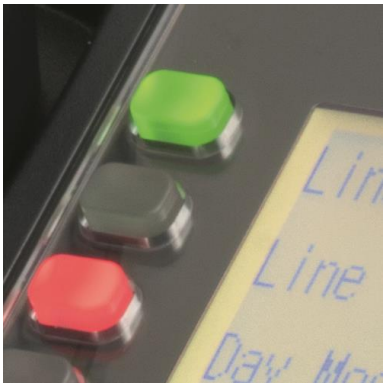
Orchestrating a brighter world NEC

# The SL2100 Quick Install Guide: SIP Trunks

Out of the box installations for resellers







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This guide explains the installation, configuration and operation of the SL2100 Telephone System including the exchange line and telephone connections.
Further information is available on BusinessNet.
Please keep all information supplied for future reference.

Regulatory Notice.
Refer to the Declaration of Conformity shown in the SL2100 Hardware Manual
Warning: This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Contents

# What is the SL2100?

The SL2100 system consists of a chassis unit with a dedicated slot for the CPU card and four universal slots for interface cards. Each universal slot supports an extension interface card, optionally each extension interface card can have a trunk interface daughter card mounted.
The chassis unit is ventilation cooled (no fan) and can be wall mounted or rack mounted with the optional rack mount shelf.
Up to three chassis units can be connected together to provide a total of twelve universal slots.
Interface cards are available for Analogue and ISDN trunks, proprietary SL2100 terminals and analogue telephones.
SIP Trunks and IP terminals are supported without the need for additional system hardware as eight VoIP resources are built in to the CPU card. VoIP resources can be expanded to 16 by adding the optional VOIPDB card and further to 128 with licenses.
InMail voicemail is also available either using the built in storage of the CPU-C1-A or by adding the optional SD card.
The built in InMail with the CPU-C1-A card provides 4channels and 2hours of storage, this can be expanded to 15hour or 120hour by adding the SD card to the CPU.
The CPU-C1 requires the SD card installed to provide InMail voicemail.
Both CPU's have built in VRS with 4channnels and 100 messages with 2hours message storage.

All equipment will operate in the default/factory setting when the SL2100 is installed.
With the default settings:

- Each telephone will function and is assigned an extension number.
- Calls received on the SIP trunk lines will ring at telephone number 200.
- Each telephone can make outside calls by dialling 9.
- Each trunk line is presented at a Function Key with busy lamp indication.

The system can be easily modified using SL2100 PCPro which has Quick Installation wizards for the majority of system settings.

**Outside lines (SIP) included in this guide**
Only one SIP carrier is covered in this guide. It is possible to connect an additional SIP carrier using SIP Profiles, this is covered in the SV9100 VOIP training material.

**Parts available for the SL2100**

Not all parts are included within this guide, please refer to the other SL2100 Quick Install Guides or the SL2100 Hardware Manual for a full description and installation instructions of all parts available.

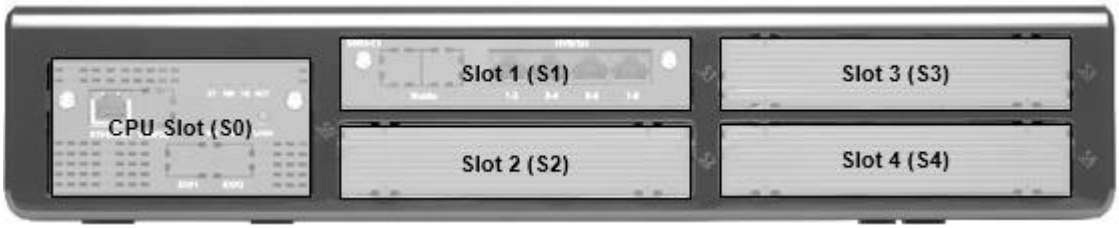
| | | |
|---|---|---|
| IP7WW-4KSU-C1 | SL2100 Chassis unit | Included within this guide |
| IP7EU-CPU-C1 | SL2100 CPU card | |
| IP7EU-CPU-C1-A | SL2100 CPU card with pre-installed IP licenses and 2hour InMail | |
| IP7WW-VOIPDB-C1 | VOIP card | |
| SL2100 IP Trunk-01 Lic | IP Trunk license (1 trunk) | |
| SL2100 IP Channel-16 Lic | VIP channel license (16 ch) | |
| IP7WW-EXIFB-C1 | Expansion interface card | Interface card required to connect to the expansion chassis |
| IP7WW-EXIFE-C1 | Expansion interface card | Interface card installed into the expansion chassis |
| IP7WW-SDVMS-C1<br>IP7WW-SDVML-C1 | InMail voicemail | Provides 15/120 hour voicemail |
| IP7WW-3COIDB-C1 | Analogue trunk daughter card | 3 analogue trunks, max. 4 per unit |
| IP7WW-2BRIDB-C1 | 2BRI card | 2 x BRI circuits, 4 trunks |
| IP7WW-1PRIDB-C1 | ISDN PRI card | 1 PRI circuit, up to 30 trunks |
| IP7WW-000U-C1 | Trunk carrier card | Require when 082E or 008E card is not available to install the 2BRIDB,1PRIDB or 3COIDB card |
| IP7WW-082U-B1 | 8 Digital Extension (2wire) and 2 SLT extension card | 8 digital and 2 SLT extension interfaces, max 3 per unit |
| IP7WW-308U-A1 | 8 Hybrid Extension (4wire) extension card | 8 hybrid extension interfaces, max 4 per unit |
| IP7WW-008U-C1 | 8 Analogue extension card | 8 analogue extension interfaces, max 4 per unit |
| IP4WW-Battery Box | Battery box | External battery box for power fail backup (batteries not included) |
| 161893001-A | Rack mount shelf | Rack mount for SL2100 chassis unit |

Refer to Prophix for all parts and licenses available in your region.

SL2100 Terminals are included in separate Quick Install Guides

# System Overview

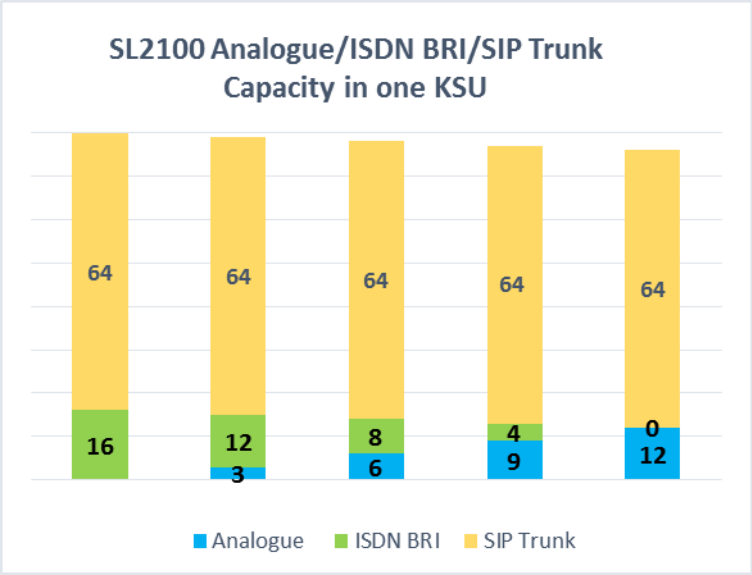
The slots are labelled S0~S4 on the front of the chassis, these slots are used for TDM interface cards.
Slot S0 has the CPU card installed, slots S1~S4 are universal slots for any interface card.




Note – Slot 4 does not support digital extensions, an IP7WW-082U-B1, IP7WW-308U-A1 or IP7WW-008U-C1 card can be installed but will only support analogue extensions, any trunk daughter card is supported in slot 4.

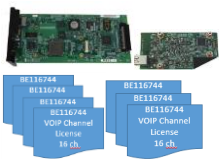
**SL2100 Trunk capacity for a single chassis**

The capacity of SIP trunks is not limited by the quantity of TDM trunks or KSU installed.
The SL2100 with one KSU supports up to 64 SIP trunks (licenses required).




## SL2100 VOIP Resource Capacity

The SL2100 CPU cards have 8 VOIP resources built in, these can be expanded further by adding the VOIPDB card (BE116500) and VOIP channel licenses (BE116744).
Adding the VOIPDB card provides 16 VOIP resources, the VOIP channel license provides an additional 16 resources up to 128 channels maximum.
Note - The VOIPDB card must be installed in order to use the VOIP channel license.

| | CPU Only | CPU with VOIPDB | CPU with VOIPDB + 1 x VOIP channel lic | CPU with VOIPDB + 2 x VOIP channel lic | | CPU with VOIPDB + 7 x VOIP channel lic |
|---|---|---|---|---|---|---|
| |  |  |  |  | |  |
| **VOIP Channels SRTP / Non-SRTP** | **8 ch** | **16 ch** | **32 ch** | **48 ch** | | **128 ch** |

# Installation Procedure

| | | |
|---|---|---|
| 1 | Unpack all items and check for damaged or missing parts.<br>See page 8 for details. | |
| 2 | Install the CPU card<br>See page 9 for details. | |
| 3 | Mount the SL2100 system on the wall or in the rack<br><br>See page 12 for details. | ***!*** Within suitable cabling distance from the exchange lines.<br>***!*** Within suitable distance from a power socket and Earth point.<br>***!*** Check the other installation considerations in section 3. |
| 4 | Connect the telephones. | See separate Quick Install Guide for the terminal type being installed |
| 5 | Connect the External MOH Device. | Optional<br>See separate Quick Install Guide for the terminal type being installed |
| 6 | Connect the exchange lines.<br>See page 16 for details. | |
| 7 | Connect the power and switch on the SL2100.<br>See page 19 for details. | |
| 8 | Configure the SL2100 to the customer's requirements.<br>See page 20 for details. | Use SL2100 PCPro software |
| 9 | Security | Ensure the system is protected against Toll Fraud and has secure maintenance passwords |
| ! | Consider the operation during power failure | Will require additional parts if required for a SIP system |

**Power Fail Operation**

It is not possible to have power fail operation with SIP trunks.
If power fail operation is required by the customer then it is recommended that additional analogue trunks are installed

# 1- Unpack the SL2100 System

**SL2100 Chassis unit**

1 x SL2100 system
1 x Wall mounting template
1 x Power cord (selected regions)
4 x Fixing screws (M4.1 x 25mm)

**SL2100 CPU card**

1 x CPU card
1 x Lithium battery (CR2032)

**SL2100 VOIPDB Card (optional)**

1 x VOIPDB card
4 x Screw & washer

Additional Items Required:

- Cross head screwdriver.
- Utility knife or small cutters to remove the plastic knockouts
- 4 Wall fixing plugs suitable for the type of wall.
- Solid wire for extending telephone cabling:
  Recommended cable type: Twisted pair (CW1308 or similar specification)
  Conductor diameter: 0.4 to 0.6 mm
  Maximum cable length: (with 0.5 mm diameter cable)
  SL2100 system telephone – 300 metres
  Normal telephone (SLT) – 1125 metres

Requirements for SIP trunking:

- A static IP address is required on the WAN interface – This is usually a chargeable extra on business internet connections
- A NAT router is required in a typical deployment. Most business grade SOHO routers and above include this function
- You will need administrative access to the WAN router/modem/firewall device. NEC will not provide support in configuration of this device

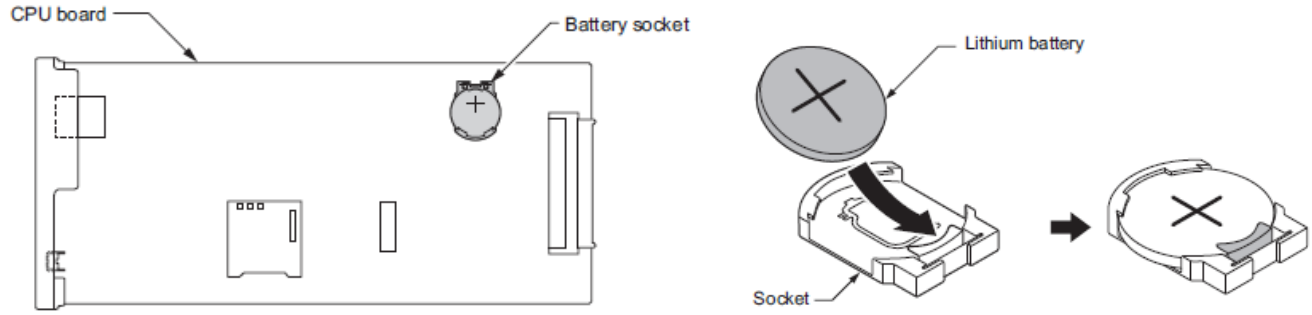
# 2- Install the CPU Card

The SL2100 chassis does not have any CPU card pre-installed, you install the card of your choice.
There are two CPU cards available:

| | |
|---|---|
| IP7EU-CPU-C1 | SL2100 Main Processor Board<br>• VoIPDB Daughter Board Connector : 1<br>• EXIFB Daughter Board Connector : 1<br>• SD Card Slot : 1<br>• Built-in 4ch of VRS (Not supported for VM without SDVML/SDVMS)<br>• Built-in 8ch VoIP resources |
| IP7EU-CPU-C1-A | The hardware is same as IP7EU-CPU-C1.<br>The feature Includes:<br>• Built-in 4ch of VRS/InMail voicemail<br>• 4pc of SL2100 IP TRUNK-01 LIC<br>• 4pc of SL2100 IP EXT-01 LIC |

Ensure the SL2100 system is powered off before removing or inserting the CPU card.

Fit the memory backup battery (CR2032 type)
The + symbol must be on top, as shown below.




Fit the optional items to the CPU card, if applicable:

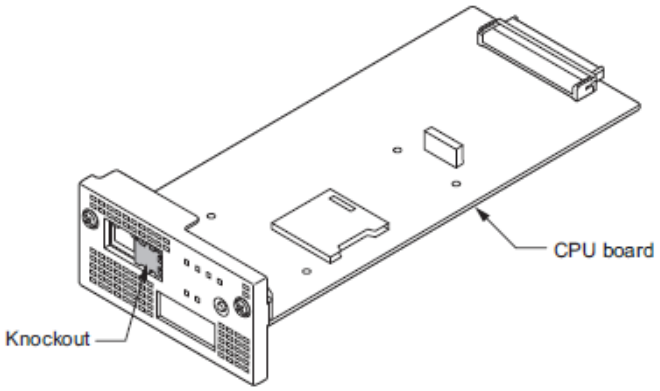
| | |
|---|---|
| IP7WW-SDVMS-C1 /<br>P7WW-SDVML-C1 | SD Card for VRS/VM (InMail) Storage 15/20 hour |
| IP7WW-EXIFB-C1 | System Expansion Bus Daughter Board (mount to CPU)<br>• 2 Bus connectors for Expansion Chassis<br>• Additional Telephony Resources<br>• VRS/VM (InMail) Channels expansion (up to 16ch)<br>• Analog Modem (V.34) |
| P7WW-VOIPDB-C1 | VoIP GW Daughter Board (mount to CPU) 16ch VOIP resources, maximum 128ch with licenses |

*Note – Both CPU cards may not be available in your region*.

**Install the VOIPDB card (Optional)**

The VOIPDB card is optional and is only required when more than the 8 VOIP resources built into the CPU card are required.

Remove the plastic knockout from the front panel of the CPU card.




