

Server Cards
Reference Guide

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Product Description

The Server Cards provide voice compression that accept inputs directly from Voice Cards in the same system unit, or voice traffic from WAN links through the system.

Server Cards

- **ADPCM ADPCM 64 (8871)**

Using this Server Card Reference Guide

This Server Card Reference Guide provides technicians with installation, switch settings, connector pinouts, configuration, and troubleshooting information for the Server Cards.

Chapter 1. *ADPCM Card*

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Chapter 1

ADPCM Card

1.1 Introduction

This chapter provides installation, configuration, and troubleshooting information for the Adaptive Differential Pulse-Code Modulation (ADPCM) Card. This card is labeled as the ADPCM 64 card on its faceplate ejector.

1.2 ADPCM Card Descriptions

1.2.1 ADPCM 64 Card Description (8871)

The ADPCM 64 Card has 32 pairs of voice compression engines that accept inputs directly from voice, SRU, and/or BRI data cards in the same system unit, or voice traffic from WAN links through the system. This card requires a matching card at the other end to decompress the voice channels to normal 64 kbps operation.

Each pair of compression engines uses one 64 kbps DS0 time slot for two compressed voice channels. Each engine can compress 64 kbps voice traffic into 24 kbps, 32 kbps, or 40 kbps, depending on the voice signal quality required.

The rate of a DS0 time slot is 64 kbps, so the sum of the compression rates for engines 1 and 2 must equal 64 kbps. For example, if you assign a 32 kbps circuit to engine 1, engine 2 can only accept another 32 kbps circuit. Also, a 40 kbps circuit can only be paired with a 24 kbps circuit, and vice versa.

The ADPCM compression engines always work in pairs. Engines 1 and 2, 3 and 4, 5 and 6, and 7 and 8 are paired. Each member of the pair must have the same ADPCM WAN port and ADPCM time slot. **Also, both members of the compression engine pair must be active before either port will operate.**

The ADPCM 64 Card can transport low-speed asynchronous data transmission (19.2 kbps or less) from an SRU user card port that will occupy a 24 kbps engine. Each data circuit must be paired with a 40 kbps voice channel. The card can also compress B-channel voice traffic from a BRI card without restricting compression rates.

The integrated access system can have up to three ADPCM 64 Cards (two normal cards and an identical redundant card).

The ADPCM 64 Card supports Transition Signaling as defined in ANSI T1.302-1989, with the exception of the Alarm bits. ANSI T1.302 specifies signaling at the 32 bps compression rate. The card uses this scheme for 24 bps and 40 bps, even though those rates are not included in the standard. Table 1-1 summarizes the signals supported by each transcoder data rate. Your DS0 time slot configuration must adhere to these specifications.

Table 1-1. ADPCM Compression Rates

Transcoder Rate	Voice Quality (MOS)*	Modem Data	DTMF	FAX
24 kbps	3.6-3.8 Range	no	no	no
32 kbps	4.0-4.3 Range	up to 4.8 kbps V.32 9.6 kbps	OK	Group II
40 kbps	4.0-4.3 Range	up to 12 kbps V.32 14.4 (no/yes)	OK	Group III

* MOS = Mean Opinion Score based on subjective evaluation

1.2.1.1 Card Jumper/Switch Settings

The ADPCM 64 Card doesn't have any jumpers or switches on its mainboard.

1.2.1.2 Installing the ADPCM Card

Insert the ADPCM card into one of the server card chassis slots (P1 to P3). The system can accommodate up to three server cards.

1.3 ADPCM Card User Screens and Settings

1.3.1 ADPCM Card Main Screen

You must configure the ADPCM card ports for operation. This is done from the ADPCM Card Main Screen, which is shown in Figure 1-1. To go to this screen, highlight the ADPCM card in the System Main Screen and press <Enter>.

