
SIP Trunking Configuration Guide for Samsung 7100 V4.53c OfficeServ DM V1.02c 2011.03.18

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1 Audience

This document is intended for the SIP trunk customer's technical staff and Value Added Retailer (VAR) having installation and operational responsibilities.

2 Introduction

This Configuration Guide describes configuration steps for Cox SIP trunking with the Samsung OfficeServ 7100 PBX. Cox SIP trunking is a scalable and efficient IP trunking telecommunication solution for your business that provides all the traditional services such as Direct Inward Dialing, Hunting, Calling Name, Calling Number, Local/Long Distance and Business Continuity options, including:

- Burstable Trunk Capacity – Dynamically increases call capacity during peak busy periods so your customers never receive a busy signal.
- Call Forward Always – On the trunk group pilot number for all calls in case of an outage (i.e., flood, fire, loss of power, etc.).
- Call Forward Not Reachable – On the trunk group pilot number that operates on a per-call contingency basis to forward the call to any PSTN number (i.e., call center or alternate office location) during temporary call completion impairments.
- Route Exhaustion – Automatic reroute of trunk group calls to any PSTN phone number (i.e., a call center) if calls can't be completed to the PBX.
- Support for geo-redundant PBX deployments and automatic reroute of SIP trunks to the backup customer data center.

All calls are routed over Cox's national fiber network with guaranteed Quality of Service (QoS); calls never traverse the Internet.

Cox National IP Backbone

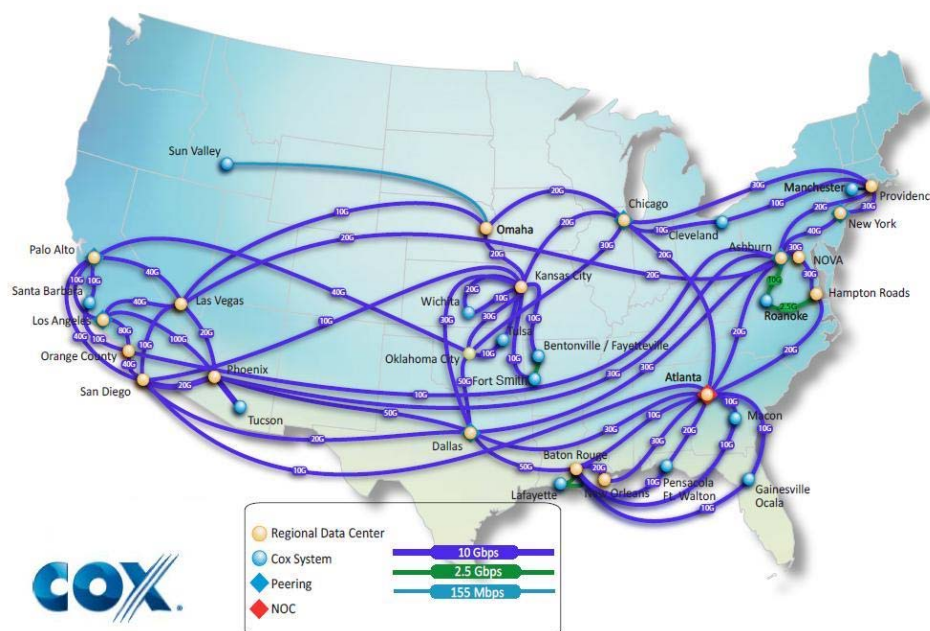


Figure 1 - Cox Fiber Network



2.1 tekVizion Labs

tekVizion Labs™ is an independent testing and Verification facility offered by tekVizion PVS, Inc. ("tekVizion"). tekVizion Labs offers several types of testing services including:

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- Verification Testing – Verification of interoperability performed on-site at tekVizion Labs between two products or in a multi-vendor configuration ("solution Verification")
- Product Assessment – independent assessment and verification of product functionality, interface usability, assessment of differentiating features as well as suggestions for added functionality, stress and performance testing, etc.

tekVizion is a systems integrator specifically dedicated to the telecommunications industry. Our core services include consulting/solution design, interoperability/Verification testing, integration, custom software development and solution support services. Our services help service providers achieve a smooth transition to packet-voice networks, speeding delivery of integrated services. While we have expertise covering a wide range of technologies, we have extensive experience surrounding our FastForward>> practice areas which include: SIP Trunking, Packet Voice, Service Delivery, and Integrated Services.

The tekVizion team brings together experience from the leading service providers and vendors in telecom. Our unique expertise includes legacy switching services and platforms, and unparalleled product knowledge, interoperability and integration experience on a vast array of VoIP and other next-generation products. We rely on this combined experience to do what we do best: help our clients advance the rollout of services that excite customers and result in new revenues for the bottom line. tekVizion leverages this real-world, multi-vendor integration and test experience and proven processes to offer services to vendors, network operators, enhanced service providers, large enterprises and other professional services firms. tekVizion's headquarters, along with a state-of-the-art test lab and Executive Briefing Center, is located in the Telecom Corridor® in Richardson, Texas.

(For more information on tekVizion and its practice areas, please visit tekVizion Labs's web site at www.tekVizionlabs.com.)

3 SIP Trunking Network Components

The network for the SIP trunk reference configuration is illustrated below and is representative of a Samsung 7100 configuration.

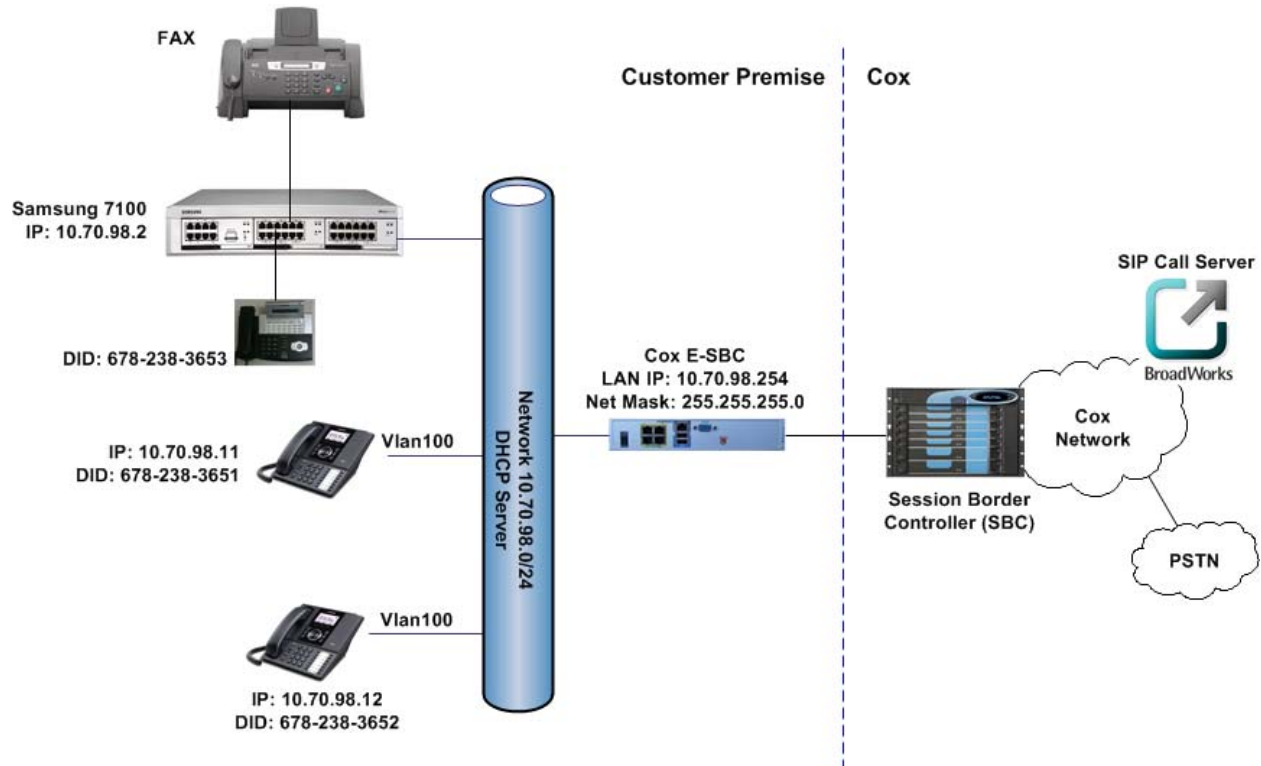


Figure 2 - SIP Trunk Lab Reference Network

Note: The Samsung 7100 does not offer DHCP server for dynamic IP address assignment for the SIP phones; however, the Cox Enterprise Session Border Controller (E-SBC) requires a static LAN IP address that must be manually assigned by the LAN network administrator. The DHCP server is provisioned on the Ethernet switch. The DHCP's IP address pool is constrained so that the E-SBC can be assigned an IP address outside of the pool.

The lab network consists of the following components:

- Samsung 7100 PBX for voice features, SIP proxy and SIP trunk termination.
- Various SIP phones on the local LAN.
- The Cox E-SBC is the Edgewater Networks (www.edgewaternetworks.com) EdgeMarc appliance. The EdgeMarc is the service demarcation point between customer's LAN network and Cox's WAN network and provides firewall/NAT traversal, B2BUA and SIP Application-level gateway. The EdgeMarc has diverse routes to a primary and secondary Acme SBC.
- Acme Packet Net-Net 9200 Session Border Controllers (SBC).



3.1 Hardware Components

- Samsung 7100
- Samsung SMT-i5210 Phone
- Samsung DS5021-D Phone
- Analog fax machine
- EdgeMarc 4550 E-SBC

3.2 Software Requirements

- Samsung 7100 Release V4.53c
- Samsung OfficeServ Device Manager V1.02c 2011.03.18
- EdgeMarc 4550 9.12.5 Release



4 Features

4.1 SIP Registration Method

Cox Network requires SIP REGISTER support to allow the IP-PBX to originate calls from the IP-PBX and to send calls to the PBX from the PSTN. Samsung 7100 supports SIP Register with authentication. Cox implementation team provides the Pilot number and the authentication key, which should be provisioned in the Samsung 7100. How to configure these in the Samsung 7100 are shown in [Section 6.3.4](#).

4.2 Features Supported

- Basic calls using G.711ulaw
- Calling Party Number Presentation
- Anonymous call
- Call Transfer
- Call Forwarding
- Call Hold and Resume
- Call Pickup
- Call Waiting
- DND
- Call Park
- Hunt groups (Simultaneous and Sequential Ring)
- Three-Way Calling
- PBX Auto Attendant to Off-net Numbers
- PBX Account Codes
- PBX Authorization Codes
- Fax Receive T38 Fax
- Dial-Up Modem
- E911 Call
- RFC2833 transcoding
- PBX-Defined Caller ID (spoofing)¹¹

4.3 Features Not Supported

5 Caveats and Limitations

- Samsung 7100 fails to send an outbound fax via G711 or T38. The problem is Samsung 7100 receives an INVITE from the network with G729 and G711ulaw as the codec options and Samsung 7100 sends a 200OK SDP with G729 only. This causes the call to tear down. This a current software limitation. This issue is currently being worked with Samsung. **Once a ticket is opened this document will be updated.**

Note*** Samsung 7100 follows the network CODEC priority of the of the INVITES sdp. A workaround for this issue is if the network can send G711 as first choice in the sdp's codec list.

