IPEC Administrator

Manual

IPEC Administrator Manual

Contents

1   *Introduction*

2   *IPEC Installation & Configuration*

3   *SoftDCA Setup & Configuration*

4   *Troubleshooting*

5   *Support*

A   *IPEC Command Line Interface*

Cerato Software License

TELTRONICS, INC. LICENSE AGREEMENT
for Teltronics Cerato® Software and related Products
(1.22.09)

NOTICE: THE FOLLOWING LICENSE TERMS AND CONDITIONS AND SEPARATE LICENSE AGREEMENT(S) INCORPORATED HEREIN BY REFERENCE (COLLECTIVELY, "AGREEMENT") APPLIES TO THE SOFTWARE DESCRIBED HEREIN AND FURNISHED TO YOU BY TELTRONICS.

YOU REPRESENT THAT YOU ARE ACTING ON BEHALF OF YOUR EMPLOYER AND ARE AUTHORIZED TO ACCEPT THIS AGREEMENT ON ITS BEHALF (SUCH EMPLOYER BEING HEREIN REFERRED TO AS "YOU"). YOU AGREE THAT YOU HAVE READ, UNDERSTAND AND SHALL ABIDE BY THIS AGREEMENT AND YOU AGREE THAT THIS AGREEMENT IS ENFORECABLE LIKE ANY WRITTEN NEGOTIATED AGREEMENT SIGNED BY YOU.

THE SOFTWARE IS NOT SOLD TO YOU, BUT IS THE PROPERTY OF TELTRONICS AND/OR ONE OR MORE OTHER THIRD PARTY LICENSORS PROTECTED BY COPYRIGHT LAWS AND INTERNATIONAL TREATY. ANY USE OF THE SOFTWARE IS GOVERNED BY THIS AGREEMENT. YOU AGREE THAT YOU ARE LICENSING THE SOFWARE FOR YOUR END USE ONLY AND NOT FOR RESALE OR REDISTRIBUTION.

1. LICENSE. (a) With respect to all software object code, application interfaces, documentation and any updates, revisions or modification thereto ("Software") of Teltronics and/or its vendors or suppliers which may be furnished to You by Teltronics hereunder, You accept and agree to abide by all the license terms and conditions set forth herein and any other separate license agreements that are specific to, and included in document or shrink wrap form with the shipment of particular Software, or presented in electronic form (including click wrap form) during the loading or installation of such Software. In the event of any conflict between the license terms and conditions set forth herein and any such separate license agreements specific to any particular Software, the license agreements specific to such particular Software shall prevail with respect to such particular Software. All Software furnished hereunder by shall be licensed only as set forth herein.

(b) Subject to your compliance with this Agreement including the license obligations pursuant to this Section 1, and your payment of the applicable license fees, Teltronics grants to You a personal, nontransferable, nonexclusive and revocable license to use the Software solely with the equipment sold to You by Teltronics or such other equipment as may be authorized by Teltronics to support such use of the Software for your own business operation up to the number of concurrent devices and/or ports as may be authorized by Teltronics. You shall not copy the Software except that You are permitted to make one (1) copy of the Software only for backup purposes, provided that You shall include on such copy the same copyright notice and proprietary marking that appear on the original Software including diskette markings.

(c) You shall (i) not modify, translate, reverse engineer, reverse compile, decompile, recompile, disassemble, port, copy, download or attempt to derive the source code from the Software, and no license to the source code is provided herein; (ii) take all actions necessary to satisfy your obligations under these license provisions including the issuance of adequate instructions and monitoring of all appropriate personnel within your organization to ensure that such personnel satisfy these license obligations; and (iii) promptly return to Teltronics any magnetic tape, disc, semiconductor device or other memory device or system and/or documentation, which has been replaced, modified or updated.

(d) The Software and all copies thereof shall at all times remain the sole and exclusive property of Teltronics or its third party vendors or suppliers(s), as applicable, and You shall have no title to or interest in such Software and copies thereof. You acknowledge that the Software constitutes valuable trade secrets of Teltronics and its third party suppliers. You agree to use the Software solely in accordance with license provisions herein and all the terms and conditions of this Agreement and to treat the Software as the confidential and proprietary information of Teltronics. If You sell or otherwise dispose of the media on which the Software is fixed, such Software must be erased or destroyed before any such sale or disposal so that the Software is no longer ascertainable from such media.

(e) If You sell or otherwise transfer or dispose of the equipment which supports the use of the Software in your business operation, or if You fail to comply with any of the terms of this Agreement, all of your rights hereunder to possess and use the Software and all copies thereof shall immediately terminate and You agree to promptly return the

Software and all copies thereof to Teltronics.

2. LICENSE FEES. The license fees paid by Licensee are paid in consideration of the rights granted under this License.

3. TERM. The Agreement is effective upon your acceptance of its terms as herein provided or any use of the Software and shall continue until terminated. You may terminate this Agreement at any time by returning the Software and all copies thereof and extracts therefrom to Teltronics. Teltronics may terminate this Agreement upon the breach by You of any term of this Agreement, and Teltronics shall have the right to injunctive relief enjoining such acts or attempts constituting a breach (in addition to other legal remedies, all of which are non-exclusive). Upon such termination by Teltronics, You agree to promptly return to Teltronics the Software and all copies and extracts thereof. The following provision shall survive any termination of this Agreement: "Limited Warranty," "Limitation of Liability," "911 Emergency Calling Limitations and Obligations," "Governing Law, Venue and Jurisdiction," "Enforceability," "No Waiver," "Export Compliance," and "Entire Agreement."

4. LIMITED WARRANTY. (A)THE PROVISIONS OF THIS LIMITED WARRANTY APPLY ONLY TO SOFTWARE SUPPLIED DIRECTLY TO YOU BY TELTRONICS. IF YOU HAVE OBTAINED SUCH SOFTWARE FROM AN AUTHORIZED DISTRIBUTOR OF TELTRONICS, YOU AGREE THAT THE ONLY WARRANTY APPLICABLE TO SUCH SOFTWARE WILL BE THE LIMITED WARRANY, IF ANY, PROVIDED BY SUCH AUTHORIZED DISTRIBUTOR AND TELTRONICS SHALL HAVE NO LIABILITY WHATSOEVER WITH RESPECT TO ANY SUCH SOFTWARE.

(B) TELTRONICS DOES NOT WARRANT ANY TELTRONICS-MANUFACTURED SOFTWARE WILL BE ERROR FREE. TELTRONICS WARRANTS THAT SUCH SOFTWARE WILL SUBSTANTIALLY CONFORM TO TELTRONICS FUNCTIONAL SPECIFICATIONS. IF ANY TELTRONICS-MANUFACTURED SOFTWARE DOES NOT SUBSTANTIALLY CONFORM TO SUCH SPECIFICATIONS, TELTRONICS WILL USE REASONABLE EFFORTS TO CORRECT SUCH NONCONFORMANCE IF TELTRONICS IS PROMPTLY NOTIFIED BY YOU IN WRITING UPON YOUR DISCOVERY OF SUCH NONCONFORMANCE AND IN ANY EVENT NO LATER THAN NINETY (90) DAYS FROM THE DATE OF INITIAL SHIPMENT BY TELTRONICS OF SUCH SOFTWARE. THIS WARRANTY IS EXCLUSIVE OF DEFECTS CAUSED BY PHYSICAL DEFECTS IN THE SOFTWARE MEDIA DUE TO MISHANDLING, OR SOFTWARE FAILURE DUE TO OPERATOR ERROR OR INTERFACING SUCH SOFTWARE WITH ANY OTHER PRODUCTS OR SYSTEMS NOT APPROVED BY TELTRONICS.

(C)TELTRONICS MAKES NO REPRESENTATION OR WARRANTY WHATSOEVER WITH RESPECT TO ANY THIRD PARTY SOFTWARE SUPPLIED BY TELTRONICS. YOU AGREE THAT TELTRONICS' SOLE OBLIGATION WITH RESPECT TO SUCH THIRD-PARTY SOFTWARE SHALL BE TO USE COMMERCIALLY REASONABLE EFFORTS TO PASS THROUGH TO YOU THE WARRANTIES, IF ANY, THAT MAY BE PROVIDED BY THE THIRD-PARTY VENDORS OR SUPPLIERS SUBJECT TO THEIR AUTHORIZATION FOR SUCH PASS THROUGH AND SUBJECT TO ANY AND ALL OF THEIR DISCLAIMERS.

(D) NOTWITHSTANDING ANY OTHER PROVISION HEREIN TO THE CONTRARY, YOU AGREE THAT THIS LIMITED WARRANTY IS VOID IF ANY SOFTWARE SUPPLIED BY TELTRONICS IS MODIFIED, ALTERED OR CHANGED IN ANY WAY BY ANYONE OTHER THAN TELTRONICS OR CONNECTED TO OR INTERFACED WITH ANY PRODUCTS OR SYSTEMS NOT APPROVED BY TELTRONICS. TELTRONICS MAKES NO WARRANTIES OR REPRESENTATIONS EXCEPT AS EXPRESSLY SET FORTH IN THIS LIMITED WARRANTY.

(E) THIS LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING WITHOUT LIMITATON, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY WARRANTY OF NON-INFRINGEMENT. WITHOUT LIMITING THE FOREGOING, TELTRONICS DOES NOT WARRANT THAT ANY SOFTWARE OF ANY KIND WILL BE WITHOUT FAILURE, DELAY, ERROR, BREAKDOWN, OUTAGE, INTERRUPTION, DEGRADATION OF VOICE QUALITY OR LOSS OF CONTENT, DATA OR INFORMATION. THE REMEDIES PROVIDED UNDER THIS LIMITED WARRANTY ARE YOUR SOLE AND EXCLUSIVE REMEDIES. IN THE EVENT THAT SUCH REMEDIES PROVIDED BY THIS AGREEMENT FAIL OF THEIR ESSENTIAL PURPOSE, YOUR SOLE AND EXCLUSIVE REMEDY SHALL BE LIMITED TO THE REFUND OF WHATEVER PORTION OF LICENSE FEE THAT YOU PAID TO TELTRONICS FOR THE DEFECTIVE SOFTWARE COVERED BY THIS LIMITED WARRANTY.

5. LIMITATION OF LIABILITY. IN NO EVENT WILL TELTRONICS BE LIABLE FOR INCIDENTAL, INDIRECT, SPECIAL, CONSEQUENTIAL, EXEMPLARY OR PUNITIVE DAMAGES OF ANY KIND EVEN IF THEY ARE FORESEEN OR FORESEEABLE. TELTRONICS' MAXIMUM CUMULATIVE LIABILITY RELATIVE TO ALL OTHER CLAIMS AND LIABILITIES, INCLUDING THAT WITH RESPECT TO DIRECT DAMAGES, WILL NOT EXCEED THE LICENSE

FEE PAID FOR THE SOFTWARE GIVING RISE TO THE CLAIM OR LIABILITY. ANY ACTION AGAINST TELTRON-ICS MUST BE BROUGHT WITHIN EIGHTEEN (18) MONTHS AFTER THE CAUSE OF ACTION ACCRUES. THESE DISCLAIMERS AND LIMITATIONS OF LIABILITY WILL APPLY REGARDLESS OF ANY OTHER CONTRARY PROVI-SION OF THIS AGREEMENT AND REGARDLESS OF THE FORM OF ACTION, WHETHER IN CONTRACT, TORT OR OTHERWISE, AND FURTHER WILL EXTEND TO THE BENEFIT OF TELTRONICS' SUPPLIERS, DISTRIBU-TORS AND OTHER TELTRONICS' AUTHORIZED RESELLERS AS THIRD-PARTY BENEFICIARIES. EACH PROVI-SION IN THE AGREEMENT WHICH PROVIDES FOR A LIMITATION OF LIABILITY, DISCLAIMER OF WARRANTY OR CONDITION OR EXCLUSION OF DAMAGES IS SEVERABLE AND INDEPENDENT OF ANY OTHER PROVI-SION AND IS TO BE ENFORCED AS SUCH.

6. 911 EMERGENCY CALLING LIMITATIONS AND OBLIGATIONS. (a) You, at your cost, shall be responsible for pro-curing the supply, implementation, connection and support of any required telephone service including emergency 911 call service over the Internet and/or public switched telephone network ("PSTN") from one or more third party service providers as required in conjunction with the use of the software and related products by You and other users for voice over internet protocol ("VOIP") communications.

(b) You are responsible for complying with all laws, rules and regulations applicable to the installation and use of the Software and related products (collectively, "Laws") including without limitation all Laws relating to 911 dialing for emergency service.

(c) 911 dialing to an appropriate public safety answering point ("PSAP") for emergency service is limited when using a VOIP phone Product co-located with and connected to the switch Product at your enterprise location because VOIP telephone service may be interrupted, delayed, lost or terminated due to various causes including but not limited to power outage, excessive bandwidth consumption, termination of service with or by the network service provider and/or other T1 provider, product, equipment, software, system and/or network failures or computer viruses. It is strongly recommended that You make alternative 911 dialing available to employees and other individuals at your enterprise via traditional wire line service over the PSTN.

(d) Prior to initiating the use of Teltronics Products in conjunction with any IP network including Internet tele-phone service for VOIP communications, You shall notify, in writing, each employee and any other person authorized to use the Products for such VOIP communications (individually and collectively "User(s)") of the following limitations:

911 DIALING TO AN APPROPRIATE PUBLIC SAFETY ANSWERING POINT ("PSAP") FOR EMERGENCY SERVICE IS NOT AVAILABLE WHEN USING ANY PORTABLE VOIP PHONE PRODUCT AT A STREET ADDRESS THAT IS DIFFERENT FROM THE STREET ADDRESS OF THE END USER'S ENTERPRISE WITH AN IP NETWORK CONNECTION FROM THAT REMOTE LOCATION TO THE SWITCH SERVICING THE END USER'S ENTERPISE. DO NOT USE SUCH PORTABLE VOIP PHONE PRODUCT AT THE REMOTE LOCATION TO PLACE 911 EMER-GENCY CALLS BECAUSE SUCH PORTABLE VOIP PHONE IS NOT CAPABLE OF COMMUNICATING THE STREET ADDRESS OF THE REMOTE LOCATION. EMERGENCY 911 CALLS MUST BE PLACED OVER A WIRE LINE PHONE AT THE REMOTE LOCATION WHICH IS CONNECTED TO TRADITIONAL PUBLIC SWITCHED TELE-PHONE NETWORK ("PSTN") FOR LOCAL SERVICE OR OTHER PHONE THAT IS CAPABLE OF COMMUNICATING THE STREET ADDRESS OF THE REMOTE LOCATION TO HELP INSURE THAT SUCH EMERGENCY 911 CALLS ARE ROUTED TO THE APPROPRIATE PSAP OPERATOR RESPONSIBLE FOR RESPONDING TO EMERGEN-CIES AT THE REMOTE LOCATION. USERS MUST WARN ALL INDIVIDUALS AT THE REMOTE LOCATION THAT SUCH PORTABLE VOIP PHONE PRODUCT CAN NOT BE USED TO PLACE ANY SUCH EMERGENCY 911 CALLS FROM THE REMOTE LOCATION BECAUSE OF THIS LIMITATION. USERS MUST INSTRUCT ALL INDIVIDUALS AT THE REMOTE LOCATION TO PLACE ANY 911 CALLS FOR EMERGENCY RESPONSE TO THE REMOTE LOCA-TION FROM A WIRE LINE PHONE AT THE REMOTE LOCATION WHICH IS CONNECTED TO THE TRADITIONAL PSTN FOR LOCAL SERVICE OR OTHER PHONE THAT IS CAPABLE OF COMMUNICATING THE STREET ADDRESS OF THE REMOTE LOCATION TO HELP INSURE THAT SUCH EMERGENCY 911 CALLS ARE ROUTED TO THE APPROPRIATE PSAP RESPONSIBLE FOR RESPONDING TO EMERGENCIES AT THE REMOTE LOCA-TION.

(e) If You permit any User to use the VOIP phone Product at a remote location connected to the switch at your enterprise location, it is strongly recommended that You affix a non removable label on the hand set of each VOIP phone Product, prior to any such use that displays the following clear and conspicuous warning

DO NOT USE THIS PHONE TO DIAL 911 EMERGENCY SERVICE CALLS UNLESS YOU ARE PHYSI-CALLY LOCATED AT THE FOLLOWING ADDRESS: (INSERT YOUR ENTERPRISE ADDRESS WHERE THE PSAP WILL RESPOND TO 911 EMERGENCY CALLS DIALED THROUGH THE SWITCH)

(f) You agree to defend, indemnify and hold harmless Teltronics, its subsidiaries, affiliates and their respective officers, directors, employees, distributor, agents and suppliers from any obligations, claims, suits, demands, causes of action, losses, liabilities, fines, penalties, damages, costs, or expenses, (including without limitation, attorneys fees), arising on account of any injury or death of persons, or damage to property asserted or incurred by or on behalf of any governmental entity, User or any other party arising out of or resulting from (i) any of your acts or omissions including

without limitation, any failure of You to comply with any Laws; or (ii) any use, inability to use, removal, failure, delay, error, breakdown, absence, outage or interruption of any telephone service including emergency 911 call service over the Internet and/or PSTN or any Software or Product including without limitation, any VOIP phone Product.

7. GOVERNING LAW, VENUE, AND JURISDICTION. This Agreement will be governed by and construed in accordance with the laws of the State of Florida but without regard to that state's conflict of laws principles. The parties agree that any action to enforce any provision of this Agreement or arising out of or based upon this Agreement or the business relationship between Teltronics and You will be brought in the state or Federal court of competent jurisdiction in the State of Florida. You and Teltronics agree that the United Nations Convention on Contracts for the International Sale of Goods (1980) shall not apply or govern this Agreement, the performance of, or any transaction between the parties under this Agreement. Reasonable attorney fees shall be reimbursed, with respect to the foregoing, to the party who prevails on the merits.

8. ENFORCEABILITY. If any provision of this Agreement shall be held to be invalid, illegal or unenforceable, the validity, legality or enforceability of the remaining provisions shall in no way be affected or impaired.

9. NO WAIVER. Any non-enforcement of any provision of this Agreement by Teltronics shall not constitute a waiver of such provision or prejudice Teltronics right to enforce such provision.

10. EXPORT COMPLIANCE. The Software and related products, as defined under U.S. export laws, are subject to U.S. export control laws and regulations and the export of such Software and or related Products is conditioned upon receipt of U.S. Government licenses and approvals. You shall ensure that no Software and or related Products shall reach any country where U.S. law prohibits the possession or use of such Items. You shall comply with all export regulations of the U.S. Department of Commerce and shall not transfer any Software and or related Products from the country of delivery, or to any facility engaged in the design, development, stockpiling, manufacturing or use of nuclear, missile, chemical or biological weapons, or to any military end-user or for a military end-use, without first obtaining Teltronics' written approval and all required approvals of the applicable U.S. agencies. Your obligations hereunder shall survive so long as You possess or control the Software and or related Products.

11. ENTIRE AGREEMENT. This Agreement and any written agreement executed by Teltronics and You for the supply of the Software and related Products represent the entire agreement between Teltronics and You and supersede all prior oral and written communications, agreements, promises, and understandings concerning the Software and related Products. In the event of any conflict between the terms of any written agreement executed by You and Teltronics and those of this Agreement, the terms of this Agreement shall prevail.

