

IP Server 900 Pre-programming Check List

During the initial setup and programming of the IP Server 900 system, there are IP Address Parameters that are entered manually through an ESI IP Feature Phone or an ESI Digital Phone. You will need to obtain several IP Address from the Network Administrator (if you are not handling the network for the customer) to statically assign to the phone system prior to connecting with WESP.

You will need to know the Public IP Address of the site if you are to do any remote administration now or in the future. You will also need the Private IP Addresses you will need to assign to the ARM and DSP of the system (Functions 8-2-1 and 8-2-2 --- *Note: IP Address in Function 8-2-2 will automatically be assigned based on the IP Address assigned in Function 8-2-1. It will be one number higher, so if the IP Address assigned in Function 8-2-1 is: 192.168.1.50 then Function 8-2-2 will be 192.168.1.51. Be aware of this so when you choosing which IP to assign to Function 8-2-1*). You will also need a private IP Address for the Network Services Processor (NSP) programmed using Function 8-2-4.

If you will be programming the system remotely using WESP there are several UDP/TCP Ports that will need to be forwarded in the customers router. Though there are other ports you may need eventually (*see the port chart included in the IP Server 900 Programming Manual for a complete list*) the ones you need for WESP are TCP Port 443 and TCP Port 59002. Port 443 must be forwarded to the IP Address in Function 8-2-1 and Port 59002 must be forwarded to the IP Address in Function 8-2-4. These ports are default values than can be changed if these are unavailable because if conflicting IP Network devices. Another port you may want to consider forwarding initially is TCP Port 22 to the IP Address in Function 8-2-1. This port is used mainly by ESI Technical Support for troubleshooting and diagnostics of the Linux ARM and all ASC, SIP and IVC capabilities of the IP Server 900.

The other IP Addresses you need to be aware of will be the IP Feature Phones. By default the IP Server 900 will automatically assign IP Addresses to each IP Feature Phones based on the IP Address assigned in Function 8-2-1. The phones will start at +101 from this address so if the IP Address assigned in Function 8-2-1 is 192.168.1.50 then the first IP Phone will get an IP Address of 192.168.1.151. So you need to make sure the addresses above 192.168.1.150 are not being used by any other network equipment to prevent any network IP conflicts or consider using the internal DHCP Server on the network to handle the addressing. (*This is covered more in system programming Function 8-2-3*).

On the following pages are the steps needed to program these IP Address through a phone. Once this programming has been completed you can access the IP Server 900 using WESP; either locally or remotely (depending on the port forwarding) complete the system programming. To connect using WESP use your Web Browser (currently Firefox is preferred) enter the following in the URL Field:

<https://xx.xx.xx.xx/wesp> - where xx.xx.xx.xx is the Private IP Address assigned in Function 8-2-1 (*or the Public IP Address that has port 443 forwarded to the IP Address assigned in Function 8-2-1*.)

If you were unable to use port 443 due to network conflicts and you instead used port 64443 then only from outside the local network you would enter the URL as follows:

<https://xx/xx/xx/xx:64443/wesp> to connect to the IP Server 900

Prior to using WESP to complete or modify system programming, you must establish a connection between the IP Server 900 system and the browser on which you intend to use WESP. In order to establish the connection, the IP and NSP parameters must be set on the IP Server 900.

Entering programming mode

You may program from any ESI desktop phone1 in the system:

- 1. Press **PROG/HELP** at any station. The normal station programming menu prompts will begin to play.*
- 2. Press **HOLD**. The “enter password” prompt will play.*
- 3. Enter the Installer password (default is 7 8 9).² Then, to confirm the password, either press # or wait two seconds. You are now in programming mode. The extension will be automatically placed in DND, and its display will show:*

INSTALLER CMD:

- 4. The system will play the system programming menu. Follow it to program as you wish.*
- 5. When finished, hang up.*

Function 1: System function programming

Function 1-4: Set System Time and Date

Function 1-1: System Initialization or
Function 1-6-9: Change System Dial Plan

Important: Always initialize the system before initial programming for a new installation. If you are using a Dial Plan other than the default (100 Number Plan), changing this in Function 1-6-9 will initialize the system for you. You must confirm the command to initialize, when prompted, by entering the Installer password (and then pressing # to finish confirmation). Be sure to set the time and date (Function 14) before initializing. System initialization will take several minutes to complete. When completed, the phone’s display will return to the idle state. You must then re-access Programming Mode by following the steps described earlier.

As covered below, you will use a desktop phone to complete programming of:

- **Function 8-2-1** to assign IP parameters for the primary IP/ASC Carrier which resides in the Master Control Unit (MCU) of the IP Server 900, and
- **Function 8-2-4** which provides the IP Server 900’s connection to the IP network

Once these Functions have been set, remember to wait a minimum of 10 minutes to give the system time to write the changes to the CompactFlash, then power down the system. Once the system has re-booted, you can connect with WESP and complete any programming changes using your browser.

A note about port forwarding:

Each IP/ASC Carrier Card, including the Master Control Unit, has a unique IP address, which can be viewed or changed in Function 821, as well as a Media DSP IP address, which can be viewed or changed in Function 822. In addition, the Master Control Unit contains two IP address aliases dedicated for specific traffic: the Network Services Processor (NSP) address, set or changed in Function 824, and the Software Assurance address, set or changed in Function 825. If the system is configured on a private data network the customer’s Internet router will have to be configured to forward the appropriate IP ports to the appropriate IP addresses.

This capability is known as port forwarding, and it is available in most modern routers. The Network Administrator will need to configure the router to forward the necessary ports according to the chart below.

