UC for Business
NEC SV8100 PBX
Table of Contents

About This Manual ................................................................................................................................................... 1
Required Functionality and Limitations ................................................................................................................... 1
   Required Functionality ..................................................................................................................................... 1
   Limitations and Unsupported PBX Features ................................................................................................. 1
       Park Groups .............................................................................................................................................................. 1
       Transfer Recall for Unmonitored Destinations ........................................................................................... 2
       Auto Attendant/Voice Messaging One-Touch Transfer to a Virtual Extension .................................................... 2
       External Transfer from an Announce Port ........................................................................................................... 2
       Analogue Extensions ........................................................................................................................................ 2
       UCB Queue Pilot/Voicemail Pilot Extension—Incoming Ring Group Extension Assignment .................................................... 3
   Miscellaneous Limitations ......................................................................................................................................... 3
Installation Process Overview.................................................................................................................................. 4
   New Installation Process ................................................................................................................................. 4
   Upgrade Process ............................................................................................................................................. 4
SV8100 Setup Form ................................................................................................................................................ 4
TCP/IP (Network) Connection Information .............................................................................................................. 5
   TCP/IP Prerequisites ....................................................................................................................................... 5
   TCP/IP Setup Diagram .................................................................................................................................... 5

PBX Programming  6

SV8100 PBX Programming Overview ...................................................................................................................... 6
Log into PC Pro ....................................................................................................................................................... 7
Step One—System Settings .................................................................................................................................... 8
   Verify/Set Up the VoIP DB IP Addresses ......................................................................................................... 8
   Assign the TCP Port Used for Communication with the CTI Server ................................................................ 8
   Disable Peer-to-Peer Functionality .................................................................................................................. 9
   Feature Access Codes used by the CTI Server ............................................................................................... 9
   Configure the Trunk Guard Timer .................................................................................................................. 10
   Disconnect Supervision ......................................................................................................................................... 10
   Change Forced Intercom Ring ........................................................................................................................ 11
   Hide the Default Voice Message Key from the Phone Display ...................................................................... 12
   Verify the DSP IP Addresses ......................................................................................................................... 13
Step Two—Configure the Virtuals and SIP Ports for UCB .................................................................................... 14
   Set Up the Virtual Extensions for the UCB Virtual Route Points ..................................................................... 14
   Set Up a Department Group for CTI Server Virtual Extensions .................................................................... 15
   Configure the SIP Extensions for UCB ........................................................................................................... 17
Configure the DND Extension and SIP Extensions for Voice Ports ............................................................... 18
Assign the SIP Extensions to an IP Duplication Group .................................................................................. 19
Set Up the DTMF for the SIP Extensions ...................................................................................................... 20
Assign a Class of Service to the SIP Ports and Virtual Extensions ............................................................... 21

Step Three—Configure the Queue Pilot Numbers ................................................................................................. 22
Configure the Virtual Extension Pilot ............................................................................................................. 22
Set Up the Pilot Numbers to Forward to the Department Group .................................................................... 23

Step Four—User Extension Configuration ............................................................................................................. 24
Key Programming .......................................................................................................................................... 24
Application Key Programming ................................................................................................................... 24
Intercom Key Programming ..................................................................................................................................... 25
Trunk/Line Key Programming ..................................................................................................................... 25
Class of Service Programming .................................................................................................................. 26
Call Forwarding Programming Locations .................................................................................................... 27

Additional Programming and Features .................................................................................................................. 27
Configuration Steps for Sites Using DID Translation Tables ........................................................................ 27
Additional Information ...................................................................................................................................... 28
How to Use Override with an Active CTI Connection .................................................................................. 28
Write the Data to the PBX Memory ............................................................................................................... 28
What’s Next? ......................................................................................................................................................... 29
About This Manual

This manual provides an overview of the hardware, software, network configuration, and PBX programming settings that should be in place prior to installing UC for Business (UCB) on the CTI server. The audience is for PBX programmers and advanced technical users familiar with the technology and terminology of computer telephony systems and networks. This manual assumes that the reader is familiar with SV8100 memory block programming using the PC Pro application.

Important Note for Upgrading Sites:
Sites upgrading from UCB 5.0 Service Pack (SP) 4 or earlier need to ensure that the SV8100 PBX is running R4 firmware. In addition, perform the following PBX programming changes:
- Removal of SIP ports from the department group
- Assignment of virtual extensions to the department group
- Assignment of application keys

To ensure that the above steps are completed correctly, complete all of the steps within this manual before upgrading the CTI server.

Required Functionality and Limitations

This section provides information about the functionality that must be enabled on the SV8100 PBX to interact correctly with UCB. A list of limitations and unsupported PBX features is also included for reference purposes.

Required Functionality

The Third-Party CTI Client License is required for integration with UCB and the SV8100 PBX.

Limitations and Unsupported PBX Features

Park Groups

UCB does not support SV8100 park groups due to the nature of using Park/Unpark within the UCB queuing/call delivery mechanism. Extensions used by agent/operators and utilizing the Park For feature must all be assigned to the same park group (24-03).
Transfer Recall for Unmonitored Destinations

The below Call Transfer Recall scenarios require the use of the SV8100 Transfer Recall timer. The default Call Transfer Recall scenarios (i.e., operator transfer to an extension) are handled by the UCB Transfer Recall timer.