Tables

Figures

Summary of Changes

Revision B, February 2010

- Added support for CIPD phone in IPEC Release 4.1.

Revision A, February 2009

- Initial release

1

Introduction

This manual is intended to be used by the network system administrator in conjunction with a Cerato technician for the installation/configuration/operation of an IPEC in a Cerato system. It contains technical information about the IPEC, complete installation prerequisites and instructions, along with trouble shooting tips to quickly help resolve installation and operation problems should they arise.

Before using IP Phones, be sure to first read and understand *911 Notification* on page 1-6 before proceeding with the installation and setup of the IPEC, since you will be responsible for the proper 911 notification procedures of phone users.

Introduction

The Teltronics IP Embedded Controller (IPEC) adds DCA, Time Sync, Analog Signal Generators (ASG), DTMF receivers, legacy music on hold (MUSIC), Multiple-Music-On-Hold (MMOH), and Attendant Workstation functionality to the VoIP product line. In addition, the IPEC supports IP phones (i.e., CIP210, CIP1 and CIP2 SoftPhone, H.323). IPEC circuits can be configured on an individual basis on the Cerato Configuration Editor, giving the card great flexibility.

The following sub-sections describe each of the IPEC's main features along with the IPEC circuit type[1][2] needed to enable the features.

Attendant Functions

The IPEC adds Attendant functionality to the VoIP product line by replacing traditional DLIC cards with Ethernet and using the Enhanced Attendant Workstation (EAWS), a software-based version of the legacy Teltronics Attendant Workstation. The EAWS uses a modern Windows-based, graphical interface, so even new users will find it easy to learn and use.

On the IPEC, configure HDLU circuit types to enable EAWS functionality.

Service Functions

The IPEC adds DCA, ASG, DTMF, and Time Sync service functions to the VoIP product line. For the DCA feature, the IPEC replaces traditional DCA modules with onboard processing and distribution over the LAN/WAN or IP network. For users that require legacy DCA serial ports, compatible serial devices (e.g., serial hub, PCs, etc.) are supported as remotely located network devices.

The IPEC can be configured to periodically synchronize the Cerato switch's CPU clock to an accurate time source on the network, via one of the IPEC DCA circuits.

The IPEC also has the functionality of Analog Signal Generator (ASG) circuits which are used to deliver Caller ID to analog extensions, and DTMF receivers which are used to detect DTMF digits.

On the IPEC, HDLU circuit types are configured to enable DCA service ports.

On the IPEC, DTMF circuit types are configured to enable DTMF service ports.

---

1. When the 'IPEC' Board Type for the HDLU is selected in the Database Configuration Editor, circuits can be configured on an individual basis. See the IPEC HDLU Circuit Types table

2. Circuit 16 on the even-numbered slot of the IPEC cannot be configured as a System Announcement, MUSIC, ASG or DTMF.

On the IPEC, ASG circuit types are configured to enable ASG service ports.

IP Phones Functions

In addition, the IPEC connects IP telephones to the Cerato system over the LAN/WAN or IP Network (typically a Local Area Network but can be any IP-based network that offers the appropriate QoS). Currently the IPEC supports the Teltronics CIP210 phone, Teltronics CIP1 and CIP2 Soft-Phones and the Polycom Sound Station IP 3000 phones.

Adding an IPEC to the Cerato enables a smooth transition to VoIP at the desktop while still maintaining all the capabilities and features of the original Cerato system.

The IPEC uses state-of-the-art voice compression algorithms to minimize the required network bandwidth. High quality installations will utilize its QoS capability in well managed LAN/WAN configurations to achieve near perfect quality voice.

On the IPEC, HDLU2 circuit types are configured to enable IP phone functionality.

Music Functions

The IPEC adds Music and Multiple-Music-on-Hold (MMOH) functionality to the VoIP product line. The music is provided through wav files that are placed on an FTP server and then downloaded to be played by IPEC circuits that have been configured to play music. These music circuits play the music and function as DTMF receivers simultaneously.

On the IPEC, MUSIC circuit types are configured to enable the legacy music on hold feature that was provided by the DTMF/MUSIC card.

On the IPEC, HDLU circuit types are configured to enable system announcements which are used to support the MMOH feature.

For more details on the MMOH feature, see *Multiple-Music-on-Hold Feature* on page 2-37.

IPEC HDLU Circuit Types Functions

Table 1-A shows the different types of HDLU circuits for the IPEC and describes its circuit function:

Table 1-A. IPEC HDLU Circuit Type Functions

Circuit Type	Circuit Function
HDLU	• Enables EAWS ports. • Enables DCA service ports. • Enables system announcements which can be used to support MMOH.
DTMF	Enables DTMF service ports.
ASG	Enables ASG service ports.
HDLU2	Enables IP phone ports.
MUSIC	Enables the legacy music that was provided by the DTMF/Music card.

References

Table 1-B lists other Teltronics documentation that may be helpful when configuring the IPEC:

Table 1-B. Additional IPEC References

Manual Name	p/n	contains information on:
Cerato Resource CD	955234	Contains pdfs of all VoIP & most Cerato documentation
Database Configuration Manual	955 087	Configuring the Cerato switch to support DCA and attendant circuits
CIP210 User Guide	610-0000-0814	User instructions for the CIP210
CIP210 Quick Reference Card	610-0000-0815	3-fold card with frequently used procedures and info about the CIP210
CIP1/CIP2 SoftPhone User Guide	610-0000-0808	Complete user's guide detailing how to use the Teltronics CIP1 and CIP2 SoftPhones
EAWS User Guide	610-0000-0801	How to use the Enhanced Attendant Workstation
EAWS Administrator Manual	610-0000-0803	Details of setup & configuration of EAWS
EAWS Quick Reference Card	610-0000-0802	Summary of most frequently used functions on EAWS

911 Notification

As the Cerato system administrator, you are responsible for configuring the Cerato system and each individual IPEC on the system so CIP1/CIP2 SoftPhone users are aware of and agree to all 911 call services' procedures.

This section covers the 911 User Notification screens the user sees when using the CIP1/CIP2 SoftPhone, and gives a list of configuration steps to properly configure the IPEC for 911 User Notification.

Chapter 2, *IPEC Installation & Configuration* on page 2-1, and Appendix A, contain more information about the commands you will need to set up 911 Notification.

Overview

When CIP1/CIP2 Softphones that are connected to the Cerato system by an IP network do not reside in the same physical location as the Cerato system, emergency calls made from that phone will connect to emergency services based on the caller's ANI being sent by the Cerato system and not the physical address of where the CIP1/CIP2 SoftPhone is located. In order to make sure the user is aware of this fact so they can inquire about their company's 911 procedures if they aren't already aware of them, you need to perform some configuration on the Cerato system and in the IPEC that will notify and/or remind the user of 911 emergency call procedures. The CIP1/CIP2 SoftPhone 911 Disclaimer dialog requires the user to accept its terms when installing and starting the CIP1/CIP2 SoftPhone. In addition, a Switch Location Text appears on every CIP1/CIP2 SoftPhone mainscreen which is the address that will be associated with the Caller's ANI for the CIP1/CIP2 SoftPhones on the IPEC as another reminder.

CIP1/CIP2 SoftPhone 911 User Notification screens:

1   When a user installs the CIP1/CIP2 SoftPhone, the **License Agreement screen** appears which includes the 911 Emergency Calling Limitations and Obligations and Indemnification disclaimers. The user must accept the License Agreement by clicking the Accept button in order to continue with the CIP1/CIP2 SoftPhone installation.

   Note The user can review or print the full text of the License Agreement (with 911 disclaimers integrated) at any time by selecting Start>Programs>Teltronics>CIP1/CIP2>License (or wherever the CIP1/CIP2 SoftPhone has been installed).

2   Upon starting the CIP1/CIP2 SoftPhone, the **911 Disclaimer dialog** appears, where the user must select Accept, acknowledging that he/she agrees to the 911 Disclaimer, before he or she is allowed to continue.

3   After starting the CIP1/CIP2 SoftPhone, the user sees a **Switch Loca-
tion Text** in red at the top of the CIP1/CIP2 SoftPhone mainscreen.
When the user moves the cursor over the Switch Location Text, the full
address of the location of the Cerato system appears.

IPEC Overview

Figure 1-1 shows a typical IPEC configuration with a network's attendant, editor terminal, time synchronizer, IP phones and legacy serial DCA devices (i.e., a printer).
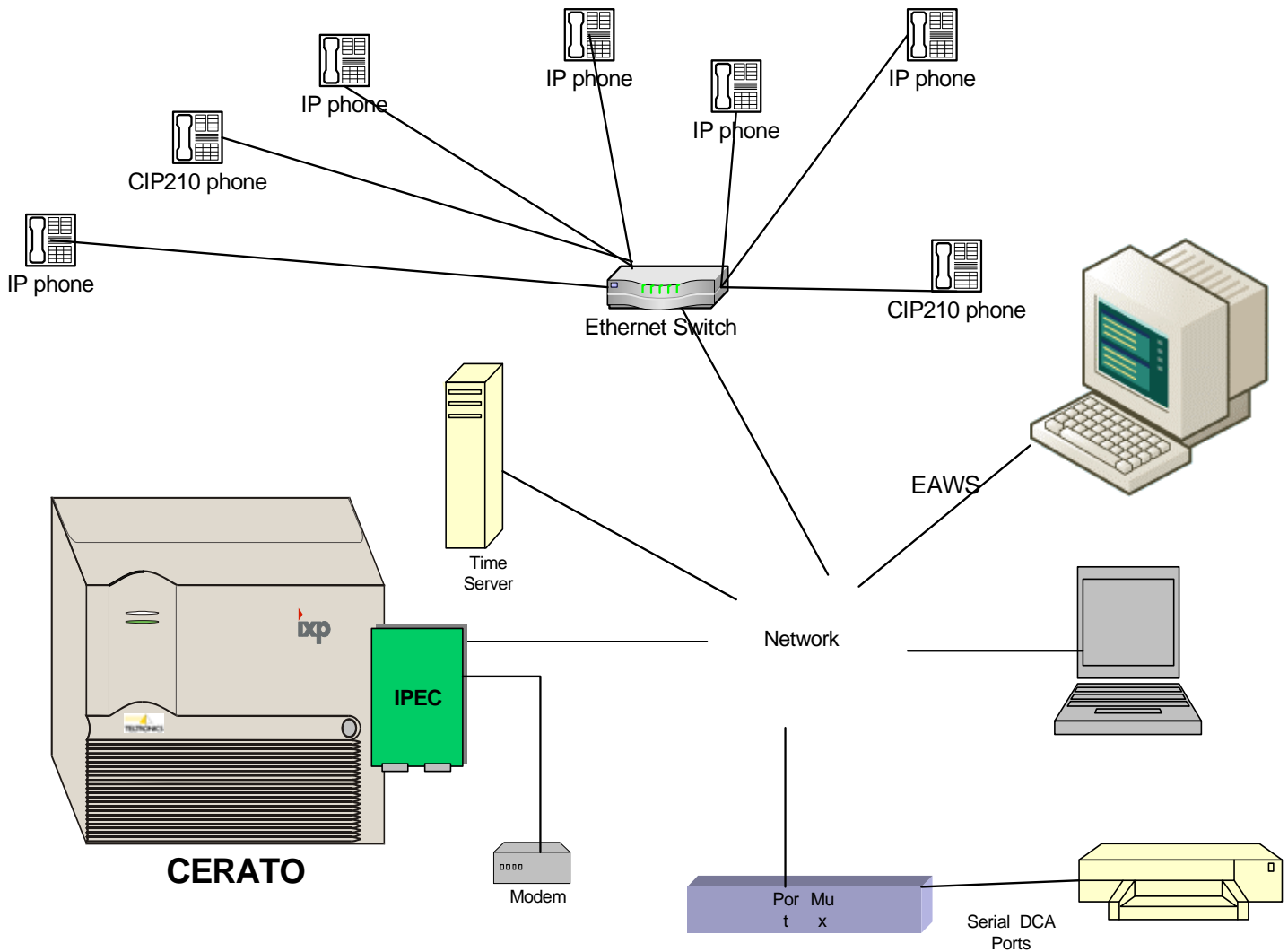
Figure 1-1. Typical IPEC Configuration

IP Phone Overview

The IPEC can serve as a line card for supporting IP telephones. It is capable of simultaneously supporting 32 toll quality IP Phones over a controlled network. Voice quality is dependent on the Quality of Service (QoS) the network is providing. Managed switches need to be utilized and configured properly to achieve error free toll quality (avoid the use of unmanaged switches or hubs in the voice path).

To optimize IP bandwidth and minimize the bandwidth burden of voice traffic on the IP Network, the IPEC supports compression and voice activity detection. Typical voice bandwidth for a circuit with compression and VAD on could be as low as 34 kbps while voice without these features can easily consume 112 kbps.

The IPEC can control either IP telephones located on the company network or IP telephones located on a remote network via Internet WAN connectivity.

For a more detailed description of the features, see Appendix B, *Detailed Feature Description*.

Voice over the Company Network

Company networks, as illustrated in Figure 1-2, are usually good environments for achieving toll quality voice in an IP application because they can be managed to prioritize voice traffic over data if necessary, and achieve zero voice packet loss.
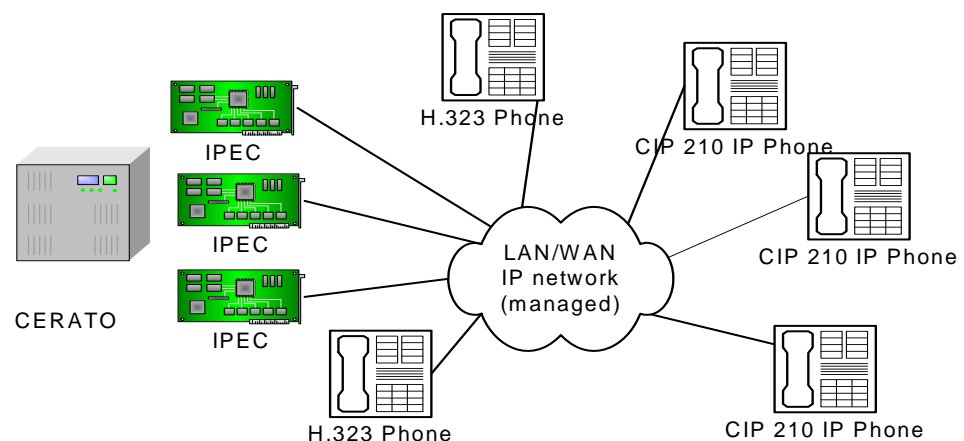
Figure 1-2. Voice over the company network

Voice over the Internet

The IPEC is capable of supporting remote IP telephones via Internet, such as home or small remote offices. The advantage in this remote capability is that the remote sites do not require a dedicated Cerato system for operation and long distance calls are toll free over the Internet. If you choose to use the remote capability, keep in mind that when using an uncontrolled network such as the Internet, you may experience occasional degradation in voice quality, depending on the traffic and other load related variables.
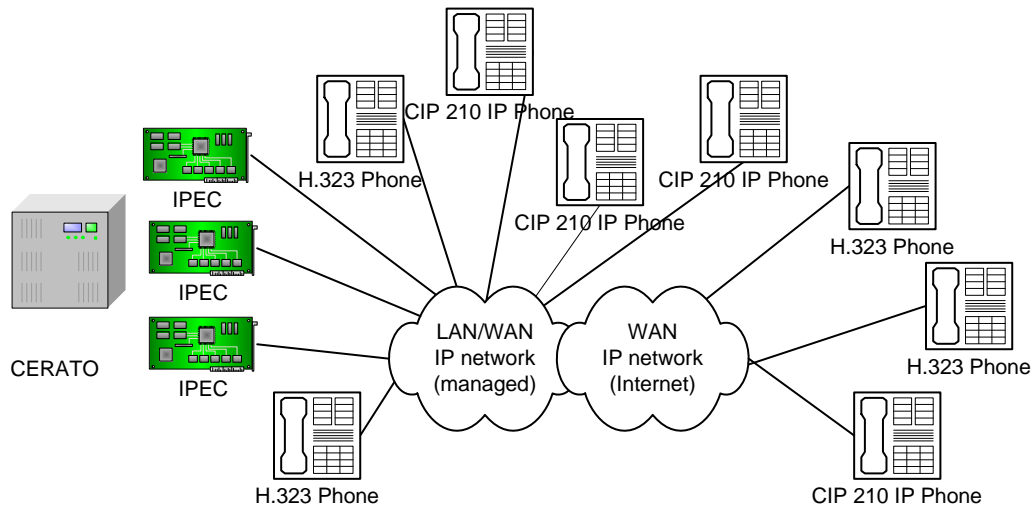
Figure 1-3. Voice over Internet

IPEC Features

The IPEC has the following features:

Table 1-C. IPEC Feature Description

Feature	Description
Board Type:	any combination of HDLU2 and HDLU boards
Switch Line Emulations	ClearCom
Port Consumption:	32 ports
Transmission Channels:	32 ports, any of which can be configured as an Attendant, DCA, ASG, DTMF, Music or IP phone circuit
Cerato Voice Formats:	G.711 mu-Law, G.711 a-Law, G729 (not available for CIP1/CIP2 SoftPhones or the EAWS).
Live circuit updates:	The administrator can add, remove, edit and change extensions without disrupting the operation of other circuits. See the EXT command in Appendix A, *IPEC Command Line Interface*.
Supported phones :	CIP210, CIP1 and CIP2 SoftPhone, H.323 compliant phones
Cerato Software Release Requirements:	Release 4.0 or later
Hot Insertable:	Yes
Network Connection: (IPEC)	**DCA:** Supports both remote (using raw TCP) and local DCA sessions (using Telnet). **Attendant:** Interfaces data and voice to the Enhanced Attendant Workstation. **Time Synchronizer:** Retrieves current time from network based time server using SNTP and periodically updates the switch through an editor session.
Network Port	Ethernet, RJ45 front panel connector. Auto-negotiation parallel detection or manual operation. Half-duplex and full-duplex operation at 100 Mbps and 10 Mbps. Used for network communications including a command status administration interface via Telnet session.
Licensing:	A license key is used to enable the number of Attendants.
Multiple-Music-on-Hold (MMOH):	Up to 31 System Announcements (wav files) can be played by the IPEC. One System Announcement per IPEC circuit is assigned to support MMOH.

Table 1-C. IPEC Feature Description *(continued)*

Feature	Description
HDLU Circuit types	When 'IPEC' Board Type for the HDLU is selected, circuits can be configured on an individual basis. The following circuit types can be configured: • DTMF - DTMF receiver • MUSIC - music sources • ASG - Analog Signal Generator • HDLU2 - HDLU2 default • HDLU - HDLU default
Network Port:	Ethernet, RJ45 front panel connector. Auto-negotiation parallel detection or manual operation. Half-duplex and full-duplex operation at 100 Mbps and 10 Mbps. Used for network communications including a command status administration interface via Telnet session.
Network Voice Formats:	**Attendant:** G.711 mu-Law **phones:** G.711 mu-Law, G.711 a-Law, G.729AB (CIP210 only)
Voice Prioritization:	802.1Q VLAN settings for VLAN ID and priority
Network Call Control Protocols	H.323 & Custom H.323 & CIP210 for advanced feature phones
VIF Size:	10 ms, 30 ms
Voice Activity Detection:	With adaptive background threshold - automatically adjusts to activity levels and replaces silence with simulated background noise
Adaptive Jitter Buffer:	Compensates for varying arrival delays and adapts to the current network characteristics with a given starting point
Lost Packet Replacement:	Plays a simulated audio stream to replace small numbers of lost packets
Echo Cancellation:	Non-linear processing and four wire-detection, G.165 & G.168 compliant with 64 ms tail.
Latency Measurements:	40 ms (analog to analog G.711 w/20 ms jitter buffer & 10 ms VIF over IP)
Extensive Self-Test:	Internal 32 channel load test, and Ethernet ping
Extensive Front Panel LED Status Indicators:	See Table 1-D on page 1-15 for details
Recommended Cable Type:	RJ45 compatible Cat 5 unshielded twisted pair

Table 1-C. IPEC Feature Description *(continued)*

Feature	Description
RS-232 Console Port:	Provides an alternative to the network port for command/status administration and establishing initial network parameters. The console port can also be allocated as a serial DCA port.
Operating System:	VxWorks
Upgradeable:	Software upgraded through network port.