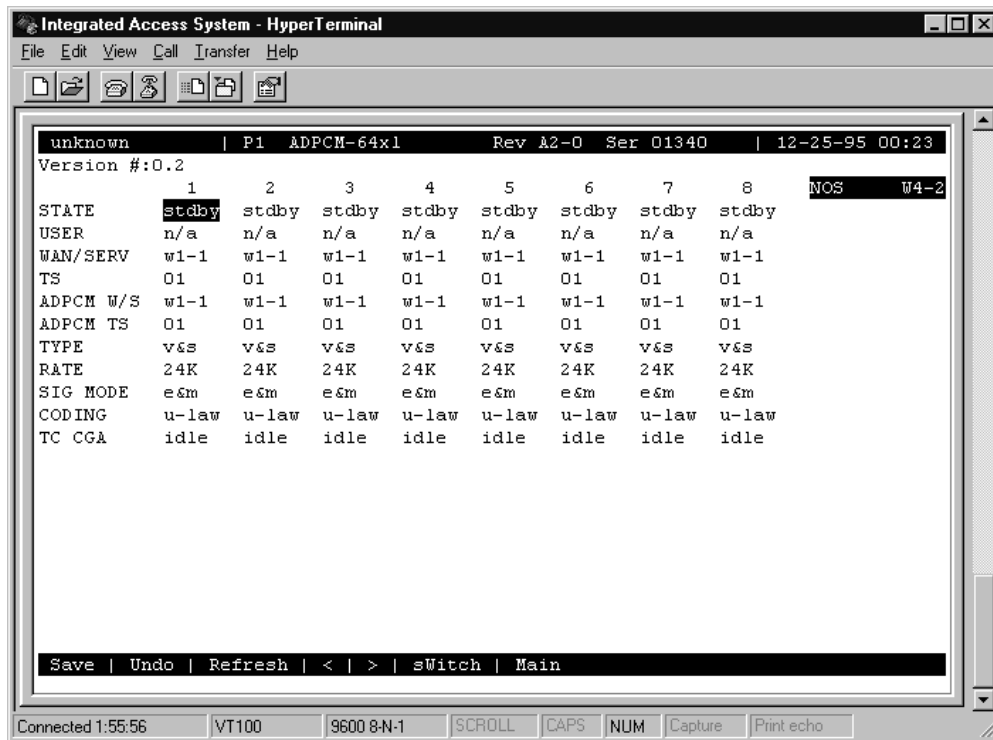


Figure 1-1. Typical ADPCM Card Main Screen

The bottom highlighted line of this screen shows several actions you can perform from the screen. To perform an action, simply press the key indicated by the uppercase letter of the desired action. For example, to save your configuration settings, press “s” to invoke the **Save** command. Table 1-2 lists these actions.

Table 1-2. ADPCM Card Main Screen Actions

Action	Function
Save	Saves changes to settings.
Undo	Returns all settings to the last saved state.
Refresh	Redraws the current screen with the latest information.
pg_Left	Pages through the 64 engines (highest to lowest), 8 at a time.
pg_righT	Pages through the 64 engines (lowest to highest), 8 at a time.
SWitch	Switches an active ADPCM card to its redundant mate.
Main	Returns to the ADPCM Card Main Screen. If changes are made to settings and not saved, users will be prompted to save or lose changes.

Table 1-3 summarizes the ADPCM card configuration parameters and available settings. These are also described in the following paragraphs.

Table 1-3. ADPCM Card Setting Option Settings and Defaults

Parameter	User Options	Default
STATE	stdby actv rdnt	stdby
USER	n/a uX-1 through uX-8	n/a
WAN/SERV	n/a w1-1 w1-2 w2-1 w2-2 w3-1 w3-2 w4-1 w4-2	none
TS	n/a 01-24 01-31	01
ADPCM W/S	w1-1 w1-2 w2-1 w2-2 w3-1 w3-2 w4-1 w4-2	none
ADPCM TS	01-24 01-31	01
TYPE	n/a v&s v trnsp	v&s
RATE	n/a 24K 32K 40K	24K
SIG MODE	n/a e&m fxs plar fxo user	e&m
CODING	n/a u-law a-inv	u-law
TC CGA	n/a idle busy	idle

STATE

The State setting determines whether the port is active or inactive. When assigning ADPCM engine pairs for WAN traffic, set the State setting to **stdby** (standby) for ports that are not yet used or not yet configured. Set it to **actv** (active) for ports that are ready for use.