- When Samsung 7100 places a call on hold for any reason, Samsung 7100 changes the media stream to port 30000. To allow MoH to be heard by the PSTN caller, Cox's standard configuration for the E-SBC must be modified so that "Do strict RTP source check: " is unchecked. This configuration must be set by Cox technician.
- When assigning an analog station (FXS) to be a fax, the value in SLI Data (2.5.7) **Figure 19** does not modify the analog ports behavior in version V4.53c



6 Configuration

6.1 Configuration Checklist

In this section we present an overview of the steps that are required to configure Samsung 7100 for SIP Trunking as well as all features that were tested.

A customer with an in-service PBX need only configure the SIP Carrier Options in 6.3.4 for Cox Business to setup the SIP Trunks.

Table 1 – PBX Configuration Steps

Step	Description	Reference
Step 1	Set System IP Address	Section 6.3.1
Step 2	Assign Licenses Keys	Section 6.3.2
Step 3	Set System Options	Section 6.3.3
Step 4	Sip Carrier Options for Cox Business	Section 6.3.4
Step 5	Trunk Groups	Section 6.3.5
Step 6	Assign Station Name	Section 6.3.6
Step 7	Pickup Group Station Assignment/Call ID Block	Section 6.3.7
Step 8	Assign Fax/Modem Station	Section 6.3.8
Step 9	Station Groups	Section 6.3.9
Step 10	Account Codes	Section 6.3.10
Step 11	Authorization Codes	Section 6.3.11
Step 12	Allow External Forward	Section 6.3.12
Step 13	Auto Attendant	Section 6.3.13
Step 14	Incoming Routing	Section 6.4.1
Step 15	Outgoing Dial Plan	Section 6.4.2
Step 16	Send CLI Number	Section 6.4.3

6.2 IP Address Worksheet

The specific values listed in the table below and in subsequent sections are used in the lab configuration described in this document, and are for **illustrative purposes only**. The customer must obtain and use the values for your deployment.

Table 2 – IP Addresses

Component	Cox Lab Value	Customer Value
EdgeMarc E-SBC		
• LAN IP Address	10.70.98.254	
• LAN Subnet Mask	255.255.255.0	
Samsung 7100 IP PBX		
• System IP Address The Internet Connection will typically be on the same subnet as the LAN IP Address of the E-SBC. If this is not the case, then Layer 3 routing must be in place.	10.70.98.2	
• Default Gateway The Default Gateway must be the LAN Network default Gateway. This will allow the administrator to log in via his/her workstation if the workstation is on a different network	10.70.98.1	

6.3 Samsung 7100 Detailed Configuration Steps

Equipment used for configuration setup:

- Samsung 7100.
- Samsung UNI 2TCN220189.
- Samsung 7100 software version release V4.53c.
- Samsung Officeserv Device Manager V1.02c 2011.03.18

6.3.1 Set System IP Address

This is accomplished via an Ethernet cross-over cable connected from a laptop or PC Ethernet port to the LAN port of the MP10a module. The default IP address of the Samsung 7100, for purposes of this explanation will be 10.100.0.1 with a subnet mask of 255.255.255.0. Document the settings before changing them. Once the steps in 6.3.1 are completed the PC settings will be placed back to their original values. The default IP address for the Samsung 7100 is 10.0.0.10. For the example 10.100.0.1 is used for the Samsung 7100.

1. Set the **IP Address** on the PC to 10.100.0.2 255.255.255.0
2. Set the **Subnet mask** to 255.255.255.0.
3. Click on **OK**

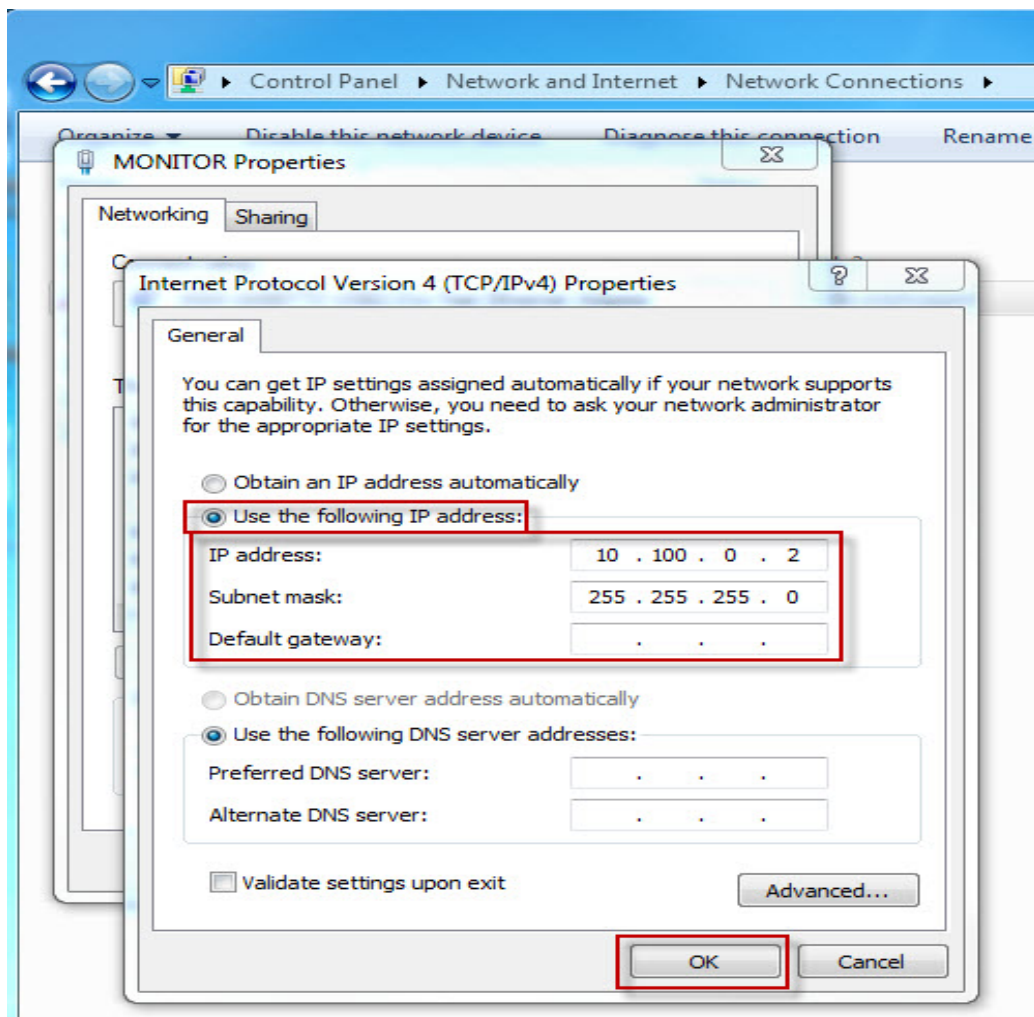
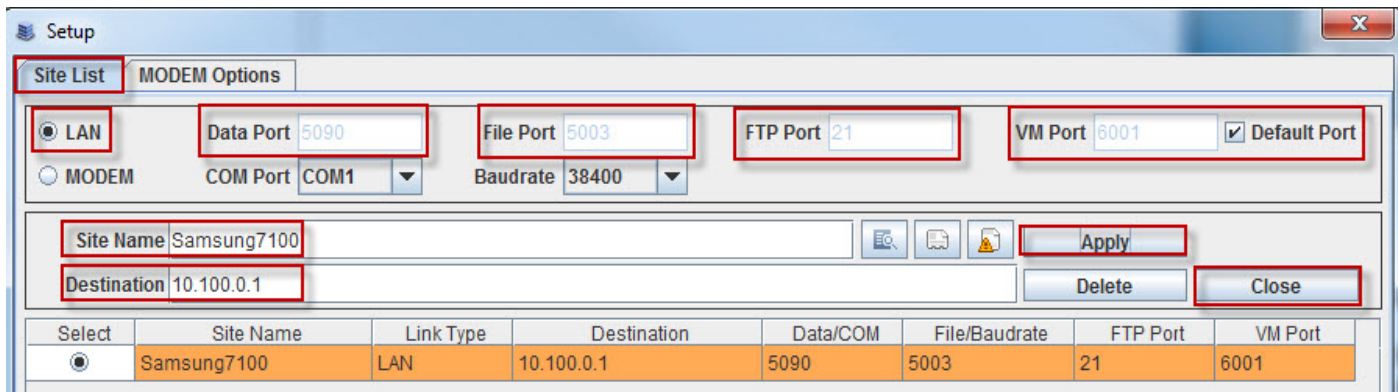


Figure 3 Set IP Address in PC

4. Connect Lan Cable between PC and Samsung 7100
5. Start OfficeServ Device Manager (OsDM)
6. Click on **System > Link Setup > Site List**
7. Select **LAN**, All other ports are left at their default values.
8. Assign a **Site Name**: For this example „Samsung 7100“ was used.
9. Assign the **Destination**: For this example “10.100.0.1” is used as discussed from [Section 6.3.1](#)
10. Click on **Apply** and then Click on **Close**



Select	Site Name	Link Type	Destination	Data/COM	File/Baudrate	FTP Port	VM Port
<input checked="" type="radio"/>	Samsung7100	LAN	10.100.0.1	5090	5003	21	6001

Figure 4 Link Setup

11. Click on **System > Connect**
12. In the **ID** field admin will be populated do not modify this. Enter the default password given to you from the PBX vendor
13. Click **OK**

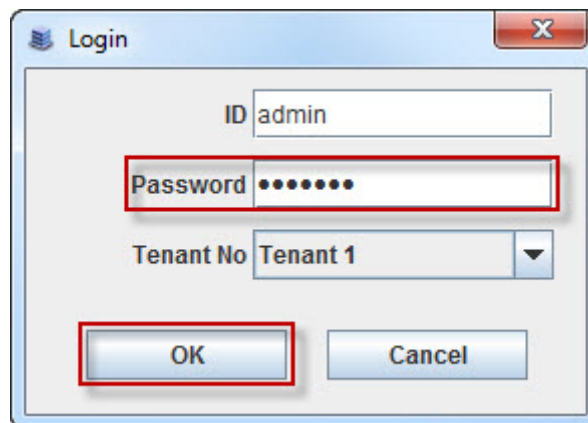
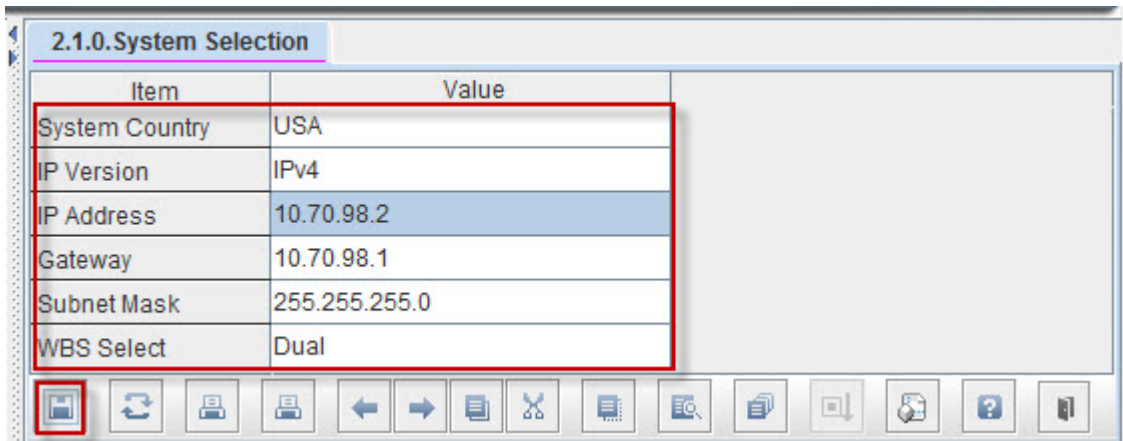