IPEC Hardware Description

This section describes the IPEC hardware, as illustrated in Figure 1-4:
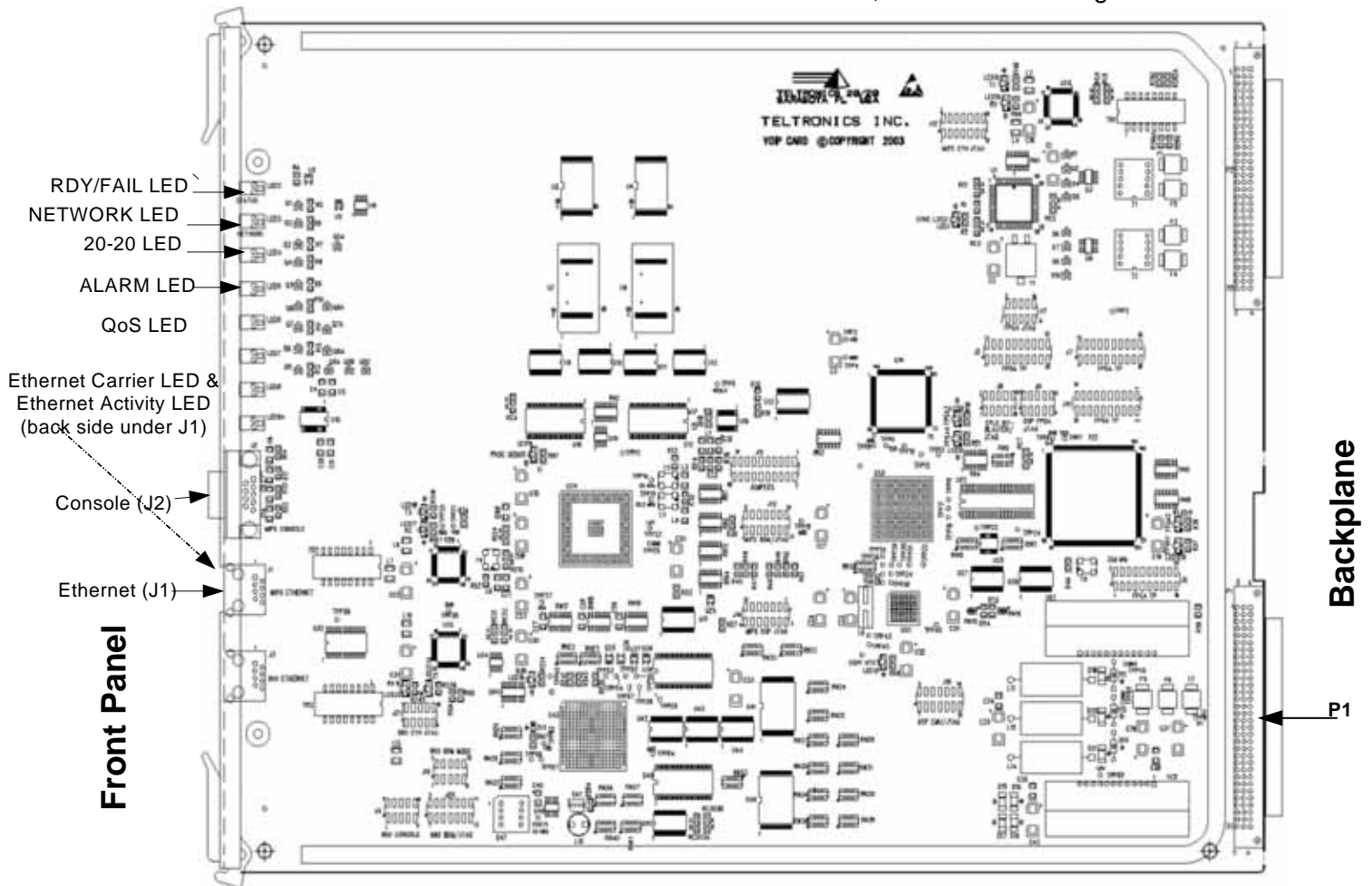
Figure 1-4. IPEC Card

IPEC Front Panel

The IPEC Front Panel, located at the left of the illustration, shows the location of its various LEDs and ports.

Ports/LEDs on the IPEC Front Panel

- J1 - Ethernet - network interface using an RJ45 connector. When enabled, auto-negotiation parallel detection automatically determines line operating conditions. If the Ethernet port the IPEC is connected to supports auto-negotiation, the IPEC auto-negotiates with it, using Fast

Link Pulse (FLP) bursts. If the other Ethernet port does not support auto-negotiation, the IPEC automatically detects the presence of either link pulses (10 Mbps) or idle symbols (100 Mbps) and sets its operating conditions accordingly. The IPEC provides half-duplex and full-duplex operation at 100 Mbps and 10 Mbps.

- J2 - Console - The console port is configured for null modem connections with the settings as 9600 bps, 8 bits, 1 stop bit, no parity, no flow control. The RS-232 interface is a DB-9 male connector with shield.

- LEDs - the LEDs on the Front Panel indicate status as shown in Table 1-D.

  Note See *Troubleshooting* on page 4-1 for details on the status indicated by the LEDs and help with troubleshooting.

Table 1-D. LED Status Description

LED Name	color	Status Description
RDY/FAIL	• off • green • red	• system is not fully booted • internal self-test passed • internal self-test failed
Network	• green • red	• Ethernet carrier detected • no Ethernet carrier Flashing lights indicate the volume of call traffic: • not flashing - no voice traffic • slow flashing - 1 - 15 channels in use • fast flashing - 16 - 32 channels in use
20-20	• off • green • red	• LED off - Cerato host CPU comm is offline • online • online but with invalid switch database config
ALARM	• green • red	• indicates no alarm • indicates alarm
QoS	 • green • yellow • red	Indicates the network packet loss for the poorest quality circuit in session: • low packet loss • medium packet loss • high packet loss

Backplane Interface

The card is connected to the switch via a P1 port on the Backplane, which provides connectivity for both signaling and PCM highway. The P1 port is illustrated on Figure 1-4,

Cables Description

The IPEC uses the following cables:

Serial Cable

Null-modem serial cable with a DB9 female connector on one end.

Table 1-E shows the pinouts for the Serial Cable.

Table 1-E. J2 Console Pinouts

Pin #	Name
1	
2	RXD
3	TXD
4	
5	GND
6	
7	RTS
8	CTS
9	

Ethernet Cable

CAT-5, ANSI T-568A or T-568B, straight-through Ethernet cable.

Table 1-F shows the pinouts for the Ethernet cable.

Table 1-F. J1 Ethernet Pinouts

Pin #	Name
1	TX+
2	TX-
3	RX+
4	
5	
6	RX-
7	
8	

2

IPEC Installation & Configuration

This chapter provides all the information needed to get the IPEC up and running in the Teltronics switch.

The IPEC board is multi-functional; it provides DCA, ASG, Music, DTMF, attendant and IP phone circuits.

- Supported phones

- Installation Prerequisites

- Board Installation

- Switch Configuration

- IPEC Configuration

- Network Configuration

- External Serial Devices

- IPEC Feature Functionality

- Verification

- Firmware Upgrade

Supported Phones

Currently, the IPEC can be used to support the following IP phones:

- Teltronics CIP210 phones

- Teltronics CIP1/CIP2 SoftPhone (3 modes of operation):

    - CIP1/CIP2 Stand-alone

    - CIP210 Companion

    - CIP210 Take-over

- Polycom Sound Station IP 3000 phones

Some of the instructions in this chapter for installing and configuring the IPEC apply to all phone types. The instructions that are only needed for one of the phone types, will be detailed in subsections of each section.

Installation Prerequisites

Before starting installation and configuration of your IPEC, be sure you have gathered together the following items and met the prerequisites listed below. See your local network administrator if you are unsure of where to find any of this information.

Note To complete the switch prerequisites listed here, some familiarity/ experience with Cerato switch programming is required.

• Teltronics switch with Software Release 4.0 or later

• 1 IPEC card - p/n: 765399

• IP address of the IPEC card you are installing

• IP Address of the Time Server you will be using

• Netmask for the subnet

• at least 1 supported phone

• Time Offset from the time server - (If the time server is not offset from UTC, see Appendix C, *Calculating the UTC Time Zone Offset*, for a guide to calculating the offset required to adjust the time for the region.)

• PC with Enhanced Attendant Workstation (EAWS) application software to support attendant circuits

• Additional serial port devices such as Ethernet serial hubs or PCs with a serial port running the SoftDCA application.

• an OCR with the number of CIP1, CIP2, or EAWS circuits to be supported

• Companding law used in your Cerato (A-Law or Mu-Law)

• CAT 5 Ethernet network cable

• Extensions to be used by EAWS, CIP1, CIP2 or CIP210

• (MMOH feature only) Microsoft Sound Recorder (comes with Windows)

• Serial terminal (Hyperterminal will work) set to 9600 baud, 8 start bits, 1 stop bit, VT-100 terminal emulation, no parity (8-N-1) and no flow control

• Serial cable with DB9 female connector (the type of serial cable needed is determined by the type of serial terminal used)

Board Installation

To install the IPEC into a Teltronics switch:

Note The IPEC is hot-swappable, so the switch does not need to be powered down before installing it.

1   Insert the IPEC into any slot that can accommodate a T1 or E1 card. Leave the slot for hex shelves to the left of the IPEC empty since the IPEC uses 32 TDM time slots and other cards will not function there. For example, if an IPEC card is installed in Shelf 3, Slot 6 of a CCS system, then Slot 5 must be left empty.

2   Connect the IPEC to the network using J1, Ethernet Network Port, see Figure 1-4, IPEC Card, on page 1-14.

3   Wait for the IPEC self-test to run. The Ready/Fail LED will turn green when the self-test successfully completes. If the Ready/Fail LED turns red, see Chapter 4, *Troubleshooting* for help.

Cerato Configuration

This section gives an overview on how to configure your Cerato switch to use the IPEC. For more information on configuring the Cerato switch, see the Teltronics Database Configuration Manual, p/n 955 087.

IPEC alarms, with the alarm category 'IPEC' are reported by the IPEC and recorded on the Cerato Alarms Control Program (ALM). To enable this capability, the IP Board Type for the HDLU or HDLU2 boards must be configured as 'IPEC' on the Cerato.

The IPEC IP address configuration has been integrated with the Cerato. To enable this capability, the IP Board Type for the HDLU or HDLU2 boards must be configured as an 'IPEC' and the IP address parameters that follow must be configured to values other than 'None'.

IPEC alarms reporting and the IP address configuration features are available with Cerato Release 4.0 or later and IPEC Release 4.1 and later. See the Sample BOA Listing sub-section for an example of the configuration parameters that have been added to support these new capabilities.

Note For details on configuring the Cerato for the MMOH feature, see Step 2 of *To configure MMOH:* on page 2-37.

Switch Configuration

To configure the Cerato switch to support an IPEC, do the following:

1   Configure the IPEC to be two boards. The boards can be any combination of HDLU and HDLU2 board types.

2   Configure either the L-xx or R-xx circuits as IP phones, as needed.

3   Configure either the L-xx or R-xx circuits for DCA or attendant circuits. For information on configuring the Cerato switch to support DCA and attendant circuits, see the Teltronics Database Configuration Manual, p/n 955 087.

4   If the MMOH feature is used, do the switch configuration in the *Multiple-Music-on-Hold Feature* on page 2-37.

   Note **For DCA circuits connected to serial devices:** Configure the circuits' serial protocol to match the protocol of the serial device used to achieve the correct flow control.

Below is an example of the Cerato database configuration settings for the attendant and DCA circuits serviced by an IPEC card. In addition, note that the Hold Treatment parameter has been configured to use ANN-1 (IPEC music or announcement) as the 'hold treatment' for the MMOH feature. The last sections show sample configuration for the MMOH feature.

Note The IPEC for this example is installed in slot 01-02

SLOT 01-02/16 PORTS: HDLU

CIRC	TYPE	EX/TG	NAME	TONE ADJUST PLAN	TR/RE	COMMENT
1	AW	5900	ATTENDANT 1	DLU	0/0	----
2	AW	5902	ATTENDANT 2	DLU	0/0	----
3	AW	5903	ATTENDANT 3	DLU	0/0	----
4	AW	5904	ATTENDANT 4	DLU	0/0	----
5	AW	5905	ATTENDANT 5	DLU	0/0	----
6	AW	5906	ATTENDANT 6	DLU	0/0	----
7	----	-----	------------DLU	0/0	----	
8	----	-----	------------DLU	0/0	----	
9	----	-----	------------DLU	0/0	----	
10	----	-----	------------DLU	0/0	----	
11	----	-----	------------DLU	0/0	----	
12	----	-----	------------DLU	0/0	----	
13	----	-----	------------DLU	0/0	----	
14	----	-----	------------DLU	0/0	----	
15	----	-----	------------DLU	0/0	----	
16	ADM	DCA	------------DLU	0/0	----	

Extension number 5900
Extension type .... AW
Circuit location 01-02-01
Class of service 6   DIAL
Next call extension 5998
Recall hunt group 4
Attendant group 3
Pickup group .... None
Group I category name .... N/A
Group II category name .... OPERATOR
Operator's Dialect .... ENGLISH
Prefix Index .... DEFAULT
Comment ..... IP-Attendant workstation

Extension group number 3
Extension group type ...... ATTENDANT GROUP
Master number 5999
Master number directory entry - Unpublished extension

 Name .... ATTENDANT 1
 Extension 5999
 Location 2/FL
 Department .... SALE

Members/size 1/1
Group members 5900
Queuing .... Y
Comment ... Attendant 1

Extension group number 4
Extension group type ...... RECALL
Comment ... RECALL HUNT GROUP FOR AW 5900
Class of service 6
Dial control class .... 10 DIAL
Feature class 6
Routing class 1
Bearer capability class ... 0
Reliable disconnect .... Y
Hold Treatment ... ANN-1
Comment ... aws

Dial control class 10
Dial control type .... DIAL
Destination .... CR-DIAL /DT
Line intercept .... TONE
Number intercept .... TONE
Partial dial intercept .... TONE
ATB intercept .... TONE
Route pattern intercept .... TONE
Feature intercept .... TONE
Control intercept .... TONE
No dial intercept .... TONE
Suspend intercept .... TONE
Cancel intercept .... TONE
Maintenance Busy intercpt .... TONE
Information Tone intercpt .... TONE
Number Change intercept .... TONE
Comment ... Initial Digit Collection

Feature class 6
Class type .... AW
Alternate Tone on Abandon (F1) .... No
Answer pretone (F3) .... No
Auto answer (F5) .... N/A
Auto wrapup (F6) .... N/A
Barge (F7) .... Yes
Barge protection (F8) .... Yes
Broadcast page (F9) .... Yes
Busy callback (F10) .... Yes
Call redirection (F12) .... Yes
Call supervisor (F13) .... Yes
Called CDR output (F14) .... Yes
Caller CDR output (F15) .... Yes
Caller Answer Pretone (F16) .... No
Caller Num Present Restricted (F17) ...... No
Camp on (F18) .... Yes
Camp on notif. suppression (F19) .... No
Code validation (F21) .... Yes
Coin Sent-Paid Operator (F22) .... N/A
Conference (F23) .... Yes
Conference disconnect (F25) .... No
Conference Lock (F26) .... No
Connected Num Pres.Restricted (F27) ...... No

Connection detail (F28) .... Yes
Dial Own Extension to Forward (F29) ...... N/A
Directed pickup (F30) .... Yes
Display Caller Number (F31) .... N/A
Emergency recorder (F32) .... N/A
Event code (F33) .... N/A
Extension dialing (F36) .... Yes
Ext. Restriction Protection (F37) .... Yes
Extension status inquiry (F39) .... Yes
External Call Forwarding (F40) .... N/A
External campers (F41) .... Yes
External extension treatment (F42) .... Yes
Forced event code (F44) .... N/A
Group pickup (F45) .... Yes
Headset operation (F46) .... N/A
Held Route (F49) .... N/A
Held Route Copy Auth Option (F50) .... N/A
Held Route Copy Acct Option (F51) .... N/A
Held Route Copy Acc Option (F52) .... N/A
Hold (F53) .... REQUIRED
Inhibit recall (F54) .... No
Internal campers (F55) .... Yes
Line disconnect (F56) .... N/A
Maintenance dialing (F57) .... No
Meet-Me conference access (F59) .... Yes
Message waiting (F60) .... Yes
No answer callback (F62) .... Yes
Page (F64) .... No
Park (F65) .... Yes
Port Connect Requestor (F66) .... No
Port Connect Target (F67) .... N/A
Port Dialing Option (F68) .... No
Post-termination rerouting (F69) .... N/A
Preanswer rerouting (F70) .... N/A
Preset conference access (F71) .... No
Priority queuing (F72) .... No
Privacy (F73) .... No
RLT (F79) .... N/A
RLT outpulsing (F81) .... N/A
Remote Call Forward Cancel (F82) .... No
Remote Extension Restriction (F83) .... No
Remote hookflash (F84) .... No
Remote Privacy (F85) .... Yes
Remote Time Reminder (F87) .... Yes
Self forwarding (F89) .... N/A
Service observe noti. required (F92) ..... N/A
Service observing (F93) .... N/A
Silent Barge Protection (F95) .... No
Silent Monitor Observed (F96) .... N/A
Silent Monitor Observer (F97) .... N/A
Silent Ringing (F99) .... N/A
Speed dial (F100) .... Yes
Supervised transfer (F101) .... REQUIRED
Third party call disconnect (F102) .... N/A

Third party call setup (F103) .... N/A
Time Reminder (F104) .... N/A
Timed Recall By Held Party (F105) .... N/A
Tone Ringing (F106) .... N/A
Transfer by access code (F107) .... REQUIRED
Trunk dialing (F108) .... Yes
Trunk Offering (F109) .... N/A
Unsupervised transfer (F110) .... REQUIRED
Vms access (F111) .... Yes
Vms system (F112) .... N/A
Vms tone prompt (F113) .... N/A
Wrapup (F117) .... N/A
Zip tone given on auto answer (F118) ..... N/A
Comment ... aws

RC COMMENT
 1 Unrestricted Routing

Data control table name .... ADMIN
Type .... ADMINISTRATIVE / TERMINAL
Data rate (bps) 9600
Character format .... 8 DATA BITS, 1 STOP BIT, NO PARITY
RS-232C equipment disconnect 1) ...BY THE DATA TERMINAL READY INPUT
DTR input min debounce time ..... 1 second
Comment ... Administrative DCAs
System device D2
Circuit location 01-02-16
Control table name .... ADMIN
Comment ... IP DCA test

Sample Configuration for MMOH:
BOA ...? list 02-18

SLOT 02-18/16 PORTS: HDLU

				TONE	ADJUST		
CIRC	TYPE	EX/TG		NAME	PLAN	TR/RE	COMMENT
-----	----	-----		----------	-----	-----	------
1	ANN-1	----- ----------		RCVR	0/0	ANN-1 music on hold
2	ADMDCA	----- ----------		DLU	0/0	
3	ADMDCA	----- ----------		DLU	0/0	
4	AW	3501 ATTEN		DLU	0/0	
5	ANN-2	------- ----------		RCVR	0/0	ANN-2 music on hold
6	ADMDCA	----- ----------		DLU	0/0	
7	DTMF	----- ----------		RCVR	0/0	
8	ANN-3	----- ----------		RCVR	0/0	ANN-3 music on hold
9	MUSIC	----- ----------		RCVR	0/0	Default music on hold
10	HDLU2	----- ----------		DLU	0/0	
11	HDLU2	----- ----------		DLU	0/0	
12	HDLU2	----- ----------		DLU	0/0	
13	ASG	----- ----------		-----	0/0	
14	HDLU2	----- ----------		DLU	0/0	
15	ASG	----- ----------		-----	0/0	
16	AW	3502 ATTEN		DLU	0/0	

Internet Protocol Board Type .... IPEC[1]
Internet Protocol Address .... 173.16.4.14[2]
Default Gateway Internet Protocol Address .172.18.45.5[3]
Subnet Mask .... 255.255.255.0[4]

BOA ...?