Port	Protocol	Forwarded to	Used for
22	TCP	IP/ASC IP (F.821)	Remote diagnostics & service
443	TCP	IP/ASC IP (F.821)	Web ESI System Programmer traffic
59002	TCP	NSP IP (F.824)	Network services

Note: This chart assumes that the Base UDP Prefix and Base RTP Prefix settings in Function 823 are left at the default values of 59 and 10, respectively. If these values are modified remember to update the 59xxx and/or 10xxx ports listed here to account for the new number(s).

Function 821: IP Carrier Card programming

This function is used to assign IP parameters for the Master Control Unit (MCU) built-in IP/ASC Carrier card and any IP/ASC Expansion Unit IP/ASC Carrier cards. The IP addressing for the MCU's IP/ASC is used to automatically populate IP addresses for all other IP devices in the system. Therefore, use Function 821 only when initially programming the system because it will override any changes made in Function 31 to IP stations as well as changes made in Functions 822 through 824.

Important: Changing parameters in this function will cause each IP/ASC Carrier card and every ESI desktop IP phone to reset the next time it becomes idle!

Note: For each IP address in the following steps, enter the address in a dotted-decimal format consisting of four numbers separated by dots. Valid numbers are 0 through 255. Use # to enter the dots between numbers.

Select the IP/ASC Carrier Card to program. Press # to confirm.

```
IP/ASC CARRIER
1
```

Note: Only Carrier Cards 1 (the MCU), 4, 7, and 10 (the Expansion Units) will appear as IP/ASC Carriers.

You'll now see the IP/ASC Carrier Card's MAC address. If this IP/ASC Carrier Card is to be used for Esi-Link, write down this address; it's needed for programming Esi-Link access to this IP-PBX from other locations. When ready press # to continue.

```
CC 1 IP/ASC MAC
00304D000000
```

Note: Every ESI MAC address begins with 00304D followed by six alphanumeric characters.

The display now shows the IP/ASC Carrier Card's support password, which can be two to eight characters long. Enter the desired password and press # to continue.

```
SUPPORT PASSWORD
73829164
```

Enter the private IP address for the IP/ASC Carrier Card. Press # to confirm.

Range: 0.0.0.0 through 255.255.255.255. Default: 172.18.0.1.

CC 1 IP ADDRESS
172.18.0.1

Note: When this parameter is changed the IP/ASC Carrier Card, and subsequently all Resource Modules in the cabinet, will be reset on the next idle.

Enter the subnet mask of the network (LAN) the IP/ASC Carrier Card is connected to. Press # to confirm.

Range: 128.0.0.0 through 255.255.255.252. Default: 255.255.0.0.

CC 1 SUBNET MASK
255.255.0.0

Note: When this parameter is changed, all IP/ASC Carrier Cards will be reset on the next idle.

Enter the default gateway address. Press # to confirm.

CC GATEWAY IP:
192.168.254.254

Enter the default public IP address for the IP/ASC Carrier Card. Press # to confirm. This is usually the address assigned to the public (internet) side of the default gateway router.

CC 1 PUBLIC IP:
209.164.111.1

The IP PBX's UDP port number now appears in the display. Enter a new value or press # to confirm. If the base UDP port chosen in step 8 is 59010, then the MCU UDP port would be 59010, IP/ASC Expansion Unit #1's UDP port would be 59020, IP/ASC Expansion Unit #2's would be 59030, and IP/ASC Expansion Unit #3's would be 59040. Range: 1-65035. Default: 591x0 [where x is the cabinet number (1-4); e.g., for the MCU, 59110].

CC 1 IP/ASC UDP
591X0

Use the scroll keys to enable or disable Quality of Service (QoS). Press # to continue

Choices: ENABLED or DISABLED. Default: DISABLED.

CC 1 IP/ASC QoS
DISABLED

Enter the numerical VLAN identifier for the IP/ASC Carrier Card and the IP phones it supports.

Press # to finish. Range: 1-4,094. Default: 1.

CC 1 IP/ASC VLAN
1

Press 1 to save your changes and restart the IP/ASC Carrier Card or press 2 to exit without restarting.

RESTART IP/ASC 1
1=YES 2=EXIT

Function 822: DSP IP Address settings

Notes: To get the system ready to connect with WESP, it is not required that you manually make any program settings in Function 8-2-2 as it is not relevant to connecting with WESP.

Function 824: Network Services Processor

The built-in Network Services Processor (NSP) is a component that provides an IP network connection for maintenance and other features, such as VIP 7 and unified messaging.

You enter each of the following parameters in one operation. NSP private IP address — View or enter the IP address for the NSP. Press # to confirm. Range: 1.0.0.1 through 254.254.254.254 (no Default).

NSP PRIVATE IP
1.0.0.2

NSP subnet mask - Enter the IP subnet mask of the network to which the NSP is connected. Press # to confirm. Range: 0.0.0.0 through 255.255.255.252.

NSP SUBNET MASK
0.0.0.0

NSP gateway — Enter the default gateway address of the NSP if it differs from that for the IP PBX. Default value is the PBX gateway IP address assigned in Function 821. Press # to confirm. Range: 1.0.0.1 through 254.254.254.254.

NSP GATEWAY
1.0.0.1

NSP public address — Enter the public WAN address that routes to the NSP if it differs from that for the IP PBX. Default value is the PBX remote-access IP address assigned in Function 821. Press # to confirm. Range: 1.0.0.1 through 254.254.254.254.

NSP PUBLIC IP
0.0.0.0

Note: These are all the settings required to allow connection with WESP; simply pound “#” through the remaining fields to save all your settings.