- Department group
- Virtual extension
- K-CCIS networking
- Trunk to trunk

Set the SV8100 Transfer Recall timer (default 30 seconds) higher than the UCB Transfer Recall timer (default 15 seconds).

The UCB Transfer Recall timer is applied to monitored destinations (i.e., operator transfer to an extension), and the SV8100 Transfer Recall timer is applied to unmonitored destinations.

Auto Attendant/Voice Messaging One-Touch Transfer to a Virtual Extension

Any virtual extensions transferred from the UCB announce ports must have either Call Queuing set to 20-09-07 in virtual extension COS, or a busy forward set to a destination. Without this setting, a second call transferred to an already ringing virtual extension recalls to the announce port.

External Transfer from an Announce Port

Some ISDN carriers do not support SIP ports dialing with the Overlap sending One-touch, or queue transfers external fail. If this failure occurs, use Enbloc with ARS enabled and the maximum digits set. Timer 34-07-05 recalls an off premise transferred call to a digital trunk after 30 seconds if not answered. Extend this timer or the call recalls to the announce port on a no answer situation.

Analogue Extensions

The Desktop, Console, or Executive Insight products do not support analog extensions for use as prime lines.
UCB Queue Pilot/Voicemail Pilot Extension—Incoming Ring Group Extension Assignment

NEC does not support the routing of calls to the UCB queues/voicemail via the Incoming Ring Group extension. This requirement refers to assigning a UCB Queue Pilot/Voicemail Pilot extension to an Incoming Ring Group (22-04), and then directing calls to the Incoming Ring Group containing the UCB Queue Pilot/Voicemail Pilot extension in a DDI table area. This requirement includes Transfer Target 1 (22-11-05) and Target 2 (22-11-06), in addition to the Fall Over Incoming Ring Group (22-11-11).

Because UCB does not use Ring Group 102 (voicemail), assigning Ring Group 102 as a target destination will not route calls to UCB voicemail ports.

Miscellaneous Limitations

- CAP keys above 999 cannot be monitored by the TSP.
- The following table lists the support for the shared keys.

<table>
<thead>
<tr>
<th>Extension(s)</th>
<th>15-07-01</th>
<th>*08 + CAP Orbit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>*03 + Virtual Extension</td>
<td>*03 + Real Extension</td>
</tr>
<tr>
<td>0 = Release</td>
<td>1 = Land On the Key</td>
<td>0 = Release</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Single</th>
<th>Shared</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
<td>Unsupported</td>
<td>Unsupported</td>
<td></td>
</tr>
</tbody>
</table>

*1 = In UCB Ext. mode (non-notify of Virtual Extension Key Offering events), 15-18-01 (Virtual Extension Key Operation mode) must be set to **0 = Release**.

*2 = The key can be assigned on the terminal, but the Offering event is not notified.

- Due to a switch limitation, a redirected call does not follow the forwarding settings of the destination. If the destination does not answer the call, the caller may be left ringing or receive music on hold. Due to this limitation, it is not possible to redirect a call to an extension using Console.
- Updates to TSP do not take place until restarting TSP.
- Program 10-12-01 and 10-12-09 cannot be in the same subnet, as this causes ring-no-answer and missing SIP packets.
- Programs 24-09-06 and 24-09-07 should not be set to the UCB pilot, as these settings are only for Centrex forwarding over Centrex trunks.
- Do not assign more DSP IP addresses than licensed for program 84-26, as it causes ring-no-answer and missing SIP packets.
- Due to a PBX limitation, the SV8100 PBX with UCB does not support Call Forward Both Ring.
- NEC IP phones use the IP Terminal Basic license. If there are more extensions programmed than licenses, the additional NEC IP phones utilize the IP Terminal Advanced licenses (UCB’s SIP licenses).
- It is not possible to control the message waiting light on virtual extensions.
- Outbound dialing is not supported on virtual line appearances, as making an outbound call from this line type causes a phantom to occur.
Installation Process Overview

New Installation Process

Upgrade Process

SV8100 Setup Form

During the PBX programming process, enter the information you will be gathering into the SV8100 Setup Form (download this form at http://www.necucb.com/trainingdocs/SV8100Setup-FR.pdf).
TCP/IP (Network) Connection Information

Allocate the IP addresses to the server and PBX.

TCP/IP Prerequisites

TCP/IP address for the CTI server (NEC recommends that this is a fixed address on the customer LAN)  

IP address #1 below. The customer must provide this information from their LAN. 

Tip: If an IP address is already assigned, use Start > Run > cmd.exe to launch a command terminal, and then run ipconfig.exe to get the IP address.

TCP/IP address for PBX (fixed address)  

IP address #2 below. The customer must provide this information from their LAN. This is the address set up in the PBX Setup.

TCP/IP Setup Diagram

Notes:

- Ensure that the first bound network interface card (NIC) is the card for the voice VLAN, otherwise there could be speech path problems as connections from the ports to phones are received on one card, but attempt to send using the second NIC.