Sample SYSANN listing: (shows listing of circuits con-
figured as announcements for the MMOH feature)

SYSANN ...? list

```
 Ann   Circuit
Source Location Comment
------ -------- -------
ANN-1  02-18-01 IPEC Music or Ann
ANN-2  02-18-05 IPEC music
ANN-3  02-18-08 IPEC music on hold
ANN-4   NONE
ANN-5   NONE
ANN-6   NONE
ANN-7   NONE
ANN-8   NONE
"
"
"
ANN-64   NONE
```

SYSANN ...?

---

1. Type 'IPEC' here to configure the board as an IPEC type and to have IPEC alarms sent to the Cerato. When 'IPEC' is typed here, the next three parameters (as shown in the example) will appear, so you can configure the settings on the Cerato as opposed to in the IPEC Command Line Interface. Setting the IP Board Type to IPEC changes the IP Board Type of the adjacent HDLU or HDLU2.
2.   Enter the IP Address of the IPEC here or enter 'NONE' or '0.0.0.0' if the IP Address is to be assigned from the IPEC board instead. If you configure an IP Address here, that address will always take priority over any address configured from the IPEC.
3. Enter the Default Gateway IP Address of the IPEC here, which is on the same network segment as this IP board, or enter 'NONE' or '0.0.0.0' if the Default Gateway IP address is not available. If you configure a Default Gateway IP Address here, that address will always take priority over any address configured from the IPEC.
4.   Enter the Subnet Mask of the IPEC here, which is the default value for a Class C IP address and identifies any network/subnetwork scheme used in the LAN segment on which this IP board is attached, or enter 'NONE' or '0.0.0.0' if the IP Address is to be assigned from the IPEC board instead. If you configure a Subnet Mask Address here, that address will always take priority over any address configured from the IPEC.

EXT Configuration

This section gives the following EXT configuration information on the CIP210 phones, CIP1 and CIP2 SoftPhones:

• EXT configuration instructions

• 911 emergency calling

• phone sample configuration

• sample EXT listing

CIP210 phones

CIP210 EXT configuration instructions

These instructions are for the CIP210 standalone phone type only. If there will also be a CIP1 or CIP2 Softphone assigned to the extension you are configuring, use the configuration instructions for that phone type and use the MAC entry option to add the CIP210 phone connection.

The phone type entered in the IPEC configuration for this extension should be CIP210.

 The CIP phones utilizes a specific set of button assignments for some of the available keys. In order for all supported features of the phone to work correctly this template for keys 2 through 6 must be followed.

1   Log in to the Cerato system Editor, select the active database and proceed to the 'EXT …?' prompt.

2   Enter the ADD command followed by the extension number to be assigned to the new CIP210.

3   Enter an Extension Type of 'CC12'.

   Note The extension type of 'CC24' can be used but the additional buttons are not accessible to the CIP210 phone.

4   For Button Expansion Module 24 (Yes/No) enter 'No'.

5   Enter the circuit number of the appropriate IPEC board as the Circuit location.

6   For the 'Internet Protocol Extension' enter 'CIP210'.

7   Assign an appropriate Class of Service. See the example later in this section for more details.

8   For 'Headset operation' enter 'No'.

9   For 'Individual speed dial blocks' enter '0' (Speed Dial and Directory entries in the CIP210 phone do not utilize this provision. Entering a '0' allows other phones use of this limited resource).

10   For Select ring, display and flash option enter 'RRR'.

11   For 'Keyset to share extension XXXX', make any appropriate entries in order to have this extension appear on buttons of other ClearCom or CIP phones. Keep in mind that a Keyset must have been previously created in order for you to assign a Keyset share on that extension. The Cerato telephone types that are classified as multi-button Keysets are: CC12, CC24, 4Key, 10Key and 20Key.

12   For 'Feature key' enter the following three assignments:

button 4 PARK

button 5 PICKUP

button 6 COM

13   Enter a 'Last Name' for this extension.

14   Enter a 'First Name' for this extension, if desired.

15   Enter the 'Extension number for directory' number for this extension. The default that appears automatically is recommended and this number will appear on the idle display of the CIP210.

16   Enter a 'Location', if desired.

17   Enter a 'Department', if desired.

18   Set the 'Published directory entry' to 'Yes' or 'No', as desired.

19   Enter the 'Group II category name', as desired.

20   Enter the 'Prefix index', as desired.

21   Assign an appropriate 'Comment' to this extension.

22   Chose one of three supported options for the assigned use of buttons 2 and 3 on the CIP210 phone as follows:

Option 1 – Do not assign any extensions to those buttons. In this case they will not have any function.

Option 2 – Create two unique SKEY extensions and assign them to those buttons, for use as expanded call handling BUSY rollover lines for the primary extension. The Select ring, display and flash option for these SKEYS must be set as RRR. This configuration also requires that proper BUSY forward assignments be made to the primary and SKEY extensions in CRG 1. If available and desired, Voicemail NO ANSWER forwarding may also be assigned in the same CRG 1.

Option 3 – Assign SHARED or DSS appearances of other CC12, CC24, 4KEY, LKEY or SKEY extension to button 2 and/or 3. The Select ring, display and flash option for these appearances should be either RRR or FFF.

Note Buttons 7-12 on CC12 or 7-24 on CC24 are not used by the CIP210 phone.

CIP210 911 Emergency calling:

From all CIP210 extension types: Although CIP210 phones are very porta-ble, it is currently not possible to relay information that identifies the actual location of a CIP phone to emergency services call centers. Therefore it is **very important** that you make sure that the settings for the Location ID parameter in the IPEC Command Interface are accurate. It is your respon-sibility to make sure that all CIP210 phone users are aware of the Location ID that emergency calls originating from CIP210 phones send to emer-gency services call centers.

CIP210 Phone Sample Configuration:

Sample Feature Class for use with CIP210 type phones:

```
Feature class ............................ 24
Class type ............................... CLEARCOM
Alternate Tone on Abandon (F1) ........... No
Answer pretone (F3) ...................... No
Auto answer (F5) ......................... N/A
Auto wrapup (F6) ......................... N/A
Barge (F7) ............................... No
Barge protection (F8) .................... No
Broadcast page (F9) ...................... No
Busy callback (F10) ...................... Yes
Call redirection (F12) ................... Yes
Call supervisor (F13) .................... Yes
Called CDR output (F14) .................. No
Caller CDR output (F15) .................. Yes
Caller Answer Pretone (F16) .............. No
Caller Num Present Restricted (F17) ...... No
Camp on (F18) ............................ Yes
Camp on notif. suppression (F19) ......... No
Code validation (F21) .................... Yes
Coin Sent-Paid Operator (F22) ............ No
Conference (F23) ......................... Yes
Conference Lock (F26) .................... No
Connected Num Pres.Restricted (F27) ...... No
Connection detail (F28) .................. Yes
Dial Own Extension to Forward (F29) ...... No
Directed pickup (F30) .................... Yes
Display Caller Number (F31) .............. N/A
Emergency recorder (F32) ................. N/A
Event code (F33) ......................... N/A
```

```
Extension dialing (F36) .................. Yes
Ext. Restriction Protection (F37) ........ Yes
Extension status inquiry (F39) ........... Yes
External Call Forwarding (F40) ........... Yes
External campers (F41) ................... Yes
External extension treatment (F42) ....... No
Facility Hold Reroute (F43) .............. No
Forced event code (F44) .................. N/A
Group pickup (F45) ....................... Yes
Headset operation (F46) .................. N/A
Held Route (F49) ......................... No
Held Route Copy Auth Option (F50) ........ No
Held Route Copy Acct Option (F51) ........ No
Held Route Copy Acc Option (F52) ......... No
Hold (F53) ............................... Yes
Inhibit recall (F54) ..................... No
Internal campers (F55) ................... Yes
Line disconnect (F56) .................... N/A
Maintenance dialing (F57) ................ No
Meet-Me conference access (F59) .......... Yes
Message waiting (F60) .................... No
No answer callback (F62) ................. Yes
Page (F64) ............................... Yes
Park (F65) ............................... Yes
Port Connect Requestor (F66) ............. No
Port Connect Target (F67) ................ No
Port Dialing Option (F68) ................ No
Priority queuing (F72) ................... No
Privacy (F73) ............................ Yes
RLT (F79) ................................ N/A
RLT flash (F80) .......................... N/A
RLT outpulsing (F81) ..................... N/A
Remote Call Forward Cancel (F82) ......... No
Remote Extension Restriction (F83) ....... No
Remote hookflash (F84) ................... No
Remote Privacy (F85) ..................... No
Remote Time Reminder (F87) ............... No
Self forwarding (F89) .................... Yes
Service observe noti. required (F92) ..... N/A
Service observing (F93) .................. N/A
Silent Barge Protection (F95) ............ No
Silent Monitor Observed (F96) ............ No
Silent Monitor Observer (F97) ............ No
Silent Ringing (F99) ..................... N/A
Speed dial (F100) ........................ Yes
Supervised transfer (F101) ............... Yes
Third party call disconnect (F102) ....... No
Third party call setup (F103) ............ No
Time Reminder (F104) ..................... No
Timed Recall By Held Party (F105) ........ No
Tone Ringing (F106) ...................... N/A
Transfer by access code (F107) ........... Yes
Trunk dialing (F108) ..................... Yes
Trunk Offering (F109) .................... N/A
```

```
Unsupervised transfer (F110) ............ Yes
Vms access (F111) ....................... Yes
Vms system (F112) ....................... N/A
Vms tone prompt (F113) .................. Yes
Wrapup (F117) ........................... N/A
Zip tone given on auto answer (F118) .... N/A
Comment ... For IP CIP 210 phones
```

Sample Feature Class for SKEY extensions assigned to CIP210 type phones:

```
Feature class ........................... 9
Class type .............................. SKEY
Alternate Tone on Abandon (F1) .......... N/A
Answer pretone (F3) ..................... No
Auto answer (F5) ........................ N/A
Auto wrapup (F6) ........................ N/A
Barge (F7) .............................. N/A
Barge protection (F8) ................... N/A
Broadcast page (F9) ..................... N/A
Busy callback (F10) ..................... N/A
Call redirection (F12) .................. N/A
Call supervisor (F13) ................... N/A
Called CDR output (F14) ................. Yes
Caller CDR output (F15) ................. Yes
Caller Answer Pretone (F16) ............. No
Caller Num Present Restricted (F17) ..... No
Camp on (F18) ........................... N/A
Camp on notif. suppression (F19) ........ N/A
Code validation (F21) ................... N/A
Coin Sent-Paid Operator (F22) ........... N/A
Conference (F23) ........................ N/A
Conference Lock (F26) ................... N/A
Connected Num Pres.Restricted (F27) ..... No
Connection detail (F28) ................. N/A
Dial Own Extension to Forward (F29) ..... N/A
Directed pickup (F30) ................... N/A
Display Caller Number (F31) ............. N/A
Emergency recorder (F32) ................ N/A
Event code (F33) ........................ N/A
Extension dialing (F36) ................. N/A
Ext. Restriction Protection (F37) ....... N/A
Extension status inquiry (F39) .......... N/A
External Call Forwarding (F40) .......... N/A
External campers (F41) .................. Yes
External extension treatment (F42) ...... N/A
Facility Hold Reroute (F43) ............. N/A
Forced event code (F44) ................. N/A
Group pickup (F45) ...................... N/A
Headset operation (F46) ................. N/A
Held Route (F49) ........................ N/A
Held Route Copy Auth Option (F50) ....... N/A
Held Route Copy Acct Option (F51) ....... N/A
Held Route Copy Acc Option (F52) ........ N/A
```

```
Hold (F53) ............................... N/A
Inhibit recall (F54) ..................... N/A
Internal campers (F55) ................... Yes
Line disconnect (F56) .................... N/A
Maintenance dialing (F57) ................ N/A
Meet-Me conference access (F59) .......... No
Message waiting (F60) .................... N/A
No answer callback (F62) ................. N/A
Page (F64) ............................... N/A
Park (F65) ............................... N/A
Port Connect Requestor (F66) ............. No
Port Connect Target (F67) ............... N/A
Port Dialing Option (F68) ............... N/A
Priority queuing (F72) ................... N/A
Privacy (F73) ............................ N/A
RLT (F79) ................................ N/A
RLT flash (F80) .......................... N/A
RLT outpulsing (F81) ..................... N/A
Remote Call Forward Cancel (F82) ........ No
Remote Extension Restriction (F83) ....... N/A
Remote hookflash (F84) ................... N/A
Remote Privacy (F85) ..................... N/A
Remote Time Reminder (F87) ............... N/A
Self forwarding (F89) .................... N/A
Service observe noti. required (F92) ..... N/A
Service observing (F93) .................. N/A
Silent Barge Protection (F95) ............ N/A
Silent Monitor Observed (F96) ............ N/A
Silent Monitor Observer (F97) ............ N/A
Silent Ringing (F99) ..................... N/A
Speed dial (F100) ........................ N/A
Supervised transfer (F101) ............... N/A
Third party call disconnect (F102) ....... N/A
Third party call setup (F103) ............ N/A
Time Reminder (F104) ..................... N/A
Timed Recall By Held Party (F105) ........ No
Tone Ringing (F106) ...................... N/A
Transfer by access code (F107) ........... N/A
Trunk dialing (F108) ..................... N/A
Trunk Offering (F109) .................... N/A
Unsupervised transfer (F110) ............. N/A
Vms access (F111) ........................ N/A
Vms system (F112) ........................ N/A
Vms tone prompt (F113) ................... N/A
Wrapup (F117) ............................ N/A
Zip tone given on auto answer (F118) ..... N/A
Comment ... SKEY
```

Sample CIP210 EXT listing:

```
BOA ...? ext I 2135

Extension number ................. 2135
```

```
Extension type ................... CC12
Circuit location ................. 03-06-06
Internet Protocol Extension ...... CIP210
Class of service ................. 24    DIAL
Headset operation ................ N
Hunt group ....................... None
Pickup group ..................... None
Number of ISD blocks ............. 4
Loop button ......................
```

Position	Ext/Fea	IBT	Type	DSEQ/DSS String
2	3135/SHARED	RRR	SKEY	
3	4135/SHARED	RRR	SKEY	
4	PARK	---	----	--------------
5	PICKUP	---	----	--------------
6	COM	---	----	--------------
7	-----------	---	----	--------------
8	-----------	---	----	--------------
9	-----------	---	----	--------------
10	-----------	---	----	--------------
11	-----------	---	----	--------------
12	-----------	---	----	--------------

```
Sharing keyset extensions ........
```

Extension	Position	IBT	Type	Key Type	DSS String
2135	1	RRR	CC12		

```
Directory entry - Unpublished extension
   Name ........................... CNF RM CIP
   Extension ...................... 2135
   Location ....................... SLC
   Department ..................... ENG
Group I category name ............ N/A
Group II category name ........... SUB-NO-PRIORITY
Prefix Index ..................... DEFAULT
Comment ..... Conference Room 2135
```

CIP1 SoftPhones

The OCR of the Cerato contains quantity licensing for CIP1 SoftPhones. Make sure your system has adequate licensed capacity in the OCR before adding CIP1 extensions.

CIP1 SoftPhone EXT configuration instructions

The CIP1 SoftPhone software must be installed on a PC equipped with an audio interface (headset or handset) prior to using the extension configured in the Cerato. See the CIP1/CIP2 SoftPhone User Guide, p/n 610-0000-0818, for setup instructions.

The CIP1 SoftPhone can also act as a companion phone to the CIP210. In this instance the Cerato extension and the IPEC configuration must be set up as a 'CIP1' type with a CIP210 MAC address option added. That option is described in the *IPEC Configuration* on page 2-27.

The phone type entered in the IPEC configuration for this extension should be 'CIP1'.

The CIP phones utilize a specific set of button assignments for some of the available keys. In order for all supported features of the phone to work correctly this template for keys 2 through 6 must be followed.

1   Log in to the Cerato Database Editor, select the active database and proceed to the 'EXT …?' prompt.

2   Enter the ADD command followed by the extension number to be assigned to the new CIP1.

3   Enter an Extension Type of 'CC12'.

    Note The extension type of CC24 can be used but the additional buttons are not accessible to the CIP1 phone.

4   For Button Expansion Module 24 (Yes/No) enter 'No'.

5   Enter the Cerato circuit number of the appropriate IPEC board as the Circuit location.

6   For the 'Internet Protocol Extension' enter 'CIP1'.

7   Assign an appropriate Class of Service. See the example in the *CIP210 Phone Sample Configuration:* on page 2-13.

8   For 'Headset operation' enter 'No'.

9   For 'Individual speed dial blocks' enter '0' (Speed Dial and Directory entries in the CIP1 SoftPhone do not use this provision. Entering a '0' allows other phones use of this limited resource.)

10 For Select ring, display and flash option enter 'RRR'.

11 For 'Keyset to share extension XXXX', make any appropriate entries in order to have this extension appear on buttons of other ClearCom or CIP phones. Keep in mind that a Keyset must have been previously created in order for you to assign a Keyset share on that extension. The Cerato telephone types that are classified as multi-button Keysets are: CC12, CC24, 4Key, 10Key and 20Key.

12 For 'Feature key' enter the following three assignments:

    button 4 PARK

    button 5 PICKUP

button 6 COM

13   Enter a 'Last Name' for this extension.

14   Enter a 'First Name' for this extension, if desired.

15   Enter the 'Extension number for directory' number for this extension. The default that appears automatically is recommended and this number will appear on the idle display of the CIP1.

