AM-TR-NIS-000112

Ameritech's Caller ID With Call Waiting (CIDCW) And Call Waiting Deluxe (CWD)

Reference material to CPE vendors for Ameritech's CIDCW/CWD Network Interface Specification

To:	CPE Vendors
Effective Date:	November, 1996
Issue Date:	Issue 2, November 1996
Expires On:	N/A
Training Time:	N/A
Related Documents:	**GR-30-CORE** Issue 1; **TR-NWT-000575** Issue 1 plus Revision 1; **AM TR-NIS-000099** Issue 3; **AM TR-NIS-000118** Issue 1; AT&T Switch-to-CPE Analog Off-Hook FSK Data Interface, Issue 1 (with Attachment 1). **GR-416-CORE** Issue 1; **TR-NWT-001273** Issue 1
Canceled Documents:	N/A
Issuing Department:	Service Integration and Delivery
Distribution:	Infotech
Business Unit:	Network

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GENERAL

This document describes the technical network interface specification for Ameritech's Caller ID with Call Waiting (CIDCW) and Call Waiting Deluxe (CWD) services.

The CIDCW service allows Ameritech customers who subscribe to Ameritech's Caller ID and to Ameritech's Call Waiting services to be able to receive the Caller ID of the waited call. This new Ameritech service offering requires new CIDCW compatible Customer Premises Equipment (CPE). Ameritech customers who subscribe to Ameritech's Caller ID with Name, may also receive the number and name associated with the waited call.

The Call Waiting Deluxe service is an advanced form of Call Waiting. In conjunction with CIDCW, CWD allows Ameritech customers to specify the termination treatment of the waiting call.

It is anticipated that CWD will be available to Ameritech customers with screen-based telephones such as an Analog Display Services Interface (ADSI) compatible Customer Premises Equipment.

Reasons For Reissue

This document is being reissued to include information on the Call Waiting Deluxe feature. CWD uses the same network interface as Caller ID with Call Waiting. DTMF digits are used to invoke the CWD options described in 1.1 following.

1. SERVICE DESCRIPTION

1.1. Purpose

Ameritech's Caller ID with Call Waiting service allows a Caller ID (or Caller ID with Name) and Call Waiting customer with CIDCW compatible Customer Premises Equipment to receive the number, or number and name, associated with the waited call. This allows the Ameritech customer to determine how they wish to respond to the waited call (i.e., ignore the waited call; answer the waited call and keep the existing call; answer the waited call and drop the existing call).

Ameritech's Call Waiting Deluxe service allows a customer with compatible CPE to control the treatment of incoming calls while the customer is off-hook on an existing call. While the customer is on an existing call, CWD notifies the customer of an incoming call with the standard call waiting tone. If a customer has Caller ID or Caller ID with Name feature, the number or name and number associated with the waited call may be provided to the customer immediately following CWD alerting.

On being alerted to the new call, the customer may choose one of the following options for treating the call:

- Answer the incoming call and put the existing call on hold.
- Answer the incoming call and disconnect the existing call.
- Forward the incoming call.
- Connect the incoming call on an announcement.
- Put the incoming call on hold and play a hold announcement.
- Conference the incoming call with the existing call.

An ADSI-compatible CPE, by using a CPE resident feature, simplifies the selection of a CWD option by displaying the options to customers allowing them to press a single soft key to select a treatment.

NOTE: Ameritech may or may not provide all of the above options.

1.2. Capabilities

Caller ID with Call Waiting

The Caller ID with Call Waiting service is an analog off-hook GR-30 (See Section 4 References: GR-30-CORE) Frequency Shift Keying (FSK) interface.

The customer's CIDCW compatible CPE can receive the following types of information over the analog local loop:

- Date and time of the waited call.
- Telephone number associated with the waited call.
- For Caller ID with Name customers, the Name associated with the waited call.

Call Waiting Deluxe

Call Waiting Deluxe utilizes an Analog Display Services Interface (ADSI) protocol. The ADSI protocol provides be-directional data communications with a CPE that allows customers to use screen-based information and call management features via their CPE. This protocol uses high frequency voiceband dual tones and uses the standard modem-based technology now used for transmission of caller identification and related information from a switch to a CPE, as de-

scribed in GR-30 (See Section 4 References: GR-30-CORE), to convey data from the Switch/Server to the CPE. This protocol uses standard Dual-Tone MultiFrequency (DTMF) signaling technology used to send a customer's called party telephone number to the network from the CPE, to convey CPE data acknowledgments and responses back to the Switch/Server.