Install the VOIPDB card to connector J2 on the CPU card and tighten the 4 screws

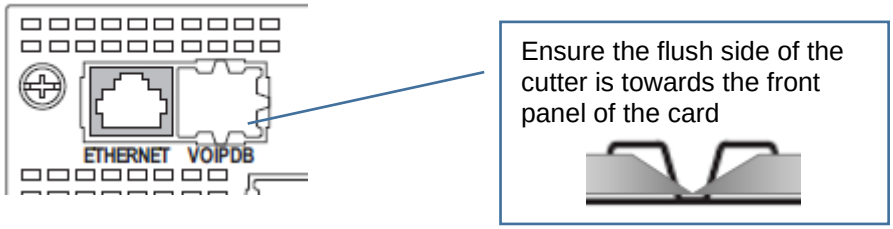
**Removing the Plastic Knockouts**

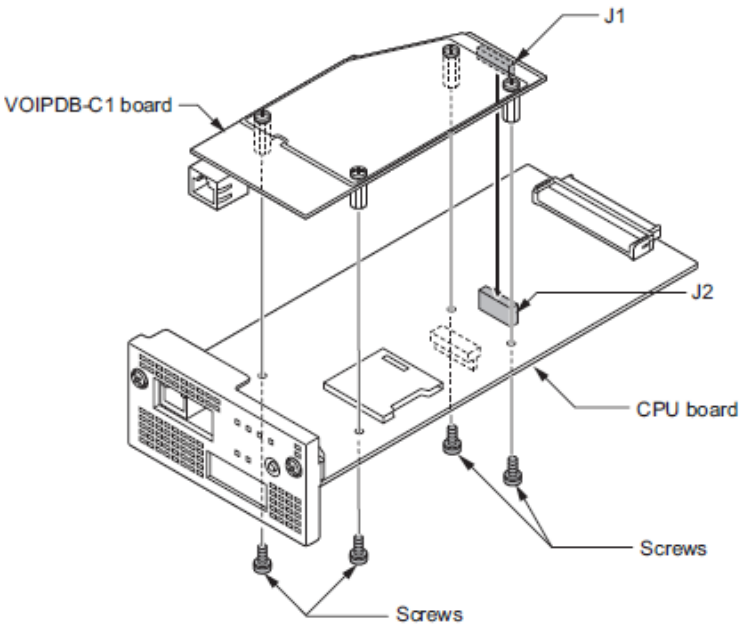
**Card knockouts**

Use small cutters with a flush cutting jaw, ensure the flush side of the cutter is towards the front panel of the card.

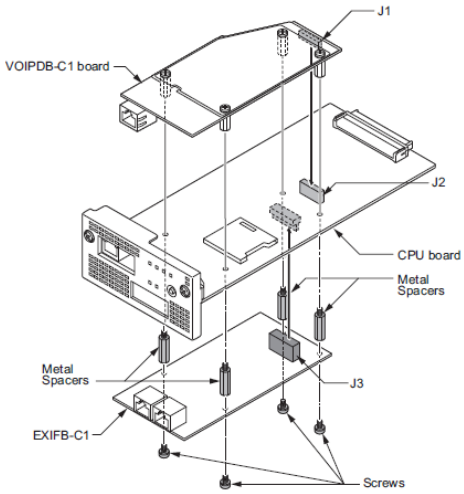
Cut the three connection points for the knockout

Remove any sharp edges with a utility knife

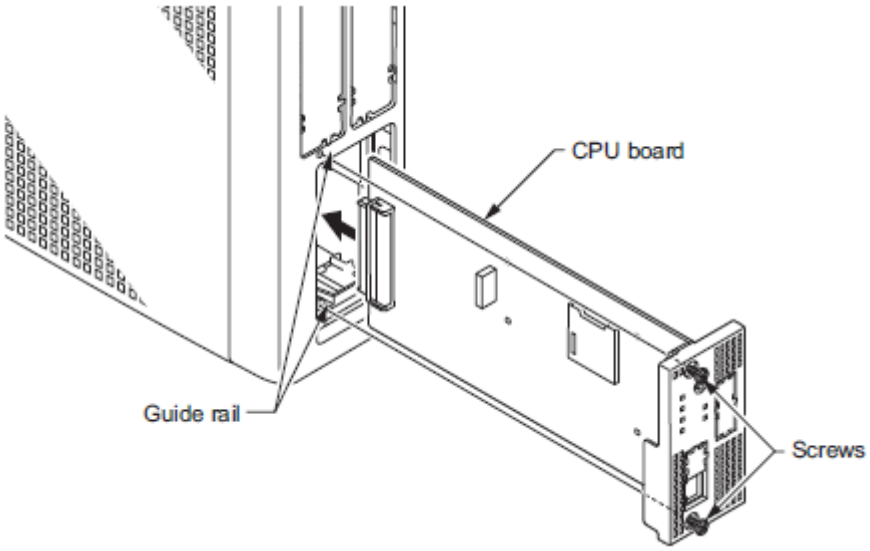


Note – If you are also installing the EXIFB card the 4 screws are replaced by the 4 metal spacers supplied with the EXIFB card.




Insert the CPU card mounted into the SL2100 CPU slot S0, ensure the card slides into the guide rails and tighten the two screws to secure the card.



# 3a- Wall Mount the SL2100 system

Installation Considerations:

- To avoid electric shock or damage do not plug in or turn on the system power before completing the installation.
- Avoid working with the system during electrical storms.
- Use the power cord supplied with the product.
- Do not bundle power cords together, the cords may overheat.
- Ensure the system has a suitable Earth Ground connection.

Environmental Considerations – Be sure the system is not:

- In direct sunlight or in hot, cold or humid places.
- In dusty areas or in areas where sulfuric gasses are produced.
- In places where shocks or vibrations are frequent or strong.
- In places where water or other fluids may come into contact with the equipment.
- In areas near electric welders or machines that emit high frequency radiation.
- Near computers, microwaves, air conditioners etc.
- Near radio antennas (including shortwave).

- If you are installing the optional expansion cabinets ensure there is sufficient wall space and ventilation. Refer to the wall mounting diagrams below.

1 Allow 930mm x 875mm (W x H) wall space for the SL2100 system.

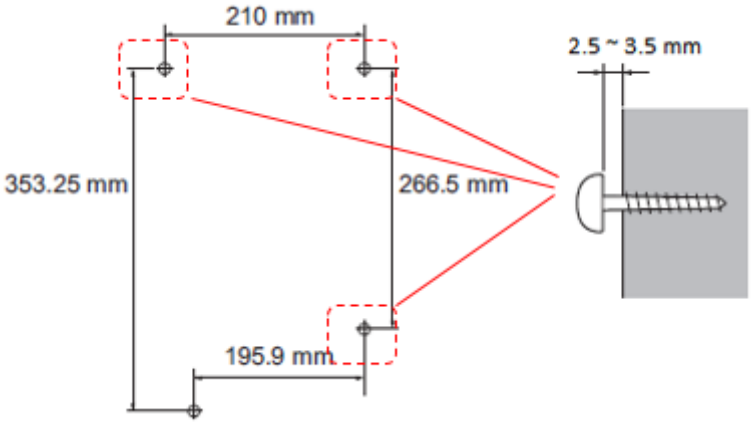
The system is 330mm x 435mm x 93mm (W x H x D)

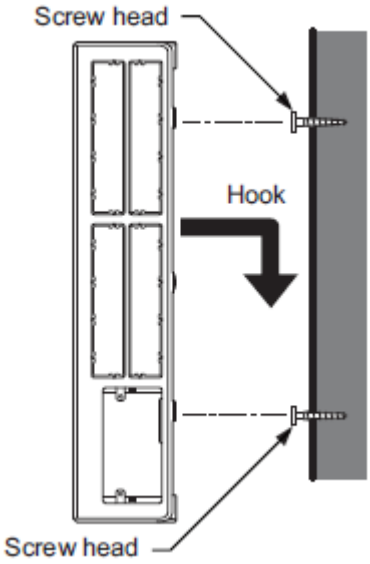
***!*** You will need more space if you are installing optional expansion cabinets. Refer to the SL2100 Hardware Manual for instructions.

Fit three screws to the wall in the holes shown. Leave 2.5~3.5 mm stand off.

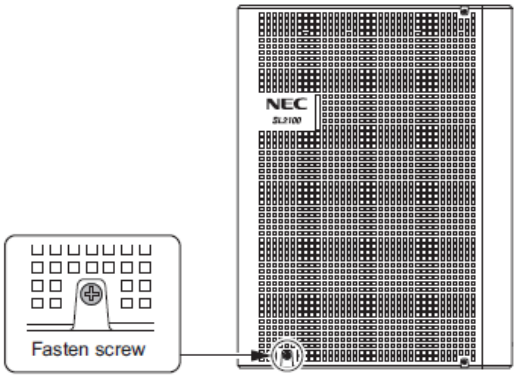
Hook the SL2100 chassis onto the three screw heads.

Ensure the wall surface is flat and that you use the correct wall plugs for the type of wall material. Screws are supplied with the SL2100 chassis.



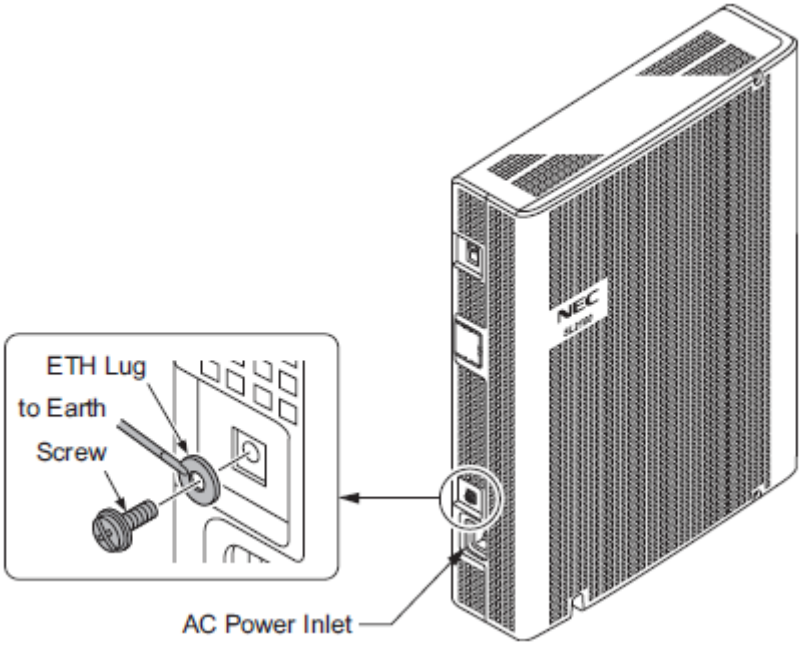



Secure the chassis to the wall with a screw.




2 Earth the SL2100 system.

***Important.*** The system must have a permanent Earth Ground connection to a verified Earth point using a minimum of 14AWG/2.5mm$^2$ cable.
The Earth connection must have no other purpose than connecting to the SL2100 unit.



# 3b- Rack Mount the SL2100 system

Installation Considerations:

- If the system requires two or three chassis then each chassis will require a shelf plate within the 19 inch rack, must be space above each chassis for heat ventilation.
- Do not stack two or three chassis per one shelf plate.

1 Use the rack mount shelf supplied by NEC. 3rd party shelves may block the side ventilation and do not provide any securing method

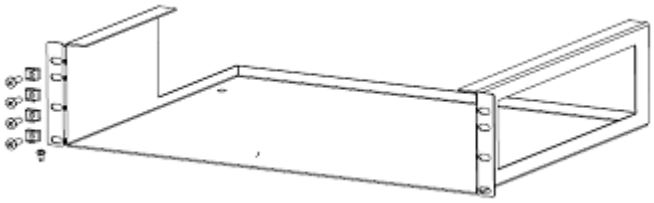
***!*** Ensure 44.5mm space above each chassis for ventilation. The shelf is oversize (100mm high) to ensure space is provided.

Confirm the location of the rack mount shelf and fit the four cage nuts supplied with the shelf

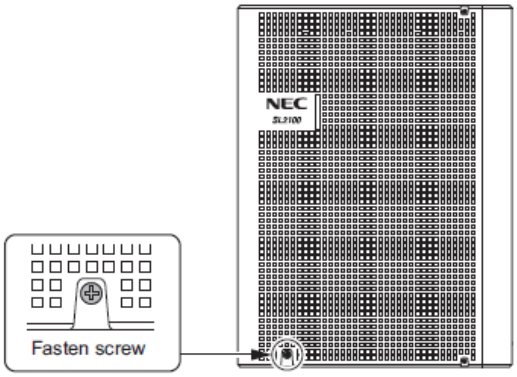
Fit the chassis into the rack mount shelf and secure with the screw supplied.

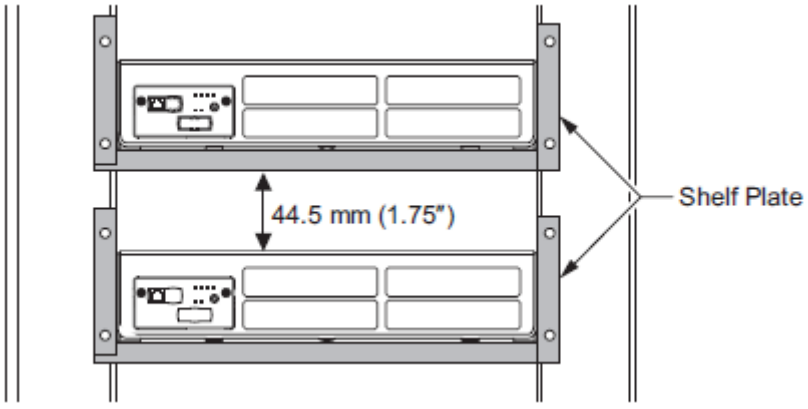
Fit the rack mount shelf + chassis into the 19 inch rack and secure the shelf with the four screws supplied

3U space will be required for each KSU.
Rack mount shelf requires 448mm x 337mm x 100mm (W x D x H) within the rack.
The AC power cable enters at the rear of the chassis, allow ~60mm for space at the rear.
Ventilation is required above the chassis.



You may need to connect the AC power cable and Earth Ground cable to the rear of the chassis prior to installing into the rack if you do not have sufficient space/access to do this afterwards.



## 4- Connect the Telephones

Refer to the Quick Install Guide for the type of terminals you will be connecting:

- SL2100 Quick Install Guide – Terminals (Type A)
- SL2100 Quick Install Guide – Terminals (Type B)

These guides also include details of connecting the following items:

- Doorphone units
- DSS consoles

## 5- Connect the External Music on Hold Device

Refer to the Quick Install Guide for MOH and External Audio.

# 6- SIP Trunk Configuration

The SL2100 includes on-board DSP resources for connection to VoIP service providers. There are 8 x VoIP resources on board the CPU. It is possible to increase this to a maximum of 128 by adding the VOIPDB hardware and licenses.

This table shows the quantity of resources required for common call scenarios.

| **Quantity of DSP resources required** | | | |
|---|---|---|---|
| | SIP Trunk | Digital/Analog/Hybrid Phone | VoIP Phone |
| SIP Trunk | 2 | 1 | 2 |
| Digital/Analog/Hybrid Phone | 1 | 0 | 1 |
| VoIP Phone | 2 | 1 | 0 |

**SIP Trunk Licenses**

The SL2100 requires licenses for SIP trunk availability. The CPU-C1-A card has 4 license built in which do not need activation via LMS.

| CPU card | SIP trunk licenses built in | Additional SIP trunk licenses (require LMS) |
|---|---|---|
| BE116494 CPU-C1 | 0 | 1~64 |
| BE117657 CPU-C1-A | 4 | 5~64 |

Refer to the licensing manual for further information on licenses and the LMS (NEC's License Server).

**Configuration Procedure**

Before starting you will need to know the following information:

The LAN settings to configure the SL2100 to join the customers network or voice LAN. The SL2100 will require two IP addresses in the customers network

- IP Address & Subnet Mask
- IP Address for VoIP media resource
- Default Gateway IP address
- DNS Server address (if using hostname to connect to SIP carrier)

The SIP carrier settings, for example;

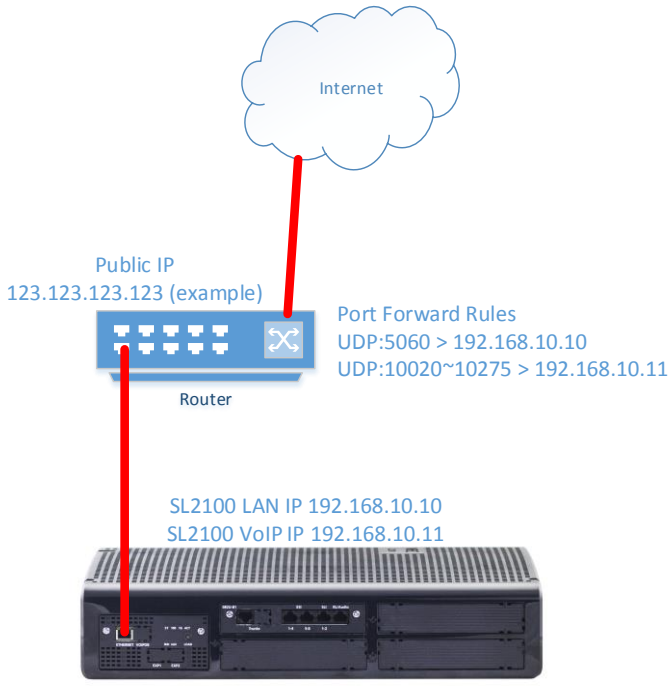
- SIP server connection IP address or hostname
- User ID
- Authentication ID and Password
- Quantity of SIP trunks to be registered

**SIP Compatibility Certificates**

SIP Compatibility Certificates are available for various carriers. These documents include a configuration guide for the SL2100 for connection to these carriers and also any limitations or considerations.