Figure 5 Login Prompt

14. Once logged in to OsDM
15. Navigate to **Configuration > System Configuration > System Selection (2.1.0)**

16. Set **System Country** to the Country the PBX resides in. For this example it USA.
17. Set **IP Version**: IPv4
18. Set **IP Address**: 10.70.98.2. This should be an IP address in the same subnet as the LAN E-SBC address. The IP address that was used for this configuration is 10.70.98.2
19. Set **Gateway**: 10.70.98.1. This should be the Gateway of the LAN segment as defined in the Ethernet Switch. Please reference **Table 2**
20. Set **Subnet Mask**: 255.255.255.0. This should be the Subnet mask of the LAN segment as defined in the Ethernet Switch. Please reference **Table 2**
21. Click on the **Save** icon in the bottom left of the screen.



Item	Value
System Country	USA
IP Version	IPv4
IP Address	10.70.98.2
Gateway	10.70.98.1
Subnet Mask	255.255.255.0
WBS Select	Dual

The screenshot shows a software window titled "2.1.0.System Selection". It contains a table with the configuration details listed above. A red rectangle highlights the table. Below the table is a toolbar with various icons. The first icon on the left, representing a save function, is highlighted with a red rectangle.

Figure 6 System Selection (2.1.0)

22. When Save is clicked you will be prompted to restart the system. Click **Yes**

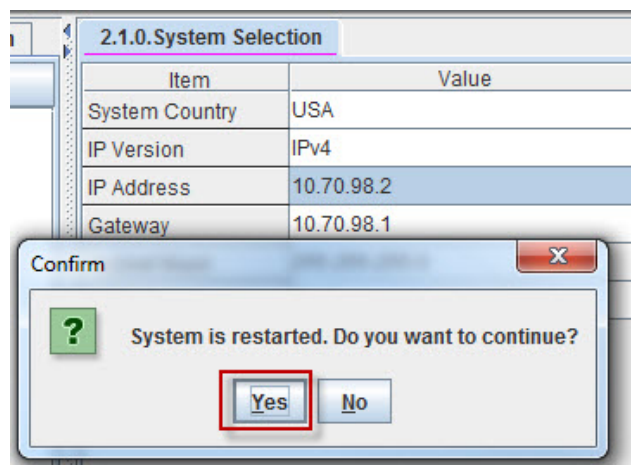


Figure 7 System Restart

23. Disconnect the Ethernet Cable between your PC and the Samsung 7100
24. Return the PC to its original configuration with the information stored from step 1 of Section 6.3.1
25. Connect the PC to its original network cable
26. Connect the Samsung 7100 Ethernet cable to the 10.70.98.0 /24 network
27. Modify the Destination address in **Figure 4** from 10.100.0.1 to 10.70.98.2 by following steps 5 thru 10 of [Section 6.3.1](#)
28. Connect to OsDM by following steps 11 thru 13 of [Section 6.3.1](#)

6.3.2 Assign Licenses Keys

The Licenses Keys will be acquired via the Samsung partner that the PBX was purchased from. Most likely the Licenses Keys will have already been installed. The Licenses Keys are a text string and can be saved to a text file.

NOTE*** *If your Licenses Keys are assigned already be very careful not to make any changes as this could render your Samsung 7100 inoperable*

1. Navigate to **Configuration > System Configuration > License Key (2.1.4)**
2. If there are License keys present and you need to save them to a text file simply Highlight the **Resource License Key** and “CTRL C”
3. Open the text file and “CTRL V” to paste the license key into the text document as a method of backing up the license key.
4. Highlight the **SIP Stack License Key** and “CTRL C”
5. Go to the text file, on the line below Resource License Key and “CTRL V”
6. Click on the Close ICON bottom right of the screen

2.1.4.License Key			
Item			Value
Temporary	License Type		Disable
Remaining License Time	Tutorial(hour)		Not Used
	Urgent(hour)		Not Used
Resource	License Key		GPWTWKI2-YICMOM46-YEWDUB7Z-DDVFQC82-AWU9757E-7QOCAYED
	License Status		OK
	MGI	Allowed	8
	VMS	Allowed	4
SIP Stack	License Key		WINKRHM3-XN9M-...-IM7-YU97BLYX-OJS3G2AW-7QOAXLMT
	License Status		OK
	SIP Trunk	Max Count	4
	SIP Phone	Max Count	0
		Connected	0
	3rd SIP Phone	Max Count	0
		Connected	0

Figure 8 License Key (2.1.4)



6.3.3 Set System Options

The System Options Shown in Figure 9 are all default values with the exception of "External BGM/MOH". The IP-PBX was tested with Int.Chime for its MOH source.

1. Set **External BGM/MOH**: Int.Chime.
2. Set **Technician Password**: XXXX In the example 5150 was used. This password can only be 4 numbers and is used when programing via any phone
3. Confirm that **DTMF Type**: Inband(RFC2833)
4. Confirm that **SIPT Ringback Message**: 183
5. Click on **Save**

2.1.5. System Options

Item		Value
Technician Password		5150
Country Code		1
Area Code		
Carrier Code		
Auto Insert Digit		
Daily Save DB	Hour	0
	Min	0
Alarm Overflow		Over Written
System Speed Max		Max500
System Speed Block		50
Idle when Enblock		Disable
LCD2 Enblock		Disable
External BGM/MOH		Int. Chime
Maximum Chain Forward All Step		1
Pickup Group Ring Service		Disable
MOBEX Executive Option	Auth By CLI	Off
	Auth Hold Tone	Off
	Tone Source	TONE
	BLF by CLI	Off
	Answer Delay Time(sec)	1
Trunk To MOBEX CLI	ISDN	Received
	SIP	Received
VoIP RTP Option	DTMF Type	Inband(RFC2833)
	MPS Service	On
	No MPS >> MGI	On
	SIPT >> SIPT MGI Use	Off
	SIPT Ringback Message	183

Navigation icons: [Save] [Refresh] [Print] [Export] [Back] [Forward] [List] [Edit] [Find] [Help] [Exit]

Figure 9 System Options (2.1.5)



6.3.4 Sip Carrier Options

Note: Please notice that the Outbound Proxy Server and SIP Domain Name is NOT data field. Please leave these blank. Remember that the E-SBC LAN IP address may/will be different from this example. Please see **Figure 2** and **Table 2** for the IP address scheme.

1. Navigate to **Features > VoIP Options > SIP Carrier Options (5.2.13)**
2. Set **SIP Carrier Name**: Cox This value can be any name that the Enterprise customer wants to use. For this example Cox was used
3. Set **SIP Server Enable**: Enable
4. Set **SIP Service Available**: Yes
5. Set **Registra Address**: This is the static LAN IP address of the Cox E-SBX. Please use the actual E-SBC LAN IP for your network. The IP Address used in this configuration is 10.70.98.254
6. Set **Registra Port**: 5060
7. Set **OutBound Proxy**: This is also the static LAN IP address of the Cox E-SBX. Please use the actual E-SBC LAN IP for your network. The IP Address used in this configuration is 10.70.98.254
8. Set **Outbound Proxy Port**: 5060
9. Set **User Name**: 6782383650
10. Set **Auth Username**: 6782383650
11. Set **Password**: *****

The actual SIP Registration Password and Username will be provided by your Cox Account Representative and must be kept confidential! The Trunk Group Pilot Number (username) is used here for illustration purposes only!
12. Set **Supplementary Type**: Server Managed Setting this parameter to Server Managed enables Refer support. By enabling refer support Samsung 7100 will not use additional resources when transferring/forwarding calls to the PSTN.
13. Click **Save**



Business®

5.2.13. SIP Carrier Options

SIP Carrier **1**

Item	Value
SIP Carrier Name	Cox
SIP Server Enable	Enable
SIP Service Available	Yes
Registra Address	10.70.98.254
Registra Port	5060
Outbound Proxy	10.70.98.254
Alternative Outband Proxy	0.0.0.0
Outbound Proxy Port	5060
Proxy Domain Name	
Local Domain Name	
DNS Server 1	0.0.0.0
DNS Server 2	0.0.0.0
User Name	6782383650
Auth Username	6782383650
Auth Password	6782383650
Regist Per User	Disable
Session Timer	None
Session Expire Time	1800
Trunk Reg Expire Time	1800
Alive Notify	None
Alive Notify Time	1800
IMS Option	Disable
P Asserted ID Use	Disable
Privacy	Disable
SIP Peering	Disable
Send CLI Table	1
Supplementary Type	Server Managed

Figure 10 Sip Carrier Options (5.2.3)

302 Response	Disable
SIP Destination Type	To Header
Codec Auto Nego	Enable
URI Type	SIP
SIP Signal Type	UDP
E164 Support	Disable
RACK Support	Disable
Hold Mode	Send Only




