password when registering, then set Auth. Register to Enable.
6. If the IP trunk requires a password when calling, then set Auth. INVITE to Enable.

Registrar Secondary Server	Register	Auth. Register	Auth. INVITE
	Disable	Enable	Enable

Note: I always set Auth. Register and Auth. INVITE to Enable. This will allow you to add a password later, if necessary. This does not cause any issues if enabled and the customer does not have a password.

### Step 4: SIP Trunk Programming

#### Trunks > SIP Settings > Virtual Trunk Card "N" Channels

1. Program VTRUNK card settings (make sure you are displaying the correct card).
2. Verify the logical port number. If the port is set to zero, you did not program your VTRUNK card correctly.
3. **Port Activation:** Each trunk that is set to **Enabled** requires and will use a **SIP license**.
  - If you have 8 "trunks" from the SIP carrier, you will need 8 licenses and need to enable 8 SIP trunks.
  - If you have 48 "trunks" from the carrier, you will need 48 SIP licenses and need to enable 48 SIP trunks.
4. **User ID-1:** Set the Username given by the SIP carrier. This is usually the main or first DID from the carrier. **The User ID-1 is required.**
5. **Password-1:** If you set **Auth. Registration** or **Auth. Invite** to **Enable**, program the password for your account here.
6. **Domain Name: VERY IMPORTANT!** This is generally the customer's public IP address.

Note: If incoming calls are failing, this is probably programmed incorrectly.

7. **DID Feature:** If the setting is **DID**, then the incoming call is checked against the Domain only and routed via the DNIS or ANI table.
  - **DID** setting is used when connecting to SIP carriers.
  - If the setting is set to **Line**, the user ID-1 is checked with the Domain name and the call is routed via the logical port number programming in Class 11.32 and Class 11.34. Note: **Line** setting is used for connecting to the SPA 3102.

Virtual Trunk Card 1 Channels							
Channel #	Log.	Port Activation	User ID-1	Password-1	Domain Name	DID Feature	Registration
1	1	Enable	2145551212		71.97.234.12	DID	Disable
▶ 2	2	Enable	2145551212		71.97.234.12	DID	Disable
3	3	Enable	2145551212		71.97.234.12	DID	Disable
4	4	Enable	2145551212		71.97.234.12	DID	Disable
5	5	Enable	2145551212		71.97.234.12	DID	Disable
6	6	Enable	2145551212		71.97.234.12	DID	Disable
7	7	Enable	2145551212		71.97.234.12	DID	Disable
8	8	Enable	2145551212		71.97.234.12	DID	Disable



8. **Registration:** If the Line is set to Enable, it will send a Register request. If it is set to Disable a Register request will not be sent.

- **Both Register** (IP 1.02.14.3) and **Registration** (IP 1.02.19.2) **Must Be Enabled** for the line to send a Register request.
- **In most cases** – Only one line per carrier needs to register.

**Step 5: ENUM Programming**

**Trunks > Trunk Features**

1. If the trunks are required to send + in front of the call, then set the ENUM format to “Add + sign to calling/called number.

- **Outgoing calls** will automatically be modified when this is set.
- **Incoming calls** do not require this setting.

Trunks > Trunk Features								
Log #	Access No.	E&M On-Hook Detect	Forced Rel. Condition	E911 Trunk	Short Flash Time	Short Flash Guard Time	MDH Input Port	ENUM Format
1	1001	1	Loop Close	Normal	4	2	0	None
2	1002	1	Loop Close	Normal	4	2	0	None
3	1003	1	Loop Close	Normal	4	2	0	None
4	1004	1	Loop Close	Normal	4	2	0	None
5	1005	1	Loop Close	Normal	4	2	0	None
6	1006	1	Loop Close	Normal	4	2	0	None
7	1007	1	Loop Close	Normal	4	2	0	None
8	1008	1	Loop Close	Normal	4	2	0	None