**NAT and Port Forwarding**

NAT is a mechanism used by almost all internet routers. It allows many devices in a Local Area Network to access the internet using a single or few public facing IP addresses.
For SIP trunking it is mandatory to forward specific ports directly to the SL2100




In this example the internet router will forward traffic on ports UDP:5060 and UDP:10020~10275 to the SL2100 from the public network.

In your internet router this function could be described as ‘Port Forwarding’, ‘Open Ports’, ‘Virtual Servers’, or similar.

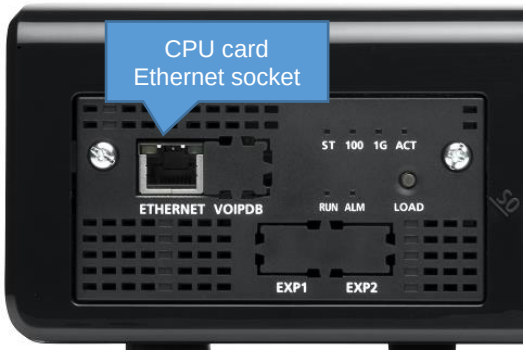
Make a note of your public (or WAN) IP address. You will need to define this in the SL2100 configuration.

You should also implement rules in your firewall to limit communication on these ports to known servers only. This prevents unsolicited SIP messages being received.

**Ethernet sockets for VOIP**

There are two Ethernet sockets available with the SL2100: CPU card and optional VOIPDB card.

- When the CPU card is installed – Use the Ethernet socket of the CPU.
  8 VOIP resources built in with the CPU card are available
  Use the VOIP IP address settings for VOIP devices
  *Note – do not use the CPU IP address settings as these will not support VOIP devices*

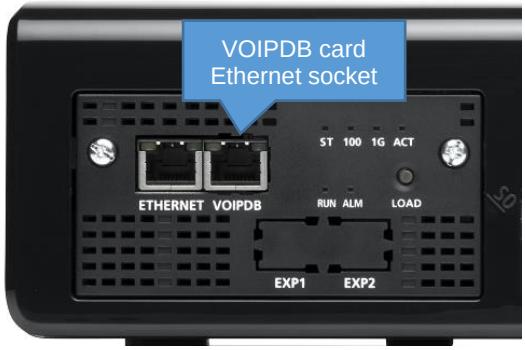



| | |
|---|---|
| SL2100 IP address | 172.16.0.10 |
| Subnet Mask | 255.255.0.0 |
| Supports | Data (eg PCPro/WebPro, SMDR etc)<br>VOIP |
| LAN speed | 100 Mbps Full Duplex |

Use the IP address and Subnet mask setup in PCPro Easy Edit - Quick Install – Cards - CPU Settings - CPU IP Address: VOIP IP Address

| | |
|---|---|
| IP Address | 192.168.0.10 |
| Default Gateway | 0.0.0.0 |
| Subnet Mask | 255.255.255.0 |
| NAPT Router IP Address | 0.0.0.0 |
| VOIP IP Address | 172.16.0.10 |
| VOIP Subnet Mask | 255.255.0.0 |

- When the optional VOIPDB card is installed – Use the Ethernet socket of the VOIPDB card
  16~128 VOIP resources provided by the VOIPDB card + VOIP channel licenses are available
  Use the VOIP IP address settings for VOIP devices




| | |
|---|---|
| SL2100 IP address | 172.16.0.10 |
| Subnet Mask | 255.255.0.0 |
| Supports | Data (eg PCPro/WebPro, SMDR etc)<br>VOIP |
| LAN speed | 100/1000 Mbps Full Duplex |

Use the IP address and Subnet mask setup in PCPro Easy Edit - Quick Install – Cards - CPU Settings - CPU IP Address: VOIP IP Address

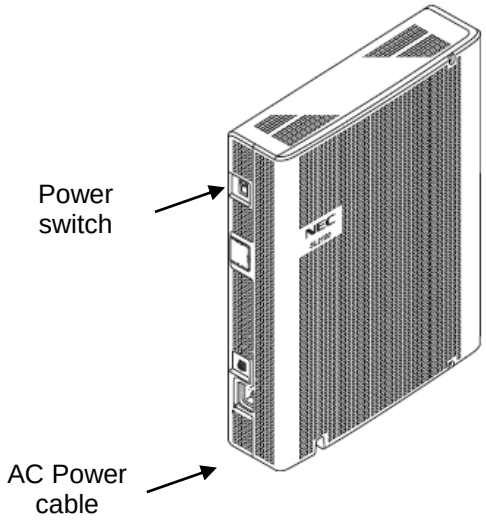
| | |
|---|---|
| IP Address | 192.168.0.10 |
| Default Gateway | 0.0.0.0 |
| Subnet Mask | 255.255.255.0 |
| NAPT Router IP Address | 0.0.0.0 |
| VOIP IP Address | 172.16.0.10 |
| VOIP Subnet Mask | 255.255.0.0 |

# 7- Connect the Power & System Start Up

The power cable is plugged into the left side (wall mounted) or rear (when rack mounted) of the unit via an IEC-C13 connector.

Before connecting the power:

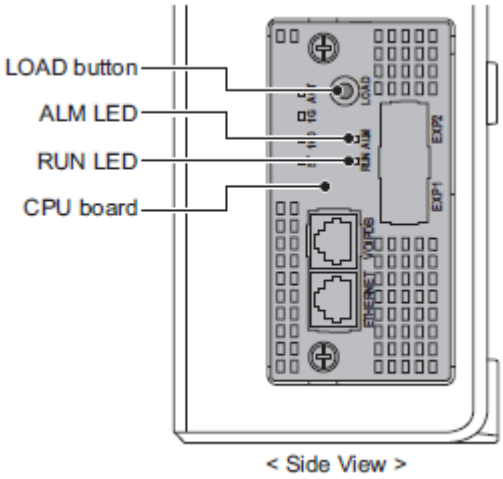
- Ensure the power switch is OFF
- Ensure the power is switched off at the source
- All cards are installed and secured correctly




## System Start Up – First Time

***!*** The first time you start up the SL2100 it is important to clear the system memory. This will ensure that the system is set to the default/factory configuration.

1. Push and hold the LOAD Button located on the front of the CPU card.




Also referred to as '**COLD Start**' can also be used at any time to delete the customer's configuration.
Warning – COLD Start should only be used when you want to delete the customer's configuration from the SL2100 CPU card.

2. Turn the power switch on
3. Continue holding the LOAD Button for approximately 10 seconds or until the ALM lamp on the CPU card lights.
4. Release the LOAD Button
5. When the system has completed reloading the system software (about one minute) the RUN LED is flashing green on the CPU card and the system phones will display the Time and Date.

Switching the SL2100 OFF

***!*** Be sure that no calls are in progress otherwise they will be cut off.
Turn the power switch OFF at the SL2100 chassis.

System Start Up – Retain Customer Configuration

This is the normal operation for powering the SL2100 on.
Turn the power switch ON at the SL2100 chassis

# 8- Configure the SL2100

This Quick Install guide will cover the most frequently used configuration options. For advanced configuration please refer to the SL2100 Features and Specifications manual.
You must have SL2100 PCPro installed to your laptop/PC, this can be downloaded from BusinessNet, refer to the Quick Install Guide – SL2100 PCpro.
The SL2100 can also be configured via an SL2100 System phone or via a WebPro interface, these are not included within this guide.

Before you configure your system it is important that you:

- Have a diagram of your exchange lines and telephones.
- Plan your requirements before you start.

While you configure your system it is advised that you:

- Make a record of your configuration as you make each change.
- Make small changes, upload to the SL2100 and test the changes. Avoid making all your changes at once as this can make testing more difficult.

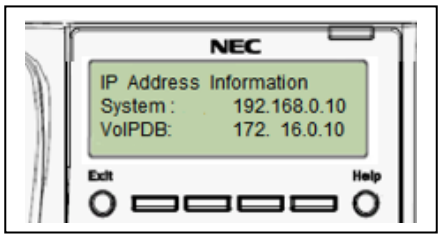
With the default/factory settings:

- Each telephone will function and is assigned an extension number (200~211).
- Calls received on the exchange lines will ring at telephone number 200.
- Each telephone can make exchange line calls by dialing 0.
- Each exchange line is presented at a Function Key with busy lamp indication.

## Connecting PCPro to the SL2100

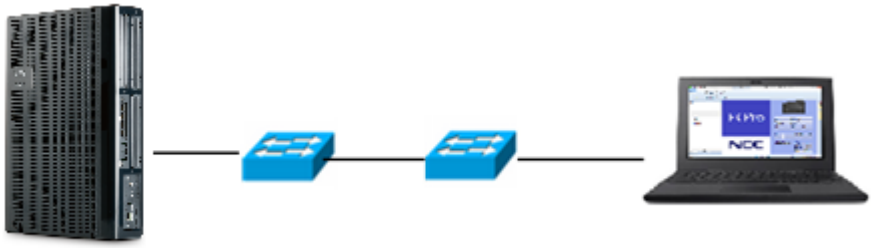
Connection default IP Address:
172.16.0.10 / 255.255.0.0

You can check the IP address at any SL2100 system phone:
Press the centre Navigation Key and dial 841

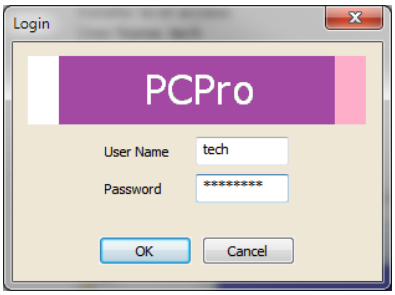


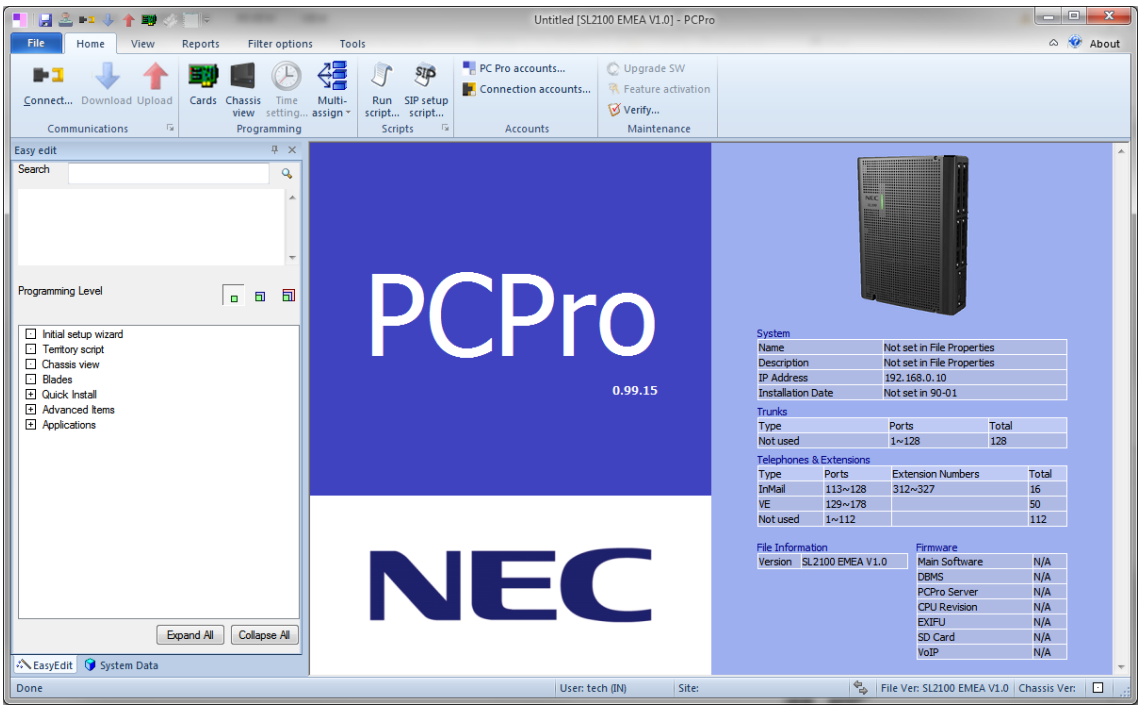

Direct to Ethernet connector on the SL2100 CPU card.

Via the customer's LAN.

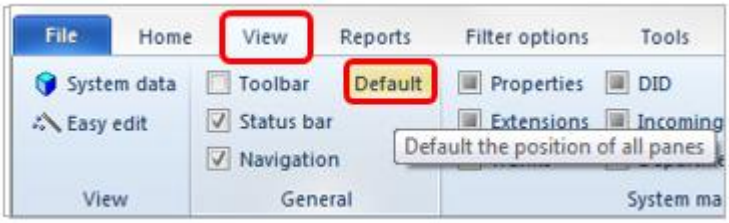


**SL2100 PCPro**
Installer level access:
User Name: tech
Password: 12345678



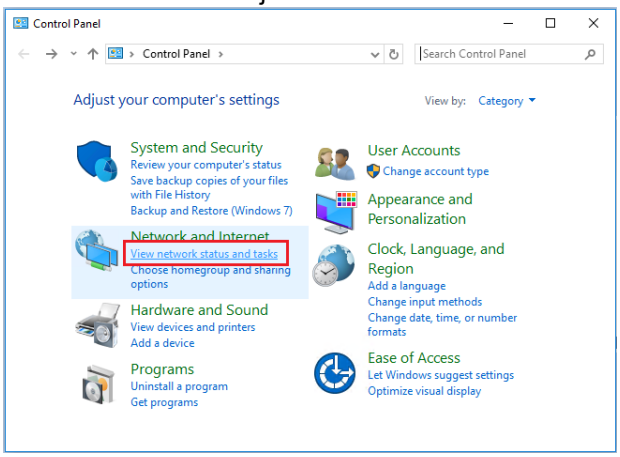

On first install you may need to setup the default sliding panes if you wish to use these.
Select **View** tab and click **Default**



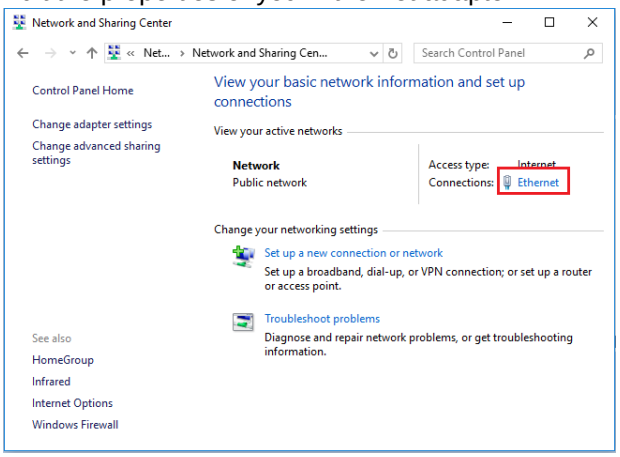
## Change your PC IP Address

You will need to reconfigure your PC to have an IP address in the same subnet as the SL2100 during system commissioning. You will be able to change the IP address of the SL2100 during this process.