16   Enter a 'Location' if desired.

17   Enter a 'Department' if desired.

18   Set the 'Published directory entry' to 'Yes' or 'No', as desired.

19   Enter the 'Group II category name', as desired.

20   Enter the 'Prefix index', as desired.

21   Assign an appropriate 'Comment' to this extension.

22   Select one of the three supported options for the assigned use of buttons 2 and 3 on the CIP1 phone, as follows:

Option 1 – Do not assign any extensions to those buttons. In this case they will not have any function.

Option 2 – Create two unique SKEY extensions and assign them to those buttons, for use as expanded call handling BUSY rollover lines for the primary extension. The Select ring, display and flash option for these SKEYS must be set as RRR. This configuration also requires that proper BUSY forward assignments be made to the primary and SKEY extensions in CRG 1. If available and desired, Voicemail NO ANSWER forwarding may also be assigned in the same CRG 1.

Option 3 – Assign SHARED or DSS appearances of other CC12, CC24, 4KEY, LKEY or SKEY extension to button 2 and/or 3. The Select ring, display and flash option for these appearances should be either RRR or FFF.

Note Buttons 7-12 on CC12 or 7-24 on CC24 are not used by the CIP1 phone.

23   Save the edit session prior to logging off.

CIP1 SoftPhone 911 Emergency calling:

From all CIP1 SoftPhone extension types: Although CIP1 SoftPhones are very portable, it is currently not possible to relay information that identifies the actual location of a CIP1 SoftPhone to emergency services call centers. Therefore it is **very important** that you make sure that the settings for the Location ID parameter in the IPEC Command Interface editor are

accurate. It is your responsibility to make sure that all CIP1 SoftPhone users are aware of the Location ID that emergency calls originating from CIP1 SoftPhones send to emergency services call centers.

CIP1 SoftPhone Sample Configuration:

See the *CIP210 Phone Sample Configuration:* on page 2-13, for an example of Feature Class configuration for the CIP1 SoftPhone.

Sample CIP1 SoftPhone EXT listing:

```
EXT ...? I 2040

Extension number ................ 2040
Extension type .................. CC12
Circuit location ................ 03-09-11
Internet Protocol Extension ...... CIP1
Class of service ................ 24    DIAL
Headset operation ............... N
Hunt group ...................... None
Pickup group .................... None
Number of ISD blocks ............ 0
Loop button .....................

    Position      Ext/Fea      IBT    Type    DSEQ/DSS String
    --------      -----------  ---    ----    ---------------
       2          3040/SHARED  RRR    SKEY
       3          4040/SHARED  RRR    SKEY
       4              PARK     ---    ----    ---------------
       5              PICKUP   ---    ----    ---------------
       6              COM      ---    ----    ---------------
       7          -----------  ---    ----    ---------------
       8          -----------  ---    ----    ---------------
       9          -----------  ---    ----    ---------------
      10          -----------  ---    ----    ---------------
      11          -----------  ---    ----    ---------------
      12          -----------  ---    ----    ---------------

Sharing keyset extensions ........

   Extension   Position   IBT    Type    Key Type    DSS String
   ---------   --------   ---    ----    --------    ----------
     2040         1       RRR    CC12

Directory entry - Unpublished extension
   Name ........................... DEMO 2040
    Extension ..................... 2040
    Location ...................... SLC
    Department .................... ENG
Group I category name ........... N/A
Group II category name .......... SUB-NO-PRIORITY
Prefix Index .................... DEFAULT
Comment ..... demo 03-09-11 IPSU L-11
```

CIP2 SoftPhones

The OCR of the Cerato will contain quantity licensing for CIP2 SoftPhones. Make sure your system has adequate licensed capacity in the OCR before adding CIP2 extensions.

CIP2 SoftPhone EXT configuration instructions

The CIP2 SoftPhone has all the capabilities of the CIP1 SoftPhone and adds the capability of button expansion, with up to 42 additional button appearances on the softphone GUI interface. The CIP2 SoftPhone software must be installed on a PC equipped with an audio interface (headset or handset) prior to using the extension configured in the Cerato. See the CIP1/CIP2 SoftPhone User Guide, p/n 610-0000-0818, for setup instructions.

The CIP2 SoftPhone can also act as a companion phone to the CIP210. In this instance the Cerato extension and the IPEC configuration must be set up as a 'CIP2' type with a CIP210 MAC address option added. That option is described in the *IPEC Configuration* on page 2-27.

The phone type entered in the IPEC configuration for this extension should be 'CIP2'.

The CIP2 SoftPhones use a specific set of button assignments for some of the available keys. In order for all supported features of the phone to work correctly this template for keys 2 through 6 must be followed.

1   Log in to the Cerato Database Editor, select the active database and proceed to the 'EXT …?' prompt.

2   Enter the ADD command followed by the extension number to be assigned to the new CIP2.

3   Enter an Extension Type of 'CC12' or 'CC24', as desired.

   Note The extension type determines the number of buttons available for SHARED or DSS appearance programming on the CIP2 phone.

4   For Button Expansion Module 24 (Yes/No) enter 'Yes' or 'No' as desired.

   Note The addition of BEM in the Cerato configuration adds 24 additional buttons to those created for the base extension type. A CC12 with BEM creates a total of 36 buttons. A CC24 with BEM creates a total of 48 buttons. Note that the first 6 buttons on the CIP2 SoftPhone are reserved for configuration in accordance with the preset CIP template.

5   Enter the Cerato circuit number of the appropriate IPEC board as the Circuit location.

6   For the 'Internet Protocol Extension' enter 'CIP2'.

7 Assign an appropriate Class of Service. See the example in the *CIP210 Phone Sample Configuration:* on page 2-13.

8 For 'Headset operation' enter 'No'.

9 For 'Individual speed dial blocks' enter '0' (Speed Dial and Directory entries in the CIP2 phone do not utilize this provision. Entering a '0' allows other phones use of this limited resource.)

10 For Select ring, display and flash option enter 'RRR'.

11 For 'Keyset to share extension XXXX', make any appropriate entries in order to have this extension appear on buttons of other ClearCom or CIP phones. Keep in mind that a Keyset must have been previously created in order for you to assign a Keyset share on that extension. The Cerato telephone types that are classified as multi-button Keysets are: CC12, CC24, 4Key, 10Key and 20Key.

12 For 'Feature key' enter the following three assignments:

button 4 PARK

button 5 PICKUP

button 6 COM

13 Enter a 'Last Name' for this extension.

14 Enter a 'First Name' for this extension, if desired.

15 Enter the 'Extension number for directory' number for this extension. The default that appears automatically is recommended and this number will appear on the idle display of the CIP2.

16 Enter a 'Location', if desired.

17 Enter a 'Department', if desired.

18 Set the 'Published directory entry' to 'Yes' or 'No', as desired.

19 Enter the 'Group II category name', as desired.

20 Enter the 'Prefix index', as desired.

21 Assign an appropriate 'Comment' to this extension.

22 Select one of three supported options for the assigned use of buttons 2 and 3 on the CIP2 phone, as follows:

Option 1 – Do not assign any extensions to those buttons. In this case they will not have any function.

Option 2 – Create two unique SKEY extensions and assign them to those buttons, for use as expanded call handling BUSY rollover lines

for the primary extension. The Select ring, display and flash option for
these SKEYS must be set as RRR. This configuration also requires
that proper BUSY forward assignments be made to the primary and
SKEY extensions in CRG 1. If available and desired, Voicemail NO
ANSWER forwarding may also be assigned in the same CRG 1.

Option 3 – Assign SHARED or DSS appearances of other CC12,
CC24, 4KEY, LKEY or SKEY extension to button 2 and/or 3. The
Select ring, display and flash option for these appearances should be
either RRR or FFF.

Note Buttons 7-12 on CC12 , 7-24 on a CC24, 7-36 on a CC12+BEM
and 7-48 on a CC24+BEM can also be programmed as SHARED or
DSS appearances on a CIP2 phone. If "Key Appearance Type" is DSS
then "DSS Dialing String" must be the same as the Appearing exten-
sion. "Allow DSS Line Pickup" can be 'Yes' or 'No'.

The 'Select ring, display, flash option' for these appearances may be set to
'RRR' or 'FFF'. Also note, since button allocation occupies CPU memory,
the allocation of buttons in the Cerato should be managed with care.
Administrators should only allocate buttons for current need without the
inclusion of large amounts of "spare" buttons when defining user exten-
sions.

23 Save the edit session prior to logging off.

CIP2 SoftPhone 911 Emergency calling:

From all CIP2 SoftPhone extension types: Although CIP2 SoftPhones are
very portable, it is currently not possible to relay information that identifies
the actual location of a CIP2 SoftPhone to emergency services call cen-
ters. Therefore it is **very important** that you make sure that the settings for
the Location ID parameter in the IPEC Command Interface are accurate. It
is your responsibility to make sure that all CIP2 SoftPhone users are
aware of the Location ID that emergency calls originating from CIP2 Soft-
Phones send to emergency services call centers.

CIP2 SoftPhone Sample Configuration:

See the *CIP210 Phone Sample Configuration:* on page 2-13, for an exam-
ple of Feature Class configuration for the CIP2 SoftPhone.

Sample CIP2 SoftPhone EXT listing:

```
EXT ...? I 2114
Extension number ................. 2114
Extension type ................... CC24-24
Circuit location ................. 03-06-09
Internet Protocol Extension ...... CIP2
Class of service ................. 24    DIAL
Headset operation ................ N
```

```
Hunt group ...................... None
Pickup group .................... None
Number of ISD blocks ............ 0
Loop button .....................
```

Position	Ext/Fea	IBT	Type	DSEQ/DSS String
2	3132/SHARED	FFF	SKEY	
3	4132/SHARED	FFF	SKEY	
4	PARK	---	----	--------------
5	PICKUP	---	----	--------------
6	COM	---	----	--------------
7	2060/DSS	FFF	CC12	2060
8	2061/SHARED	FFF	CC24	
9	3061/SHARED	RRR	SKEY	
10	2132/DSS	FFF	CC24-24	2132
11	-----------	---	----	--------------
12	-----------	---	----	--------------
13	-----------	---	----	--------------
14	-----------	---	----	--------------
15	2070/DSS	RRR	CC12	2070
16	2063/DSS	FFF	CC12	2063
17	2079/DSS	FFF	4KEY	2079
18	2078/DSS	FFF	4KEY	2078
19	2072/DSS	FFF	CC12	2072
20	-----------	---	----	--------------
21	-----------	---	----	--------------
22	-----------	---	----	--------------
23	-----------	---	----	--------------
24	-----------	---	----	--------------
25	-----------	---	----	--------------
26	-----------	---	----	--------------
27	-----------	---	----	--------------
28	-----------	---	----	--------------
29	-----------	---	----	--------------
30	-----------	---	----	--------------
31	-----------	---	----	--------------
32	-----------	---	----	--------------
33	-----------	---	----	--------------
34	-----------	---	----	--------------
35	-----------	---	----	--------------
36	-----------	---	----	--------------
37	-----------	---	----	--------------
38	-----------	---	----	--------------
39	-----------	---	----	--------------
40	-----------	---	----	--------------
41	-----------	---	----	--------------
42	-----------	---	----	--------------
43	-----------	---	----	--------------
44	-----------	---	----	--------------
45	-----------	---	----	--------------
46	-----------	---	----	--------------
47	-----------	---	----	--------------
48	-----------	---	----	--------------

Sharing keyset extensions ....

Extension	Position	IBT	Type	Key Type	DSS String
2114	1	RRR	CC24-24		
2132	32	FFF	CC24-24	DSS	2114

Directory entry - Unpublished extension
    Name .... CIP2 TEST#3
    Extension 2114
    Location .... SLC
    Department .... ENG
Group I category name .... N/A
Group II category name .... SUB-NO-PRIORITY
Prefix Index .... DEFAULT
Comment ..... CIP2 test phone

Additional CIP Phone configuration

It is important the ANI sent for PSALI purposes to emergency services call centers (when a CIP type phone places such a call) matches the location information that is entered in the IPEC Location ID fields. Be sure to verify that this routing is accurate.

IPEC Configuration

The IPEC is configured initially through its console port or through the BOA Editor of the Cerato. After its IP address has been established, it can alternatively be administered through the network port via a telnet session.

Complete the following steps to configure the IPEC board:

IPEC Menu:

1   Use Ctrl/C on a Console Port to activate the IPEC Command Line Interface (CLI). The IPEC CLI is used to configure the IPEC.

2   Type 'help' at the 'menu>' level to display the main menu listing shown below:
    ```
    menu>help
    Command       Description
    -----------   -----------------------------------------
    help          Displays help information
    exit           Exits the terminal menu
    ready         Enters the ready console
    dca           Opens a terminal to a DCCLI circuit
    closedca       Forces an open DCCLI session to be closed
    Usage: help [command]
    Specify a command for detailed help on that command.
    ```

3   Type the desired command. The menu prompt changes. See the sub-sections that follow for details.

IPEC Configuration:

1   Type 'ready' at the 'menu>' prompt. The prompt changes to display ready>.

2   Login to the Admin mode to access the Admin mode commands to review and modify parameters.

    Get help with commands by doing any of the following:

    •   Use the sample configuration in Table 2-A as a guide to configure the IPEC

    •   See Appendix A, *IPEC Command Line Interface* for a complete reference of all Interface commands

    •   Type a command alone at the command prompt, '<command>', to get parameter options for that command, or type 'help <command>' to get full details on that command

> **Note** For a complete description on configuring the IPEC for the MMOH feature, see the *Multiple-Music-on-Hold Feature* on page 2-37.

Table 2-A. Sample IPEC Configuration

Configuration String	Description
login admin admin	Login to the admin mode for configuration changes.
license b674-08a2-a05-97c5	Enter your license if it has not already been recorded.
ip addr 192.168.0.50	Enter the IP address for the card. This parameter can also be configured from the BOA editor on the Cerato instead of here. Once the IP Address is configured in the BOA editor, that address takes priority over any address configured here.
ip netmask 255.255.255.0	Enter the IP netmask for the card. This parameter can also be configured from the BOA editor on the Cerato instead of here.
ip gateway 192.168.50.1	Enter the IP gateway for. the card. This parameter can also be configured from the BOA editor on the Cerato instead of here.
time server 192.168.0.211	Enter the IP address of your time server.
time tz -6	Time Offset from the time server - (If the time server is not offset from UTC, see Appendix C, *Calculating the UTC Time Zone Offset*, for a guide to calculating the offset required to adjust the time for the region.)
ext R-02 aws 2034 2900	Configures the circuit for use with an IP attendant workstation. The <ext> field should match the AW extension number configured for this circuit. The <xfer_ext> field should be en extension destination established to accept calls in the event of a loss of operation by the console. This could be another Attendant group, a voice-mail auto-attendant extension route, an extension hunt group or any other overflow extension capable of handling the attendant traffic in the event of an outage.
dca R-03 dccli dcaclicircuit	Enter the circuit number and id to configure a DCA circuit that can be accessed from the unit's menu CLI via telnet or console port.
dca R-07 dcser 192.16.22.204 344	Enter the circuit number, IP address and port number to configure the circuit as a DCSER port, (i.e., a DCA circuit that initiates a raw TCP connection to an IP serial hub to transport the DCA data.)
dca R-10 dcpc dcpcportcircuit	Enter the circuit and id to configure the circuit as a DCPC port, (i.e. a port that provides DCA circuit access to a PC-based DCA application.)
time R-04 5	Enter the DCA circuit number to be used as a time synchronization port, and enter the specified interval in minutes that the switch will be synchronized with the unit's time server.
coding 1[1]	Selects preferred IP coding profile to be G.711.

Table 2-A. Sample IPEC Configuration

music serv 102.22.41.5 testlogin testpassword	Configures music FTP server used for downloading and feeding audio files to the IPEC card for the MOH feature. The music FTP server can also be configured for 'anonymous' users, as follows: `music serv 102.22.41.5 anonymous jane` Even though the 'anonymous' type login does not require a password, the \<password\> field must be filled in with a user name (or any ascii string), when configuring it with the MUSIC SERV command.
music def defaultwavfile.wav	Configures a default audio source file for the MMOH feature.
music r-2 ./wav/ann2.wav /r	Configure the circuit to receive the audio source and stores it in RAM for the MMOH feature.
ethmode auto	Allows auto negotiation of the network data rate and duplex.
compand mode mulaw	Sets the companding for the Cerato switch interface to Mu-law.
ip tos none	Sets the diff services type to "none" thereby disabling diff services. (Used to facilitate voice prioritization over WAN services.)
vlan pri none	Sets the VLAN priority tagging (p-tagging) to the highest level. (Used to priority voice over other services.)
vlan id none	Sets the VLAN ID to "none" thereby disabling VLAN IDs. (Used to isolate voice traffic on a separate virtual LAN for prioritization)
save	Saves the new setting for use on the next reboot.
reboot	The system prompts you to reboot in case a reboot is needed to activate the new or changed settings.
status	After the previous steps have been made, it may take 30 seconds for the card to lock with the Cerato switch and establish a connection with the LAN. Use the 'status' command to inspect the operating parameters of the board. It is a good idea to: • verify that the board goes online • review the operating Ethernet mode
show	Displays configuration that you have entered and in some cases, configuration of circuits from the Cerato, e.g., DTMF, ASG.

[1] Teltronics recommends, where possible, that IP circuits be run uncompressed. See the Voice Quality & Network Data Rates and Packet Coalescing details in Appendix B, *Detailed Feature Description* as a guideline when choosing coding profile.

Configuring the IPEC for CIP1/CIP2 SoftPhones

This section details special or extra steps needed when configuring the IPEC for the CIP1/CIP2 SoftPhone. Some of the information gathered here will be needed when you (or another individual) set up the physical CIP1/CIP2 SoftPhone as detailed in the CIP1/CIP2 SoftPhone User Guide, p/n 610-0000-0818.

To configure the IPEC for CIP1/CIP2 SoftPhones:

1   Be sure IPEC Release 4.1 or later is installed and that your Cerato PBX is equipped with Release 4.0 or later software.

2   Verify that your Cerato OCR is licensed for sufficient CIP1 and CIP2 extensions for your needs.

3   Decide on a phone mode of operation. There are three different user modes of operation for the CIP1/CIP2 SoftPhone that each require slightly different IPEC configuration. See the CIP1/CIP2 SoftPhone User Guide, p/n 610-0000-0818, for a a detailed description of the three operation modes.

  • CIP1/CIP2 Stand-alone mode - used as a standalone phone to replace the CIP210 phone

  • CIP210 Companion mode - used as a companion desktop application to the CIP210

  • CIP210 Take-over mode - gives take-over access to user's CIP210 phone when he or she is away from the office

4   Determine and input all 911 location information, so you can do all the configuration at one time for minimal user impact, since every time you make location configuration changes, the IPEC must be rebooted.

5   Configure the IPEC EXT type, 911 Alert Frequency, and MAC address (if needed) for the phone/mode of operation you have selected. Table 2-B shows some examples of this configuration.

6   If the extension is a CIP2 type, determine the proper quantity of expansion buttons to assign. The valid range is from 1 to 42. The first 6 buttons of the CIP2 extension are deducted from the total buttons available on the phone in order to determine the expansion button quantity.

  Note The IP address, extension, and the MAC address (if needed) for the phone/mode of operation you have selected, the extension and the password (if any) will be needed later when configuring the CIP phone.

7   Reboot the IPEC. This is required every time Location information changes.

> ***Note***   If needed, you can have multiple IPEC cards installed with different location information if you wish to support multiple offices with a single Cerato system and have a means to route 911 calls to multiple PSAP locations.