**Step 6: General trunk programming**

1. **Program DNIS or ANI Routing:** The carrier usually sends the DNIS and ANI as 10 or 11 digits.
2. **Program Optimized Routing:** In some instances the carrier will require all calls to be sent as 11 digits. ALL carriers who use ENUM REQUIRE the number to be 11 digits. If you set the ENUM setting, then you MUST send all calls as 11 digits. Note: Optimized routing is required for dialing out on SIP trunks.
3. **Program CNIS:** You can program the caller ID number (Class 10.79) sent to the carrier. If the number is not programmed there, we send the number in Class 29.09 (Trunk Group). If neither are programmed, we send the **TRUNK ACCESS NUMBER**. Some carriers route this, so you will send a four digit access code as your caller ID.
4. **Program Trunk Access Numbers:** Make sure you add trunk access numbers (11.02) before you reset the system. The system will require a reset after you add the trunk access numbers to the trunks.

**Important:** Iwatsu only supports modification to the **From: header**. Other methods of sending CNIS are not supported. Also, we do not send a different name. If you need these services, use the Ingate Separator.

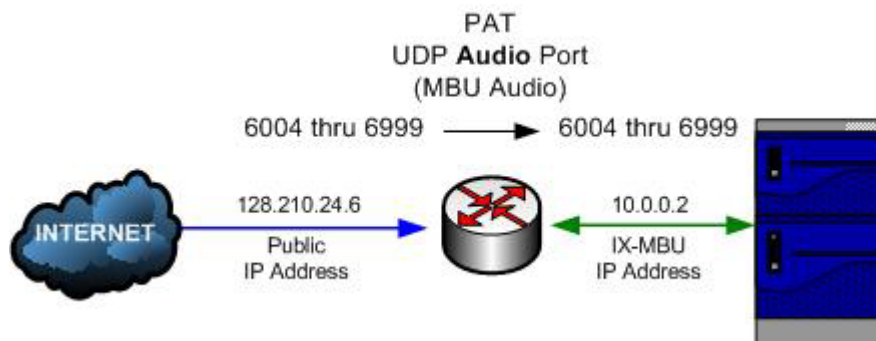


**Step 7: Network programming****Signaling Port: UDP 5080****Audio Ports: UDP 6004-6999****Public IP Address and NAT**

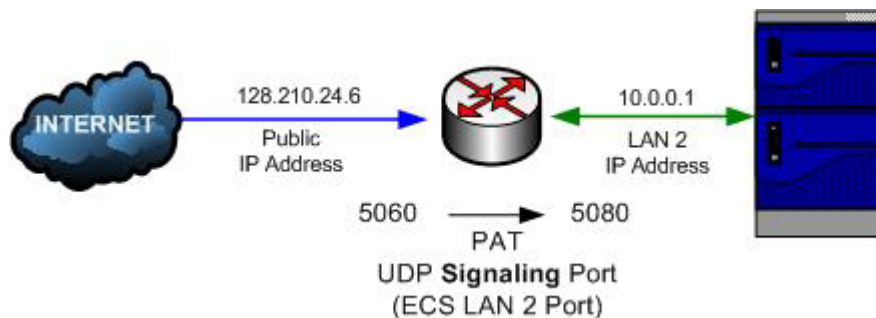
Note: Proper port forwarding on a NAT router is the sole responsibility of the distributor / installer. Fusion is not responsible for customer premise equipment configuration.

**Port Address Translation (PAT) for audio**

- Audio ports **UDP 6004-6999** must be routed to **UDP 6004-6999** at ECS MBU IP Address.

**Port Address Translation (PAT) for SIP signaling**

- Signaling port **UDP 5060** from carrier **must** be routed to **UDP 5080** at ECS LAN 2 IP Address.

**Port Forwarding**

A Non-VPN SIP Trunk call will specify port **5060** as the contact port for the internet side of the router.

Routers used for this application **must be** programmed to **forward all inbound SIP packets to ECS SIP Trunk port 5080**.