- Make a note of the IP addresses for reference in the Installation wizard.
PBX Programming

SV8100 PBX Programming Overview

The SV8100 PBX differs slightly in the queuing mechanism used by other NEC systems. The principle is that pilot numbers are forwarded to a department group containing virtual extensions. When a virtual extension receives a call, the SV8100 PBX checks the redirecting ID (forwarding extension) to identify the queue pilot, and then reacts according to the CTI server configuration for that pilot/queue number.

The virtual/SIP extension queuing mechanism works with SV8100 park slots (10-64 by default). For the first announcement, the SIP extension does a call pickup on the virtual extension to retrieve the call. When a call has been announced and is required to be queued, the SIP extension parks the call in the system park slots where the caller waits (hearing music on hold) until the call is ready for delivery to an agent or the next progress announcement is required. When an announcement is required, the call is unparked to a SIP port for the announcement and is then re-parked in a system park slot.

Notes:

- From UCB version 5.1, SIP extensions have been replaced with virtual extensions for queues and queuing extensions. From this version onwards, SIP extensions are only used for the DND extension, voice ports, and conference ports.

- The queuing mechanism requires that there are sufficient virtual extensions available in the department group to support all the calls to be queued before being announced. NEC also recommends a minimum of eight virtual extensions within a queuing environment.

- The number of SIP extensions required should be the same as the maximum number of calls that require simultaneous announcements.

Because the UCB CTI server utilizes SIP extensions, CTI server integration requires the SV8100 to have an IPLA card and enough DSP resources configured to cover the required amount of TDM to IP conversions (e.g., ISDN to SIP port calls). You must include this factor in the normal DSP calculations.
The SV8100 also utilizes TAPI as a CTI interface, which means that the SV8100 TAPI driver is a prerequisite component for integration with the CTI server. Currently, the TAPI driver does not support live updates. When adding new extensions or modifying handset key programming, restart the CTI server before new devices are learned, or programming changes take effect.

Log into PC Pro

Use PC Pro for all of the PBX programming procedures within this document.

1. Open the PC Pro application and connect to the SV8100.
2. After the connection has been established, download the SV8100 database.
Step One—System Settings

Verify/Set Up the VoIP DB IP Addresses

If the IP address information in the following steps is present, then verify that it is correct; otherwise enter the needed information.

1. Navigate to program 10-12: CD-CP00 Network Setup.
2. In the 03-Default Gateway field, type the default gateway IP address.
3. Enter the IPLA IP address into both PC Pro and the SV8100 Setup Form.
   a. In the 09-IPLA IP Address field, type the IPLA IP address.
   b. Enter this same IPLA IP Address into the SV8100 Setup Form in both the SIP Register IP Address and SV8100 VOIP Address fields.

The IPLA IP address:

- Should be a static IP address provided by the customer. Rarely, if ever, should the default address be used.
- Cannot be in the same subnet as the CPU IP address in 10-12-01.

4. From the 10-IPLA Subnet Mask list, select the subnet mask.
5. If any changes were made, log out of PC Pro, restart the SV8100 PBX, and then log back into PC Pro.

Assign the TCP Port Used for Communication with the CTI Server

1. Navigate to program 10-20: External Equipment LAN Setup.
2. Enter the CTI server’s TCP port value into both PC Pro and the SV8100 Setup Form.
   a. In the 01-CTI Server-TCP Port field, type 8181.
   b. Enter this same TCP Port value into the SV8100 Setup Form in the TCP Port Number field.
3. In the 01-CTI Server-Keep Alive Time field, type 30 (the default setting).
Disable Peer-to-Peer Functionality

2. Clear the following options:
   - 01-Peer to Peer Mode
   - 02-RTP Forwarding Mode
   - 03-SIP Peer to Peer
3. Ensure that the 04-DT700 Peer to Peer option is chosen.
4. Click Apply, and then collapse all the settings.

Feature Access Codes used by the CTI Server

As part of the CTI server configuration, define the access code using the SV8100 PBX section within the System Setup window of Administrator. Make a note of the codes being used for the features in the following sections.

<table>
<thead>
<tr>
<th>Memory Block</th>
<th>Feature/Description</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-11-01—Set/Cancel Call Forward Immediate</td>
<td>Call Forward All. Enter this value into the SV8100 Setup Form in the Forward All field.</td>
<td>US Default—741</td>
</tr>
<tr>
<td>11-12-08—Barge-in</td>
<td>Monitor Conversation. Enter this value into the SV8100 Setup Form in the Monitor Conversation field.</td>
<td>US Default—710</td>
</tr>
<tr>
<td>11-12-29—Direct Extension Call Pickup</td>
<td>Call Pickup. Enter this value into the SV8100 Setup Form in the Pickup field.</td>
<td>US Default—**</td>
</tr>
<tr>
<td>11-12-31—Park Hold</td>
<td>Park. Enter this value into the SV8100 Setup Form in the Park field.</td>
<td>US Default—#6</td>
</tr>
<tr>
<td>11-12-32—Answer Park Hold</td>
<td>Park Answer. Enter this value into the SV8100 Setup Form in the Unpark field.</td>
<td>US Default—*6</td>
</tr>
<tr>
<td>Optional: 11-12-37—Common Canceling Service Code</td>
<td>NEC does not recommend using this setting, as it cancels the call forwarding behavior that is required to forward calls made to busy and unavailable extensions.</td>
<td>Remove the code (leave blank), and then click Apply.</td>
</tr>
</tbody>
</table>
Configure the Trunk Guard Timer

NEC recommends setting the SV8100 Trunk Guard Timer to 0 (default 1 second). Assigning the setting to 0 ensures that the SV8100 provides an immediate Disconnect/Idle TAPI event on disconnect of a trunk. Under default conditions, the SV8100 waits for one second before providing a Disconnect/Idle TAPI event. In certain call scenarios, this method may cause a phantom to occur.