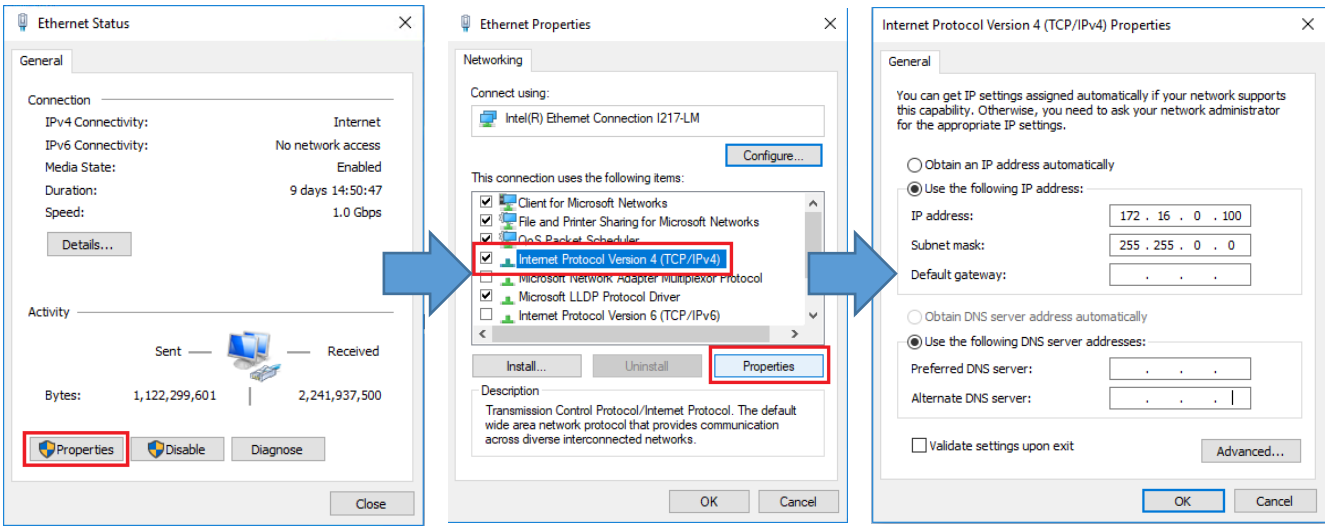
Your IP Address is adjusted in Windows Control Panel, select 'View network status and tasks'




Edit the properties of your Ethernet adaptor




You will need to define an IP address in the same network as the SL2100. Recommended values are 172.16.0.100 / 255.255.0.0
Gateway and DNS addresses are not necessary. Once commissioning of the SL2100 is completed you can return to this area and reconfigure your network adaptor to the previous values.



**PCPro Initial Setup Wizard**

Provides the basic setup for a newly installed SL2100.
Step by step configuration of the following items:

- Country specific default setup
- Extension numbering plan
- Service code selection
- Trunk access code
- SL2100 system phone's Programmable Function Keys
- Trunk setup (only for the trunk types installed)
    - Day and Night mode incoming call routing
    - Auto Attendant option
    - Step on timer
    - Remove unused trunks
- System time and date

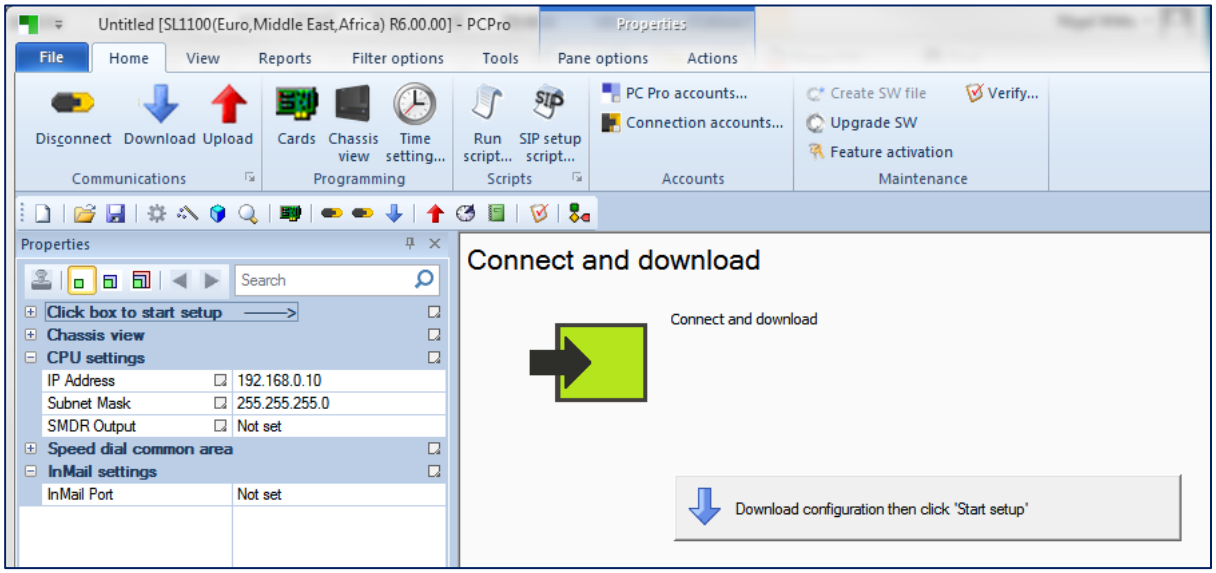
Downloads the SL2100 system configuration to detect the hardware installed, the wizard will then tailor to the system, so that you only have to setup the parts actually installed.
Will detect if the configuration is at default/factory setting and warn you if not, to prevent you from overwriting an existing configuration.

**Start the Wizard**

The Initial Setup Wizard can be started from either the Properties sliding pane or the Easy Edit navigation menu **once you have connected to the SL2100 system.**

| Easy Edit | Properties sliding pane |
|---|---|
| Initial setup wizard<br>Chassis view<br>Cards<br>Quick Install<br>Advanced Items<br>Applications | Properties<br>Search<br>Click box to start setup<br>Chassis view<br>CPU settings<br>IP Address 192.168.0.10 |

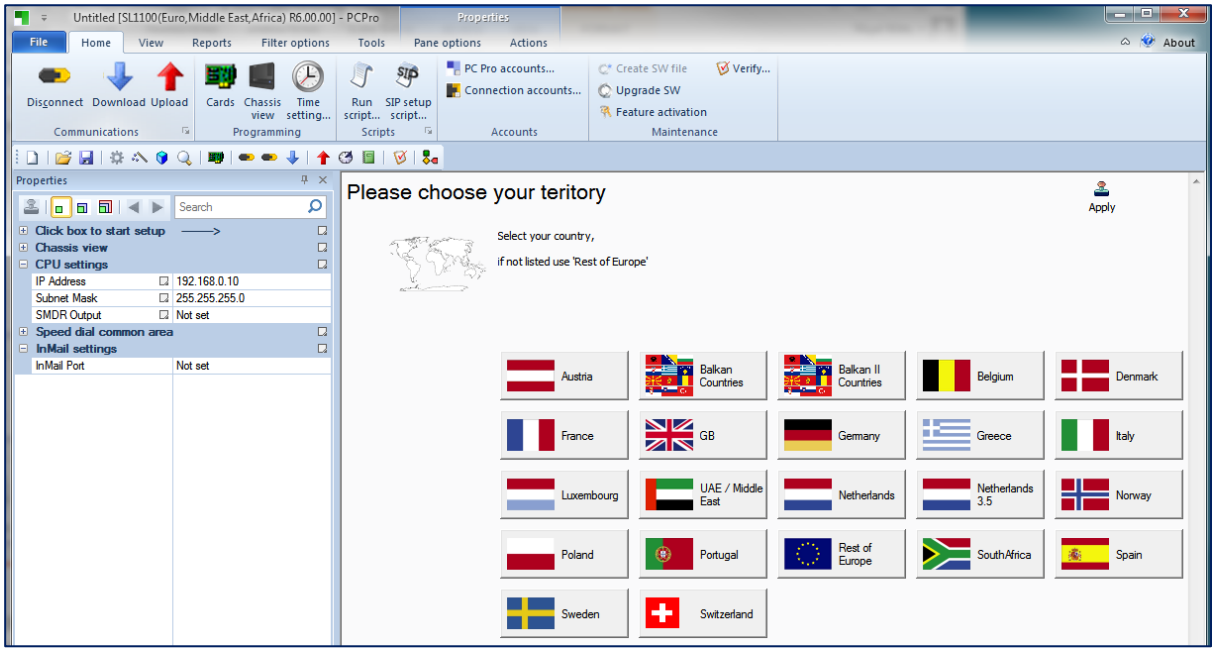
**Download the system configuration**




! If a non default system configuration is downloaded the wizard will show a warning message, you can choose to continue or not.

**Select your Country Default**

This will setup the trunk access, Service codes, languages etc for the PBX

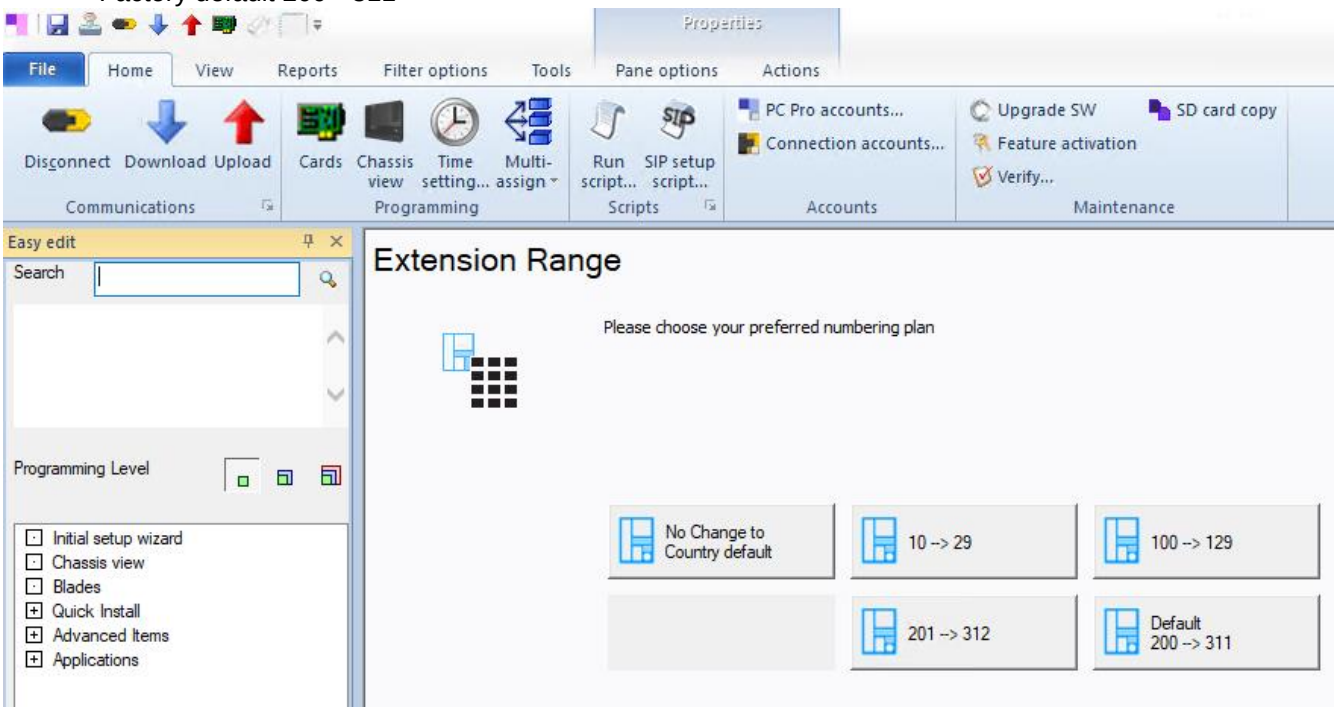



This guide is based on an example configuration, your country selection may have different settings.

**Select the Extension Number Range**

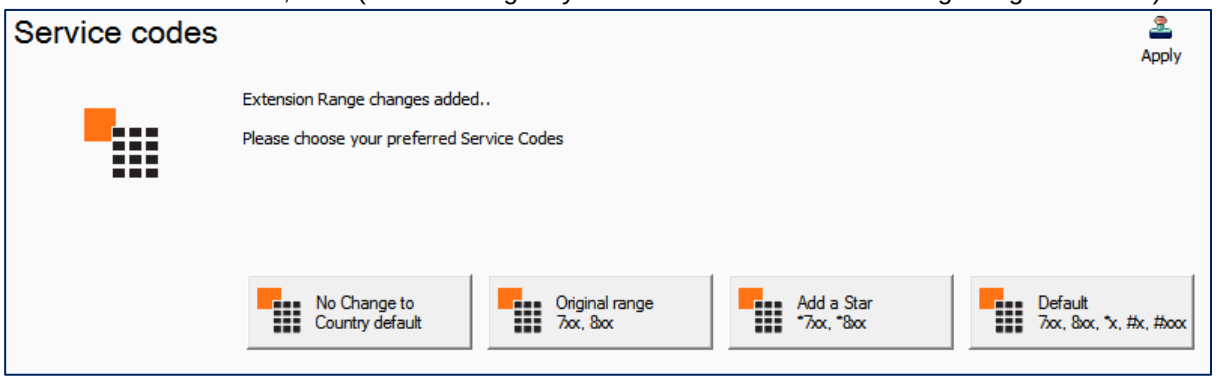
- Leave at country default
- 10->29
- 100->129
- 201->312
- Factory default 200->311

Press F1 to get help with the Initial Setup Wizard



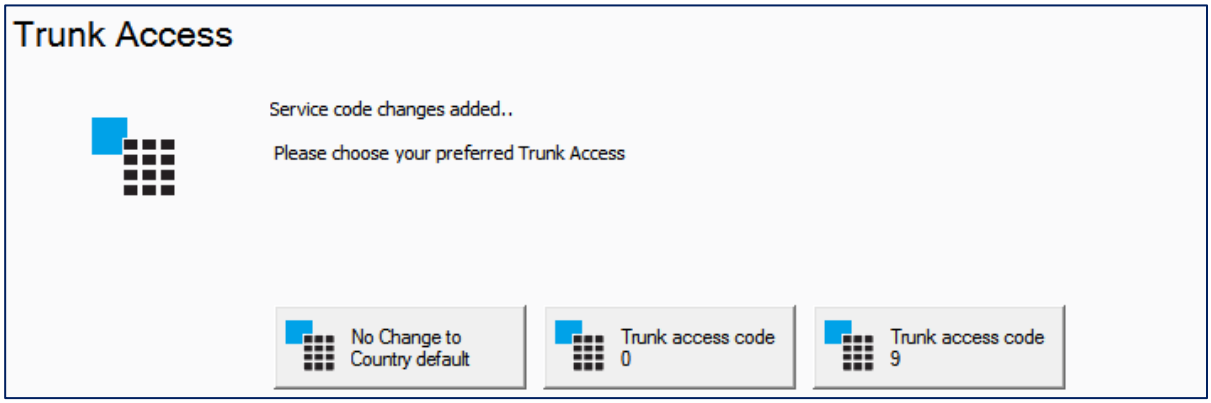
**Select the Service Code Range**

- Leave at country default
- Original range 7xx, 8xx
- Add a Star *7xx, *8xx (use this range if you want extension numbers beginning 7xx or 8xx)