Setting the State to **rdnt** (redundant) for any port on an unused card will cause that card to act as the redundant back-up for all of the other ADPCM cards in that unit. Once a card is designated as a redundant ADPCM card the only way it can be used for regular ADPCM traffic is to change the state of the selected port back to either **actv** or **stdby**.

When assigning ADPCM engine pairs from user cards, changing the port from **stdby** to **actv** and saving the selection information on the user card screen will cause the system to automatically assign an ADPCM engine.

When the engine is assigned from a user card, no changes can be made from the ADPCM card screen to any of the fields.

USER

The User setting identifies the user card and port connected to this engine. This is the place where the ADPCM card will expect incoming (non-compressed) voice, subrate data, and B-channel traffic. If assigned from a voice, SRU, or BRI card port, this selection will show the user card slot and port number (e.g., **u5-2** for the card in slot U5, port 2). If you are assigning a WAN time slot, this setting will show **n/a**.

WAN/SERV

The WAN/SERV setting identifies the incoming WAN link connected to this engine. This is the place where the ADPCM card will expect incoming (non-compressed) voice. If you are assigning voice traffic to a WAN time slot, this setting will show **w1-1** to **w4-2**. If you are assigning to a voice card or SRU card port, this setting will show **n/a**.

TS

The Time slot parameter selects the specific time slot of the above WAN link on which the ADPCM card can expect incoming voice traffic. If WAN 1-1 is equipped with a T1 CSU module or a DSX/CEPT module configured for T1 DSX interface, the options are **1** to **24**. If a DSX/CEPT module is installed on that WAN port and that module is configured for CEPT E1 interface, the options are **1** to **15** and **17** to **31**. If you are assigning time slots to voice or SRU card ports, this setting will be **n/a**.

ADPCM W/S

The ADPCM W/S setting identifies the outgoing WAN link to which the engine is connected. If you are assigning to a voice, SRU, or BRI card port, or to voice traffic from a WAN time slot, this setting will show **w1-1** through **w4-2**. This is the WAN link to which the ADPCM card will send its outgoing (compressed) traffic.

ADPCM TS

The ADPCM Time slot parameter selects the specific time slot on the WAN link chosen in the previous setting that the ADPCM card will send outgoing compressed traffic. The options are determined by the equipment on the WAN link selected in the previous setting. If WAN 1-1 is equipped with an 812 CSU or 811 DSX/CEPT Module configured for DSX, the options are **1** to **24**. If a DSX/CEPT module is installed and configured for CEPT E1, the options are **1** to **15** and **17** to **31**.

TYPE

The Type parameter identifies the voice and signaling requirements for the incoming circuit. The options are **v** (voice), voice and **v&s** (signaling) and **trnsp** (transparent). Use **v** when the input to the ADPCM channel is a 64 kbps channel and inband signaling is not required. Use **v&s** when the input to the ADPCM channel is a 64 kbps voice channel and the ADPCM card must also provide inband signaling.

The **trnsp** setting allows you to map the outputs of SRU ports to the ADPCM channel. The subrate data will be clocked into the ADPCM channel at an input rate of 24 kbps, then passed transparently (non-compressed) through the ADPCM card to the appropriate WAN time slot. This could be useful if you have an odd number of voice channels and want to utilize the empty engine pair of the last ADPCM channel.

The B-channel traffic from the BRI card also uses the **trnsp** setting, but it does not place any restrictions on the compression rates.

If the engine is assigned to a voice card, this selection will show **v&s**. If assigned to an SRU card, it will show **trnsp**. You cannot change it from this screen.

RATE

The Rate parameter identifies the compression requirements for the incoming circuit. The options are **24K**, **32K**, and **40K**. The sum of the pair of engines must always equal 64 kbps.