Example IPEC EXT commands for phones

The following table shows some example IPEC Command Interface EXT command configuration for various phones.

Table 2-B. Example IPEC EXT commands for phones

Command	Description
ext l-04 cip1 1	CIP1 extension in standalone mode added to port L-04 of the IPEC with a 911 alert frequency of 1
ext l-05 cip1 2 0001d800216b	CIP1 extension with companion or takeover mode added to port L-05 of the IPEC, with a 911 alert frequency of 2, and associated with CIP210 having a MAC address of 0001d800216b
ext l-06 cip2 1 30	CIP2 extension in standalone mode added to port L-06 of the IPEC with 911 alert frequency of 1 and expansion button quantity of 30
ext l-07 cip2 0 42 0001d80168ef	CIP2 extension in companion or takeover mode added to port L-07 of the IPEC with 911 alert frequency of 0 (off), expansion button quantity of 42, and associated with a CIP210 having a MAC address of 0001d80168ef
ext r-01 cip210 0001d8201e3f	CIP210 extension added to port R-01 of the IPEC for CIP210 phone having a MAC address of 0001d8210e3f

Network Configuration

This section details network configuration needed to successfully administer the network and use the IPEC. To insure your network is properly supporting the IPEC, review this section and/or see your network administrator.

LAN/WAN Requirements

The IPEC provides toll-quality voice over well-controlled networks. When a network supports both voice and data traffic, bursts of data can delay voice packets until they are too late to be reassembled and used in real-time. As the number of lost voice packets becomes audibly significant, crackling or even gaps in the audio can become apparent. For shared networks, the only viable solution is to prioritize voice packets over data, thereby avoiding the congestion and associated delays.

For best performance in shared networks, Teltronics recommends using the industry wide standard of prioritizing voice by using VLAN prioritization and Diff services for prioritization over WAN.

Firewall / Network Address Translation

Firewall incompatibility is not necessarily detectable using ping tests. For voice paths, firewalls incompatibility can manifest itself as blocked voice path either in both directions or just one direction, depending on the configurations of the firewalls involved. To operate properly, all firewalls must be configured to support all the connections required for the type of network communication involved.

Routers perform Network Address Translation (NAT) as a form of firewall security to protect internal IP address from the outside world, and NAT is often used to implement additional network features including load balancing, multiple routing. If you are using NAT in your network you will need to configure it to allow the required IP ports of the IPEC as shown in Table 2-C.

Table 2-C. IPEC IP Port Requirements

Connection	IP Port Requirement
Attendant Workstation	TCP 2022 UDP 3300-3331
DCPC	TCP 2022
DCSER	TCP User configurable to match destination
CIP210	TCP 2021 UDP 3200-3231
Telnet	TCP 23

Table 2-C. IPEC IP Port Requirements (continued)

Connection	IP Port Requirement
Firmware updates & Network control/status	TCP 2020

External Serial Devices

The IPEC offers one serial port (the console port) that is dual purpose and can be used for a serial DCA interface. To provide more that the one serial port, the IPEC supports external serial devices such as serial hubs and PCs with serial ports, all using the network for connectivity. The SoftDCA application is available from Teltronics as well as serial hub devices. Serial devices are also available from several vendors in a variety of densities.

The IPEC uses TCP/IP to connect to these devices and connects to specific serial ports by using port number assignment.

The Comtrol Device Master, quad port serial hub, 98751-2 (www.comtrol.com) has been tested with the IPEC.

IPEC Feature Functionality

This section details how to enable various functions/features of the IPEC card:

- Enhanced Attendant Workstations (EAWS)

- IP Phones

- Time Synchronizer

- DCA

- Multiple-Music-on-Hold (MMOH)

Enhanced Attendant Workstations (EAWS)

To enable the EAWS:

1   Check the switch OCR to see the maximum number of Enhanced Attendant Workstations (EAWS) allowed.

2   Configure the Attendant ports on the IPEC and Cerato until the maximum limit is reached.

3   Each Attendant can log into any configured EAWS by specifying the IP Address of the IPEC card used and their extension.

IP Phones

This section lists the IP phones that the IPEC supports, and details how to verify the IPEC/IP phone setup functions properly.

The IPEC supports the following IP phones:

- Teltronics CIP210, CIP210 User Guide, p/n 610-0000-0814

- Teltronics CIP1/CIP2 SoftPhone, CIP1/CIP2 SoftPhone User Guide, p/n 610-0000-0818

- Polycom Sound Station IP 3000 phones

Note To install and setup the supported Teltronics IP phones, see the user guides that came with the phones.

Polycom Sound Station IP 3000

If you are using Polycom Sound Station IP phones, install and setup the phones as described in the documentation that came with the phone and do the following:

- Configure the phones to support dialing the IPEC via the N* sequence programmed to select a gatekeeper.

- Use the IP address of the IPEC for the gatekeeper address.

- Set up the extension on the IPEC with the following flags, so the phone will operate correctly: NNAME, NONUM, NOMWI

Verification

To verify that the IPEC and IP Phones have been set up properly, make a call with the IP phone(s).

Time Synchronizer

The Cerato has an embedded clock feature that keeps time for the switch and is used for time stamping. Periodically, this clock requires resynchronization similar to most clocks since they lose time.

Note Network servers also have clocks that drift in time but they use government-controlled SNTP Time Servers located on the Internet to regularly synchronize to UTC and provide a relatively accurate time source. These servers usually use internal atomic crystals to maintain accuracy.

The IPEC uses this same network based time synchronization method for the Cerato switch by regularly updating the Cerato clock based on the time retrieved from a time server.

To configure the IPEC with a DCA port reserved for regularly updating the Cerato switch's time clock:

1   Assign one port to be the time synchronizer and specify the update interval.

2   Configure the switch side of this port as a DCA editor port (i.e. a DCA type port that is used for editing.)

The IPEC periodically retrieves the time from the time server, using the interval specified, and updates the Cerato switch's clock using an editor session. The accuracy of the clock is dependent on many factors, including the accuracy of the local time server, network latency, and update time within the Cerato, so therefore it is limited to be accurate only to within a few seconds of the actual time.

Note Decreasing the update interval of the Cerato switch's clock may not result in increased clock accuracy.

DCA

The IPEC supports three types of DCA circuits:

DCCLI:

- Console port - the console port can be allocated as the serial device for an DCCLI type circuit.

- Network port - using a Telnet session you can connect to the switch using an DCCLI type circuit.

DCPC:

Network port – used to connect a DCA port type directly to a SoftDCA application, where the PC emulates the DCA function. See Chapter 3, *SoftDCA Setup & Configuration* for details.

DCSER:

Network port - used to connect to an Ethernet Serial Hub that acts as a simple serial DCA.

Multiple-Music-on-Hold Feature

The Multiple-Music-on-Hold (MMOH) feature gives the Cerato the ability to select from multiple music on hold sources. The feature configures an audio source, either music or an announcement, to play on any of the IPEC card's 31 circuits (Circuit 16 on the even-numbered slot of the IPEC is not used since it cannot be configured as an announcement).

To configure MMOH:

To configure MMOH, follow the steps listed here in the applicable sub-sections: i.e., Cerato, PC, Music FTP Server, and IPEC.

See Appendix A, *IPEC Command Line Interface* for more details on each of the IPEC Command Line Interface commands that are shown here.

Cerato Setup:

1 Install the IPEC card.

2 Configure at least one HDLU card on the IPEC to support the

Announcements needed for MMOH.

3   *For system default music on hold to come from the IPEC only*: configure one of the HDLU circuits as 'MUSIC'.

4   Configure some System Announcements in the SYSANN part of the Cerato Configuration Editor on the IPEC's unassigned HDLU circuits.

5   Modify the COS of the extensions so the correct Hold Treatment is assigned to them.

6   Save the Cerato configuration changes.

PC Setup:

7   Create MMOH music wav files using Microsoft Windows' Sound Recorder, with the following specifications:

   • Format: CCITT u-Law

   • Attribute: 8.000 kHz, 8 bit, mono 7 kb/sec

Note Or, convert an existing wav file using Microsoft Windows' Sound Recorder with the specifications described here.

Music FTP Server Setup:

8   Get a user name and password to the FTP server.

9   Place the music wav file on the FTP server.

IPEC Setup:

10 Configure the FTP server using the MUSIC command.

11 Determine the option to use with the MUSIC command, as follows:

   • **/f -** downloads file from the ftp server and places it in Flash. It is then played from its Flash location. (Max Flash per IPEC is 3 MB)

   • **/r** - downloads file from the ftp server and places it in temporary storage (RAM). It is then played from RAM. Automatically re-downloads the file from the FTP server after a reboot. (Max RAM per IPEC is 20 MB)

   • **/s** - streams the file from the FTP server repeatedly and plays to the circuit specified

12 Configure the music circuits using the MUSIC command

   Note Use the circuits configured on the Cerato for music on hold.

13 (optional) Configure the default music for the IPEC using the MUSIC command.

14 Save the IPEC configuration.

IPEC Default Music Source

There are two types of default music sources on the IPEC: a **global** default music source for the IPEC and a **per circuit** default music source. Both of these files are stored in Flash. The default audio source is played on circuits that have been configured as music circuits when the audio source file assigned to that circuit cannot be played. First the IPEC will try to play the default music source assigned to the music circuit. If a default music source was not assigned or cannot be played, the global default music source will then be played. If the global default music file was not defined or cannot be played, then a 'Hold Tick' tone will be played instead of the audio source.

Verification

To verify that the IPEC and features have been set up properly, try using each feature:

- DCA

- Enhanced Attendant Workstation - see the EAWS User Guide, p/n 610-0000-0801 for details

- Time Synchronization

- IP Phone - make a call using a supported IP phone

Firmware Upgrade

To upgrade the IPEC card's firmware, do the following:

1   Obtain the current IPEC firmware upgrade utility (ipec.exe) and a new license from Teltronics.

2   As a precaution, save the IPEC configuration information in case it inadvertently gets deleted during the upgrade process, as described here:

   a   Telnet into the IPEC. The 'menu>' level appears.

   a   Enter 'ready'. The ready> prompt displays.

   b   Enter 'login admin <password>'. The 'admin>' level appears.

   c   Enter 'show' to display the current configuration details, then enter 'license' and save the data displayed by either capturing or copying it to a file on your PC.

   d   Enter 'exit' to return to the 'menu>' level.

3   Upgrade the IPEC card's firmware as follows:

   a   Ping the IPEC from a PC that is connected to the LAN that the IPEC is connected to, to ensure it is connected.

   b   Enter the upgrade command, as follows:

   ```
   c:<filename> <ipec_ip_address> <adminpw>
   ```

:
Table 2-D. Firmware Upgrade Parameters

parameter	definition
filename	the IPEC firmware upgrade utility
ipec ip addr	the IP address of the IP unit
adminpw	the unit's admin password

For example:

```
c: ipec 172.16.60.17 admin
```

   c   Add 'go' to the command line string when prompted to by the firmware upgrade utility, to verify that you have a new license string when upgrading from firmware version 1.0 to the newer version of firmware.

For example:

```
c: ipec 172.16.60.17 admin go
```

Note that after the upgrade completes, you will not be able to go back to firmware version 1.0 and resume operations with the older license string.

   d The upgrade starts. Be sure NOT to interrupt the download process since the card may become disabled and would require a reset by the Teltronic's factory.

4 Log on to the IPEC via telnet when the upgrade process is complete.

5 Enter 'ready' at the 'menu>' level.

6 Enter 'login admin <password>' from the 'ready>' level.

7 Enter 'License <license code for the card> at the 'admin>' level when needed.

8 Save or reboot the IPEC card when prompted.

9 Verify that the configuration that was saved in Step 2 above hasn't been deleted. If for some reason it has been deleted, reenter the configuration using the saved configuration information.

3

SoftDCA Setup & Configuration

This chapter details how to set up and configure a SoftDCA, a software version of the DCA, as follows:

- Prerequisites

- Installing the SoftDCA software

- Configuring & Starting the SoftDCA

- Hiding, Opening and Exiting the SoftDCA

- Verification

Prerequisites:

Before installing the SoftDCA, verify that the following items have been set up:

- PC running Windows 95, 98, ME, NT, 2000 or XP

- 1 Ethernet card

- 1 available serial port

Installing the SoftDCA Software

To install the SoftDCA, do the following:

1   Insert the Cerato Resource CD into your PC and the installer opens to the main menu page.

2   Review and accept the software license agreement. The documentation and software license can also be opened from the main menu as needed.

3   Click the 'Install PC Applications' button to open the Install PC Software dialog, as illustrated in Figure 3-1.

Figure 3-1.   Install PC Software dialog

4   Select the 'SoftDCA' radio button and click the Install button. The software is installed to your PC.

Configuring & Starting the SoftDCA

To configure the SoftDCA:

1   From the Start Menu, select Programs>Teltronics>SoftDCA>SoftDCA to open the SoftDCA configuration dialog, as illustrated in Figure 3-2.
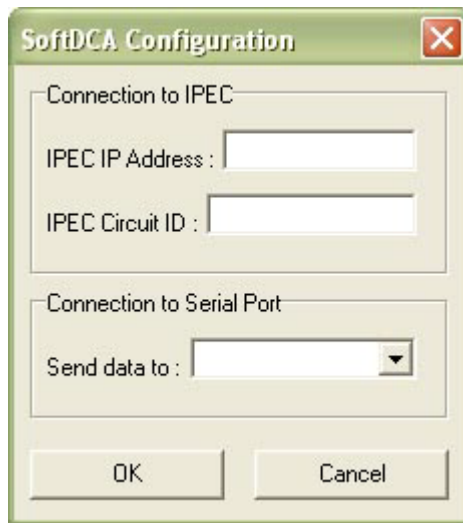
Figure 3-2. SoftDCA Configuration dialog

2   Enter the IP Address of the IPEC in the 'IPEC IP Address:' field.

3   Enter the name of the circuit on the IPEC board that the SoftDCA will
    connect to in the 'IPEC Circuit ID:' field. You must use the string in the
    Parameters field of the DCPC type circuit configured in the DCA com-
    mand in the IPEC section of the IPEC CLI in this field.

4   Select the serial port to send data to in the 'Send data to: drop-down
    field. Once a Comm Port is selected here, it will not be available for
    other devices while the SoftDCA application is running.

5   Click OK. The dialog closes and the SoftDCA application appears in
    one of two states: Connected or Disconnected.

Connected:

If configured with the correct information, the SoftDCA will connect to the
IPEC, as indicated by a blue status bar and text that reads 'Connected', as
illustrated in Figure 3-4.

STATUS BAR: ➤

IP Address: of the host IPEC
Circuit ID: of the host IPEC
Status - SoftDCA is Connected (blue) to the IPEC
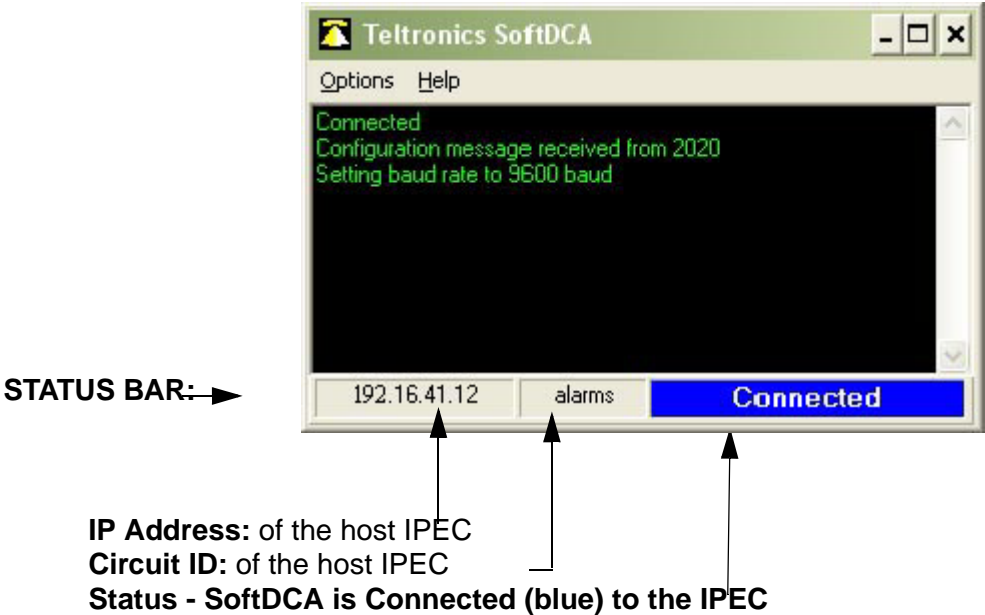
Figure 3-3. Teltronics SoftDCA - Connected

Disconnected:

If configured with incorrect information, the SoftDCA will not connect to the IPEC, as indicated by a red status bar and text that reads 'Disconnected', as illustrated in Figure 3-4.
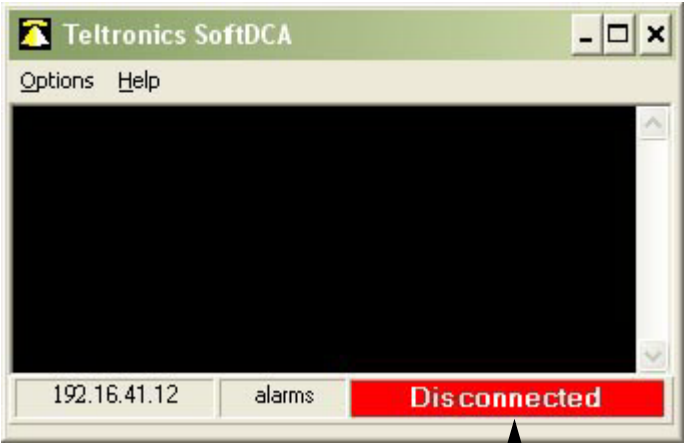
Status: SoftDCA is Disconnected (red) from IPEC

Figure 3-4. Teltronics SoftDCA - Disconnected

Hiding, Opening and Exiting the SoftDCA

The SoftDCA application remains running in the background of the PC and does not need to be shut down, although it will need to be manually restarted each time the PC is rebooted.

To Hide the SoftDCA:

Click the 'Close Window' option on the Options menu.

To Open the SoftDCA:

Double-click on the SoftDCA icon in the PC tool tray to open the Soft-DCA.

To exit the SoftDCA:

Click the 'Exit SoftDCA' option on the Options menu of the SoftDCA application. the SoftDCA shuts down and its icon is removed from the PC tool tray.

Verification

To make sure the IPEC and SoftDCA have been properly set up and configured, send data via the SoftDCA.

4

Troubleshooting

This chapter contains the following troubleshooting information to help you quickly resolve problems during the board or phone installation or operation.

• IPEC Operation Problem/Resolution

• CIP210 User Data Migration

IPEC Operation Problem/Resolution

Table 4-A describes common problems with IPEC operation and details resolution needed to correct the problem.

Note See the Log command in the IPEC CLI to get current call statistics for the IPEC.

Table 4-A. IPEC Problem and Resolution

Problem	Resolution
Music and voice quality are degraded (exhibiting popping and/or periodic loss of voice.)	Music/voice degradation is usually caused by improper prioritization of music/voice vs. other services and manifests itself as lost packets or packet jitter. • Use QoS VLAN and p-tagging features to prioritize voice. • Use managed switches, QoS capable routers, and guaranteed WAN services with sufficient bandwidth to support the required aggregate voice bandwidth. • Avoid the use of hubs.