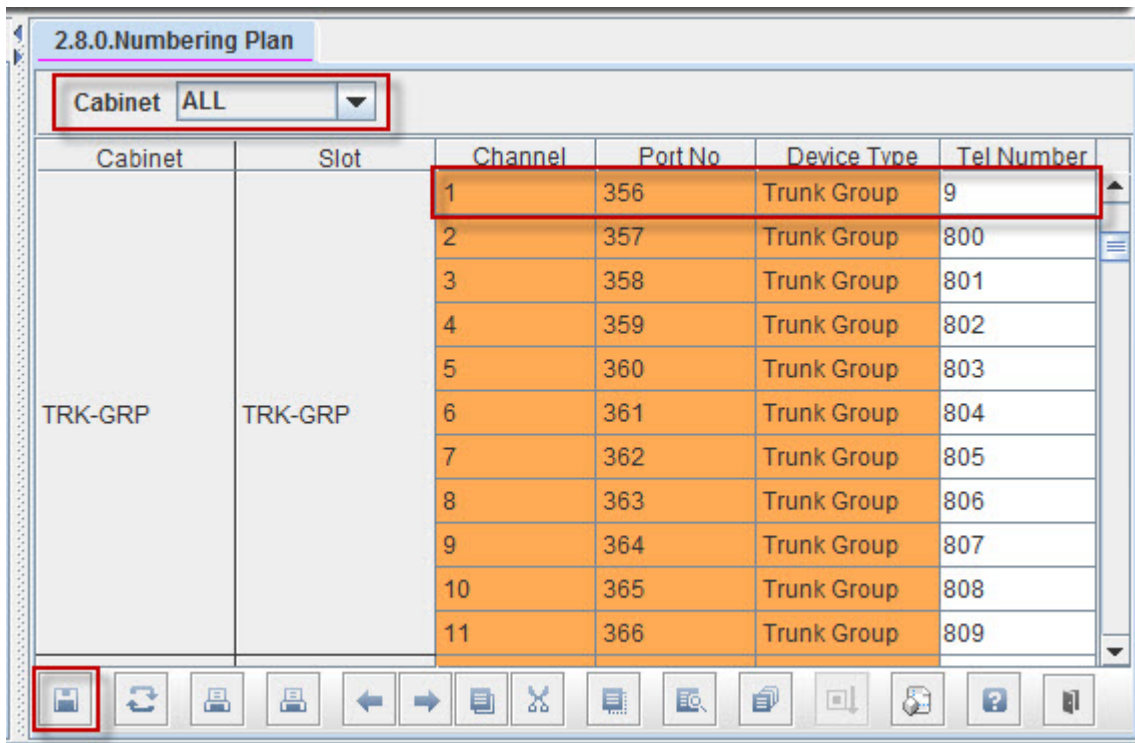
Figure 11 Sip Carrier Options cont... (5.2.13)

6.3.5 Trunk Groups

For the purpose of this example the user base of this PBX uses the access code of 9 to make a call to the PSTN. The Numbering Plan for the system is found in 2.8.0. The numbering plan has Sip Trunk numbers that will be used in 4.1.2 also the trunk group number that is used as the access code is defined in 2.8.0 as well. The number 9 is the trunk group number, this is set in 2.8.0 under TRK-GRP.

When an extension user makes a call to the PSTN 9 will be dialed to access the trunk. The user will then dial a 10 digit number or a 1 + 10 digit number.

1. Navigate to **Configuration > Numbering Plan > Numbering Plan (2.8.0)**
6. Set **Cabinet to All** from the drop down menu. This will bring up a list of the Numbering Plan for the IP-PBX.
2. Scroll the list down until you find the **Cabinet TRK-GRP**
3. For **Channel 1 Trunk Group** Enter 9 for the Tel Number
4. Click **Save**



2.8.0.Numbering Plan

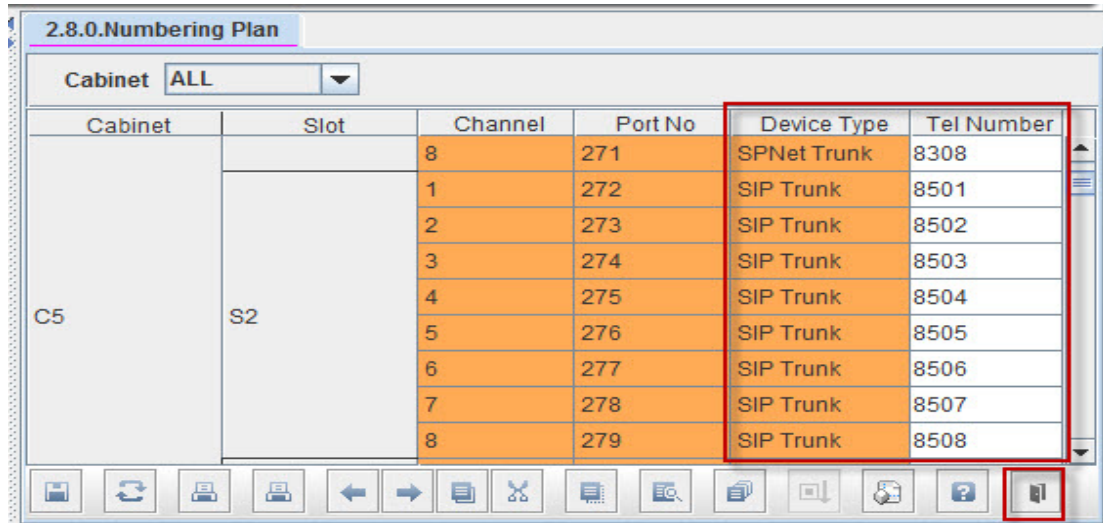
Cabinet ALL

Cabinet	Slot	Channel	Port No	Device Type	Tel Number
TRK-GRP	TRK-GRP	1	356	Trunk Group	9
		2	357	Trunk Group	800
		3	358	Trunk Group	801
		4	359	Trunk Group	802
		5	360	Trunk Group	803
		6	361	Trunk Group	804
		7	362	Trunk Group	805
		8	363	Trunk Group	806
		9	364	Trunk Group	807
		10	365	Trunk Group	808
		11	366	Trunk Group	809

Save

Figure 12 TRK-GRP (2.8.0)

5. In the same window scroll up until you find SIP Trunk under Device Type
6. There are no changes required if the default numbering plan is ok. For the purpose of this example the default numbering plan is used. Record the numbers for the SIP Trunks under Tel Number
7. Click **Close**



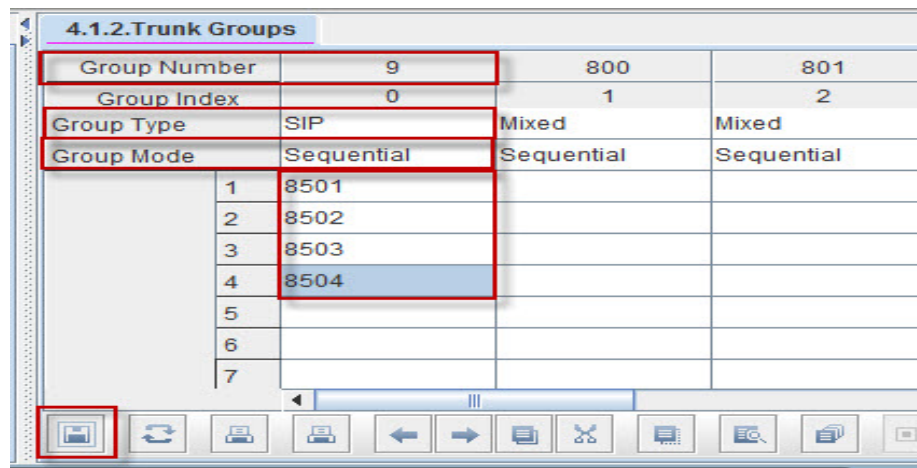
2.8.0.Numbering Plan

Cabinet: ALL

Cabinet	Slot	Channel	Port No	Device Type	Tel Number
C5	S2	8	271	SPNet Trunk	8308
		1	272	SIP Trunk	8501
		2	273	SIP Trunk	8502
		3	274	SIP Trunk	8503
		4	275	SIP Trunk	8504
		5	276	SIP Trunk	8505
		6	277	SIP Trunk	8506
		7	278	SIP Trunk	8507
		8	279	SIP Trunk	8508

Figure 13 Trunk Numbers (2.8.0)

8. The number of trunks that can be used is determined from **Figure 8** reference SIP Stack > SIP Trunk> Max Count = 4. This is determined by the license that was purchased from the IP-PBX vendor.
9. Navigate to Group & Table > Grouping > Trunk Groups (4.1.2). Find Group 9. Notice that the 9 cannot be modified.
10. Set **Group Type**: SIP
11. Set **Group Mode**: Sequential
12. Add SIP Trunk Members 8501 – 8504
13. Click **Save**



4.1.2. Trunk Groups				
Group Number	9	800	801	
Group Index	0	1	2	
Group Type	SIP	Mixed	Mixed	
Group Mode	Sequential	Sequential	Sequential	
	1	8501		
	2	8502		
	3	8503		
	4	8504		
	5			
	6			
	7			

Figure 14 Trunk Groups (4.1.2)

6.3.6 Assign Station Name

Assign station name to be displayed on the phone. This view has several more columns to the right that are all at their default values.

1. **Navigate to Configuration > Port Configuration > Port Common Data (2.4.2)** scroll down until you locate the Tel Number you are working with
2. For this example we are using ext. 3201 and 3202
3. Assign the **Name** for each extension that you are using.
4. Click **Save**

2.4.2.Port Common Data

Tel Number	Name	Made Busy	MOH	LCR Class	Call Priority	Distinct D
3416		Idle	371	1	No	No
3201	TestOne	Idle	371	1	No	No
3202	TestTwo	Idle	371	1	No	No
3203		Idle	371	1	No	No

Samsung7100-10.70.98.2] ['11.... [Office Serv 7100] [USA] Oct 5, 2011 11:21:00 AM

Figure 15 Port Common Data (2.4.2)

6.3.7 Pickup Group Station Assignment/Call ID block

1. Navigate to **Configuration > Station Port Configuration > Station Data (2.5.1)** scroll down until you locate the Tel Number(s) you are working with
2. In the **"Pickup Group"** column input the Pickup Group number that will be assigned to the extension numbers that are being provisiond.
3. To Block Caller ID for an extension set NO under **"CLI Send"**.
4. Click **Save**

2.5.1.Station Data

Tel Number	Pickup Group	Branch Group	CLI Receive	CLI Send
3415			Yes	Yes
3416			Yes	Yes
3201	1		Yes	Yes
3202	1		Yes	No
3203			Yes	Yes

Figure 16 Station Data (2.5.1)

6.3.8 Assign Fax/Modem Station

1. The analog phone ports in the Samsung 7100 are MW SLI Devices. These are daughter cards mounted on the UNI 2TCN220189 interface card. Based on the lights on the front of the card you can identify which are Analog Trunks (FXO) Digital Stations or Analog Stations (FXS)
2. Based on **Figure 17** below the First analog station will be MD3 P1.
 - Green Light 4TRM: 4 port loop start trunk interface module.(FXO)
 - Red Light 4DLM: 4 port digital phone interface module.
 - Amber Light 4SLM: 4 port Single Line Analog telephone interface (FXS)

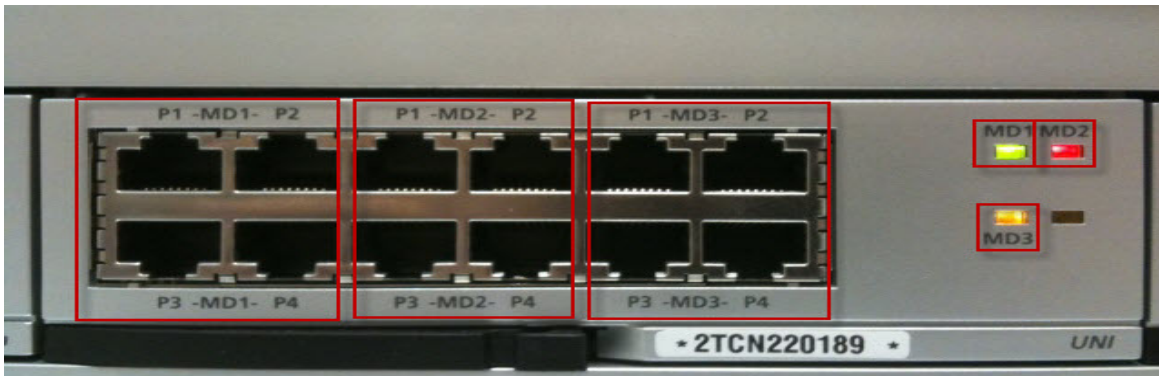


Figure 17 Analog/Digital Interface

3. Navigate to **Configuration > Numbering Plan > Numbering Plan (2.8.0)**
4. Set **Cabinet** to All from the drop down menu. This will bring up a list of the Numbering Plan for the IP-PBX
5. Scroll the list down until you find **MW SLI** under **Device Type**. To the right will be the extension numbers under the heading Tel Number. If the extension numbers that are listed are not suitable they can be changed in this location only!
6. If you change the extensions from the default information click **Save** or if there are no changes click Close