If this engine is assigned to a user card port, the selection will show the value that was chosen on that port. It cannot be changed from this screen.

SIG MODE

The Signaling Mode parameter identifies the type of signaling required for the incoming circuit from the network. If **v&s** was chosen in the Type setting, the options are **e&m**, **fxs**, **plar**, and **fxo**. If **v** or **trnsp** was chosen in the Type setting, the only option is **n/a**.

If this engine is assigned to a user card, this selection will show **user**. It cannot be changed from this screen.

CODING

The Coding parameter identifies the PCM companding format required for the incoming circuit from the network. The choices are **u-law** or **a-inv**.

If this engine is assigned to a voice or BRI card, this selection will show the value you selected for that port. If this engine is assigned to an SRU card, this selection will show **u-law**. It cannot be changed from this screen.

TC CGA

The Trunk Conditioning CGA setting identifies the type of trunk conditioning required for the incoming circuit. If **v&s** is chosen in the Type setting, the options are **idle** or **busy**. If **trnsp** or **v** is chosen as the Type, the only option is **n/a**.

If this engine is assigned to a voice card, this selection will show the value you selected on the voice card port. If assigned to an SRU or BRI card port, the field will show **n/a**. It cannot be changed from this screen.

1.4 ADPCM Card Error Messages

Refer to Appendix B in the System Reference Guide for further information on Error Messages regarding this card.

1.5 ADPCM Card Troubleshooting

The following are instructions on how to troubleshoot the ADPCM card. This is in case the card fails for any reason:

1. Green LED on faceplate.
2. Verify that the card is in the right slot, P1 through P3.
3. Reseat the card if necessary. This can be done with the power on.
4. View the card status on the main screen.
5. Check the cards configuration options. Select the card from the main screen to do this.
6. Now try to log into the ADPCM main screen. If this still didn't work the card may be bad. Try swapping it with a new card.
7. If the ADPCM card is determined to be faulty, replace it and return the faulty unit for repair to the location specified by your distributor.

1.6 ADPCM Server Card Specifications

ADPCM Card (8871)

Input Voice Channels	Can originate from any 2-wire or 4-wire voice card or from a DSO on a WAN (E1/T1 or HDSL) interface. μ -law & A-law 64Kbps PCM compatible on a per channel basis.
Input Sub-rate Data	SRU data traffic at 19.2Kbps or less can be carried on a 24Kbps sub-channel.
Input BRI traffic	B channel voice traffic can be compressed at any of the configurable rates.
Modem Data Support	Transcoder rate: 24, 32 or 40 Kbps; Modem Data: none, up to 4.8Kbps, V.32 to 9.6Kbps, up to 12Kbps and V.32 bis to 14.4Kbps
Fax Support	Transcoder rate for fax: 24, 32 or 40 Kbps; none, Group II and Group III fax.
Voice Quality	As measured by Mean Opinion Score (MOS) analysis, a subjective evaluation with a range of 0 (poor quality) to 5 (good quality). Toll quality voice is accorded a MOS of 4.0 24Kbps transcoder rate MOS is 3.6-3.8; 32Kbps transcoder rate MOS is 4.0-4.3 and 40Kbps transcoder rate MOS is 4.0-4.3
Echo Cancellation	Non provided—typically not required
Signaling	Transmitted in-band utilizing CAS transitional signaling, as per ANSI T1.302—1986 for 32Kbps and modified for use with 24Kbps and 40Kbps. Note Robbed Bit Signaling Alarm Transmission, as specified in ANSI T1.302a-1989 is not supported.
Maximum Card Count	3 (2 active, 1 redundant)
Transcoder Operation	Compliant to G.761 Alarm Indication and Fault Handling.

Standards Compatibility

ANSI	T1.302 1989
	T1.302a 1992
	T1.303 1989
CEN	EN 500 081-1
	EN 500-092-1
	EN 60950/A2
ITU-T	G.721
	G.723
	G.726 12/90