1. Navigate to program **20-01: System Options**.
2. In the **10-Trunk Guard Time** field, type **0**.

---

Disconnect Supervision

NEC recommends enabling Disconnection Supervision to ensure that the correct trunk TAPI messages are received when the calling party ends a call. Failure to configure this setting results in phantom calls due to the CTI server not receiving notification that the trunk has released the call.

1. Navigate to program **20-02: Multi-Line Telephone System Options**.
2. Click the **09-Disconnect Supervision** option (if not already chosen).
Change Forced Intercom Ring

Change intercom signaling so that extensions ring when one terminal calls another. By default, the SV8100 treats internal calls as intercom calls. When an internal extension is called, the phone plays a short tone and then the speaker phone is enabled, thus allowing immediate reply (hands free).

To resolve this issue, complete the following procedure to program the SV8100 to perform intercom ring instead of intercom voice.

1. Navigate to program **20-02: Multi-Line Telephone System Options**.
2. From the **12-Forced Intercom Ringing** list, select **Signal**.

![20-02: Multi-Line Telephone System Options](image)

**Note:**
This programming step changes the intercom signaling system-wide. Users extensions can be changed back to voice announce on a station-by-station basis by dialing the access code (US default 721) (program 11-11-15).
Hide the Default Voice Message Key from the Phone Display

The Voice Message (VMsg) soft key does not control UCB voice messaging. Therefore, this key should be removed from the phone display to avoid confusion for voice messaging users.

**Warning:**

Never assign the UCB department group to program 45-01.

<table>
<thead>
<tr>
<th>Memory Block</th>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>45-01-01 Voice Mail Department Group</td>
<td>Disabled (0)</td>
<td>This field should be set to 0, as there is no department group 0 and the field cannot be empty.</td>
</tr>
<tr>
<td>45-01-07 Centralized Voice Mail Pilot</td>
<td>-</td>
<td>This field must be empty.</td>
</tr>
<tr>
<td>45-01-08 Centralized Voice Mail Department Group</td>
<td>Disabled (0)</td>
<td>This field should be set to 0, as there is no department group 0 and the field cannot be empty.</td>
</tr>
<tr>
<td>45-01-14 CCIS Centralized Voice Mail Pilot</td>
<td>-</td>
<td>This field must be empty.</td>
</tr>
</tbody>
</table>

**Tip:**

To check that the VMsg soft key has been removed from the phone display, place the phone off the hook and then back on the hook to refresh the phone display.
Verify the DSP IP Addresses

Verify with the IT department the IP addresses and subnet mask of the DSP resources used by SIP terminals when communicating with a TDM application, such as a terminal or trunk.

The CTI server uses SIP terminals to communicate with the SV8100. Each time a SIP terminal communicates with any TDM application (such as a terminal or a trunk), it uses a DSP resource. Each IP address in program 84-26 supports up to 16 DSP resources (16 concurrent IP to TDM channels).

Note:
The IPLA addresses must be in the same subnet as the IPLA.

Navigate to program **84-26 IPLA DSP Basic Setup**. If the PBX is using a:

- PZ-IPLB card with SV8100 R5 firmware, enter:
  - Only one IP address in the **84-26-1 IP Address** field.
  - 0.0.0.0 in each **IP Address** field for 84-26-2 through 84-26-8.
- PZ-32IPLA card (which has a total of 32 DSP resources), enter up to two static IP addresses.
  - Enter the first address in the **84-26-1 IP Address** field.
  - Enter the second address in the **84-26-2 IP Address** field.
- PZ-64IPLA card (total of 64 DSP resources), enter up to four IP addresses.
- PZ-128IPLA card (total of 128 DSP resources), enter up to eight IP addresses.

Resources not used (e.g., fields 3-8 for 32 IPLA) should be assigned **0.0.0.0** in the **IP Address** field.

IP addresses assigned in program 84-26 must be in the same subnet as the IPLA IP address entered in 10-12-09, and preferably should follow in order.
Step Two—Configure the Virtuals and SIP Ports for UCB

In UCB, the term virtual route points refers to the virtual extensions that reside in the UCB department group. The CTI server then uses SIP extensions for the announcements. The SIP extensions are registered by the Aculab software/SIP.exe process on the CTI server, and act as announcement and voice messaging ports. For more information, see “SV8100 PBX Programming Overview” in this manual.