**Public IP Address**

Direct connection requires a static public IP address. This public IP address is programmed in the ECS database under **Trunks > SIP Settings > SIP IP Settings: Non VPN IP address** and is used for a SIP Trunk Port that is marked as a Non-VPN port under **System > Hardware (Class 01)**.

Note: Iwatsu supports only static public IP addressing, but some carriers do support DHCP with far-end NAT traversal.



**Step 8: Alternative Programming (Not Required)**

1. You can request from the carrier to send signaling requests to UDP port 5080 instead of 5060.
  - a. This is programmed in Trunks-->SIP Settings-->SIP IP Settings: IP-Trunk NAT Port. Set this to 5080.
  - b. This makes it easier for the Network Admin to setup forwarding. Instead of forwarding requests for UDP 5060 to UDP 5080 at the LAN 2 private IP address, they simply forward all requests for UDP 5080 to UDP 5080 at the LAN 2 private IP address.
  - c. **Not all carriers support this feature.**

**Notes**

1. Request that fax detection is disabled from the carrier for this circuit. Fax is not supported on SIP trunks.
2. Currently, the proxy domain is not supported. This should be available in the future. For now, use the IP address of the server, instead.
3. This carrier was tested using 12.24 software. This is the supported version of software.

## DISCLAIMERS

The information published in this document is intended to provide a general overview of Iwatsu Enterprise-CS interoperability with third party SIP products and services. Fusion has tested the performance of the SIP stations, soft phones, Wifi handsets and ATAs listed in this document. Please note, however, that since changes, modifications and availability of third party equipment and services are beyond the control of Fusion, interoperability and/or compatibility with said products and services are subject to change without notice.

Due to the changes in service offering by various alternate carriers and the lack of a unified interoperability standard, Fusion recommends that the Dealer contact Fusion Engineering to verify interoperability with a specific carrier or to request interoperability testing with any carrier not included in this document.

### WARRANTY DISCLAIMER:

**FUSION DISCLAIMS ALL WARRANTIES AND CONDITIONS, EXPRESS, IMPLIED, OR STATUTORY OF ANY NATURE WHATSOEVER, CONCERNING THE SERVICES AND PERFORMANCE OF THE SIP STATIONS, SOFTPHONES, WIFI HANDSETS, AND SIP TRUNKS LISTED HEREIN, INCLUDING FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY.**

### LIMITATION OF LIABILITY:

**IN NO EVENT SHALL FUSION BE LIABLE IN CONTRACT, TORT, STRICT LIABILITY, NEGLIGENCE OR OTHERWISE FOR ANY PUNITIVE, CONSEQUENTIAL, INCIDENTAL, SPECIAL, OR INDIRECT DAMAGES, OR FOR LOST PROFITS, LOSS OF DATA, LOSS OF USE OF DATA, DAMAGE OR EXPENSE, DIRECTLY OR INDIRECTLY ARISING FROM USE OF OR INABILITY TO USE THE EQUIPMENT OR SERVICES, EITHER SEPARATELY OR IN COMBINATION WITH ANY OTHER EQUIPMENT, OR FROM ANY OTHER CAUSE WHETHER OR NOT ICON VOICE NETWORKS HAS RECEIVED NOTICE OF THE POSSIBILITY OR CERTAINTY OF SUCH DAMAGES OR LOSSES.**

### DEALER ADVISEMENT:

Dealers are advised to include similar disclaimers in their sales agreements with their customers. When using equipment providing telephony over Transmission Control Protocol/Internet Protocol (TCP/IP) and Session Initiation Protocol (SIP) wired and/or wireless facilities, a user may experience certain compromises in performance, reliability and security, even when the equipment performs to the specifications. Dealer's customer should be advised of these risks and acknowledge, under its purchase agreement with the Dealer, that it aware of these risks and that it has determined that they are acceptable for its application of the equipment. In addition, if the customer is solely responsible for ensuring that its networks and transmission facilities QoS and security are adequate for the purpose intended, the customer should acknowledge the same in its purchase agreement with the Dealer. Confer with your legal advisor as to the wording and the requirements when making disclaimers in your jurisdiction.