<h3 align="center">Table 4-A. IPEC Problem and Resolution</h3>

Problem	Resolution
Ready/Fail LED does not turn green.	The Ready/Fail LED indicates the results of the self test, and if it does not turn green, the IPEC board is not working. Return the board to the factory for repair.
20-20 LED does not turn green.	A green LED color indicates successful communication with the Cerato system (in legacy Cerato system, the LED may take a few minutes to turn green). **red LED:** indicates a problem with the Cerato system database configuration *or* indicates when an extension configuration misconfiguration/mismatch occurs, as described by the following indicators: • Log message appears in the log file: "Circuit configuration mismatch - 20-20 LED red" • The '20-20 Host CPU:' field of the STATUS command displays 'Bad Configuration' and an exclamation mark '!' appears to the left of the affected circuit number(s) • for CIP1/CIP2 SoftPhone: 'Disconnected' dialog appears - 'The extension is not found or is temporarily unavailable. Check your IPEC configuration and try again' • This alarm message is reported on the Cerato: 'Circuit configuration mismatch - 20-20 LED red' **no light**: indicates a lack of synchronization with the Cerato system. Use another line card in the same slot to eliminate Cerato system hardware failure.
Network LED remains red.	The Network LED normally turns red initially, then should turn off (no light). If the LED remains red, this indicates the Ethernet port is not detecting carrier from the device on the other end of the cable. Check the cable and make sure the remote device is operating properly.
QoS LED changes to red.	The QoS LED is a real-time indicator of the voice quality or degradation. When the QoS LED changes to red, this indicates a high volume of packet loss. • Use QoS VLAN and p-tagging features to prioritize voice. • Use managed switches, QoS capable routers, and guaranteed WAN services with sufficient bandwidth to support the required aggregate voice bandwidth. • Avoid the use of hubs.
Alarm LED appears red.	The Alarm LED indicates that the IPEC is not able to process calls. Verify the Cerato is configured properly to support the IPEC.
Only one circuit is available and the IPEC reboots regularly.	Enter a valid license to enable more than one channel and prevent the card from rebooting.

Table 4-A. IPEC Problem and Resolution

Problem	Resolution
The console port won't respond.	• Enter Ctrl + C. • Verify that the console port is using a null modem cable
The LAN is working properly, but enabling VLAN disconnected the IPEC.	• Ping the IPEC to make sure it is sure accessible in general. • Make sure the IPEC was not changed to a VLAN that is not fully functional. You will have to use the console port to reset the VLAN ID
Voice is significantly delayed.	Check the settings for the jitter buffers; if set too long, voice delay may occur. Change the jitter buffers back to the default of 10/50/140.
Voice circuits in compressed mode seem to consume as much bandwidth as non-compressed.	Make sure the preferred coding profile is compressed on both ends of the link to insure compression is used.
'System error: 20-20 telephony bus not responding' error message appears when using the IPEC CLI.	The Cerato and IPEC configuration are incompatible. Check both configurations and make the required changes to make sure they are compatible. To quickly redisplay the IPEC CLI prompt, type Ctrl + C.
Voice path connects in one direction only or in neither direction while PING tests indicates 'connection'.	Check the network firewall configuration to insure compliance with the firewall requirements of *Firewall / Network Address Translation* on page 2-32. Reconfigure the local and remote firewall as necessary to support the applications. Users who travel can use a VPN connection since it avoids many firewall setting problems. Obtain the IP Address of the VPN from the network administrator.
The network connection is moved to the other network port on the IPEC resulting in some network functionality no longer working.	If the topology of the LAN is altered by changing MAC addresses of some of the devices, force re-registration by clearing the ARP cache on the local router.
IPEC fails to log in to the Music FTP Server. IPEC Alarm #35.	• make sure you have access to the FTP Server • make sure the username and password are correct that was set up with the MUSIC SERV command

Table 4-A. IPEC Problem and Resolution

Problem	Resolution
IPEC fails to open an audio source file on the Music FTP Server. IPEC Alarm #37.	Place the audio source file on the Music FTP Server.
IPEC audio for music goes out of and then back in service often. IPEC Alarms #33/#34.	Make sure the IPEC is given enough bandwidth for the number of circuits configured.
Incorrect audio file format. IPEC Alarm #39.	See the instructions in Chap 2 for creating a new audio file.
IPEC fails to write music file to Flash/RAM since Flash/RAM is full. IPEC Alarms #41/#42.	Place a priority on audio files, as follows: highest priority in Flash, lower priority in RAM and stream the remaining audio files. If an audio file will not fit in either Flash or RAM, it will need to be streamed.

CIP210 User Data Migration

If a CIP210 phone becomes inoperable for any reason, to avoid having to manually reenter all the data, you can switch to a new CIP210 and copy over the user data (that is resident on the IPEC) from the inoperable phone over to the new phone.

Data is migrated from the following data locations on the CIP210:

- Directory

- Speed Dial list

To recover CIP210 user data, do the following:

1 Replace the MAC address of the old phone of the circuit being updated in the IPEC with the MAC address of the new phone.

2 Replace the inoperable CIP210 with a new phone.

3 Configure the new CIP210 as follows:

   1) Press the **SYSTEM** LCD key. The System menu page displays.
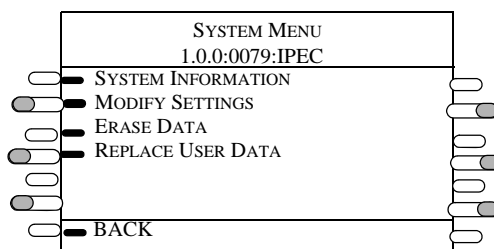
System Menu LCD Screen

   2) Press the **REPLACE USER DATA** LCD key. Note that this option only appears on the menu when the MAC for the circuit has been changed. The data is downloaded to the new CIP210.

4 Inspect the user data thoroughly to verify the data was successfully recovered.

> *WARNING: Do not reboot the IPEC in the middle of data recovery, since the user data would be lost and unrecoverable.*

5

Support

You can get technical support on the Teltronics IPEC, by either of the following methods:

Teltronics website:

See the Products & Services and Customer Support pages on the Teltronics website at: http://www.teltronics.com.

The website contains the following information about IPEC:

- Online Documentation

- Downloads for software enhancements

Teltronics Tech Support phone number:

1-800-444-7434. You will need your PIN number from your Teltronics Maintenance agreement. If you do not have a PIN Number, contact your Teltronics Sales Representative.

A
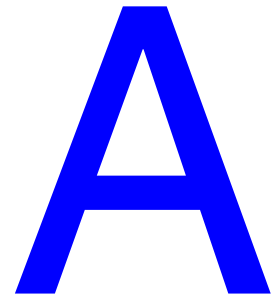
IPEC Command Line Interface

The IPEC Command Line Interface (CLI) is used to connect to an Administration Console to configure the board for operation and to review operational conditions. The interface is accessed via a console port or network connection.

Note Use Ctrl/C on the Console Port to activate the IPEC CLI.

At the IPEC CLI, the menu> prompt appears. To see a list of the options available, type 'Help':

```
menu>help
```

To get a list of commands with descriptions for a mode, type 'help' at that mode. To get parameter options on a command, type the command alone: '<command>'. To get full details on a command, type 'help <command>'

For details on commands available at the menu prompt, see Table A-1. For details on commands available in the IPEC Administration Console, see Table A-2.

Table A-1. 'Menu>' Level Commands

command	description	usage

help	Displays help information.	`help`
		Depending on the mode, Help displays parameter options commands.
		menu>: root level commands
		ready>: status-only commands
		admin>: all commands
		
		`help [command]`
		Shows full details on the specified command.

Table A-1. 'Menu>' Level Commands

command	description	usage
exit	Ends the terminal menu.	At the menu prompt, type 'exit': `menu>exit`
ready	Enters the ready console	`ready` This command enters the administration console. Only one administration console can be active at a time. If an administration console is currently active, it will be closed when this command is run.
dca	Opens a terminal to a DCCLI circuit. ***Note*** See the autodca command at the Admin mode of the IPEC Administration Console to logon automatically.	`dca <id>` Starts a DCA terminal connected to a DCCLI circuit configured with the specified 'id'. Available Circuit DCCLI ID Circuits: ------------- --------------- R-03 cdr R-06 Cerato
closedca	Forces an open DCCLI session to be closed.	`closedca <id>` Typically a DCCLI session will be closed by the original user by using the exit sequence or by ending the telnet session. This command will force the specified DCCLI session to be closed, even if the original user is still active, and allow a new session to be started.

IPEC Administration Console Commands

Table A-2 lists the IPEC Administration Console commands, gives a description of the commands, and shows how the commands are typed along with other usage details.

Note Only status type commands are available until the Login command is used to change to the Admin mode.

Table A-2. IPEC Administration Console Commands

Command	Mode	Description	Usage
help	Both	Displays help information.	*help* Depending on the mode, Help displays parameter options commands. menu>: root level commands ready>: status-only commands admin>: all commands *help [command]* Shows full details on the specified command.
exit	Both	at the Administration Console: exits to the menu> prompt at the menu> prompt: exits the CLI	*exit*
reboot	Admin	Reboots the unit.	*reboot*

Table A-2. IPEC Administration Console Commands

Command	Mode	Description	Usage
status	Both	Displays general operational status information about the unit. This status does not reflect any configuration changes that require a save or reboot before they will take effect. **Unit Self-test:** Indicates whether the unit passes self-test. **Current Date/Time:** Current date and time. **Ethernet Port:** Indicates which port is set for use. (Front or Back). **Ethernet Carrier:** Indicates the operating mode of the Ethernet port. **20-20 Host CPU:** Status of link to Cerato host CPU. **Network Quality:** Indicates the quality of the network connection. **Gatekeeper:** indicates whether a gatekeeper is used **Active Circuits:** Number of circuits currently in use. **Circuit Status:** shows the current status for each configured circuit on the unit, including the status of the Cerato signaling connection and configuration, and network device information as appropriate. Circuit numbers are specified as L-XX or R-XX, where XX is a circuit number from 1 to 16. L-XX indicates circuits on the slot to the left of the board, R-XX indicates circuits on the slot the board is in. • **Circ** - circuit number - a '*' next to the circuit number indicates that the circuit is currently active. A '!' indicates that a mismatch was detected between the unit configuration and the Cerato editor. • **Type** - type of circuit • **Status** - *Online* - The circuit is online and ready for use. *Offline* - The circuit is offline and inactive. *NetOff* - The circuit is offline because it doesn't have a connection to a network device. *SwOff* - The circuit is offline because the Cerato host CPU signaling for that circuit is offline. NOTE: It is possible for the Cerato host CPU to be online for some circuits, and offline for others. *Playing* – The circuit is receiving the configured music, or the default music, or the 'on hold tick'. *DnldReq (download required)* – The circuit is waiting for an audio file to be downloaded from the FTP server. *Loading* – A music file is being downloaded from the FTP server to its destination location in Flash or Ram. *Stopped* – The circuit has stopped receiving audio. • **Cod** - coding profile for the circuit • **Ext** - ext of the circuit • **Name**- subscriber's name; a '+' next to the name indicates that the default music file is being played on this circuit. • **IP Address** - subscriber's IP address	*status*

Table A-2. IPEC Administration Console Commands

Command	Mode	Description	Usage
show	Both	Displays the parameters set on the IPEC: **Unit Type:** Description of the unit type, i.e., IPEC. **Serial No:** Serial number of the unit. **License Key:** Teltronic's license key for IPEC. **Hardware ID:** Hardware revision code. **Firmware Ver:** Firmware version number. **Firmware Date:** Date firmware was created. **Comment:** misc comments **Front Eth MAC:** MAC address of front Ethernet port. **Back Eth MAC:** MAC address of back Ethernet port. **Ethernet Mode:** Displays the selected Ethernet Mode. **Ethernet Port:** Describes which Ethernet port is being used, i.e., Front or Back. **Ethernet VLAN ID:** Valid values range from 1-65534. See the 'vlan' command for more information. **Ethernet User Pri**: Valid values range from 0 to 7. See the 'vlan' command from more information. **Music FTP Server:** IP address of the MMOH FTP Server. **IP TOS:** The Ethernet IP TOS/DS byte. See the "ip" command description for more information. **IP Address:** The IP address of the unit. **IP Netmask:** The netmask of the unit. **IP Gateway:** The gateway for the unit. **Time Server:** The IP address of the Time Server. **Time Offset:** time offset from time server in hours and minutes. **Default Coding:** The unit's default coding profile. **H.323 G.711 VAD mode:** on or off **Jitter Buffer:** Displays the jitter buffer settings for minimum, nominal and maximum delays. **Switch Companding Law:** Companding law used for the Cerato interface. **Gatekeeper: t**he unit's gatekeeper **Auto-Connect DCCLI ID:** The ID of the DCA circuit the console port automatically connects to. **911 call Location Warning Information sent to CIP phone users:** location that displays on phone for 911 calls **Circuit Status:** shows status of all circuits • **Circuit** - the name of the circuit • **Type** - the type of circuit • **Cod** - the unit's preferred coding profile • **Parameters** - the string name of the circuit	`show`

Table A-2. IPEC Administration Console Commands

Command	Mode	Description	Usage
ping	Both	Pings an IP device on the network.	*ping <ipaddr> [count]* Pings the IP address specified by 'ipaddr'. If 'count' is specified, pings the address 'count' times. The default count is 3, the maximum count is 10.
login	Ready	Logs in for configuration change access.	*login admin [password]* If the [password] option is not specified, you will be prompted for the password. The default password is 'admin'.
logout	Admin	Logs out to disable configuration change access.	*logout*
pwreset	Both	Resets admin password to "admin".	*pwreset*

Table A-2. IPEC Administration Console Commands

Command	Mode	Description	Usage

log	Both	Displays system log.	`log all [<options>]`
			
			Displays all log entries. NOTE: This may generate a lot of output and could take a while to display over the serial console port.
			
			`log last <num> [<options>]`
			
			Displays the last <num> log entries
			
			`log range <from_num> [<to_num>] [<options>]`
			
			Displays a range of log entries, starting at <from_num> until <to_num> starting at 1 for the oldest up to the number of log entries. The <to_num> parameter is optional, and if not specified, all entries up to the last will be displayed.
			
			`log seq <seq_num> [<num>] [<options>]`
			
			Displays <num> log entries starting from sequence number <seq_num>. If <num> is not specified, all entries will be displayed up to the end of the log.
			
			`log show`
			
			Shows the number of log entries and the last sequence number.
			
			`log info`
			
			Displays information about the log output, and describes the various groups of statistics.
			
			Commands with an <options> parameter allow the options listed below. These options control which groups of statistics will be displayed, and whether to display statistics, system messages, or both. If <options> is not specified, the default will be '/b'.
			/b Displays basic information and stats
			/a Displays adaptive playout buffer stats
			/p Displays additional packet stats
			/all Displays all available stats
			/stat Displays stats only (no system messages)
			/msg Displays system messages only (no stats)
			
			The unit's maximum number of log entries is: 2828. After the maximum number is reached, the oldest entries will be erased to make room for new entries.

Table A-2. IPEC Administration Console Commands

Command	Mode	Description	Usage

password	Admin	Changes unit's (telnet, admin or CIP1/CIP2 Soft-Phone) password.	`password telnet`
			`password admin`
			Changes the unit's telnet or admin access password. The command will prompt for the password and confirmation. The password can be from 1 to 19 characters long and can only contain standard characters or symbols and no spaces.
			`password none telnet`
			Clears and disables the unit's telnet access password.
			`password <circuit> <password>`
			Sets the password for a CIP soft phone circuit. The password can be from 1 to 23 characters long and can only contain standard characters or symbols and no spaces.
			`password none <circuit>`
			Clears the password for a CIP soft phone circuit. With a cleared password soft phones can connect with a blank password.

erase	Admin	Erases configuration.	`erase <command>` Commands: config Erases configuration and restores factory defaults comment Erases the unit's comment string log Erases system and statistics logs all Erases both configuration and logs
comment	Admin	Sets the unit's comment string.	Sets the unit's comment string to the specified string. The comment string is intended for user reference, and is displayed by the 'show' command. The comment string may only contain standard characters, symbols and spaces, and can be up to 80 characters long.
ip	Admin	Configures IP address and parameters.	`ip <parameter> <value>` Parameter Description ------------- -- addr Ethernet IP address (e.g.,192.168.0.50) netmask Ethernet IP subnet mask (e.g., 255.255.255.0) gateway Ethernet IP default gateway(e.g., 192.168.0.1) tos Ethernet IP TOS/DS byte (prefix with '0x' for hex, or specify 'none' for no TOS/DS value)

Table A-2. IPEC Administration Console Commands

Command	Mode	Description	Usage
ethmode	Admin	Configures Ethernet mode.	`ethmode <mode>` Modes: auto — Auto-negotiate 10/100 and full/half duplex 10F — Force 10 Mbps full duplex 10H — Force 10 Mbps half duplex 100F — Force 100 Mbps full duplex 100H — Force 100 Mbps half duplex
compand	Admin	Configures the unit to match the switch companding law.	`compand <mode>` Where <mode> is "alaw" or "mulaw". The companding law configured here must match the companding law of the Cerato switch that the unit is installed in.
save	Admin	Saves configuration changes.	`save`
restore	Admin	Discards configuration changes.	`restore`
license	Admin	Sets the license key or displays license info.	`license <license key>` This command will set a new license key for the unit. This license key determines the maximum number of available circuits and which features are enabled on the unit. A license key is only valid for use on a particular IP unit.

Table A-2. IPEC Administration Console Commands

Command	Mode	Description	Usage

location	Admin	Sets the unit's location information so the switch administrator can notify CIP1 and CIP2 users of how the switch is programmed to route 911 calls.
		
		WARNING: The switch administrator is responsible to ensure appropriate actions are taken to notify users of 911 call services and procedures.
			`location disable`
			DISABLES LOCATION INFORMATION FOR SUPPORTED VOIP 911 CALLS. BY DISABLING THIS OPTION YOU, ON BEHALF OF YOUR COMPANY, HAVE ELECTED NOT TO DISPLAY, ON THE SUPPORTED VOIP TELESETS, THE LOCATION ADDRESS THAT IS COMMUNICATED TO THE PSAP WHEN DIALING 911 CALLS. AS A RESULT, USERS MAY NOT BE INFORMED OF THIS LOCATION INFORMATION WHEN FOR EXAMPLE, THE SUPPORTED VOIP TELESETS ARE USED FROM LOCATIONS OTHER THAN THE LOCATION WHOSE ADDRESS IS COMMUNICATED TO THE PSAP WHEN DIALING 911 CALLS.
			IN ALL CASES, IF YOUR COMPANY PERMITS THE USE OF THE SUPPORTED VOIP TELESETS, FROM ANY LOCATION OTHER THAN THE LOCATION WHOSE ADDRESS IS COMMUNICATED TO THE PSAP WHEN DIALING 911 CALLS, THEN PROVIDE AN ALTERNATE MEANS OF ACCESSING 911 EMERGENCY SERVICE FROM THE SUPPORTED VOIP TELESETS AT SUCH OTHER LOCATION OR, AT A MINIMUM, WARN THE USERS OF THIS LIMITATION AND THE REQUIREMENT FOR SUCH USERS TO SEEK ALTERNATE MEANS OF ACCESSING 911 EMERGENCY SERVICE AT SUCH OTHER LOCATION.
			FOR FURTHER INFORMATION ON THIS MATTER, REFER TO THE IPXX ADMINISTRATOR MANUAL, 20-20 RESOURCE CD, AND USER'S MANUAL THAT ACCOMPANIES THE SUPPORTED VOIP TELESETS.
			