Set Up the Virtual Extensions for the UCB Virtual Route Points

1. Navigate to program 11-04: Virtual Extension Numbering.
2. Configure the range of virtual extensions to use as virtual route points. NEC recommends that a minimum of eight virtual extensions are used in a queuing environment.
3. Enter this same range of virtual route points into the SV8100 Setup Form in the Virtual Route Points Range field.
Set Up a Department Group for CTI Server Virtual Extensions

The SV8100 supports up to 64 department groups, with all extensions assigned to department group 1 by default. As a result of this default behavior, do not use department group 1 when setting up the CTI server; UCB recommends using department group 63, but any unused department group may be used.

1. Click the **Standard View** tab.

2. Under the **Standard** section, click **Department Groups**.

3. Change the **Department Group** field (in the upper-right corner of the window) to 63, and then click the magnifying glass icon. If 63 is already used for another item, select a spare department group.

4. In the **Basic Settings** section, enter the needed information.
   a. In the **Pilot** field, assign an unused department group pilot number that is not already assigned in programming steps 11-01, 11-02, 11-04, 11-06, 11-07, 11-08, and 11-17. A warning displays if the number selected has already been assigned to one of these memory blocks.
   b. Enter this same **Pilot** number into the SV8100 Setup Form in the **Department Group Pilot Number** field.
   c. In the **Name** field, type a name for the department group (e.g., CTI or UCB).
   d. From the **Calling Cycle** list, select **Circular Routing**.
   e. From the **Routing When Busy** list, select **Routes to an Idle Member**.
   f. From the **Hunting Mode** list, select **Circular** so the system keeps looking for an open extension when all other extensions are busy.
g. In the **Call No Answer Time** field, type **3600**.
h. From the **Enhanced Hunting Type** list, select **Busy**.

**Tip:**
System programming memory block references:

- **Pilot** = 11-07-01
- **Name** = 16-01-01
- **Calling Cycle** = 16-01-02
- **Routing When Busy** = 16-01-03
- **Hunting Mode** = 16-01-04
- **Call No Answer Time** = 16-01-09
- **Advanced Hunting Type** = 16-01-10

5. Select the virtual extensions to be used as virtual route points.
   a. In the **Primary Members** section, click the virtual extensions to be used as virtual route points.
   b. Click the **Sort Priority by 1-2** icon. NEC recommends a minimum of eight virtual extensions in a queuing environment.

**Warning:**
Ensure that no other extensions are selected in this department group.

**Tip:**
System programming reference = **16-02-xx**.

6. Click the **Apply** button.

7. Click the **System Data Programming** button (or press **F11**).
## Configure the SIP Extensions for UCB

### Notes:
- A range of SIP extensions can be configured as SIP voice ports. The number of SIP extensions should be equal to the number of Aculab SIP licenses and one extra for the DND extension (e.g., if there are eight Aculab licenses, there should be nine SIP extensions configured).
- The CTI server needs to control the call forward for queue blocking where the CTI server changes the call forward on the pilot number from the department group to a DND extension, and therefore playing a busy tone back to the caller.
-Because each SIP extension requires an IP Terminal Advance license on the SV8100, you may also need to confirm the number of licenses available on the SV8100 in PC Pro (under Communication > Feature Activation).
- NEC IP phones use the IP Terminal Basic license. If there are more extensions programmed than licenses, the additional NEC IP phones utilize the IP Terminal Advanced licenses (UCB’s SIP licenses).
- SIP extension numbers can be changed/assigned in program 11-02. The SIP extensions can only be assigned to ports on the SV8100 that are not already assigned to hardware blades and/or IP terminals (i.e., NEC DT7xx terminals).
- If the CP00 has an ME50 expansion memory board installed, ports 1 to 512 can be used for the SIP extensions. If no ME50 board is installed, only ports 1 to 64 are available for the SIP extensions.
- If NEC IP phones are utilized in the SV8100, the UCB SIP extensions should be separated from the NEC IP phones by at least two ports.
- When using PC Pro, it is extremely important that a new download is taken after the UCB SIP registration is complete. Additional changes can then be made to the newly downloaded database containing the registered SIP ports. If the prior database (the SIP ports not yet registered) is loaded into the system after the registration, the ports may go offline and registration is not possible.
Configure the DND Extension and SIP Extensions for Voice Ports

1. Navigate to program 11-02: Extension Numbering to configure the range of SIP extensions to use for the UCB DND extension and voice ports.

2. In the SV8100 Setup Form, enter the:
   - Range of SIP extensions into the **Voice Port Range** field.
   - DND extensions into the **DND Extension** field.

3. From the Programming menu, select **Unregistered Phones > IP Phone List**.

4. In the IP Phone List window:
   a. Click the required number of IP terminals.
   b. Click **OK**. The options chosen in this window allow the terminals to be used as IP extensions, and make the extension visible from within PC Pro.
   c. Enter the port range chosen in this window into the SV8100 Setup Form in the **Voice Port Range** field (e.g., 170 for the DND extension, and 171-178 for the SIP voice ports).
Assign the SIP Extensions to an IP Duplication Group

All SIP extensions associated with UCB use the same IP address assigned to the CTI server. An IP duplication group allows more than one SIP extension to be registered by a single IP address. Without this duplication group, the SV8100 allows only one SIP extension to register per IP address.

The following steps describe how to set the IP Duplication Allowed group.

1. Navigate to program 15-05: IP Phone Basic Setup.
2. For each SIP port, ensure that 18-IP Duplication Allowed Group is set to Group 10.