The ADSI is a be-directional interface and protocol needed to support Analog Display Services. The standard Analog Display protocol uses both DTMF and GR 30 (See Section 4 References: GR-30-CORE) CPE Alerting Signal (CAS) and GR 30 (See Section 4 References: GR-30-CORE) physical layer protocol type modem signaling to provide the basic communication between the Switch/Server and CPE. The Switch/Server will use a voice band CAS to "wake up" the CPE to receive data as in the off-hook GR-30 (See Section 4 References: GR-30-CORE) protocol. The CPE will use various combinations of DTMF tones to provide acknowledgments and responses to the Switch/Server. GR-416 (See Section 3.1 Reference: GR-416-CORE) identifies the following DTMF signals and corresponding options:

- "DTMF 9" - FORWARD option
- "DTMF 8" - ANNOUNCEMENT option
- "DTMF 7" - DROP option
- "DTMF 6" - HOLD option
- "DTMF 3" - CONFERENCE option

NOTE: Ameritech may or may not provide all of the above options.

In particular, the initial voice band alerting signal is acknowledged with DTMF tone pairs from the CPE in the same manner as in the off-hook GR-30 (See Section 4 References: GR-30-CORE) protocol. The Switch/Server will use the GR-30 (See Section 4 References: GR-30-CORE) physical layer protocol type modem based signaling to deliver data to the CPE.

CWD uses capabilities that are described in the following related documents:

TR-NWT-000575, CLASS Feature: Calling Identity Delivery on Call Waiting, Issue 1 (Bellcore, October 1992), plus Revision 1, December 1994.

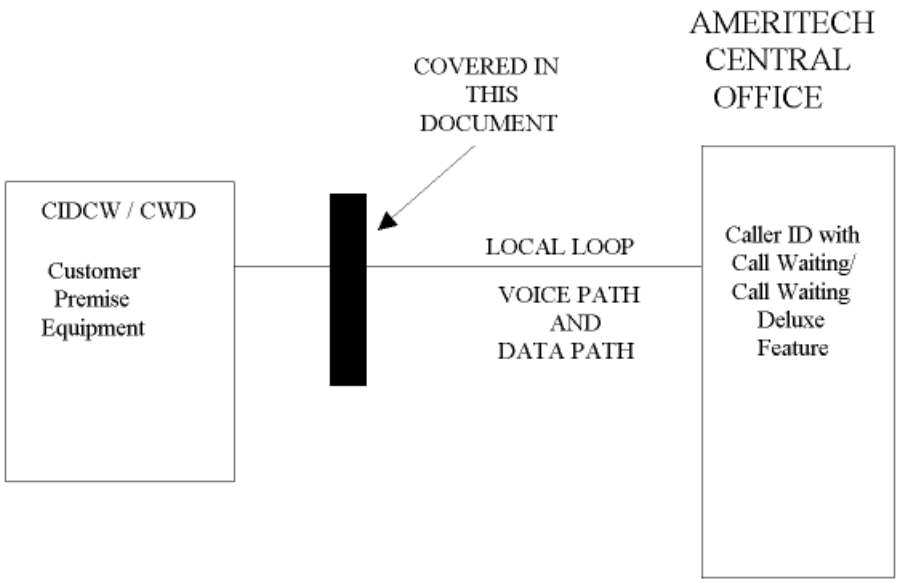
GR-30-CORE, Voiceband Data Transmission Interface Generic Requirements, Issue 1, (Bellcore, December 1994) and **SR-TSV-002476**, Customer Premises Equipment Compatibility Consideration for the Voiceband Data Transmission Interface, Issue 1 (Bellcore, December 1992) provide requirements and considerations for CPE alerting and the transmission data (e.g. CID data or the date and time) applicable to CWD.

TR-NWT-001273, Generic Requirements for an SPCS to Customer Premises Equipment Data Interface for Analog Display Services, Issue 1 (Bellcore, December 1992) and **SR-INS-002461**, Customer Premises Equipment Compatibility Considerations for the Analog Display Services Interface, Issue 1 (Bellcore, December 1992) provide requirements and considerations for feature download and operation of CPE resident features.