			`location enable`
			Enables location information. Location text should be set using the command below when this option is enabled.
			
			`location reset`
			Resets location information to the unit's built-in default.
			
			`location <line> <text>`
			Sets the unit's location information. There are 3 lines of information available. The <line> argument determines which line will be set and ranges from 1 to 3. <text> is the location text for the specified line, and may only contain standard characters, symbols and spaces, and can be up to 35 characters long.

Table A-2. IPEC Administration Console Commands

Command	Mode	Description	Usage

gatekeeper	Admin	Configures the unit's H.323 gatekeeper address	`gatekeeper none`
			
			Configures the unit to not use a gatekeeper. IP phones that are configured to use the gatekeeper will not work in this mode.
			
			`gatekeeper auto`
			
			Configures the unit to broadcast and auto-detect the gatekeeper's IP address.
			
			`gatekeeper <ip address>`
			
			Configures the unit to use the specified gatekeeper IP address.

jitter	Admin	Configures the jitter buffer settings.	`jitter <nominal>`
			
			Sets the nominal delay.
			
			`jitter <min> <nominal> <max>`
			
			Sets the minimum, nominal, and maximum delays.
			
			Jitter buffer delay parameters are specified in milliseconds and range from 10 to 140 (and min <= nominal <= max). Higher values for nominal delay will reduce packet loss due to jitter but add a corresponding amount of latency to the audio stream. The nominal delay specified here is used as a starting point. The actual nominal delay will be automatically adjusted between the minimum and maximum values based on the real-time measured jitter.

Table A-2. IPEC Administration Console Commands

Command	Mode	Description	Usage
dirmap	Admin	Configures the switch ID to switch name map (for directory). This command is used when Network Directory data needs to be downloaded to the Cerato system from other Cerato systems in the network. The Directory can be downloaded over IPTU trunks using TDN.	`dirmap` Displays the switch ID to name map. `dirmap add <swid> <name>` Adds a new switch ID to name mapping. `dirmap delete <swid>` Deletes a switch ID to name mapping. The switch ID to name map is used by EAWS applications to display a text name for directory entries from switches on the TDN network. The switch ID should be a number from 0 to 999, corresponding to a node configured in the editor. The name string may only contain standard characters, symbols, and spaces, and can be from 1 to 21 characters long. Note that the switch id refers to the three digit PNANI number assigned to a Cerato in the SYSPAR section of the editor.

Table A-2. IPEC Administration Console Commands

Command	Mode	Description	Usage
time	Admin	Configures time zone, time server, and time synch settings	*time server <ipaddr>* Sets the SNTP server IP address to the specified value. *time tz <offset>* Sets the time offset to the specified number of hours from the time provided by the time server. Offset may be positive or negative. *time tzmin <offset>* Same as 'tz' except the time offset is specified in minutes. *time disable* Disables date/time tracking. Date/times will be relative to unit boot. *time <circuit> <interval_minutes>* Configures the circuit as a time synchronization port. The circuit must be configured as a DCA with access to the switch database editor. The switch time will be synchronized with the unit's time server on the specified interval (in units of minutes). Circuit Format: Circuit numbers are specified as L-XX or R-XX, where XX is a circuit number from 1 to 16. L-XX indicates circuits on the slot to the left of the board, R-XX indicates circuits on the slot the board is in.
autodca	Admin	Enables the console to auto-connect to a DCA circuit on boot up.	*autodca set <id>* Configures the unit serial port console to automatically connect to the DCCLI circuit with the specified <id> when the unit boots. *autodca none* Disables auto-connecting to a DCCLI circuit on boot.

Table A-2. IPEC Administration Console Commands

Command	Mode	Description	Usage

dca	Admin	Configures DCA circuits	`dca <circuit> dccli <id>`
			
			Configures the circuit as a DCCLI port. A DCCLI port is a DCA circuit that can be accessed from the unit's menu CLI via telnet or the console port. The <id> parameter is a string used to identify this circuit when accessing the DCA port. This string is provided as an argument to the 'dca' command from the menu CLI. The string is not case sensitive and the maximum length is 31 characters. It may only contain standard characters and symbols and no spaces.
			
			`dca <circuit> dcser <ipaddr> <port>`
			
			Configures the circuit as a DCSER port. A DCSER port is a DCA circuit that initiates a raw TCP connection to an IP serial hub to transport the DCA data. The TCP connection is established to the specified IP address and port.
			
			`dca <circuit> dcpc <id>`
			
			Configures the circuit as a DCPC port. A DCPC port provides DCA circuit access to a PC-based DCA application. The application must be configured to connect to this circuit using the unit's IP address and the specified circuit <id>. The <id> string is not case sensitive and the maximum length is 31 characters. It may only contain standard characters and symbols and no spaces.
			Circuit Format: Circuit numbers are specified as L-XX or R-XX, where XX is a circuit number from 1 to 16. L-XX indicates circuits on the slot to the left of the board, R-XX indicates circuits on the slot the board is in.

Table A-2. IPEC Administration Console Commands

Command	Mode	Description	Usage

ext	Admin	Configures the IP phone to circuit map.
		
		Note Ext is a live update command and does not require a reboot.
			`ext <circuit> cip210 <mac>`
			Configures the circuit for use with a CIP210 phone. The <mac> value is the phone's 12-digit MAC address (which is printed on a label on the bottom of the phone, e.g. 0001d803ab0d).
			
			`ext <circuit> cip1 <freq> [mac] [/p <pass>]`
			`ext <circuit> cip2 <freq> <btns> [mac] [/p <pass>]`
			Configures the circuit for use with a soft phone.
			  <freq> value sets the display frequency of the soft phone 911 location notice, such that it will be displayed every <freq> times the phone connects. <freq> can range from 1 to 50, or may also be set to 0 to disable the periodic notice display.
			  [mac] value is a CIP210 MAC address and allows that CIP210 phone to connect to this circuit. If both a CIP210 and a soft phone connect at the same time, the soft phone will take precedence and disconnect the CIP210.
			  <btns> value (for CIP2) sets the number of extra line appearance buttons (in addition to the standard 3 lines) and can range from 0 to 42.
			  <pass> Sets the initial password. Without this option, the initial password will be blank. Refer to the 'password' command for more information.
			
			`ext <circuit> h323 <alias> [flags]`
			`ext <circuit> h323 <ipaddr> [flags]`
			`ext <circuit> h323 <alias> <ipaddr> [flags]`
			Configures the circuit for use with an H.323 device. The <alias> and <ipaddr> values identify an H.323 device so that the unit can map it to a specific switch circuit. The format of <alias> is as follows:
			  id:<string> - H.323 ID alias (alphanumeric string)
			  dn:<number> - E.164 alias (phone number or extension number)
			  auto - Use the circuit's extension from the switch database as an E.164 alias. When using the 'auto' alias, <circuit> can be specified as 'all' to configure all circuits with the same settings. If only an alias is specified with no IP address, outgoing calls to the H.323 device will fail unless a gatekeeper is configured and available. Incoming calls will be compared with the alias if set or with the IP address if not, to determine which circuit will receive the call.
			Flags for H.323 circuits:
			  /nonum Do not send calling party number
			  /noname Do not send calling party name
			  /nname Prefix calling party number to calling party name
			  /nomwi Disable H.450.7 message waiting indicator feature
			
			`ext <circuit> aws <ext> [<xfer_ext>]`
			Configures the circuit for use with an EAWS. The <ext> parameter should match the extension number configured for the circuit and will be used to connect the EAWS application to the correct circuit. The <xfer_ext> parameter is optional, and if supplied will transfer any pending calls to the specified extension if the network connection is lost. <xfer_ext> can be up to 4 digits long and should contain only digits 0-9, *, and #.
			Circuit Format: Circuit numbers are specified as L-XX or R-XX, where XX is a circuit number from 1 to 16. L-XX indicates circuits on the slot to the left of the board, R-XX indicates circuits on the slot the board is in.

Table A-2. IPEC Administration Console Commands

Command	Mode	Description	Usage

music	Admin	Configures audio sources.	`music serv <ipaddr> <login id> <password>`
			
			Address for the Music FTP server (e.g. The FTP server is used to download and feed audio files).
			
			`music <circuit> <filename.wav> [/f | /r | /s | / def]`
			
			Examples:
			   'music r-1 ./wav/ann1.wav /f' stores the file in flash.
			       ann1.wav will be played to circuit R-1.
			   'music l-2 ./wav/ann1.wav' associates the wav file with
			       another circuit. ann1.wav is now played to R-1
			       and L-2.
			   'music r-12 ./wav/ann2.wav /r' stores the file in ram.
			   'music l-3 ./wav/ann3.wav /s' streams the file from the
			       network.
			   'music r-5 ./wav/ann4.wav /def' if there is a failure to
			       access the configured wav file for this circuit
			       ann4.wav will be played to circuit R-5 rather
			       than the default music file.
			/f Download this file from the ftp server and place it in
			  Flash. It is then played from its Flash location.
			/r Download this file from the ftp server and place it in
			  ram (temporary storage). It is then played from its
			  ram location. Automatically re-download the file from
			  the FTP server after a reboot.
			/s Stream the file from the FTP server repeatedly and play to
			  the circuit specified.
			/def The wav file specified will be played to the designated
			   circuit if the wav file configured for the circuit isn't
			   available. This option is used to override the global
			   default file. The override default file must be located
			   in flash.
			
			`music def <filename.wav>`
			
			This command defines the global default wav file. The global default is played to any circuit when the configured wav file cannot be opened. The global default file will be stored in flash.

Table A-2. IPEC Administration Console Commands

Command	Mode	Description	Usage

vlan	Admin	Configures Ethernet 802.1Q VLAN settings.	`vlan pri <value>`
			
			Sets user priority tag to the specified value. Valid values range from 0 to 7, or 'none'. '7' is the highest priority and is the recommended setting for prioritizing voice traffic.
			
			`vlan id <value>`
			
			Sets the VLAN ID to the specified value. Valid values range from 1 to 65534, or 'none'. If 'none' is specified for both the priority and VLAN ID parameters, the VLAN header will not be added to Ethernet packets.

Table A-2. IPEC Administration Console Commands

Command	Mode	Description	Usage

coding	Admin	Configures coding profiles
		
		Note
		G.729 coding profiles 3, 4, or 9 are available for the CIP210.
		
		In addition, note that a coding profile of 3, 4, or 9 can be selected for a CIP 1/CIP 2 SoftPhone that has a MAC address defined (i.e. used to connect to a CIP210). The connected CIP210 will use the G.729 coding profile. When a CIP 1/CIP 2 SoftPhone is connected in 'takeover' mode, the coding profile is automatically adjusted to an appropriate G.711 coding profile. The actual coding profile used by 'online' circuits can be viewed from the 'status' command.
			`coding <profile>`
			Sets the default coding profile to <profile>.
			
			`coding <circuit> <profile>`
			`coding <circuit> default`
			Configures the circuit to use the specified coding profile, or if default is specified, the unit's default coding profile. For H.323 circuits, this command sets the preferred coding profile.
			
			NOTE: H.323 will not negotiate VAD on/off for G.711. If H.323 selects a G.711 codec, the VAD mode will always follow the setting of the default coding profile.
			
			NOTE: If the preferred coding profile is not available at the remote endpoint, another profile from the list will be negotiated.
			
			Circuit Format: Circuit numbers are specified as L-XX or R-XX, where XX is a circuit number from 1 to 16. L-XX indicates circuits on the slot to the left of the board, R-XX indicates circuits on the slot the board is in.
			
			<profile> is a coding profile number from the table below.
			
			`No. Codec       VAD           VIF`
			`--- ------------    ---              ---`
			`  1 G.711        Mu-law On    10  (Default)`
			`  2 G.711        A-law  On    10`
			`  3 G.729AB     On           10`
			`  4 G.729A      Off          10`
			`  5 G.711        Mu-law Off   10`
			`  6 G.711        A-law  Off   10`
			`  7 G.711        Mu-law On    30`
			`  8 G.711        A-law  On    30`
			`  9 G.729AB     On           30`

Table A-2. IPEC Administration Console Commands

Command	Mode	Description	Usage
clear	Admin	Clears circuit configuration	*clear <circuit>* Clears the configuration on the specified circuit. *clear <type>* Clears all circuits of the specified type. <type> can be one of the following: 'ext' for extensions, 'dca' for DCA type circuits, and 'music' for music on hold circuits. *clear all* Clears all circuit configuration. Circuit Format: Circuit numbers are specified as L-XX or R-XX, where XX is a circuit number from 1 to 16. L-XX indicates circuits on the slot to the left of the board, R-XX indicates circuits on the slot the board is in.
reset	Admin	Forces a runtime reset of unit subsystems.	*reset comm all* Resets Cerato host communication for all circuits. *reset comm <circuit>* Resets Cerato host communication for the specified circuit.

B

Detailed Feature Description

This appendix expands on the features description in Chapter 1: *IPEC Features* on page 1-11, as follows:

- **transmission channels** - The IPEC has a maximum of 32 channels.

- **compressed and non-compressed coding** - The IPEC simultaneously supports compressed and non-compressed coding on a channel-by-channel basis.

- **Voice Formats** - are on a channel by channel basis. The following voice format is available:

  - *G.711 PCM* - only mu-Law is available on the network side

- **VIF Size -** VIF size is a specification of how much voice data is contained in an Ethernet packet and is specified in milliseconds. For example, a VIF of 10 ms means 10 ms of voice is contained in a packet.

- **Voice Activity Detection** - A sophisticated Voice Activity Detection (VAD) algorithm is implemented on the IPEC. Through an adaptive threshold level detection algorithm both short and long-term average power levels are used to detect when voice is active. Periodically background noise is captured and forwarded to the far end for playback insertion allowing background re-creation without consuming IP bandwidth. Effectively when packets stop arriving at the receiving end the background noise with appropriate level is simulated locally through a playback buffer avoiding the need for IP bandwidth when voice is inactive. A 5 ms look-ahead buffer is used to prevent loss of speech at the end of a speech segment.

  To preserve IP bandwidth: the IPEC operates with VAD, and for pass-through modes, VAD is automatically disabled.

- **De-Jitter/Packet Loss Compensation** - IP packets with voice pay-loads arrive in a burst-like fashion with variable time gaps between packets. The jitter buffer absorbs the time variations and smooths out the voice creating the constant playback rate required for toll quality. The jitter buffer size starts at nominal at the start of a call and over the duration of the call adjusts to the characteristics of the network.

  In general, small buffers provide better voice quality as the time delay of the voice is less, however if the buffer size is set too small, the packet may not arrive in time for playout.

  For best results, the network should be managed to prioritize voice over data so the jitter buffer will automatically optimize to a small size.

  Packets are occasionally lost through network transmission or arrive too late for real-time play-out requiring some adjustment in the play-out. With file transfer protocols, missing packets are recovered through retransmission requests, however with voice, the real-time nature of the communication does not allow time for retransmission and there-fore missing voice packets must be replaced with simulated packets. The play-out algorithm detects packet sequence numbers and missing packets are replaced with a repeat of the previous voice frame or com-fort noise. A single missing packet is not detectable to the ear and usu-ally two in a row are not detectable depending on the VIF size. In general, voice packet loss of 20 milliseconds or less is not noticeable.

- **Echo Cancellation** - G.168 and G.165 compliant line echo cancella-tion with 64 ms tail size removes echo from the frame of PCM samples by non-linear processing replacement of the echo return signal with low level pink noise.

- **Voice Quality & Network Data Rates** - Voice quality is affected by network bandwidth, packet losses, latency (delay), jitter (delay variations), compression (G.729 codec), and by other network factors. Table 2-A shows network bandwidth usage for various coding profiles available on the Cerato IP modules. Voice quality estimates in the table are subjective and should only be used as a guideline to select coding profiles. Actual results will vary depending on network variations. Data rates shown are average over long time intervals. Burst data rates for profiles using VAD can be estimated by looking at the similar profile where VAD is not used.

Table 2-A. Network Bandwidth Usage

Profile	Codec	VAD	VIF	Typical Bandwidth required (kbits/sec)*	Voice Quality Effect Managed Network [†]	Voice Quality Effect Unmanaged Network[‡]
1	G.711 Mu-law	On	10	67.2	Very Good	Good
2	G.711 A-Law	On	10	67.2	Very Good	Good
3	G.729 A,B	On	10	33.6	Good	Acceptable
4	G.729 A	Off	10	56.0	Very Good	Good
5	G.711 Mu-law	Off	10	112.0	Excellent	Very Good
6	G.711 A-law	Off	10	112.0	Excellent	Very Good
7	G.711 Mu-law	On	30	48.0	Very Good	Acceptable
8	G.711 A-law	On	30	48.0	Very Good	Acceptable
9	G.729 A,B	On	30	14.4	Acceptable	Poor

*   Per phone connection each direction, VAD estimated at 60% activity, double the network data rate estimate for two-way audio conversation. Assumes packet header of 60 bytes.

[†]   Assumes latency less than 80 msec and voice packet loss less than 2%

[‡]   Assumes latency less than 150 msec and voice packet loss less than 10%.

C
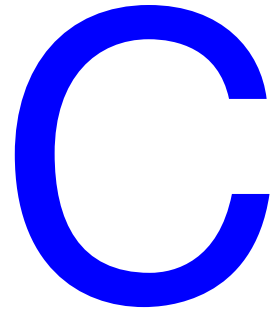
Calculating the UTC Time Zone Offset

This appendix gives details on how to calculate the time zone UTC offset for the geographic location of your system.

UTC Time Zone Offset

The UTC offset is a number that indicates the longitudinal zone of your location. Use Table C-1 to find the UTC offset for the longitudinal zone you are located in.

Note Be sure to adjust the UTC offset for Daylight Savings Time, if necessary. For example, the UTC offset for California is -8, but changes to -7 during Daylight Savings Time.

Table C-1. UTC Time Zone Offset

Longitudinal Zone	Offset
W180.0½ to W172.5½	-12
W172.5½ to W157.5½	-11
W157.5½ to W142.5½	-10
W142.5½ to W127.5½	-9
W127.5½ to W112.5½	-8
W112.5½ to W097.5½	-7
W097.5½ to W082.5½	-6
W082.5½ to W067.5½	-5
W067.5½ to W052.5½	-4
W052.5½ to W037.5½	-3

Table C-1. UTC Time Zone Offset

Longitudinal Zone	Offset
W037.5½ to W022.5½	-2
W022.5½ to W007.5½	-1
W007.5½ to E007.5½	0
E007.5½ to E022.5½	1
E022.5½ to E037.5½	2
E037.5½ to E052.5½	3
E052.5½ to E067.5½	4
E067.5½ to E082.5½	5
E082.5½ to E097.5½	6
E097.5½ to E112.5½	7
E112.5½ to E127.5½	8
E127.5½ to E142.5½	9
E142.5½ to E157.5½	10
E157.5½ to E172.5½	11
E172.5½ to E180.0½	12

Index

W
WAN *1*

Cerato IPEC Administrator Manual

© 2010 Teltronics, Inc.