**Note:**
This programming step changes the intercom signaling system wide. User extensions can be changed back to voice announce, on a station-by-station basis, by dialing the access code (US default is 721) (program 11-11-15).

**Notes:**
- When UCB attempts to register the SIP extensions for the first time, the SV8100 R4 firmware automatically assigns Group 10 for each SIP extension. The group number does not change if the SIP extensions have already been assigned to a particular group (e.g., on an upgraded system). In this instance, the group assignment remains as Group 1 if this group was used prior to upgrade.
- This duplication group setting can be verified in the 15-05: IP Phone Basic Setup system programming command post UCB SIP registration.

**Tip:**
The system programming reference is 15-05-18 for the IP Duplication Allowed Group.
Set Up the DTMF for the SIP Extensions

The announce ports must recognize DTMF digits to allow for proper tone recognition within Auto Attendants, One-Touch Keys, and so on. The steps below outline how to establish DTMF recognition for the SIP extensions that are used to answer calls.

If this procedure is required before the SIP registration, you must use either the handset or PC Pro’s Unregistered Phones > IP Phone List under the Programming option.

To set the SIP ports to recognize DMTF, complete the following procedure for each SIP port.

1. Navigate to program **15-03: Single Line Telephone Basic Setup**.
2. From the **Extension** list, select a SIP announce extension.
3. From the **01-Signaling Type** list, select **DP**.
4. From the **03-Terminal Type** list, select **Special Receive DTMF Tones After the Initial Call is Set Up**.
5. Click **Apply**.

6. Copy these settings to all other SIP announce ports.
   a. Click the **Copy** icon.
   b. In the **From Extension** list, select the extension chosen in step 2.
   c. In the **To Extension** list, select the remaining SIP announce extensions.
   d. In the **Data Item** list, select **01** and **03**.
   e. Click **OK**.
7. Click **Apply**.

8. To enable the DTMF Relay Mode for the CODEC SIP extension, navigate to program **84-19: SIP Extension CODEC Setup**, and then select **RFC2833** from the **32-DTMF Relay Mode** list. The CODEC can then be used by all SIP queuing ports.
Assign a Class of Service to the SIP Ports and Virtual Extensions

The SIP ports and virtual extensions need to be configured into an unused class of service (e.g., class 14 if not already used); this can be set in 20-06 modes 1-8 to 14 for each SIP port/virtual extension and configured for the features in the following table.

<table>
<thead>
<tr>
<th>Memory Block</th>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-08-05—Dial Number Preview</td>
<td>Disabled (0)</td>
<td>Causes false TAPI off-hook messages to be received and should therefore be disabled.</td>
</tr>
<tr>
<td>20-08-13—ISDN CLIP</td>
<td>Enabled (1)</td>
<td>Provides the SIP port with calling party information.</td>
</tr>
<tr>
<td>20-08-20—Hot key Pad</td>
<td>Disabled (0)</td>
<td>Prevents false TAPI off-hook messages from occurring.</td>
</tr>
<tr>
<td>20-11-11—Automatic On-hook Transfer</td>
<td>Disabled (0)</td>
<td>Prevents complete transfers from occurring instead of cancel transfers.</td>
</tr>
<tr>
<td>20-11-19—Normal/Extended Park</td>
<td>Enabled (1)</td>
<td>Setting:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• This value to 1 allows SIP ports to use Extended Park.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The Extended Park time PRG 24-01-07 to 0 disables the SV8100 from recalling UCB parked calls.</td>
</tr>
<tr>
<td>20-11-20—No Callback</td>
<td>Enabled (1)</td>
<td>Prevents the SV8100 from performing PBX transfer recalls, and therefore leaves the CTI server in control of when a call is recalled to a port.</td>
</tr>
<tr>
<td>20-13-10—Barge-in Mode</td>
<td>Enabled (1)</td>
<td>Enables the barge in feature.</td>
</tr>
<tr>
<td>20-13-15—Initiating Barge-in</td>
<td>Enabled (1)</td>
<td>Enables the ports to barge into extensions for recording or intrusion purposes.</td>
</tr>
<tr>
<td>20-13-16—Receiving Barge-in</td>
<td>Enabled (1)</td>
<td>This command may be used in the future to control voice message screening.</td>
</tr>
<tr>
<td>24-01-07—Extended Park Hold Recall Time</td>
<td>Disabled (0)</td>
<td>This works in conjunction with 20-11-19 to disable the extend park recall timer (by default this is set to 320 seconds, but setting the value to 0 totally disables this feature).</td>
</tr>
</tbody>
</table>
Step Three—Configure the Queue Pilot Numbers

The pilot numbers are virtual extensions that are forwarded to the UCB department group. The number of queue pilots that are required depends on the modules purchased (Voicemail, Console, and/or Contact Center), e.g., a Voicemail only site only requires a Voicemail pilot and a Hold pilot. Additional queue pilots are required for each operator and contact center queues that are added to the system.

Configure the Virtual Extension Pilot

1. Navigate to program **11-04: Virtual Extension Numbering**.
2. Assign an extension for each pilot extension.
Set Up the Pilot Numbers to Forward to the Department Group

Call forwarding for the voice message pilot, hold pilot, and all operator/agent queue pilots should be forwarded to the CTI server department group number.