AM TR-NIS-000118, Ameritech's Analog Display Services Interface Feature Download, Issue 1 (February 1994) provides requirements for feature download and transmission requirements of DTMF signaling and Frequency Shift Keying signaling for ADSI.

GR-416-CORE, CLASS Feature, Call Waiting Deluxe, Issue 1 (Bellcore, April 1995).

Figure 1. Typical CIDCW/CWD Arrangement



2. NETWORK INTERFACE

2.1. Physical Network Interface

The physical Network Interface (NI) is the point of connection between the Ameritech CIDCW/CWD equipment and the CIDCW/CWD CPE provided by the customer. Interconnection from the Ameritech CIDCW/CWD Central Office switch to the CIDCW/CWD CPE is via a standard voice grade analog local loop in the off-hook condition.

Figure 1 shows a typical CIDCW/CWD arrangement.

The CIDCW/CWD Physical Layer is responsible for the transmission of the physical data units between the Ameritech CIDCW/CWD central office equipment and the customer's CIDCW/CWD compatible CPE modem across the network interface. This layer is also responsible for the physical, electrical and transmission requirements of Frequency Shift Keying signaling for CIDCW/CWD.

Details for the Physical Layer can be found in Bellcore's CR-30 for off-hook signaling. Further details for AT&T's 1A ESS Switch interface and the 5ESS Switch interface can be found in AT&T's "Switch-to-CPE Analog Off-Hook FSK Data Interface," Issue 1 (with Attachment 1). (See Section 3 References: Switch-to-CPE Analog Off-Hook FSK Data Interface)

2.2. Datalink Layer

The Datalink Layer provides reliable data transmission between the Ameritech central office switch and the customer's CIDCW/CWD compatible CPE. This layer establishes and releases the datalink connections and detects transmission errors.

Details for the Datalink layer can be found in Bellcore's TR-575 (See Section 3 References: **TR-NWT-000575**) (with references to Bellcore's GR-30). Further details for AT&T's 1A ESS Switch Interface and the 5ESS Switch interface can be found in AT&T's "Switch-to-CPE Analog Off-Hook FSK Data Interface," Issue 1 (with Attachment 1). (See Section 3 References: Switch-to-CPE Analog Off-Hook FSK Data Interface.)

2.3. Message Layer

The message Layer covers the character set and data codes which are displayed on the customer's CIDCW/CWD compatible CPE.

Details for the Message Layer can be found in Bellcore's TR-575 (See Section 3 References: **TR-NWT-000575**) (with references to Bellcore's GR-30). Further details for AT&T's 1A ESS Switch interface and the 5ESS Switch interface can be found in AT&T's "Switch-to-CPE Analog Off-Hook FSK Data Interface," Issue 1 (with Attachment 1). (See Section 3 References: Switch-to-CPE Analog Off-Hook FSK Data Interface.)

3. REFERENCES

1. **GR-30-CORE** Issue 1, December, 1994, "Voiceband Data Transmission Interface Generic Requirements."

2. **TR-NWT-000575**, Issue 1, October 1992, "Calling Identity Delivery and Call Waiting."

3. **SR-NWT-002024**, Issue 1, April 1992, “Customer Premises Equipment Compatibility Considerations for the SPCS-to-CPE Data Transmission Interface.”

4. **TR-NWT-001188**, Issue 1, December 1991, “CLASS Calling Name Delivery Generic Requirements.”

5. **TR-TSY-000031**, Issue 3, January 1990, “CLASS Feature: Calling Number Delivery.”

6. **AM TR-NIS-000099**, Issue 3, August 1993, “Ameritech’s Caller ID, Called IS with Name and Visual Message Waiting Indicator.”

7. **AM TR-NIS-000118**, Issue 1, February 1994, “Ameritech’s Analog Display Services Interface Feature Download.”

8. AT&T “Switch-to-CPE Analog Off-Hook FSK Data Interface,” Issue 1 (with Attachment 1 - “Calling Identity Delivery On Call Waiting”).

9. **GR-416-CORE** Issue 1, April 1995, “CLASS Feature: Call Waiting Deluxe.”

10. **SR-TSV-002578**, “A Method and Apparatus for Detecting a Dual Tone Signal in the Presence of Speech,” Issue 1, April 1993.

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