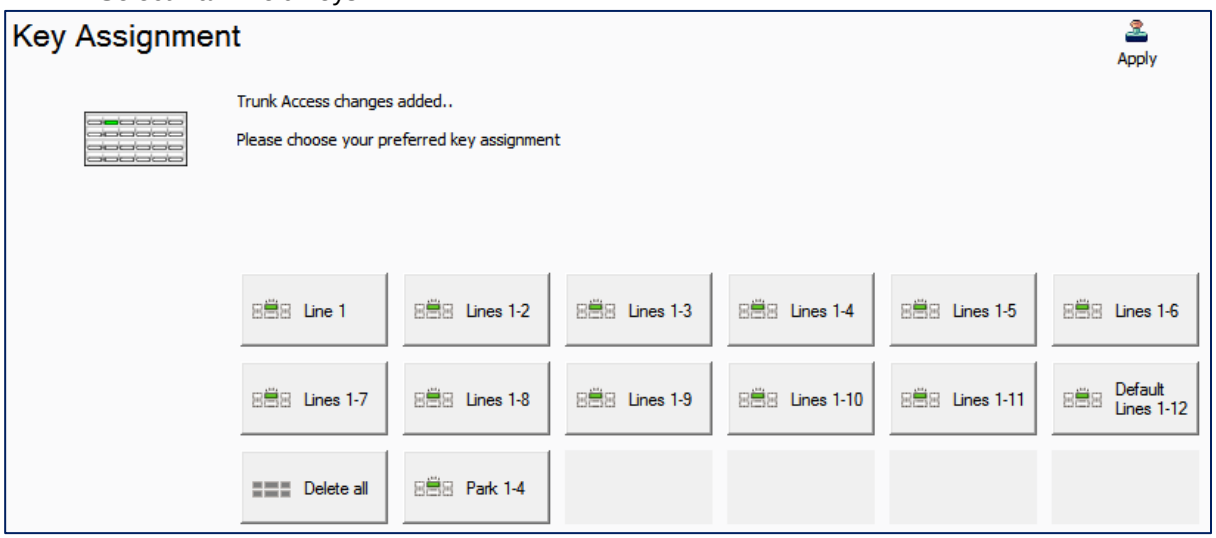

**Select the Trunk Access code**

- Leave at country default
- Trunk access code = 0
- Trunk access code = 9

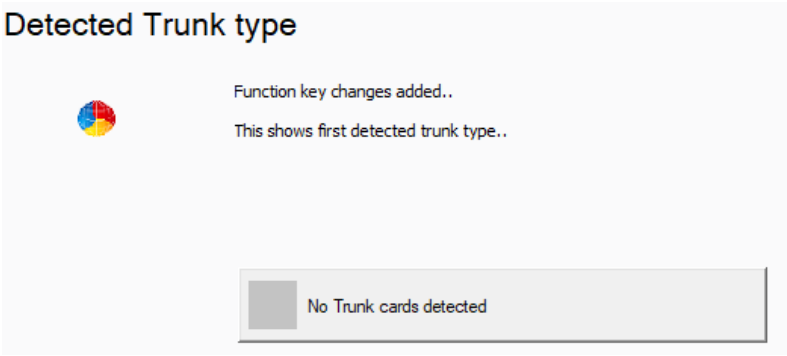



**Select the Programmable Function Key Assignment for all system phones**

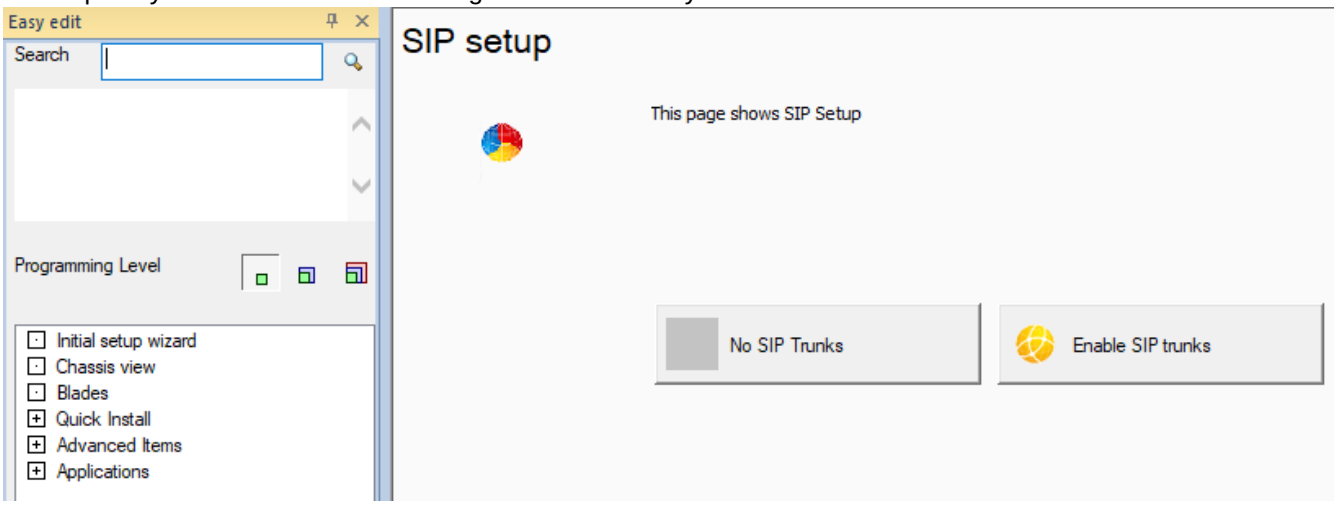
- Select from 1 to 12 lines (these are trunks connected to the SL2100)
- Delete all keys (you can setup your own key assignment later with PCPro)
- Select Park Hold keys 1~4



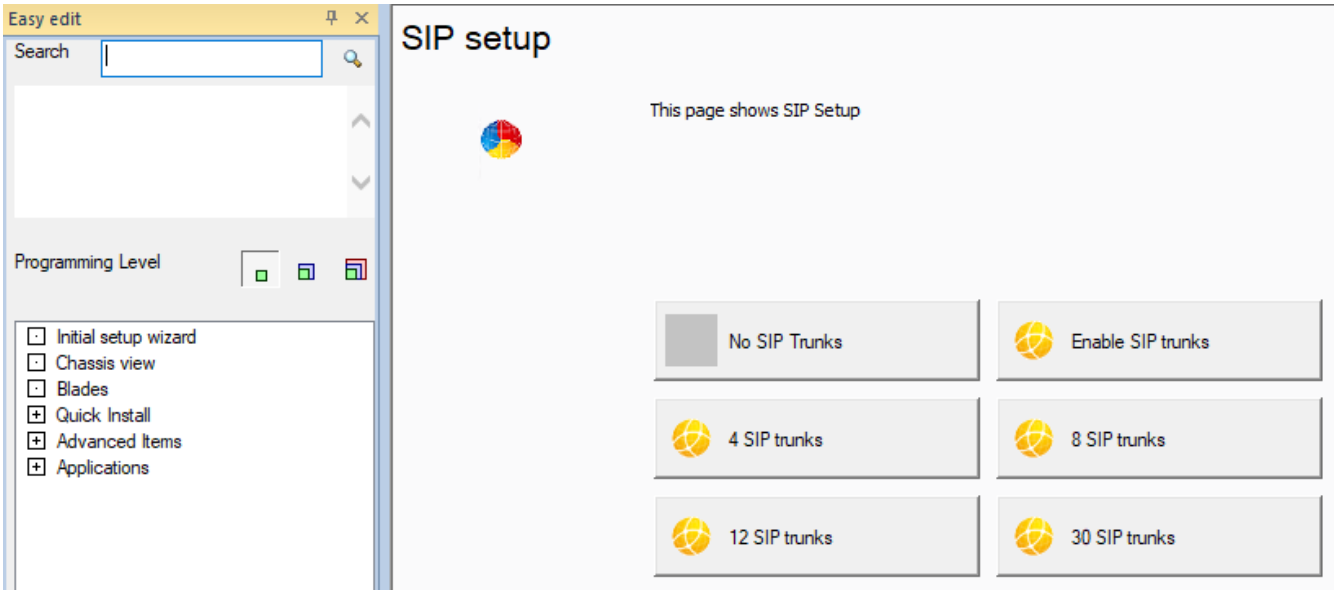
**Detected Trunk Type**
If you have SIP Trunks only, the Initial Setup Wizard will confirm that no Trunk cards are detected.




**Enable SIP Trunks**
At this point you can enable SIP trunking on the SL2100 system.




**SIP Setup**
After enabling SIP trunks you need to confirm the number of trunks required. Additional licenses will be required for more than 4 SIP trunks.



**Choose a carrier**

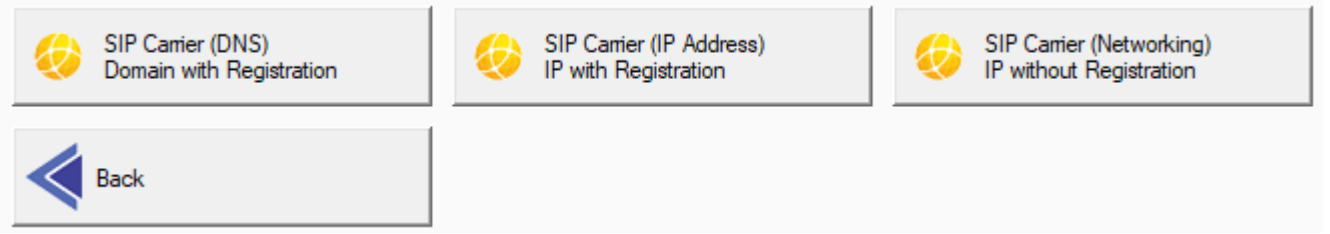
If your SIP carrier is listed then click on the SIP carrier name


**Configure another carrier**

If your carrier is not listed then you can setup a custom carrier.

SIP Carrier with registration if your carrier has provided a UserID and password

SIP Carrier without registration if your carrier does not provider a UserID and password



**Enter your carrier information**

This information should be provided by your SIP carrier.

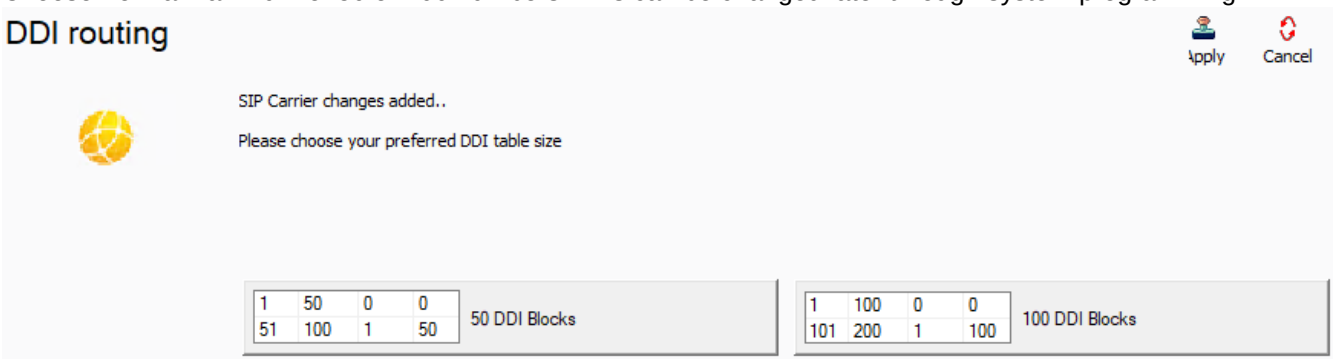
| | |
|---|---|
| **SIP Carrier Add Trunks** | |
| Trunk Type | SIP |
| Start Port | 1 |
| Number of Ports | 4 |
| **SIP Carrier (DNS)** | |
| VOIP IP Address | 192.168.88.130 |
| Resource IP Address | 192.168.88.131 |
| VOIP Subnet Mask | 255.255.255.0 |
| Default Gateway | 192.168.88.1 |
| Domain Assignment | IP Address |
| Domain Name | mysipcarrier.com |
| Host Name | sbc |
| Outbound Default Proxy | False |
| Inbound Default Proxy | False |
| Registrar Domain Name | sbc.mysipcarrier.com |
| Proxy Domain Name | mysipcarrier.com |
| Proxy Host Name | sbc |
| SIP Carrier Choice | Default |
| Registration Expiry Time | 3600 |
| DNS Mode | On |
| DNS IP Address | 192.168.88.254 |
| **SIP Carrier User Account** | |
| Profile 1 User ID | 12345678 |
| Authentication User ID | 12345678 |
| Authentication Password | ******** |
| **SIP Carrier Port fowarding** | |
| NAT Router | Used |
| NAPT Router IP Address | 82.123.123.10 |
| **SIP Carrier Options** | |
| DTMF Payload Number | 101 |

- VOIP IP Address is used for control signalling. This needs to be configured for the customer LAN network.
- Resource IP address is used for generating voice packets. This must be an address on the LAN. This needs to be configured for the customer LAN network.
- If you are using a hostname (such as mysipcarrier.com) you will need to specify a DNS server. This service is often provided by your network router.
- The NAPT Router IP Address is your ***public*** IP address. This address is provided by your internet service provider.

**Choose the preferred DDI table size**

The DDI table is used to route individual incoming SIP numbers. These are provided by the SIP carrier, normally in blocks of 10.

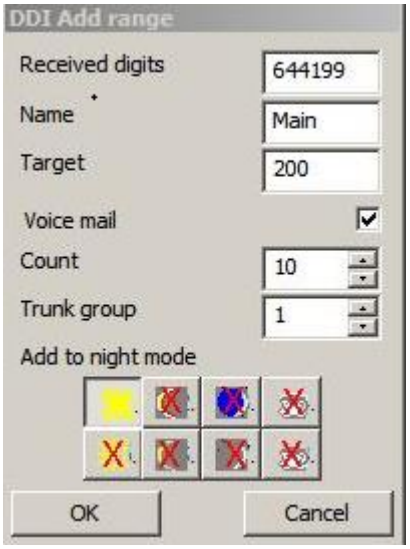
Choose from a maximum of 50 or 100 numbers. This can be changed later through system programming.



**Add your DDI number range**

Click the **Add Range**  button to create one or more incoming DDI ranges.

Note – You can use the Add Range button as many times as you wish to build your bespoke DDI routing.



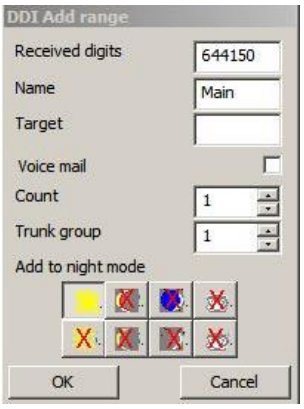

**Received digits** – Enter the first number in the incoming DDI range that will be received from the network provider.
**Name** – Enter the name of the DDI range, this will be used for all DDI's, you can edit individual DDI's later
**Target** – Enter the first extension number that the range of DDI's will ring at. Leave blank if you don't want the DDI to ring at an extension
**Voice mail** – Check the box if each DDI should route to voicemail (requires the optional InMail card to be installed)
**Count** – Enter the total quantity of DDI numbers received from the network provider. This is the quantity of DDI's that will be setup by PCPro
**Trunk Group** – leave this at 1 as this is the default group.
**Add to night mode** – Uncheck each of the eight modes that you want the DDI to route. PCPro will only setup the DDI's for the unchecked modes.

**DDI Add Range Example**

The customer has a DDI range of 644150 to 644159 (block of 10 DDI's with 6 DDI digits received)

Day Mode:

**644150** – Main Number to ring at a group of extensions

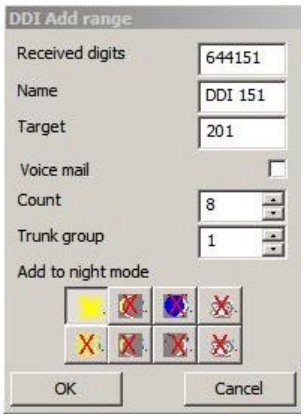



Target is blank as we will be routing directly to an IRG.
The IRG is setup in **Incoming Ring Groups**

Count = 1 as we are setting up a single DDI number

Uncheck the Day icon and click OK

**644151~158** – Extension DDI's to ring at extensions 201~208 and if un-answered step on to the built-in Answer Machine




Target is the first extension number within the range of target extensions
Count = 8 as we want to setup 8 DDI numbers (644151~158)

Built-in Answer Machine is setup within **VRS Auto Attendant**

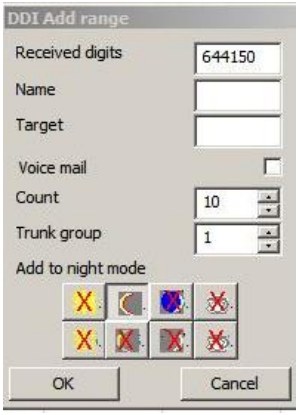
**644159** – Sales DDI to ring at a group of extensions and if un-answered ring at a another group.


Target is blank as we will be routing directly to IRG's.
The IRG's are setup in **Incoming Ring Groups**.