1. Navigate to program 24-09: Call Forwarding Fixed Settings.

2. For each pilot extension, set the forwarding of all calls to the department group.
   a. From the 01-Call Forward Type list, select Call Forward All Calls.
   b. Set the 02-CO Call Forward Destination for Both Ring, All Calls, and No Answer field to the CTI server department group pilot.
   c. Set the 03-Intercom Call Forward Destination for Both Ring, All Calls, and No Answer field to the CTI server department group pilot.

3. Click Apply.
Step Four—User Extension Configuration

Key Programming

Application Key Programming

From version 5.1, UCB uses application key mapping on the PBX to map MSF key functionality to specific keys on individual phone sets.

1. In program 15-07: Function Keys, set all required function keys to 76—Application Key.
2. Using the Any Dial Data field of the Function Keys window, enter the mapping code that represents the functionality to be applied to the selected key.

Note:
Mapping codes are configured from the Dterm Keys tab of the SV8100 PBX Setup window in Administrator. The mapping code entered in PC Pro should match the number listed in the Key column of the Configured Keys list.
Intercom Key Programming

In program 15-07: Function Keys, select **00-ICM Key from the 04 list to configure an ICM key on any blank function key to enable internal calls to be held or un-held using Desktop.

**Warning**

- This configuration step is only required for installations on sites within Australia, New Zealand, and the United States.
- This step is not required on sites where held calls that are recalled using a handset cause the function key to flash. However, this step must still be performed if the site requires an intercom key that indicates held/recalled calls.

Trunk/Line Key Programming

Remove all trunk/line keys from all NEC Univerge handsets when used in conjunction with UCB. Assigning trunk/line keys to NEC Univerge handsets causes multiple TAPI call events at each handset. In certain call scenarios, this method may cause a phantom to occur.
Class of Service Programming

Each extension is assigned a class of service; by default this is 1. Use program 20-06 to view which class of services are being used for each extension (in the example to the right, class of services 15 and 1 are being used).

The following table lists some considerations to make for the functionality when configuring the user’s extension class of service. Go to each memory block and assign the programming changes to the class of services for all user extensions.

**Warning**
Do not make any of these changes to SIP port and virtual extension class of services.

<table>
<thead>
<tr>
<th>Memory Block</th>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-08-05—Dial Number Preview</td>
<td>Disabled (0)</td>
<td>Causes false TAPI off-hook messages to be received and should therefore be disabled.</td>
</tr>
<tr>
<td>20-08-13—ISDN CLIP</td>
<td>Enabled (1)</td>
<td>Provides extensions with calling party information.</td>
</tr>
<tr>
<td>20-08-20—Hot Key Pad</td>
<td>Disabled (0)</td>
<td>Prevents false TAPI off-hook messages from occurring and should therefore be disabled for both agents and operators. Voice Messaging and Executive Desktop users can still enable this feature if required.</td>
</tr>
<tr>
<td>20-11-06—Unscreened Transfer</td>
<td>Enabled (1)</td>
<td>Allows calls to be transferred from an analog extension.</td>
</tr>
<tr>
<td>20-11-11—Automatic On-hook Transfer</td>
<td>Disabled (0)</td>
<td>Prevents complete transfers from occurring instead of cancel transfers.</td>
</tr>
<tr>
<td>20-11-19—Normal/Extended Park</td>
<td>Disabled (0)</td>
<td>Sets the Class of Service to use Normal park and follows the timer set in program 24-01-06.</td>
</tr>
<tr>
<td>20-13-10—Barge-in Mode</td>
<td>Enabled (1)</td>
<td>Enables the barge in feature.</td>
</tr>
<tr>
<td>20-13-15—Initiating Barge-in</td>
<td>Enabled (1)</td>
<td>Enables the extension user to barge into extensions for recording or intrusion purposes.</td>
</tr>
<tr>
<td>20-13-16—Receiving Barge-in</td>
<td>Enabled (1)</td>
<td>Allows the extension user to barge into a call. This is usually set for all extensions where monitoring or recording is required.</td>
</tr>
</tbody>
</table>

**Notes:**
- When considering the park hold recall timer value for each extension, if setting the class of service to use the extended park recall timer in 20-11-19, the CTI server fully controls the call when a user clicks the Desktop or Console Park button. However, this has the disadvantage for any user wanting to park a call using the normal handset option, as this command means that the call never recalls from the park slot.

If wanting to use the system park slots (slots 1-10 for users as the CTI server uses 11-64 by default), do not use the extended park hold recall timer. However, the SV8100 park hold recall timer must be greater than the CTI server client recall timer so that the CTI server is in control of recalling parked calls rather
Notes:

than the SV8100 PBX. The SV8100 is still able to recall calls parked using the handset.

• If preview dial or the hot key pad are enabled on an agent or operator’s extension and a CTI server function key is pressed while the phone is ringing, an off-hook message is sent that contains the key press information. When this information is received by the CTI server, it is not possible to determine whether a key press or answer message has been received. Therefore, the line unpark or line pickup code is evoked by the key press and the event fails.