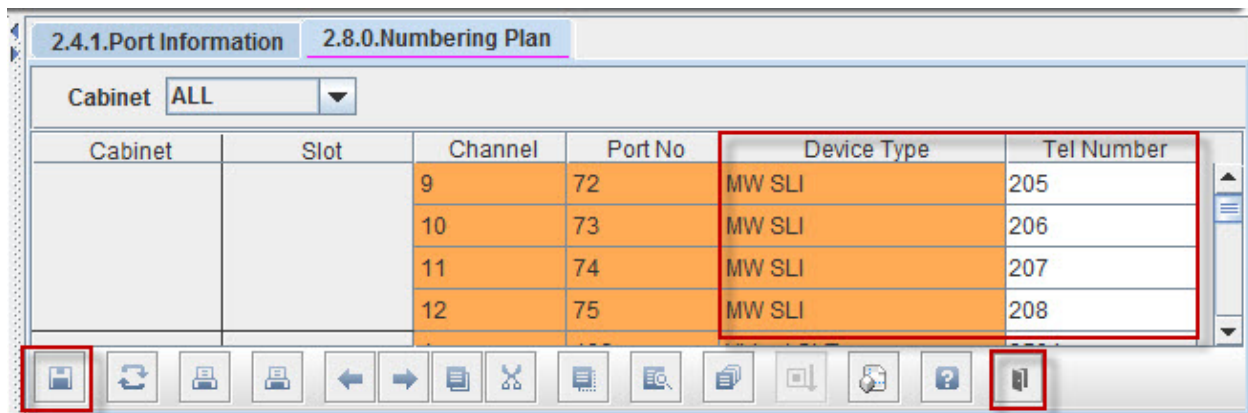
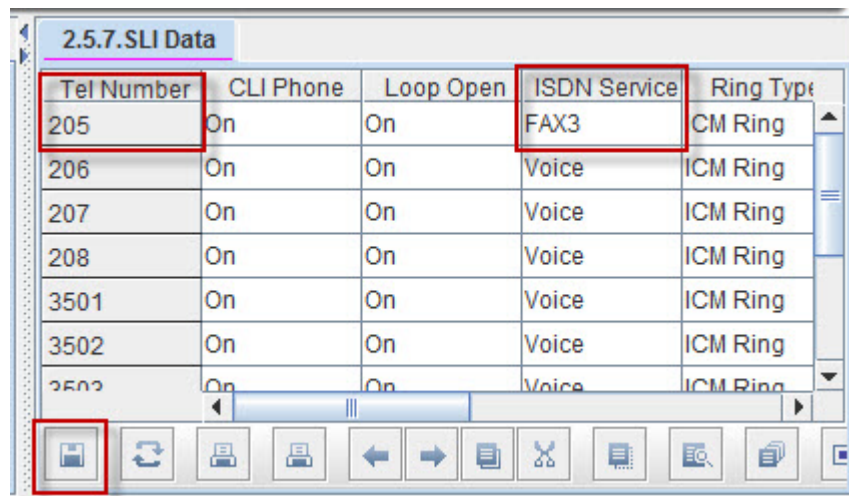


Figure 18 Numbering Plan MW SLI (2.8.0)

7. Navigate to **Configuration > Station Port Configuration > SLI Data (2.5.7)**
8. Scroll the list down until Tel Number 205 is visible
9. Under **ISDN Service** set Voice to FAX3

NOTE*** In this software release FAX3 has no impact but in future release it will control fax setup. This setting also works for a FXS used as a MODEM.



Tel Number	CLI Phone	Loop Open	ISDN Service	Ring Type
205	On	On	FAX3	CM Ring
206	On	On	Voice	ICM Ring
207	On	On	Voice	ICM Ring
208	On	On	Voice	ICM Ring
3501	On	On	Voice	ICM Ring
3502	On	On	Voice	ICM Ring
3503	On	On	Voice	ICM Ring

Figure 19 SLI Data (2.5.7)

6.3.9 Station Groups

Station Groups are used to set up Simultaneous and Sequential ring groups. Station Groups are also used in the setup of Auto Attendant. The Auto Attendant will be explained in [Section 6.3.13](#)

1. Navigate to **Group & Table > Grouping > Station Groups (4.1.1)**.
2. For this example Group 500 will be the Simultaneous Ring Group
3. Set **Ring Mode**: Uncondition
4. Set **Group Name**: All At Once is used for this example.
5. Towards the bottom of **Figure 20** set 201 and 3202 as part of Group 500
6. For this example Group 501 will be the Sequential Ring Group
7. Set **Ring Mode**: Sequential
8. Set **Group Name**: Sequential is used in this example.
9. Towards the bottom of **Figure 20** set the order that the phones should ring. In this example 3202 will ring first and 201 will ring second.
10. Click **Save**

4.1.1. Station Groups

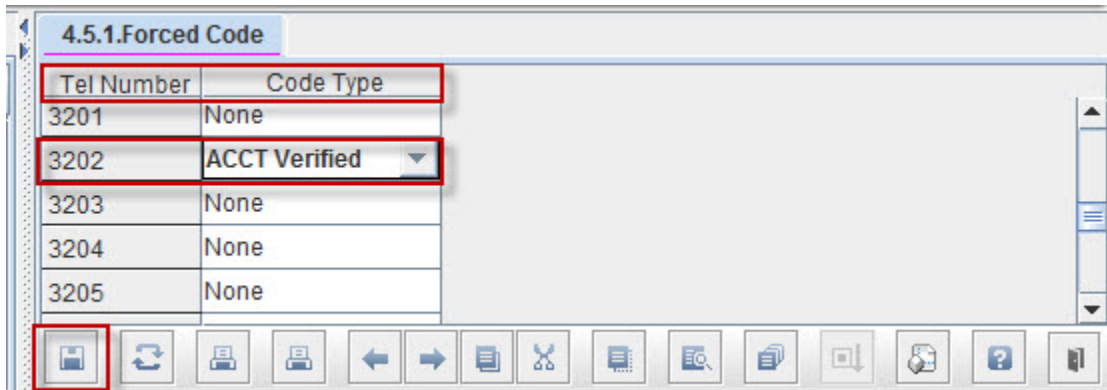
Group Number	500	501	502	
Group Index	0	1	2	
Group Type	Normal	Normal	Normal	Normal
Ring Mode	Uncondition	Sequential	Uncondition	Sequen
Next Port	519	519	519	
RBT Message				
Group Name	All At Once	Sequential	AA	
Transfer Time	0	0	0	0
Overflow Time	35	35	1	35
Hunt Time	0	10	0	0
Group Busy	Off	Off	Off	Off
Group Answer	Off	Off	Off	Off
All Out Next	Off	Off	Off	Off
	1	201	3202	202
	2	3202	201	
	3			

Figure 20 Station Groups (4.1.1)

6.3.10 Account Codes

There are two different types of Account Codes in the Samsung 7100. They are ACCT Verified and ACCT No Verified. For purpose of this example ACCT Verified will be explained.

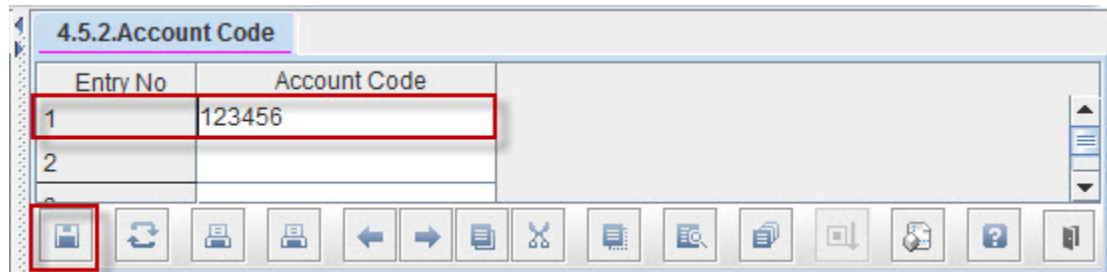
1. Navigate to **Group & Table > Account/Authorize Code > Forced Code (4.5.1)**
2. Scroll the list down until the extension that will be assigned "ACCT Verified" is reached.
3. Via the pull down menu select ACCT Verified. In this example extension 3202 is used.
4. Click **Save**



Tel Number	Code Type
3201	None
3202	ACCT Verified
3203	None
3204	None
3205	None

Figure 21 Forced Code (4.5.1)

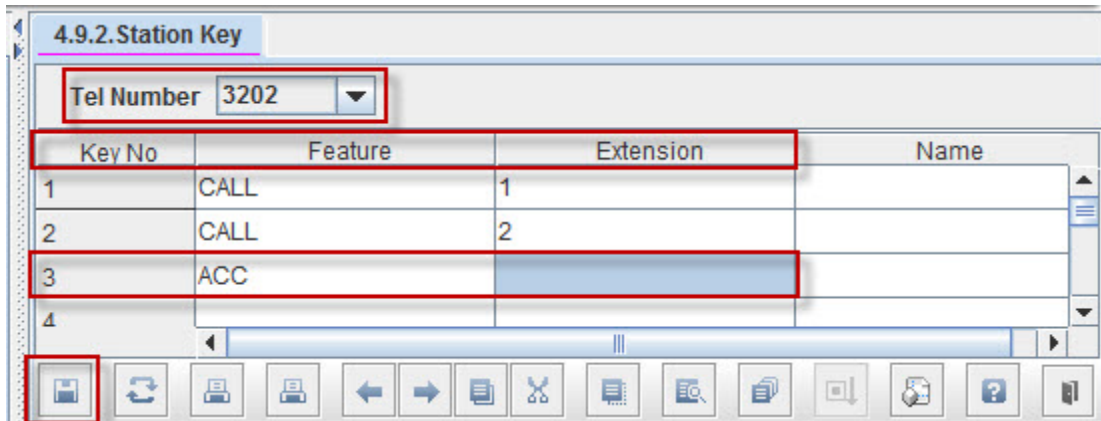
5. Navigate to **Group & Table > Account/Authorize Code > Account Code (4.5.2)**
6. For **number 1** under Entry No enter a 1-12 digit Account Code. For this example 123456 is used.
7. Click **Save**



Entry No	Account Code
1	123456
2	

Figure 22 Account Code (4.5.2)

8. Navigate to **Group & Table > Key Programming > Station Key (4.9.2)**
9. Use the drop down menu to select the Tel Number in this example 3202 is used.
10. For **"Key No"** 3 assign ACC under Feature. For this example "Key No" 3 is used.
11. Under **Extension** the **"Entry No"** can be entered as shown in **Figure 22** here or for "Key No" 3 Extension can be left blank. If this is left blank when the user at extension 3202 presses key number 3, the user will be prompted for a BIN number NOT the Account Code number that is entered in that bin. For this example the user must enter 001

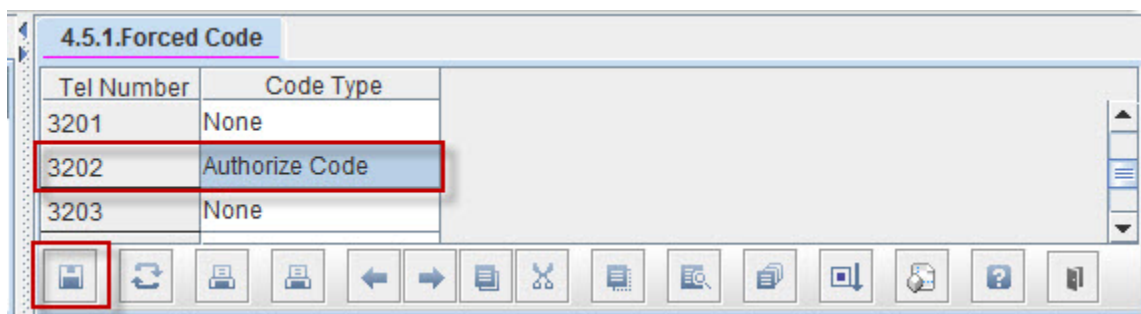


Key No	Feature	Extension	Name
1	CALL	1	
2	CALL	2	
3	ACC		
4			

Figure 23 Station Key (4.9.2)

6.3.11 Authorization Codes

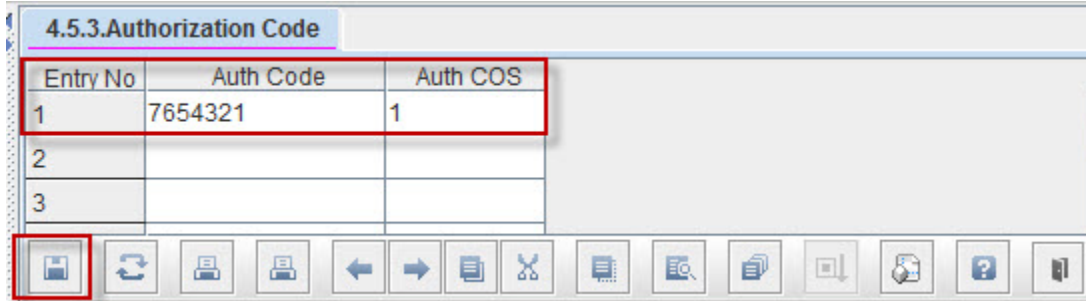
1. Navigate to **Group & Table > Account/Authorization Code > Forced Code (4.5.1)**
2. Scroll down to the extension that will be configured for Authorize Code. For this example 3202 is used.
3. Set **Code Type**: Authorize Code
4. Click **Save**



Tel Number	Code Type
3201	None
3202	Authorize Code
3203	None

Figure 24 Forced Code Authorize (4.5.1)

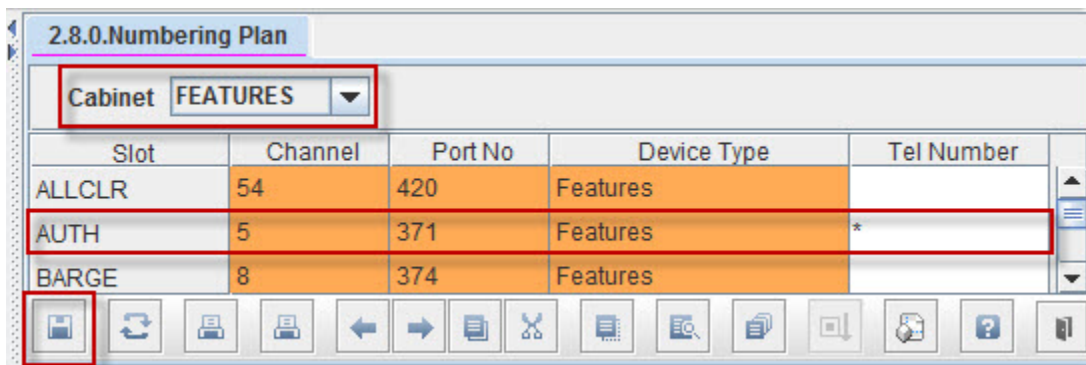
5. Navigate to **Group & Table > Account/Authorization Code > Authorization Code (4.5.3)**
6. Set **Auth Code** for Entry No. 1: 7654321 This number can be 1 – 10 digits in length
7. Set **Auth COS** for Entry No. 1: 1



Entry No	Auth Code	Auth COS
1	7654321	1
2		
3		

Figure 25 Authorization Code (4.5.3)

8. Navigate to **Configuration > Numbering Plan > Numbering Plan (2.8.0)**
9. Set **Cabinet** to FEATURES from the drop down menu. This will bring up a list of Features under the column Slot.
10. Scroll down until AUTH is shown
11. Record the information under Tel Number for AUTH. If this number is acceptable click Close if this number requires changing, change the number and click **Save**. For this example * is used.



Slot	Channel	Port No	Device Type	Tel Number
ALLCLR	54	420	Features	
AUTH	5	371	Features	*
BARGE	8	374	Features	

Figure 26 Numbering Plan Features

6.3.12 Allow External Forward

1. Navigate to **Features > Timer/Option Features > UCD Forward/Wakeup Options (5.14.16)**
2. Set **Intercom External Forward**: On This allows stations to call forward calls to PSTN.
3. All other options in this table are default
4. Click **Save**

5.14.6.UCD Forward/Wakeup Options

Item	Value
Periodic UCD Report	Off
Periodic UCD Report to UCD SIO	Off
UCDS Visual Alarm Count	0
UCDS Audio Alarm Count	0
UCD CS Level 1	0
UCD CS Level 2	0
UCDS Visual Alarm (10 sec)	0
UCDS Audio Alarm (10 sec)	0
Periodic UCD Report (sec)	5
Intercom External Forward	On
Preset Forward Busy	Off
VMAA Chain Forward	On
Alarm MOH	Off
Alarm Reminder Count	5
Alarm Reminder Interval	25
Alarm Reminder Ring Off	20

Figure 27 UCD Forward Wakeup Options (5.14.6)

6.3.13 Auto Attendant

1. Navigate to **VMAA > Open Block Table > Dial (8.1.4)**. This is to create the PSTN number so that it may be dialed via a single digit is pressed.
2. Click Add a new dialog window will appear named New Block
3. Set **Block Name**: Dial Block
4. Set **Label Name**: DialOffPrim is used for our example.
5. Click **Save**

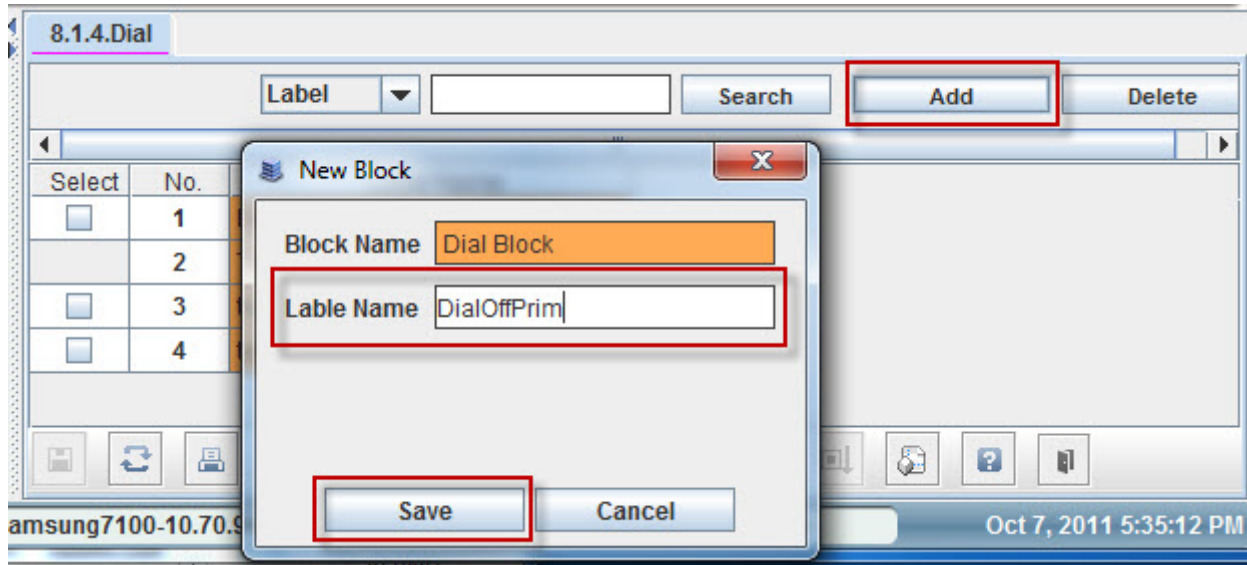


Figure 28 New Block (8.1.4)

6. Once Save is pressed
7. Click Add a new dialog window will appear named Dial Block (OffPrim)
8. Set **Number:** 6782344101# This number is for example only
9. Set **Station Type:** Off Premise
10. Click **Save&Exit**

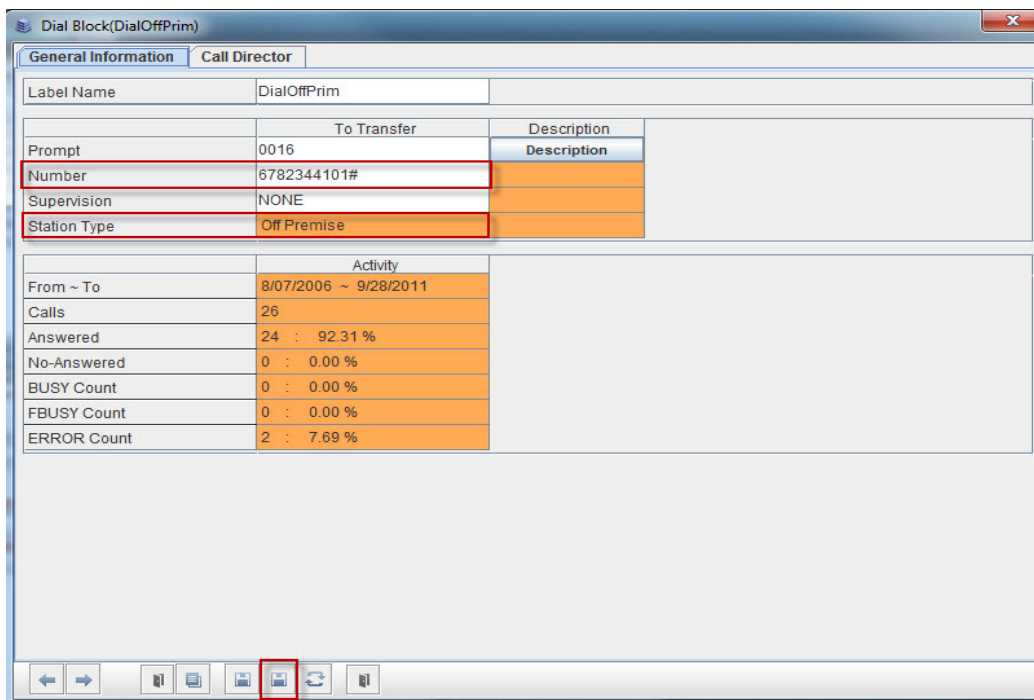
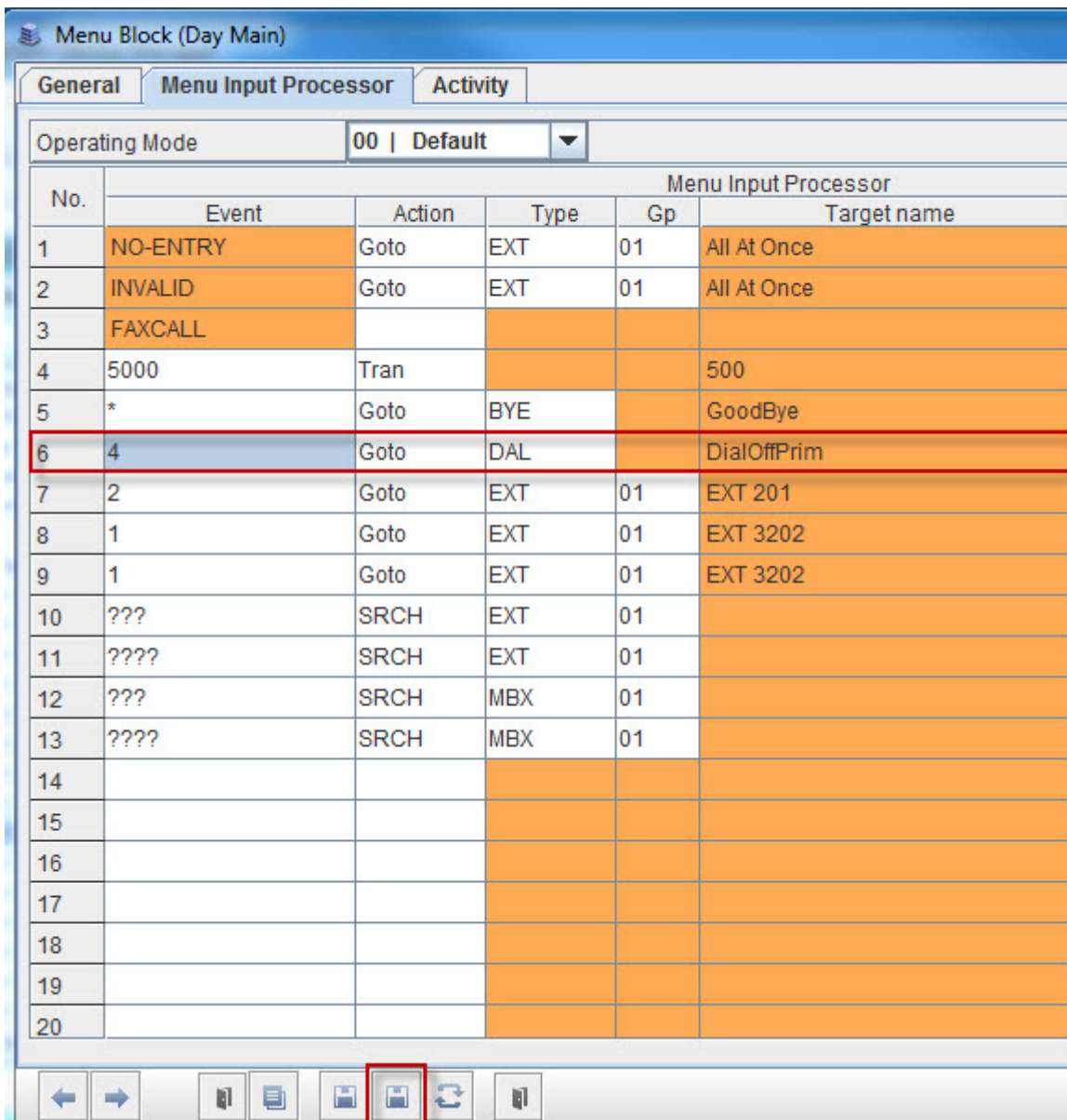


Figure 29 Dial Block(DialOffPrim)

11. Navigate to **VMAA > Open Block Table > Menu (8.1.13).**
12. Double click on Day Main
13. Click on Menu Input Processor
14. Set **No. 6** For Event to 4 Set Action Goto Type DAL Target name select DialOffPrim.
DialOffPrim is created in Section 6.3.13 steps 1 – 10. Now when a user dials the Auto Attendant number and presses the digit 4 the call will be sent to 6782344101.
15. Use modify the Auto Attendant as required
16. Click **Save&Exit**



Menu Block (Day Main)

General | **Menu Input Processor** | Activity

Operating Mode: 00 | Default

No.	Menu Input Processor				
	Event	Action	Type	Gp	Target name
1	NO-ENTRY	Goto	EXT	01	All At Once
2	INVALID	Goto	EXT	01	All At Once
3	FAXCALL				
4	5000	Tran			500
5	*	Goto	BYE		GoodBye
6	4	Goto	DAL		DialOffPrim
7	2	Goto	EXT	01	EXT 201
8	1	Goto	EXT	01	EXT 3202
9	1	Goto	EXT	01	EXT 3202
10	???	SRCH	EXT	01	
11	????	SRCH	EXT	01	
12	???	SRCH	MBX	01	
13	????	SRCH	MBX	01	
14					
15					
16					
17					
18					
19					
20					

Navigation icons: Back, Forward, Home, **Save & Exit**, Refresh, Print.

Figure 30 Menu Block (Day Main)

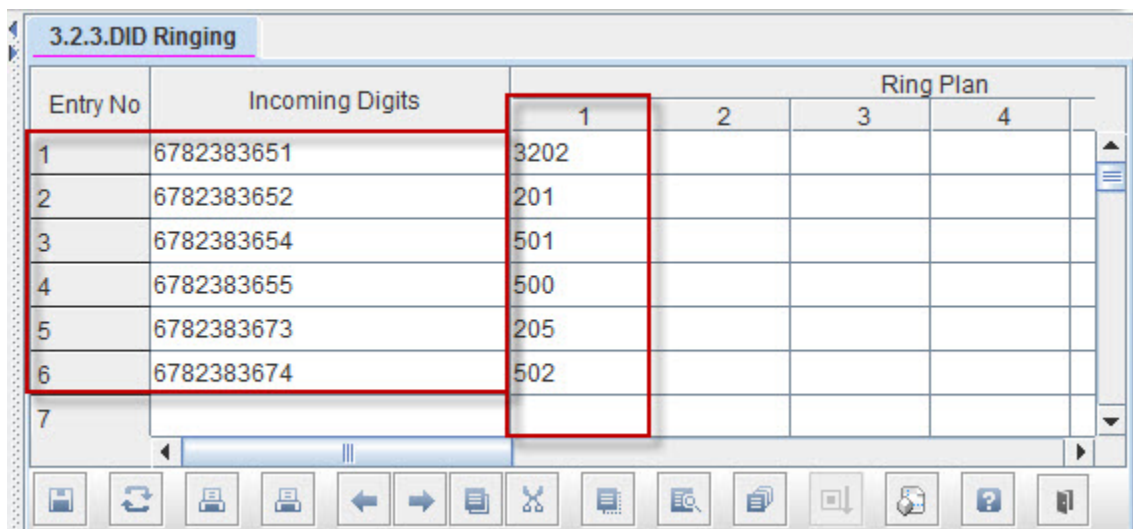
6.4 Samsung 7100 Dial Plan Configuration

For purpose of this example the Samsung 7100 is configured to dial 9 which is the access code for the SIP trunk. Setting up dial 9 access is covered in [Section 6.3.5](#). The steps below give detailed step by step instructions for Inbound and out bound calls.

6.4.1 Incoming Routing

To provision DID numbers in Samsung 7100 is a very simple process. The steps below define this process. The DID numbers that are used below are test numbers. Use only the range that is assigned to you from your Cox representative

1. Navigate to **Call Routing > Incoming > DID Ringing** (3.2.3)
2. For this example “Entry No” 1 – 6 will be populated and described below. Each Entry will be associated with a extension or a group
3. Set “**Entry No**” 1 Incoming Digits: 6782383651 to the right under “1” enter 3202
4. Repeat Step 3 for “Entry No” 2 – 6
 - When 6782383651 is received the call terminates to extension 3202
 - When 6782383652 is received the call terminates to extension 201
 - When 6782383654 is received the call terminates to group 501 **Figure 20**
 - When 6782383655 is received the call terminates to group 500 **Figure 20**
 - When 6782383673 is received the call terminates to Fax 205
 - When 6782383674 is received the call terminates to AA group 502 **Figure 20**
5. Click **Save**



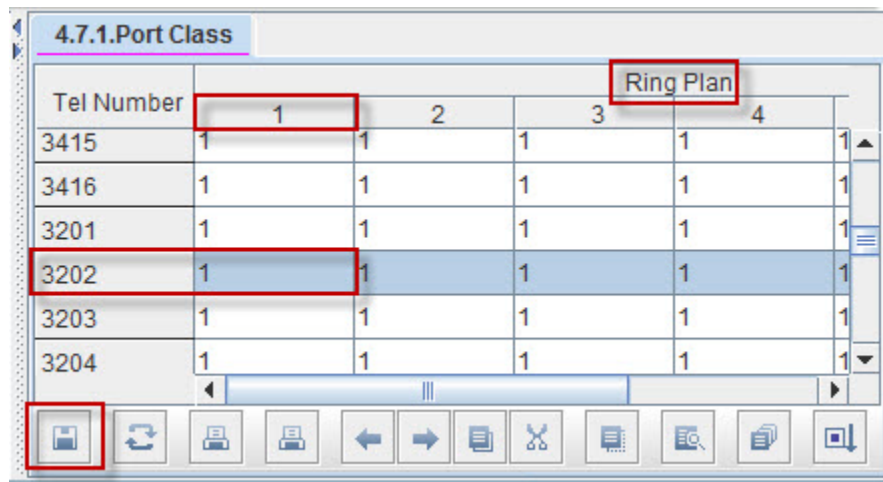
Entry No	Incoming Digits	Ring Plan			
		1	2	3	4
1	6782383651	3202			
2	6782383652	201			
3	6782383654	501			
4	6782383655	500			
5	6782383673	205			
6	6782383674	502			
7					

Figure 31 DID Ringing (3.2.3)

6.4.2 Outgoing Dial Plan

The dial plan consists of what is allowed or denied. The method, in which the IP-PBX's dial plan is documented, is to deny the numbers that should not be allowed out of the IP-PBX. That which is not explicitly denied is allowed.

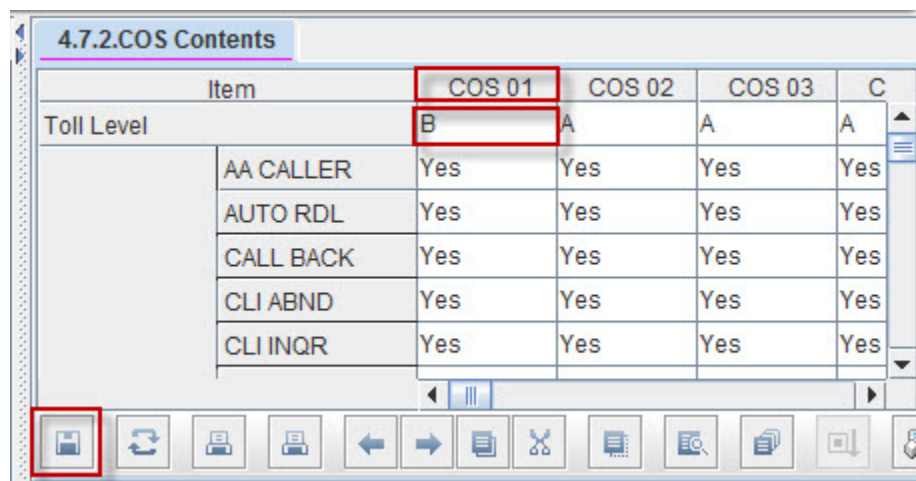
1. Navigate to **Group & Table > Class Of Service> Port Class (4.7.1)**
2. Scroll down until the extension that is being configured appears under "Tel Number" for this example we are using extension 3202
3. Set **3202: 1** under column "1" The "1" represents Class Of Service (COS) 1 The Gui is incorrectly worded. The Gui states "Ring Plan" Should be worded COS



Tel Number	1	2	3	4
3415	1	1	1	1
3416	1	1	1	1
3201	1	1	1	1
3202	1	1	1	1
3203	1	1	1	1
3204	1	1	1	1

Figure 32 Port Class (4.7.1)

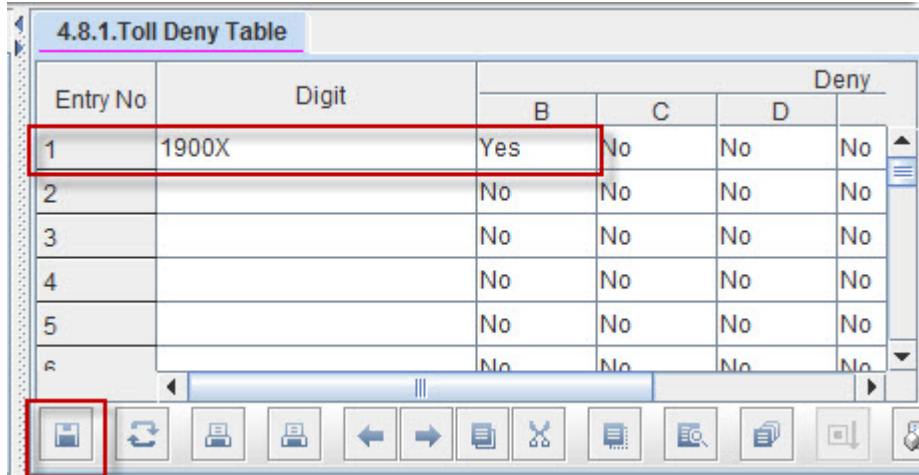
4. Navigate to **Group & Table > Class Of Service> COS Contents (4.7.2)**
5. By default all COS's use "Toll Level" A. For COS 01 change the "Toll Level" to B
6. Click **Save**



Item	COS 01	COS 02	COS 03	C
Toll Level	B	A	A	A
AA CALLER	Yes	Yes	Yes	Yes
AUTO RDL	Yes	Yes	Yes	Yes
CALL BACK	Yes	Yes	Yes	Yes
CLI ABND	Yes	Yes	Yes	Yes
CLI INQR	Yes	Yes	Yes	Yes

Figure 33 COS Contents (4.7.2)

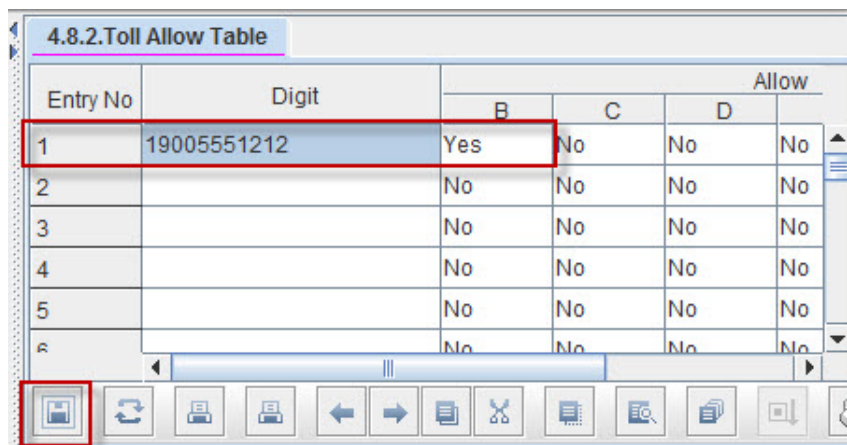
7. Extension 3202 has been assigned COS 1 with Toll Level B. The goal now is to deny extension 3202 from dialing any 1900 numbers.
8. Navigate to **Group & Table > Toll Restriction > Toll Deny Table (4.8.1)**
9. Set **"Entry No":1 1900X**
10. Set **Toll Deny Table B** for "Entry No" 1 to Yes
11. Click **Save**



Entry No	Digit	Deny			
		B	C	D	
1	1900X	Yes	No	No	No
2		No	No	No	No
3		No	No	No	No
4		No	No	No	No
5		No	No	No	No
6		No	No	No	No

Figure 34 Toll Deny Table (4.8.1)

12. Now when station 3202 dials 1900-xxx-xxxx the call is blocked and a message shows on the phone that reads Toll Restricted.
13. The Toll Allow (4.8.2) table is used to override the Toll Deny Table (4.8.1) Figure xx. For this example 19005551212 will be allowed and all other 900 numbers will be blocked.
14. Navigate to **Group & Table > Toll Restriction > Toll Deny Table (4.8.1)**
15. Set **"Entry No":1 19005551212**
16. Set **Toll Allow Table B** for "Entry No" 1 to Yes



Entry No	Digit	Allow			
		B	C	D	
1	19005551212	Yes	No	No	No
2		No	No	No	No
3		No	No	No	No
4		No	No	No	No
5		No	No	No	No
6		No	No	No	No

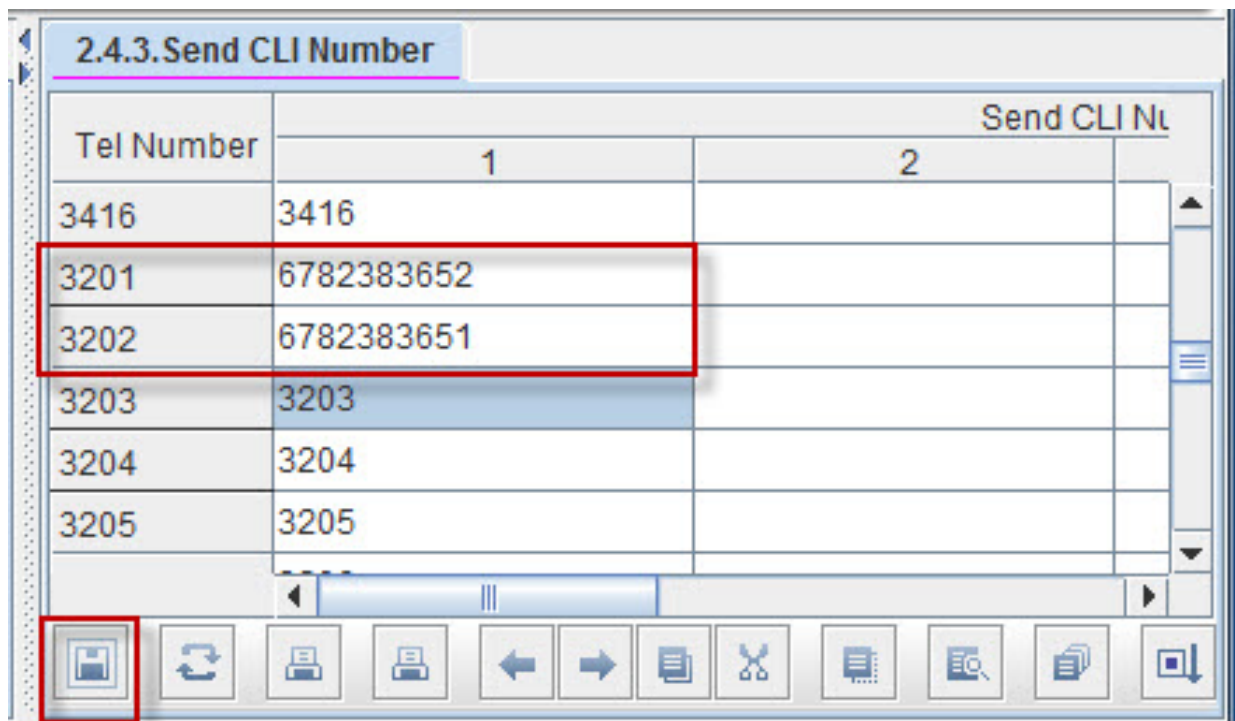
Figure 35 Toll Allow Table (4.8.2)

17. Now if extension 3202 dials 19005551212 the call completes.
18. A summary of the call permissions for extension 3202 is 1900 calls are denied with the exception of 19005551212. All other calls are allowed.

6.4.3 Send CLI Number

The Calling Line ID (CLID) is configured to send phone user's 10-digit DID number

1. Navigate to **Configuration > Port Configuration > Send CLI Number (2.4.3)**
2. Scroll down to the extension numbers that are being configured. In this example we are using extension 3201 and extension 3202
3. For extension 3201 Set 6782383652 in the column to the right
4. For extension 3202 Set 6782383651 in the column to the right
5. Click **Save**



Tel Number	Send CLI Number	
	1	2
3416	3416	
3201	6782383652	
3202	6782383651	
3203	3203	
3204	3204	
3205	3205	

Figure 36 Send CLI Number (2.4.3)



6.4.4 Calling Line ID Spoofing

Calling ID Spoofing is the practice of sending a CLID that is not within the Cox assigned DID telephone number range(s). A legitimate use of CLID spoofing is the PBX customer wants to display their toll free number on non-emergency PBX originated calls such the dialed party can call the company back. To enable CLID spoofing support, the PBX customer must:

1. Contact your Cox sales representative to request spoofed CLID support on the Cox network, otherwise Cox will block calls that present a spoofed CLID.
2. Enter the toll free or other telephone number instead of the 10-digit DID number to be displayed for each extension in **Figure 36** above.