Count = 1 as we are setting up a single DDI number

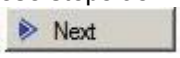
Night Mode:

All DDI's to route to the built-in Answer Machine



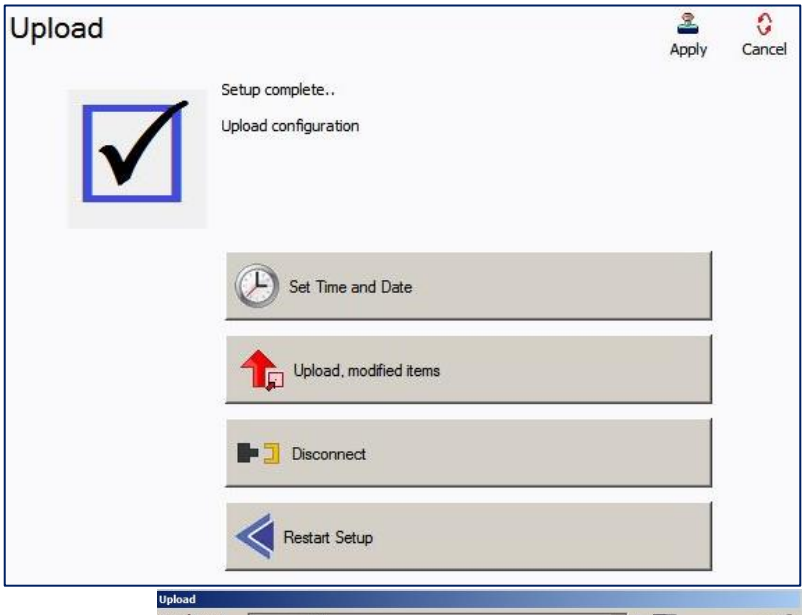

Built-in Answer Machine is setup within **VRS Auto Attendant**

You can repeat these steps as many times as required to setup all of your DDI's

When done, click 

to step on to the next wizard screen.

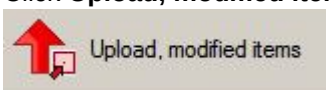
## Set Time & Date and Upload to the SL2100




Click **Set Time and Date**

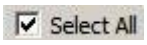

to set the system to the correct time and date.

Click **Upload, modified items**

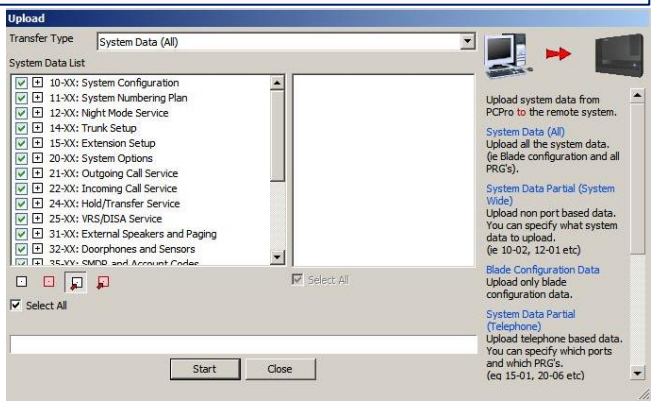



Then select the **Upload Data** icon


Ensure **Select All**




is ticked and




Click **Start**

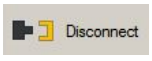

to begin uploading the changes to the SL2100 system, the progress bar will show when this is complete (should take less than 30 seconds).

Click **Close**


when finished.

## Repeat Wizard or Finish

If you've uploaded your changes then click **Disconnect**




to finish. PCPro will disconnect from the SL2100 system.

You can restart the wizard and choose a new configuration by clicking **Restart Setup**


Each time you run the wizard it will effectively start with a new configuration, any other wizard settings within the SL2100 will be overwritten.

## Make Additional Changes with PCPro

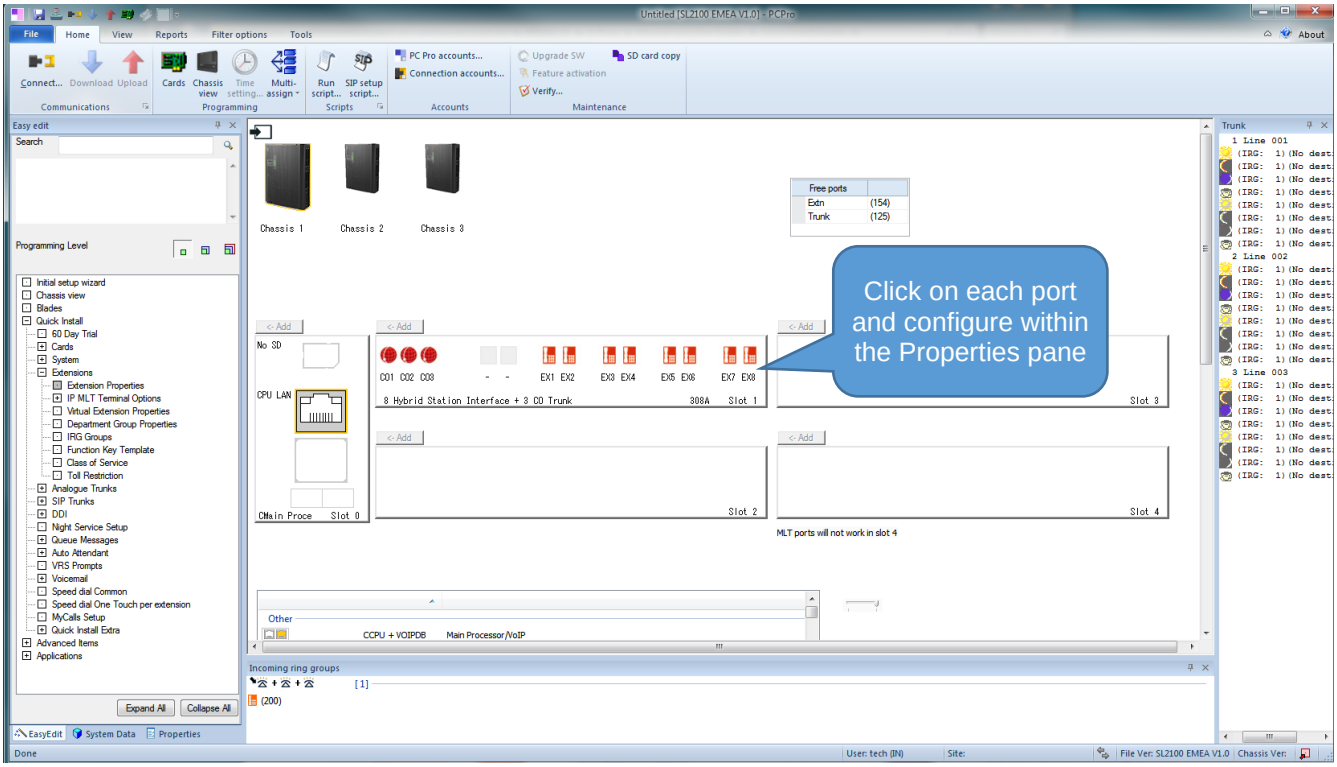
Note – Only required if the configuration you selected via the Initial Setup Wizard requires fine tuning.

**Connect** 

and **Download** 

the SL2100 configuration, then click **Chassis View** 

within the Home TAB.




Click on any port (trunk, extension or audio) within the Chassis screen to view the properties within the Properties pane and make changes to the system configuration.

When done, click **Upload** 

to send the changes to the SL2100 system.

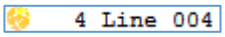
Click **Disconnect** 

to finish.

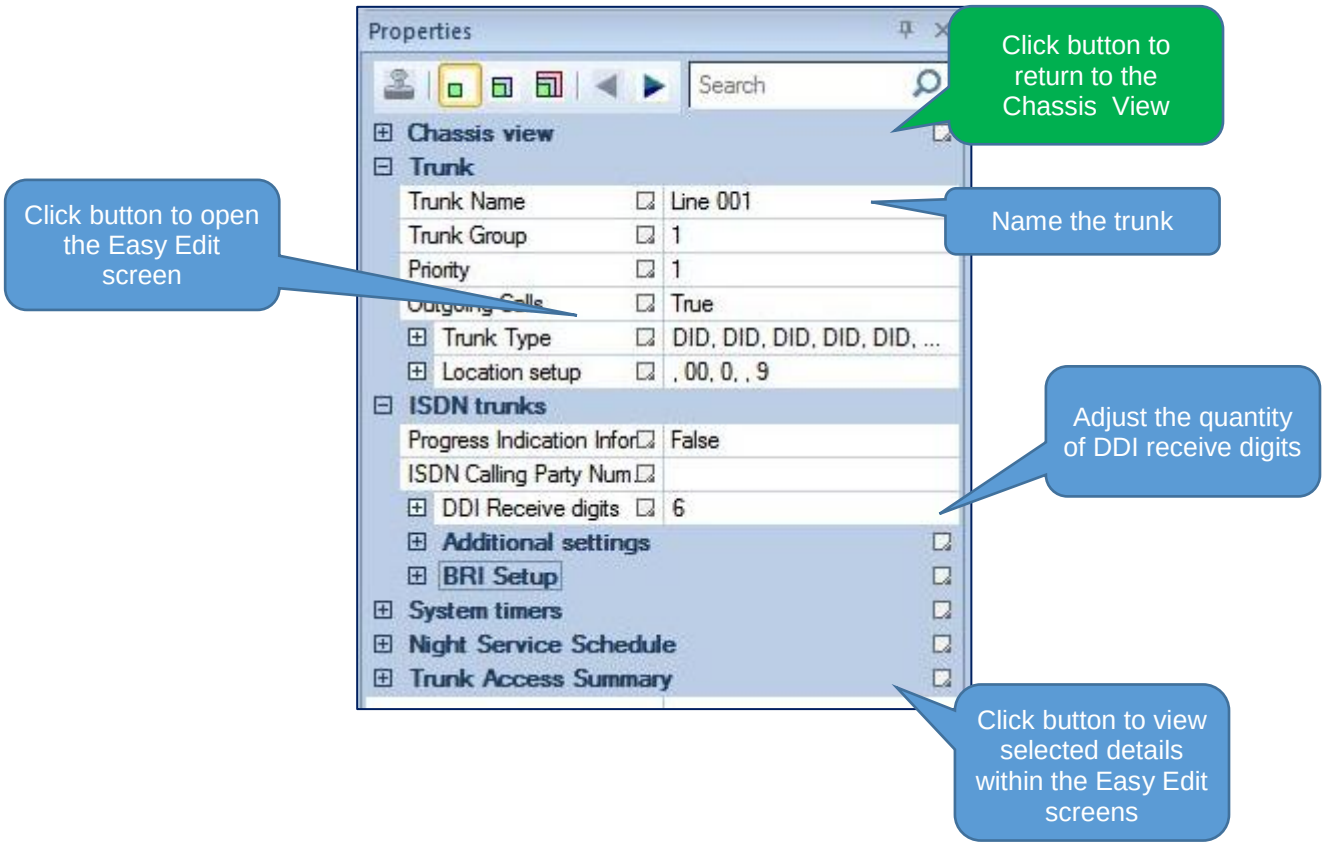
**Note – Not all options are available within the Properties pane when you are offline (not connected to the SL2100), configuration within this guide is done online so you should always:**

1. **Connect to the SL2100**
2. **Download the system configuration** (always download before you make any changes)
3. **Then begin your configuration changes** (remember to save the PCPro file to your PC)
4. **Upload your changes and Disconnect**

**SIP Trunk Type**

From the Trunk Pane click the trunk port you want to configure 

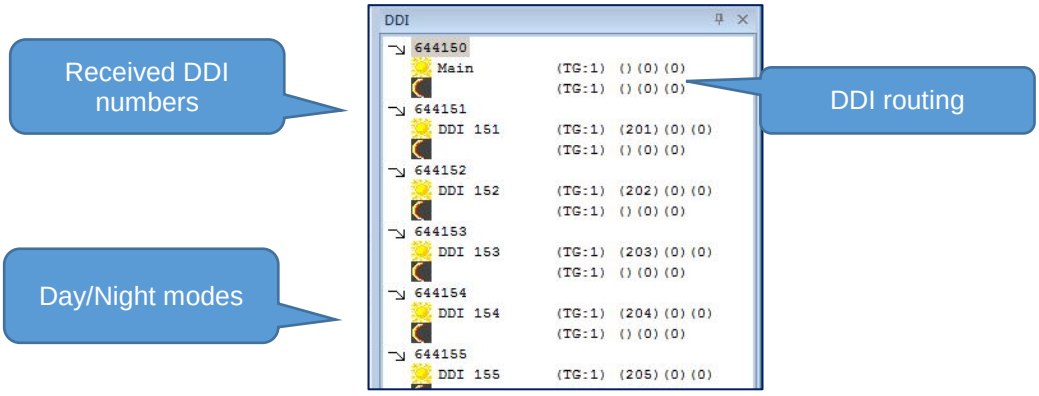
Within the Properties pane you can configure the SIP configuration.



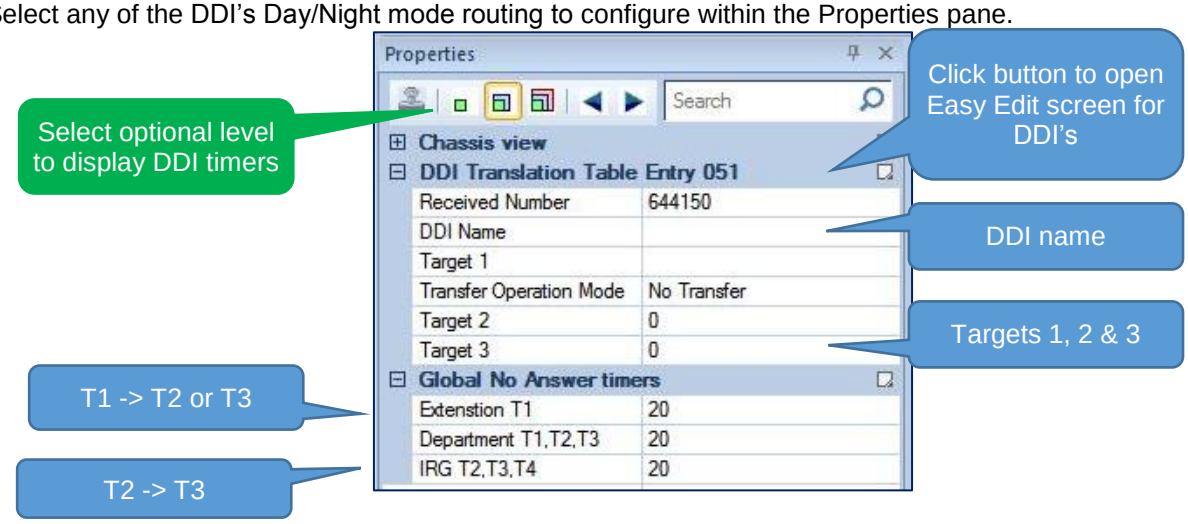

The trunk type was set to DDI by the Initial Setup wizard.

**DDI Routing**

Use the DDI pane to show a summary of the DDI's that were setup by the Initial Setup wizard.




Select any of the DDI's Day/Night mode routing to configure within the Properties pane.




- **Target 1** = Extension number (leave blank if not required and next target will be used)
- **Transfer Operation Mode** = step on from Target 1 to Targets 2 or 3 (None, Busy, No-Answer or Busy & No-Answer)
- **Target 2 & 3** = Incoming Ring Group number 1-25, VRS Auto Attendant 501-504
  Note - other options are available but not included within this guide.

The no answer step on timers are in seconds and apply to all DDI's.

Tip – Decide on the Night Modes and the quantity of Incoming Ring Groups required before you begin editing within PCPro, then build your Incoming Ring Group members and finally assign the groups to the DDI's for each mode.

Tip – Setup your Automatic Night Mode schedule (if required) before you configure the Incoming Call Routing.

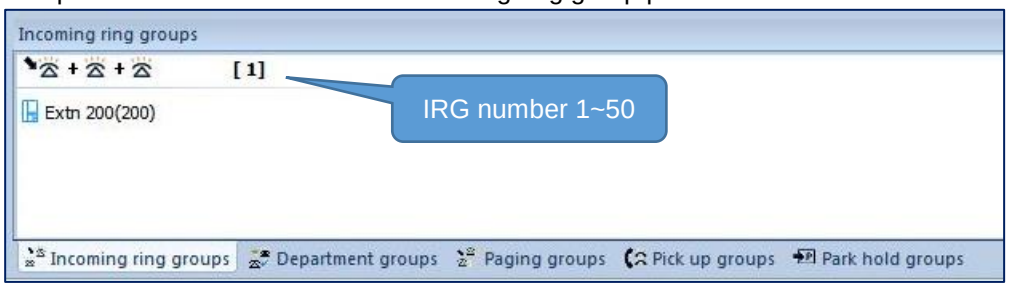
Tip – Create your Incoming Ring Groups first (within the Incoming Ring Group pane) before assigning the Group number as the target for a DDI.