This issue often causes either the “please hang-up” or “call delivery to your extension has stopped” message. These settings only affect the delivery mechanism and therefore these features can be enabled on operator/agents handsets if required.

Call Forwarding Programming Locations

• 24-09-01 Call Forward Type Busy/No Answer
• 24-09-02 CO Destination for No Answer
• 24-09-04 CO Destination Busy

Additional Programming and Features

Configuration Steps for Sites Using DID Translation Tables

If sites intend to use DID translation tables to control forward busy no answer, configure the memory blocks in the following table for each DID received from the telecommunications service provider.

<table>
<thead>
<tr>
<th>Memory Block</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>22-11-01—Received Number</td>
<td>Set this field to the DID number to be received from the telecommunications service provider.</td>
</tr>
<tr>
<td>22-11-02—Target Number</td>
<td>Set this field to the extension number that the DID number should map to.</td>
</tr>
<tr>
<td>22-11-04—Transfer Operation Mode</td>
<td>Set the value of this field to Busy/No Answer.</td>
</tr>
<tr>
<td>22-11-05—Transfer Target 1</td>
<td>Set this field to the UCB department group.</td>
</tr>
</tbody>
</table>
| 22-11-07—Call Waiting | To prevent outside callers from receiving busy tones from the department group, this command can be enabled on the incoming pilots DID entry if all department group members are busy. When this occurs, the call queues even if all department group members are busy and then delivers when a member becomes available. However, this prevents the accurate reporting calls as the operation performs before a call reaches the queue pilot. Therefore, NEC does not recommend this setting as it is no longer possible to accurately report queue wait times.  
A solution to this situation is to increase the number of available virtual ports to meet the additional resource demand.  
Ensure to clear the Call Waiting option. |
Additional Information

Usually, when a site is using DID forwarding they set memory block 24-09 to No Call Forward All Calls. As a consequence of this setting, the call forward busy/no answer settings for all internal calls is disabled.

To enable internal call forwarding, apply the memory block settings in the following table.

<table>
<thead>
<tr>
<th>Memory Block</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>24-09-01—Call Forward Type</td>
<td>Call Forward Busy/No Answer</td>
</tr>
<tr>
<td>24-09-02—CO Call Forward Destination for Both Ring, All Calls, and No Answer</td>
<td>Enter the voice messaging pilot number.</td>
</tr>
<tr>
<td>24-09-03—Intercom Call Forward Destination for Both Ring, All Calls, and No Answer</td>
<td>Enter the voice messaging pilot number.</td>
</tr>
<tr>
<td>24-09-04—CO Call Forward Busy Destination</td>
<td>Enter the voice messaging pilot number.</td>
</tr>
<tr>
<td>24-09-05—Intercom Call Forward Busy Destination</td>
<td>Enter the voice messaging pilot number.</td>
</tr>
</tbody>
</table>

Notes:

- If forward busy no answer is only required for internal extensions, then 24-09-02 and 24-09-04 do not need to be set.
- If memory block 24-09-02 is used to set to the Call Forward Destination for Ring, All Calls and No Answer, and memory block 24-09-04 is also set, external calls are handled using the settings configured within 24-09 and will ignore the DID translation table settings within memory block 22-11. For details, see "UCB Queue Pilot/Voicemail Pilot Extension—Incoming Ring Group Extension Assignment."

How to Use Override with an Active CTI Connection

When using Override with an active CTI connection, program 15-05-39 must be enabled for the extensions to be overridden. The overriding terminal must be of the same type and number of line keys as the terminal to be overridden.

Note:
If the types of terminals and number of keys are different between overriding and overridden phones, the Telephony Service Providers (first-party and third-party) may not function properly.

Write the Data to the PBX Memory

After the configuration is complete, upload the database and disconnect PC Pro from the SV8100 so the data can be written to the PBX memory.
What's Next?

When the list of prerequisites have been completed prior to installing the UCB product suite on the CTI server, proceed with the configuration of the CTI server and the installation of UCB. For more information about installing the CTI server, as well as a step-by-step walkthrough of the CTI server installation process, refer to the CTI Server Installation Manual.
About NEC Corporation

NEC Corporation is one of the world’s leading providers of Internet, broadband network and enterprise business solutions dedicated to meeting the specialized needs of its diverse and global base of customers. NEC delivers tailored solutions in the key fields of computers, networking and electronic devices, by integrating its technical strengths in IT and Networks. The NEC Group employs more than 150,000 people worldwide. For additional information please visit the NEC home page at http://www.nec.com

NEC reserves the right to change product specifications, functions, or features, at any time, without notice. Please refer to your local NEC representatives for further details. Although all efforts have been made to ensure that the contents are correct, NEC shall not be liable for any direct, indirect, consequential or incidental damages resulting from the use of the equipment, manual or any related materials. The information contained herein is the property of NEC Corporation and shall not be reproduced without prior written approval from NEC Corporation.

Copyright © 2011 NEC Corporation. All rights reserved. NEC, NEC logo, and UNIVERGE are trademarks or registered trademarks of NEC Corporation that may be registered in Japan and other jurisdictions. All other trademarks are the property of their respective owners. All rights reserved. Note: This disclaimer also applies to all related documents previously published.