## Incoming Ring Groups

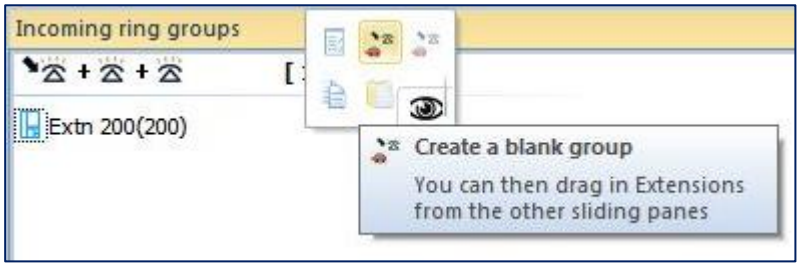
Incoming Ring Groups (IRG) are used for routing incoming trunk calls to a group of extensions.

- There are 50 groups available
- Each group can have up to 32 members
- A member can be any extension number
- An extension can be a member or more than one group
- All available members ring when a call arrives at the group
- Each group will queue incoming calls when all members are busy
- Longest ringing queued call is answered first

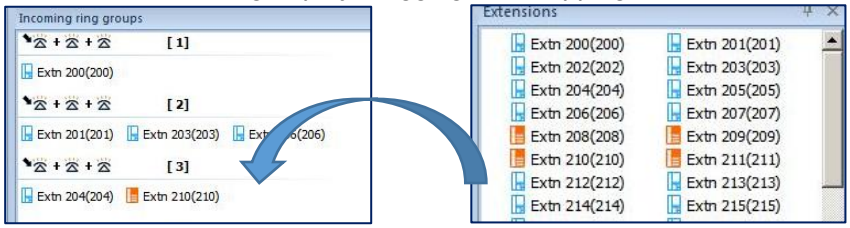
Setup the IRG member within the Incoming ring group pane.



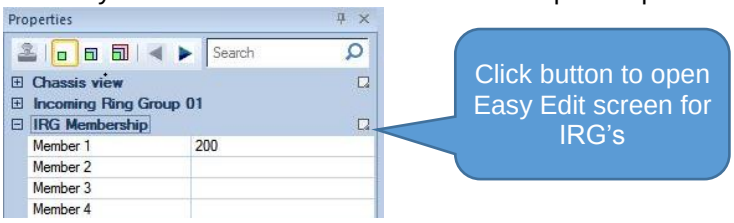

Add New Group by right click within the pane and selecting **Create a blank group** 



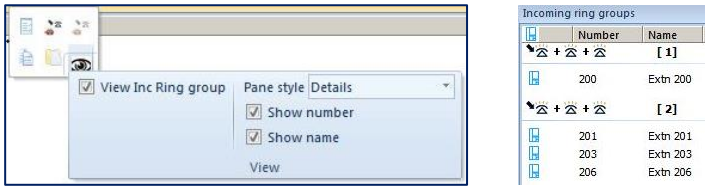

Add members to the group by dragging and dropping them from the **Extensions pane**.




Click any IRG to view the details within the Properties pane




Change the view within the pane by right clicking and selecting **View** 



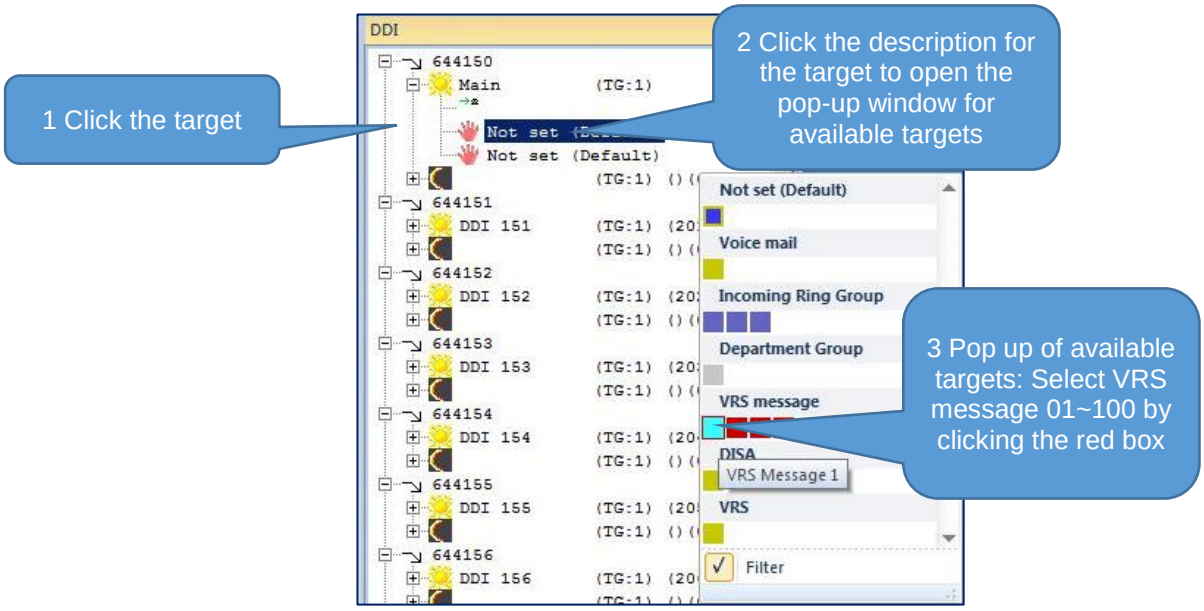
**VRS Auto Attendant**

The SL2100 has a 4-channel auto attendant built-in that can be used to answer incoming trunk calls and either play a customer recorded greeting (eg to announce that the office is closed in Night Mode), give the caller a list of dialling options to route the call within the SL2100 system or take a message within the built-in Answer Machine.

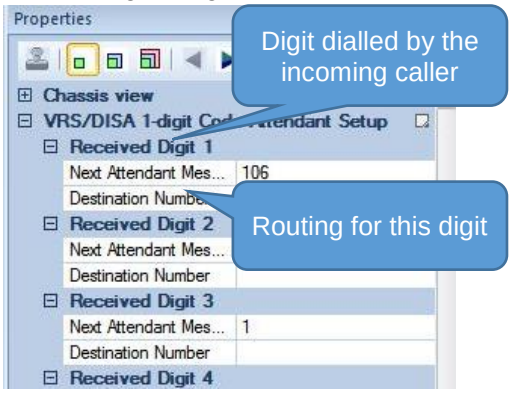
There are 100 VRS greeting messages available, each 4 minutes maximum. There are 120 minutes of total recording time available for the 100 greetings and up to 10 Answer Machine messages. Note- the 120 minutes recording time is shared with InMail when using the CPU-C1-A card.

Tip - Refer to the SL2100 Multi-Line Terminal User Guide for instructions on recording the VRS greeting messages and listening to the Answer Machine messages. New message count will be shown at the system phone connected to extension port 01.

Within the DDI pane select the DDI and then the Night mode you want to route to Auto Attendant.
Click the T2 or T3 target.
Click the description text for the target and the pop-up of available targets will show
Select VRS message 01~04




Click the new target VRS Message 1 to open the Properties pane
In the Properties pane select the single digit routing options for the Auto Attendant message, these are the digits that will be dialled by the incoming caller when answered by the Auto Attendant greeting.

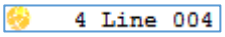



**Received digits** are 1~0, *, #
**Next Attendant Message**:
0 = Go to Destination Number
1~4 = Play VRS Message 1~10
106 = Go to Answer Machine
**Destination Number:**
Any valid extension number = Ring the extension

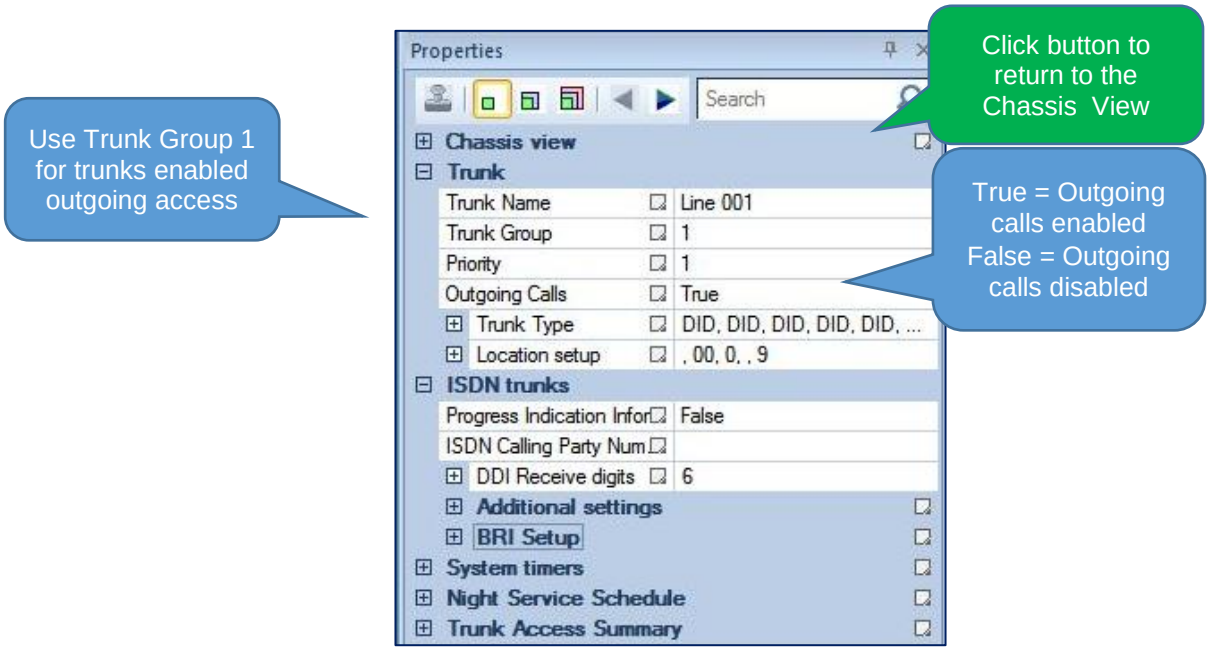
Tip – For all unused digits set the Next Attendant Message to play the same message number, this will repeat the greeting message again for the caller.

Note – You can also setup Auto Attendant features using InMail voicemail, refer to the Quick Install Guide – InMail Voicemail.

**Trunk – Outgoing Trunk Access**

From the Trunk Pane click the Trunk port you want to configure 

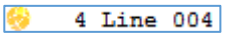
Within the Properties pane you can enable/disable outgoing trunk access.



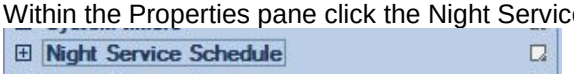

The Priority can be used to select the order the trunks are seized when a user dials the Trunk Access code.

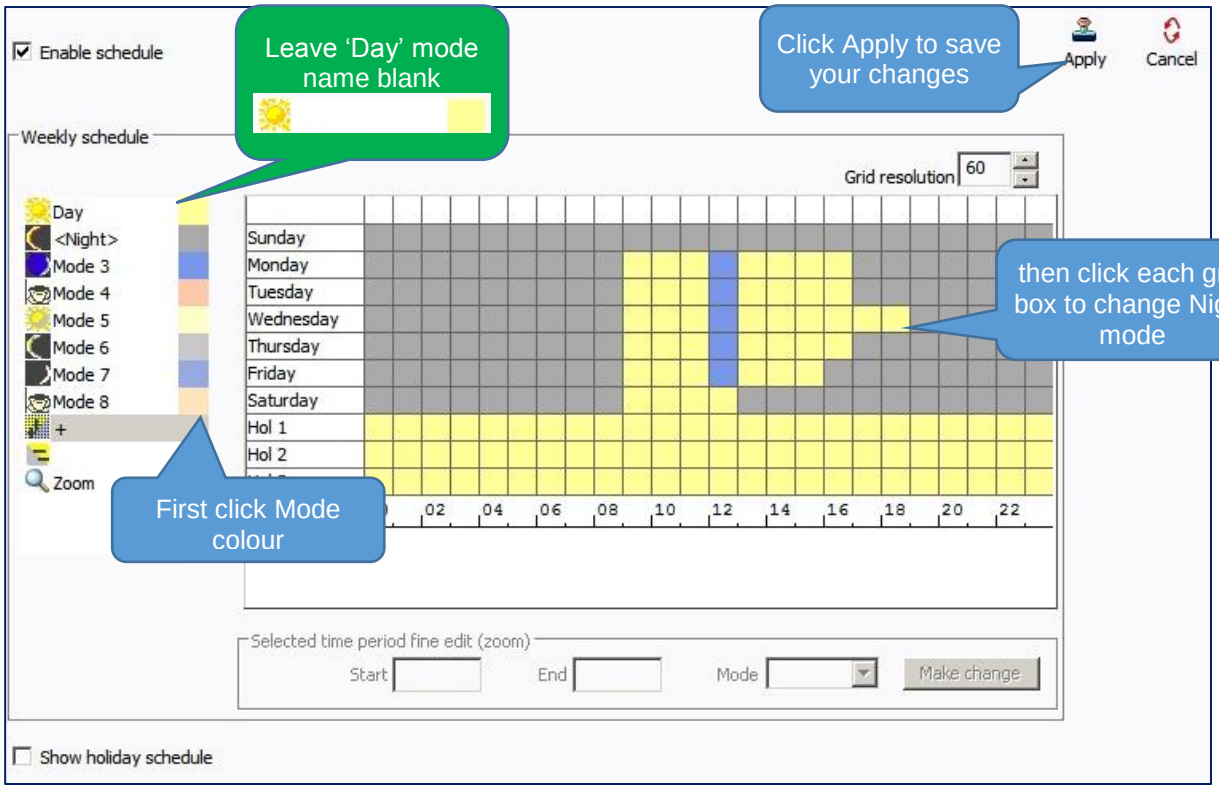
**Automatic Night Mode Schedule**

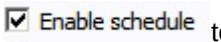
Night modes are used to adjust the incoming ring assignment of the SL2100. Mode 1 (Day) and Mode 2 (Night) are used within the Initial Setup Wizard, additional modes can be added via this screen. The example below has Mode 3 used for lunch period.

From the Trunk Pane click the Trunk port you want to configure 

Within the Properties pane click the Night Service Schedule button




Enable the schedule 

to begin editing and use Automatic Night Modes schedule on the SL2100.

Double click the name of each mode to edit the name .
Tip – Leave the name of Day empty (blank) otherwise all phones will display the text **Day** on the display during normal working hours. (Day is shown on this screen shot only for your help).

Click the colour box of the mode and then click within the weekly grid to change the mode. Click Apply to save your changes.

Change the resolution of the grid to view 1/15/20/30/60 minute grid.

Check the 'Show holiday schedule' box if you want to setup fixed holiday days within each year.

Note – Automatic or Manual Night Mode operation can be used simultaneously or independently.
Tip – Setup Programmable Function Keys if the customer is using Manual Night mode selection.
Function Keys can be setup for each mode or you can have a single key that toggles Day-Night-Day.

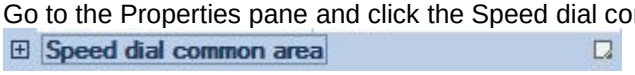
## Speed Dials

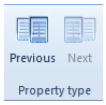
You can copy a list of speed dial names and numbers into the PCPro screen and then upload to the SL2100.
Prepare a spreadsheet in the following format:

| Number | Name |
|---|---|
| 01234567890 | A customer |
| 01234567891 | B customer |
| 01234567892 | C customer |
| 01234567893 | D customer |

The name must be 12 characters or less.

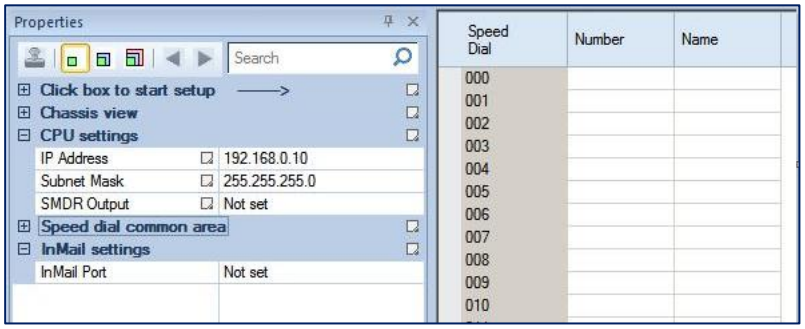
Go to the Properties pane and click the Speed dial common area button



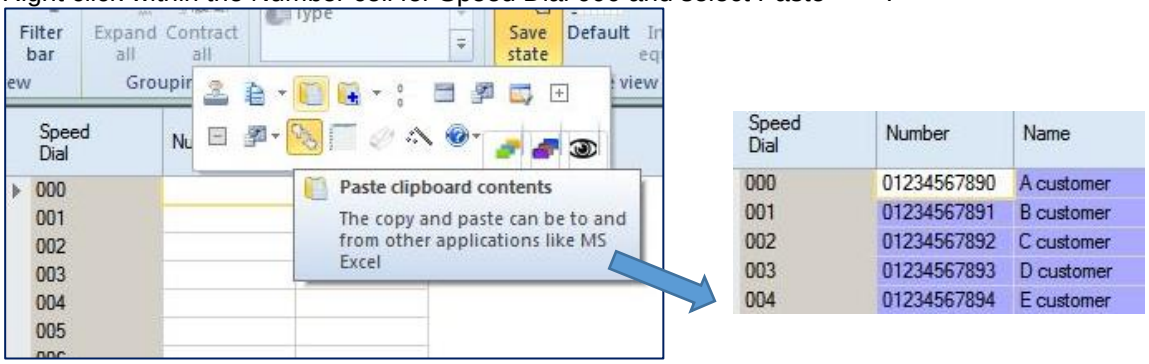

You may need to change the Property View Type to show the Speed dial common area button.

The Speed Dial Easy Edit screen will open




Highlight the numbers and names from the spreadsheet

Right click within the Number cell for Speed Dial 000 and select Paste  .




Click Apply to save your changes.

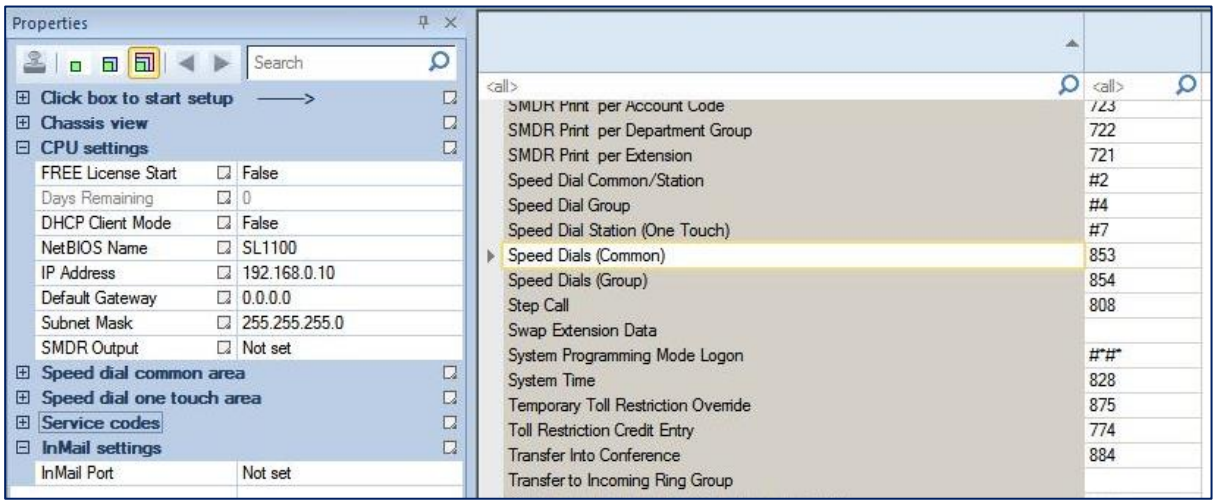
There are 900 system speed dial entries available.
System telephones can search via the Navigation Key (Menu-Contacts-Search)
Single Line telephones use the Service Code + Speed dial number

## Service Codes

Go to the Chassis View and click the Service codes button 

You may need to change the Chassis View Type to show the Service codes button.

Expand the details within the Properties pane 


The number range for Service Codes was selected within the Initial Setup wizard.

You can Right click within the Service Codes screen and export the data to the clipboard.

Service codes can't be duplicated and must be within the defined number range you selected within the Initial Setup wizard

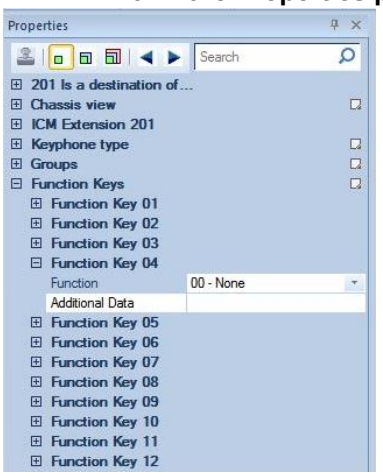
**Extension – Programmable Function Keys**

Programmable Function keys are available to all system telephones and can be used for many system features – DSS, Line keys, Night Mode selection, Call Forwards etc.

Go to the Chassis View and click on the extension port you want to configure 

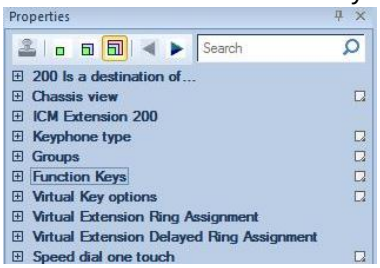

There are two options available to configure the Function key:

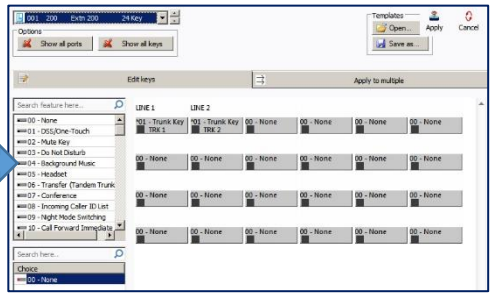
1. **Within the Properties pane** – allows selection of keys 1~12 and requires knowledge of the key types

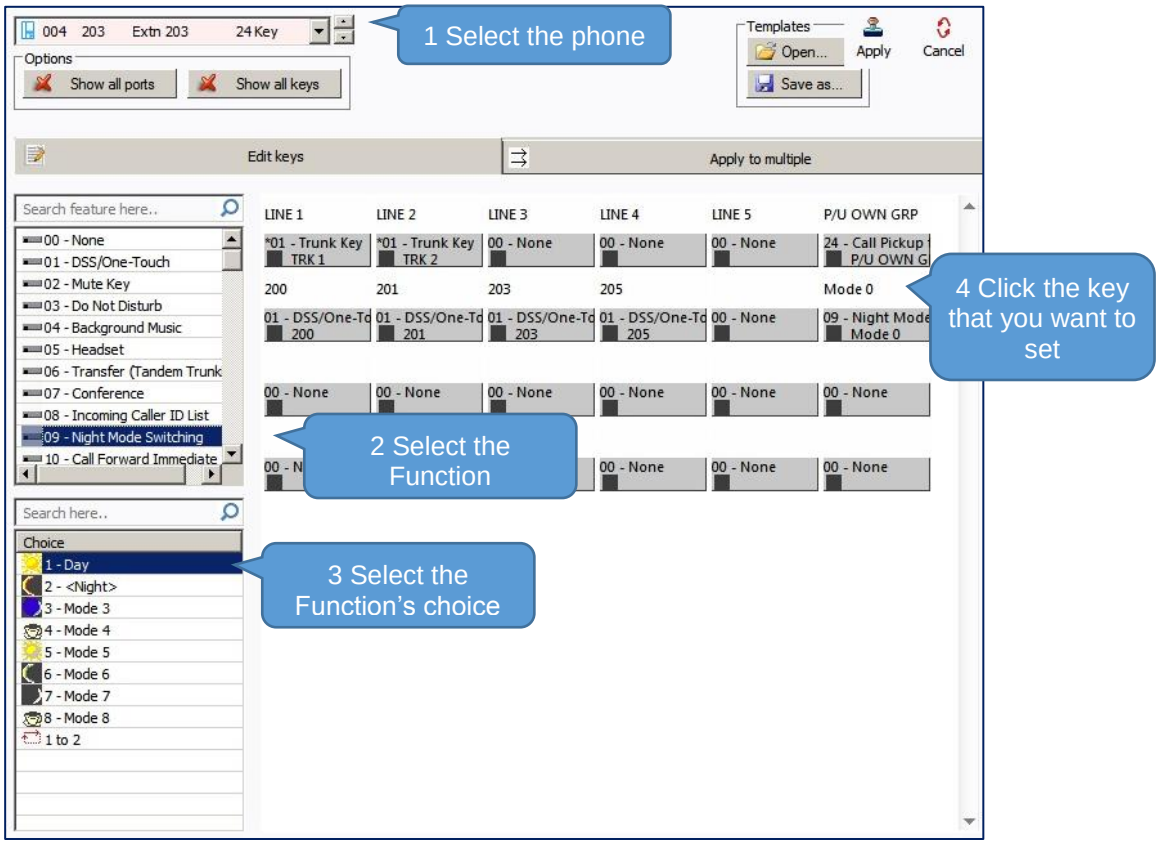



2. **Within the Easy Edit screen** – allows selection of all keys and is simpler to use

   Click the Function Keys button  to open the Easy Edit screen

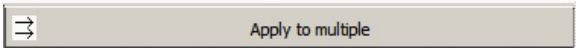





Select the phone you want to configure
Select the function from the list
Most functions will have a choice available, pick the one you want
Click the Programmable Function key to assign your selection
Repeat for other keys and phones
Click Apply to save your changes

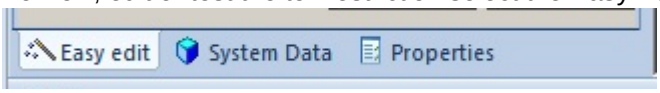
You can copy the key assignment of the current phone to others by clicking the Apply to multiple button.



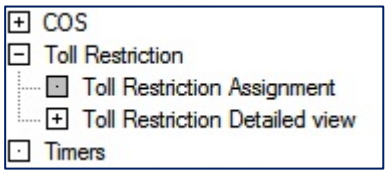

Programmable Function keys are setup within the Initial Setup wizard for Line keys or no function, you can add further functions here.

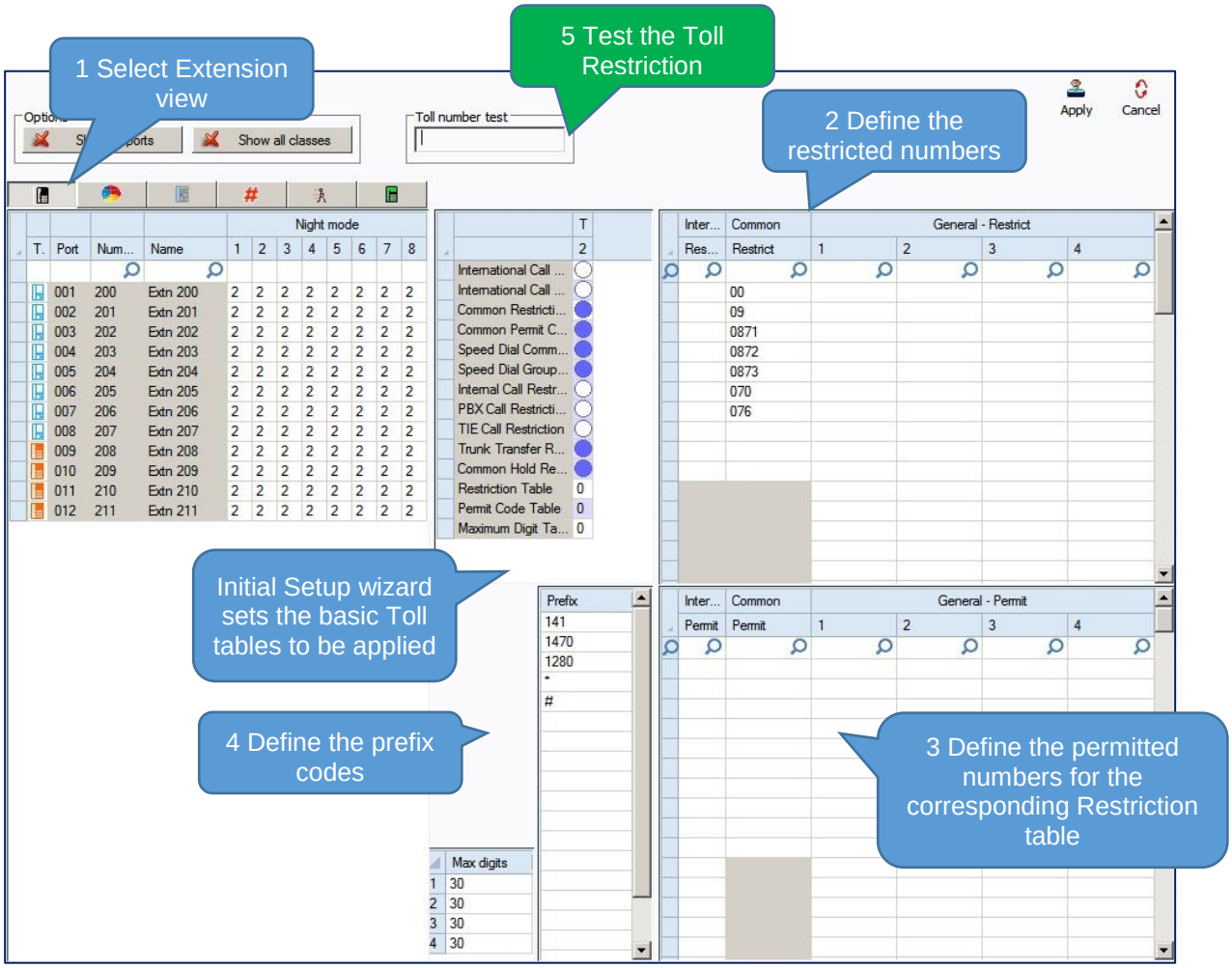
**Extension - Toll Restriction**

The Initial Setup wizard will setup basic Toll Restriction.
To view, edit or test the toll restriction select the Easy Edit view




Then select Toll Restriction – Toll Restriction Assignment




In the example above:
All extensions are set to Toll Restriction class 2 for all night modes
The Common Restriction table is used to restrict dialled numbers
Prefix codes are defined that will be applied before any restricted number

**Testing Toll Restriction**

Enter a dialled number in the Toll Number Test box – as each digit is entered it will be checked against the Toll Restriction tables.

- Red highlight means the number is restricted
- Green highlight means it's permitted (applied as an exemption to the restriction tables)

Note – You must ensure that all phones can dial Emergency numbers for all available lines in all modes

**What to do if you make errors within the SL2100 Configuration**

Errors that break configuration rules will be highlighted when you click the Apply button.
The errors will usually show red or you will see a pop-up message depending which area you are configuring.
Enter the correct value and re-apply.
Then Upload your changes to the SL2100 and re-test.

Tip - Press F1 to get help within PCro.

If you can't locate your errors within PCPro then you may need to default the SL2100 back to factory defaults and run the Initial Setup wizard again (this will only take a few minutes).

- Before doing this, download the current SL2100 configuration with PCPro and save the file to your PC, you may then be able to copy and paste the majority of your changes back in, eg the non-configuration effecting items like extension names, speed dials, programmable function keys etc.

# 9- Security

You should ensure that the customer's system is secure from Toll Fraud.
**The Health Check feature within the InGuard Application can be used to check the system for weaknesses.**
**The InGuard on-board application can also be used to give the customer ongoing protection from Toll Fraud.**
Refer to the InGuard Toll Fraud Guard Installation and User manuals for details.
Additional licenses are required to run On-board applications.

Use the Toll Restriction section of this guide to setup outgoing call restriction of numbers the customer does not want to dial.
There is also a separate Quick Install Guide for Toll Restriction.

**Auto Attendant Dial Actions**
Make sure the outside callers that are answered by the VRS can only dial known digits.

**Call Management**
Consider the use of a call management system or call logger to give the customer visibility of calls, InReports can be used for this.

**Trunk to Trunk Transfer / Call Forward External**
Do not allow these unless the customer requests the feature, ensure you setup adequate toll restriction to prevent toll fraud.

**System/PCPro Passwords**
Ensure you change the default passwords for:

- PCPro/WebPro
- User Pro (if used)
- DIM Access (if enabled for maintenance)

To edit the passwords using PCPro:
Search for *password* within the System Data and Easy Edit areas: