

Route Diversity (1096)

Route Diversity provides an increased safety factor for ESP facilities that could be subject to disruption from cable cuts and other unavoidable catastrophes. It provides for diverse routing when necessary in order to comply with special ESP requirements.

| Generic Name of ONA Service | Product Name | BSE or CNS |
|-----------------------------|---------------------------------|------------|
| Route Diversity | AM - Special Facilities Routing | BSE |
| | BA - Route Diversity | BSE |
| | BS - Route Diversity | BSE or CNS |
| | NX - Special Facilities Routing | BSE |
| | SWB - Diversity | BSE |

FEATURE OPERATION:

Three example serving arrangements provide the desired overall special facilities routing:

1. Local Diversity provides a transmission path for services between the customer's designated premises and the serving wire center that is diverse from the normal transmission path.
2. Inter Wire Center Diversity provides a transmission path diverse from the normal path, for services between a set of wire centers.
3. The Serving Wire Center Avoidance arrangement provides a transmission path for services between the customer's designated premises and a wire center which is not normally the serving wire center.

This capability is provided with the following conditions in mind: diversity involves providing services over different physical routes, and avoidance involves providing one or more services on a route which avoids specific geographic locations.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is independent of central office switch type.
2. The diversity may consist of separate facilities within the same sheath, facilities in separate sheaths over the same facilities route, or entirely separate facility routes.
3. All route diversity combinations are not available for all ESP locations. ESPs desiring route diversity should contact their LEC account representative to determine what is available to them.
4. Reference:
 - Traffic Routing Administration Catalog of Products - LERG Southwestern Bell area data, LATAs 5XX.

This service, if offered as a BSE, is associated with all basic serving arrangement types. To avoid duplication, it is listed in this section only.

Secondary Channel Capability (1034)

The secondary channel feature provides the customer with access to a low speed monitoring channel associated with a primary dedicated digital private line channel. The secondary channel simultaneously transmits at a lower bit rate.

| Generic Name of ONA Service | Product Name | BSE or CNS |
|------------------------------|------------------------------------|------------|
| Secondary Channel Capability | AM - Secondary Channel | BSE |
| | BA - Secondary Channel | BSE |
| | BS - Secondary Channel Capability | BSE or CNS |
| | NX - Secondary Channel Capability | BSE |
| | PB - Secondary Channel | BSE |
| | SWB - Secondary Channel Capability | BSE |
| | Qwest - Secondary Channel | BSE |

FEATURE OPERATION:

The secondary channel capability offers a companion digital transmission channel independent of the primary channel and at a lower bit rate.

The basic dedicated digital private line offers two-point and multi-point synchronous full duplex data transmission at 2.4 Kbps, 4.8 Kbps, 9.6 Kbps and 56 Kbps. Secondary channel data transmission rates are subrates of the basic dedicated digital private line speeds, i.e., 133 bps, 266 bps, 533 bps and 2.666 Kbps. The secondary channel will utilize the same basic network equipment and transmission facilities as the primary channel and will have comparable quality.

A 2-point circuit connects two customer stations in a balanced mode of operation.

From different remote stations on a multipoint circuit, transmission on the primary and secondary channels are independent of each other, that is, a remote station can communicate with the control station on the primary channel while another station simultaneously transmits on the secondary channel to the control station.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. The customer's overall performance will depend on the characteristics of the CPE and customer premises cabling that is provided and maintained by the customer, as well as those of the DDS network. These performance objectives are attainable if the CPE connected to the DDS network meets the requirements of TR-NPL-000157.
2. Due to use of the same network equipment and transmission facilities for related primary and secondary channels, the quality of the related channels should be approximately equal.
3. Multipoint capability may not be available in all locations.
4. Note that some LECs may not offer this feature in conjunction with the Category 3, Type K - Dedicated Digital (64 Kbps) BSA.

5. References:

- TR-NPL-000157 Secondary Channel in the Digital Data System: Channel Interface Requirements, Issue 2, April 1986. [No longer listed.]

This service, if offered as a BSE, is associated with the Dedicated Digital (< 64 kbps) basic serving arrangement.

Statistical Multiplexer (1035)

This capability provides the ESP with access to a more efficient form of time division multiplexers that work by a dynamic allocation of time slots. Multiple data streams can be multiplexed into a single high speed data stream on a single link. Statistical multiplexing requires CPE that is compatible with the central office based multiplexing equipment. Such multiplexing must be transparent to the speed, code and protocol of the user's data signal; protocol conversion is not to be provided by such equipment.

| Generic Name of ONA Service | Product Name | BSE or CNS |
|-----------------------------|--------------------------------------|------------|
| Statistical Multiplexer | BA - Statistical Multiplexer in C.O. | BSE |

FEATURE OPERATION:

There is no activation required by the ESP once the service is established. As part of establishing the service, it must be verified that the ESP's equipment and the central office equipment are compatible.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. Present statistical multiplexers use a proprietary protocol that is particular to each vendor. Therefore, each vendor's statistical multiplexer will communicate only with equipment that uses that vendor's protocol.
2. There are no feature interactions. This capability is used only as a transport medium from the ESP to the central office.
3. References:
 - No generic reference documents available.

This service, if offered as a BSE, is associated with the Dedicated Digital (< 64 kbps) basic serving arrangement.

Verify Integrity of Subscriber Lines (1036)

This capability allows an ESP to be signaled by central office equipment every 60 seconds or less to report on the integrity of the ESP's client's lines that are being monitored for breaks. Scanning equipment located in the central office and equipment located on the ESP's client's premises check the client's line within 60-second intervals. If the ESP's client's line has been disabled, the BOC central office equipment will automatically notify the ESP of its client's line disablement.

| Generic Name of ONA Service | Product Name | BSE or CNS |
|--------------------------------------|---|------------|
| Verify Integrity of Subscriber Lines | AM - Notification of Subscriber Line Breaks | CNS |
| | AM - Detection of Subscriber Line Breaks | BSA * |
| | NX - PULSENET SM | BSA |
| | PB - POLLSTAR SM | BSE |
| | PB - ALARM PLUS SM | BSE |

FEATURE OPERATION:

1. ESP clients with this capability will have their line connected to a scanning device in the central office upon receipt of an order by the telephone company.
2. Compatible CPE is placed on the client's premises by the ESP and is connected to the telephone line.
3. The scanner will periodically poll each client's line for a signal. Lack of a signal will indicate a line break.
4. Upon detection of a line break, the scanner will transmit a report to the ESP over a dedicated link or a dialup connection.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This service is independent of central office switch type.
2. The client's line must be one-party service.
3. This service may not work when certain range extension or subscriber carrier equipment is used on the client's line.

* This capability is inherent with Alarm Services (DNAL) for Ameritech.

SM PULSENET is a registered service mark of NYNEX.

SM POLLSTAR is a service mark of Pacific Bell, ALARM PLUS is a service mark of Nevada Bell.

4. References:

- Ameritech - AM-TR-MKT-000038
- Ameritech - AM-TR-MKT-000039

This service, if offered as a BSE, may be associated with the Dedicated Alert Transport or Dedicated Network Access Link basic serving arrangements, as stated in each individual ONA plan.

4. Technical Descriptions for Dedicated Network Access Link Serving Arrangements

Calling Directory Number Delivery - via BCLID (1063)

Calling Directory Number Delivery - via BCLID (CDND/BCLID) will allow the Centrex, Multiline Hunt Group (MLHG) or PBX with DID customer to receive call-related information on calls that are received from outside the Centrex group, MLHG or PBX. The information is transmitted over a dedicated data channel.

| Generic Name of ONA Service | Product Name | BSE or CNS |
|--|---|------------|
| Calling Directory Number Delivery- via BCLID | BS - Call Tracking - BCLID * | BSE |
| | PB - Bulk Calling Line Identification (BCLID) | BSE |
| | Qwest - Calling Number Identification (BCLID) | BSE |

FEATURE OPERATION:

The customer must contact the telephone company to have the CDND/BCLID service initiated. A service order is required. This service is initiated on an individual customer basis for a PBX customer and on a customer group basis for a Centrex or MLHG customer. Parameter changes and possible hardware installation are required. In addition, the customer will require CPE (e.g., a TTY, minicomputer, etc.) capable of receiving the ASCII formatted signaling that will be sent over a dedicated data channel. Once the service is initiated it will remain activated continuously until a request is made to discontinue the service.

The output message containing the CDND/BCLID data goes over the dedicated data channel to the customer before ringing is applied to the called line. The transmitted information is as follows:

- CDND/BCLID Identifier
- The date of the call
- The time the call was made
- The calling directory number
- The line multistatus ("M" for PBX", MLHG, etc. and "T" for true DN)
- The called directory number or terminal number and group number
- The busy/idle status of the called directory number

* Due to an ongoing lack of demand, BellSouth amends its ONA plan and requests permission from the FCC to eliminate the service. (Request made to FCC in 2002).

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

| Switch Type | 1A ESS |
|--------------------------|--------|
| Earliest Generic Release | 1AE10* |

Note: * Available on an intraoffice basis with generic 1AE9.

2. The serving central office switch must be equipped with the appropriate CLASSSM CDND/BCLID software and hardware. In order to provide call related information on an interoffice basis, both the originating and terminating switches must be equipped with the CLASS and Common Channel Signaling (CCS) SS7 software and hardware and the interoffice trunks must be converted to SS7. This service is only offered on an intraLATA basis at this time.
3. When a customer has more than 10,000 calls per CDND/BCLID channel per hour, call related data for some calls may be lost.
4. Each CDND/BCLID directory number can have only one primary input/output channel and one backup channel to the 1A ESS switch.
5. A PBX customer that wants to subscribe to BCLID must be assigned to a multiline hunt group or must be a PBX with DID.
6. CDND/BCLID output is not stored in the switch, therefore CPE must be available to collect the information.
7. The customer cannot activate or deactivate this service, it must be done via the service order process.
8. References:
 - GR-32 LSSGR: CLASSSM Feature: Bulk Calling Line Identification, FSD 02-02-1280 (A Module of LSSGR, FR-64), Issue 1, June 2000 (replaces TR-NWT-000032 Issue 2 & Revision 1 – no technical changes).

This service may be associated with the Dedicated Network Access Link or Circuit Switched Line basic serving arrangements, as stated in each individual ONA plan.

Make Busy Key (1071)

This capability is provided via a dedicated link connected to a line scan point or equivalent, and is associated with a MLHG, DID or equivalent. By activating an ESP provided key at the ESP end of this link, the ESP can place one or more lines or trunks in a busy or overflow condition. Subsequent calls may either be directed to a tone, announcement or possibly an alternate route.

| Generic Name of ONA Service | Product Name | BSE or CNS |
|-----------------------------|--|------------|
| Make Busy Key | AM - Make Busy Arrangements | BSE |
| | BA - Make Busy Arrangements | BSE |
| | BS - Subscriber Transfer Service/Break In Rotary | BSE or CNS |
| | BS - Make Busy/Night Transfer (Access) | BSE |
| | NX - Trunk Group Make Busy/Night Transfer | BSE or CNS |
| | PB - Availability Control Arrangement | BSE |
| | SWB - Remote Make Busy | BSE |
| | SWB - Remote Make Busy - Trunk Side | BSE |
| | Qwest - Make Busy | BSE |

FEATURE OPERATION:

1. The customer (ESP) requests this service and the associated Dedicated Network Access Link (DNAL) from the telephone company via service order.
2. The ESP must specify which line(s), trunk(s), group of lines or group of trunks is to be associated with the service.
3. Upon activation of a customer provided key, or similar device, the associated lines or trunks will be placed by the central office switch in a busy condition. The lines or trunks remain in the busy conditions until released by the customer.
4. Calls to busy lines or trunks will receive normal busy condition treatment which may include tones, announcements or alternate routing including call forwarding.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

| Switch Type | 1A ESS | 5ESS | DMS-100 |
|--------------------------|--------|--------|---------|
| Earliest Generic Release | 1AE8A | 5E2(2) | BCS17 |

2. A line or trunk may be associated with only one key.
3. Originating service is not affected by key activation.
4. The maximum number of lines or trunks that can be controlled via a single key varies by switch type.
5. Normal operation of the alternate routing or various Call Forwarding capabilities is not affected by this service.
6. References:
 - GR-569 LSSGR: Multiline Hunt Service, FSD 01-02-0802 (A Module of LSSGR, FR-64), Issue 1, June 2000, see "make-busy key" (replaces TR-TSY-000569 Issue 1 – no technical changes).

This service, if offered as a BSE, may be associated with the Dedicated Network Access Link or Circuit Switched Line basic serving arrangement, as stated in each individual ONA plan.

Message Desk (SMDI) (1072)

This capability will provide the ESP with real time call status information on telephone calls that are terminated to a multiline hunt group. The information delivered in this package includes the following:

MLHG and terminal identification of call handler, call reason (call forward type or direct call), original calling directory number, and originally called number in the forwarding situation.

The call status information is transported from the serving central office via a data link to the ESP message desk terminal equipment.

If the ESP has a MLHG and an associated SMDI (Simplified Message Desk Interface) data link, the ESP will get both the call status information and the ability to activate the message waiting indicator. Current limitations require the ESP to obtain a MLHG and a dedicated data access link to interface with every switch in which the ESP desires the capability to receive the call status information.

Multiple Users capability provides the delivery of calling number, called number, reason for forwarding of calls forwarded or placed to the ESP, identifies the multiline hunt group assigned to ESP customers (multiple users capability) and allows for the activation/deactivation of a stutter dial tone on the ESP's customer line. This allows the ESP to use one data link for multiple groups of end users and the activation of message waiting indicator. The reason for forwarding includes: Call Forwarding Busy, Call Forwarding Don't Answer, Call Forwarding Variable (forwarding of all calls), and Direct Call.

| Generic Name of ONA Service | Product Name | BSE or CNS |
|-----------------------------|--|------------|
| Message Desk (SMDI) | AM - Simplified Message Desk Interface | BSE |
| | AM - Simplified Message Desk Interface-Expanded | BSE |
| | BA - Messaging Services Interface | BSE |
| | BS - SMDI | BSE |
| | NX - SMDI | BSE |
| | PB - Forwarded Call Information | BSE |
| | PB - Forwarded Call Information - Multiple Users | BSE |
| | PB - Forwarded Call Information - Non Centrex | BSE |
| | SWB - Simplified Message Desk Interface | BSE |
| | SWB - Simplified Message Desk Interface - Expanded | BSE |
| | Qwest - Message Delivery Service | BSE |

FEATURE OPERATION:

There is no required action by the ESP's customer to activate the SMDI feature. When an ESP customer's call is terminated to a MLHG served by the SMDI feature, call information including the called DN, the type of call forwarding used for the call, and the calling DN (intraoffice only) is delivered by way of a dedicated data link to the ESP. The ESP must then use some type of CPE to receive and interpret the SMDI data. If this CPE is equipped to display the client's

account information to the attendant coincident with receipt of the client's call, the attendant can answer the call on a personalized basis using an appropriate answering phrase.

Message Desk provides the capability to initiate a request over the SMDI link to activate/deactivate the Message Waiting Indicator (MWI) on an individual client's line.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches

| Switch Type | 1A ESS | 5ESS | DMS-100 |
|--------------------------|--------|--------|---------|
| Earliest Generic Release | 1AE8A | 5E4.2* | BCS29** |

Note: * In the 5ESS, this feature requires the non-standard pre-ISDN arrangement using the ISDN 1 Message AP/ACP or 3A translator with the 5E4.2 Generic.

Note: ** In the DMS-100, BCS29 supports this feature on Residential Enhanced Services (RES).

2. This feature can only be offered on an Intraoffice basis.^{# &}
3. The ESP's CPE used to receive and interpret the SMDI data must use the same signaling, control, and data communications protocol as the telephone office Input/Output channel. This channel uses a standard Electronic Industries Association (EIA) RS232 asynchronous 1200 or 9600 baud ASCII interface.
4. Reference for SMDI:
 - GR-283 LSSGR: Simplified Message Desk Interface (SMDI) (A Module of LSSGR, FR-64), Issue 3, February 2002 (replaces TR-NWT-000283 Issue 2 & Supplement 1, & GR-283 Issue 2).

This service, if offered as a BSE, may be associated with the Dedicated Network Access Link or Circuit Switched Line basic serving arrangement, as stated in each individual ONA plan.

[#] For Ameritech's AMSI-E service, this restriction does not exist. See Message Desk (SMDI)- Expanded in the Region Specific Section (Appendix 1) of this Guide for more information.

[&] For Southwestern Bell's Simplified Message Desk Interface- Expanded service, this restriction does not exist.

Message Desk (SMDI) - Expanded (1099)

The Message Desk (SMDI) - Expanded feature provides the 7 or 10 digit directory number of the voice messaging subscriber on calls forwarded by Call Forward Busy Line and Call Forward Don't Answer features to the message desk or Voice Message Provider's (VMP) Multiline Hunt Group (MLHG). The Message Desk (SMDI) - Expanded service will allow a message desk or a VMP to serve any station/subscriber within a Local Access Transport Area (LATA) from one host central office. The subscriber and the message desk or VMP must be served from central offices that are connected to the Common Channel Signaling System SS7 network.

| Generic Name of ONA Service | Product Name | BSE or CNS |
|--------------------------------|--|------------|
| Message Desk (SMDI) - Expanded | AM - Simplified Message Desk Interface-Expanded | BSE |
| | BA - Premier Messaging Services Interface | BSE |
| | BS - InterSwitch SMDI | BSE |
| | SWB - Simplified Message Desk Interface - Expanded | BSE |
| | Qwest - Message Delivery Service Interoffice | BSE |

FEATURE OPERATION:

1. The message desk or VMP has the option of having 7 or 10 digit originating subscriber's directory numbers, as well as the reason the call is being forwarded, delivered to the message desk or VMP's Customer Premises Equipment (CPE). The information package to the message desk or VMP, delivered in real time over the Dedicated Network Access Link (DNAL), includes the MLHG and terminal identification of the call handler, call reason (call forward type or direct call), originating caller's directory number, and originally called number in the forwarding situation. Information will be passed over a DNAL when the CPE and the message desk or voicemail subscribers are connected to the SS7 network. The message desk or VMP must have some type of CPE to receive and interpret the Simplified Message Desk Interface (SMDI) data.
2. The call forward type includes Call Forwarding Busy Line, Call Forwarding Don't Answer, Call Forwarding Variable (forwarding of all calls), and direct ESP call.
3. The DNAL may be utilized by the CPE to activate the stutter dial tone, more commonly known as the Message Waiting Indicator (See: Remote Activation of Message Waiting - Expanded, and/or Message Waiting Indicator - Ability to Activate Audible/Visual Message Waiting).

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

| Switch Type | 1A ESS | 5ESS | DMS-100 |
|--------------------------|-----------|------|---------|
| Earliest Generic Release | 1AE11.03* | 5E7* | BCS30* |

* ESP and End User's serving central offices must be interconnected with SS7.

2. The ESP's CPE used to receive and interpret the SMDI data must use the same signaling and data communications protocol as the telephone office Input/Output channel. This channel uses a standard Electronic Industries Association (EIA) RS232 asynchronous 1200 or 9600 baud ASCII interface.
3. Interconnection to the CPE is via standard outside plant cable, tip and ring connections.
4. Interface Description - Interface Between Customer Premises Equipment, Simplified Message Desk and Switching System: 1A ESS, Issue 1, July 1985.
5. References:
 - Ameritech Message Signal Interface (AMSI) and Ameritech Message Signal Interface - Expansion AM-TR-OAT-000065, Issue 1, July 1990.
 - Technical reference for Call Forwarding Busy Line and Call Forwarding Don't Answer can be found in GR586 LSSGR: Call Forwarding Subfeatures, FSD 01-02-1450, Issue 2, April 2002 (replaces TR-TSY-000586 Issue 1 & GR-586 Issue 1).

This service, if offered as a BSE, is associated with the Dedicated Network Access Link serving arrangement.

Message Waiting Indicator - Activation (Audible) (1075)

This capability allows an ESP to indicate to its subscriber that a message is waiting for retrieval. With this capability, the ESP can activate an audible signal, e.g., stutter dial tone, on the ESP's client's line.

Activation of message waiting can be provided in limited switch types. The technology used is the same technology which supports the SMDI product. The input/output (I/O) port is used to recognize incoming messages from the ESP. Those incoming messages direct the switch to activate a message waiting indication on an ESP's client's line.

| Generic Name of ONA Service | Product Name | BSE or CNS |
|--|--|------------|
| Message Waiting Indicator - Activation (Audible) | AM - Remote Activation of Message Waiting | BSE |
| | BA - Messaging Services Interface | BSE |
| | BS - SMDI | BSE |
| | NX - SMDI | BSE |
| | PB - Activate Message Waiting Indicator | BSE |
| | PB - Forwarded Call Information - Multiple Users | BSE |
| | SWB - Simplified Message Desk Interface | BSE |
| | Qwest - Message Delivery Service | BSE |

FEATURE OPERATION:

1. An ESP's client can use call forwarding busy line (CFBL), call forwarding don't answer (CFDA), or call forwarding variable (CFV) to forward their calls to the ESP.
2. With appropriate line translations in Stored Program Control switches, an ESP can turn on or off a special recall dial tone (stutter dial tone) to notify their clients of an awaiting message. Whenever the client attempts to originate a call, the client receives stutter dial tone. This indicates to the client that a message(s) has been received by the ESP for the client. The client will receive stutter dial each time a call is attempted until the ESP sends a message to the switch to remove the stutter dialtone (MWI).
3. Messages to turn on/turn off the Message Waiting Indicator (MWI) are sent to the central office on an SMDI type data link.
4. If the client DN does not have the MWI option assigned, is not a valid DN, or if the switch does not have enough resources to carry out the message waiting function, a message is sent to the ESP via the Input/Output channel.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

| Switch Type | 1A ESS | 5ESS | DMS-100 |
|--------------------------|--------|--------|---------|
| Earliest Generic Release | 1AE8A | 5E4.2* | BCS29** |

Note: * In the 5ESS, this feature requires the non-standard pre-ISDN arrangement using the ISDN 1 Message AP/ACP or 3A translator with the 5E4.2 Generic.

Note: ** In the DMS-100, BCS29 supports this feature on Residential Enhanced Services (RES).

2. This feature can only be offered on an Intraoffice basis.

3. References for MWI:

- GR-283 LSSGR: Simplified Message Desk Interface (SMDI) (A Module of LSSGR, FR-64), Issue 3, February 2002 (replaces TR-NWT-000283 Issue 2 & Supplement 1 & GR-283 Issue 2).

This service, if offered as a BSE, may be associated with the Dedicated Network Access Link or Circuit Switched Line basic serving arrangement, as stated in each individual ONA plan.

Message Waiting Indicator Activation (Audible) - Expanded (1100)

When an end user subscribes to Voice Message/Reminder service the end user should have the ability to forward calls to the Enhanced Service Provider's voice messaging service, leave a detailed message for those who may be calling, and have a recorded voice message left in response. When messages are left for the end user, a message waiting indicator should be provided indicating a message is waiting. The ability to remotely activate message waiting indicator to end user's lines not located in the same central office, but in the same Local Access Transport Area (LATA) as the ESP (Voice Message Provider), is made possible through the Common Channel Signaling System 7 (SS7) network.

| Generic Name of ONA Service | Product Name | BSE or CNS |
|---|--|------------|
| Message Waiting Indicator Activation (Audible) - Expanded | AM - Remote Activation of Message Waiting - Expanded | BSE |
| | BA - Premier Messaging Services Interface | BSE |
| | Qwest - Message Delivery Service Interoffice | BSE |

FEATURE OPERATION:

The subscriber to the ESP's service has calls forwarded to the ESP's 7 or 10 digit telephone number. The end user can use Call Forwarding Busy Line, Call Forwarding Don't Answer, Call Forwarding Variable, or direct call to reach the ESP's voice message service. The ESP can activate a message waiting indicator for end users not served by the same central office switch as the ESP as long as the called subscriber (end user) and the ESP's central office are connected via the SS7 network and are equipped with the appropriate software packages.

Messages from the Voice Message Provider:

Two message types may be sent by the voice message provider to the serving central office via a Dedicated Network Access Link (See: Message Desk (SMDI) - Expanded). The first message activates the Message Waiting Indicator (MWI) feature on a specified directory number, the second message deactivates the indicator. The ESP's serving central office does not acknowledge receipt of these messages unless it encounters a problem when attempting to execute the request.

There are two types of failure messages, invalid and blocked. The invalid message results from an attempt to activate or deactivate MWI on a directory number not assigned the MWI option. The failure message can also be generated when a directory number is transmitted with incomplete or inaccurate information. The blocked message indicates that the central office was momentarily unable to execute the message request.

The ESP's serving central office does not expect an acknowledgment signal indicating the activation/deactivation of MWI for the ESP.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

| Switch Type | 1A ESS | 5ESS | DMS-100 |
|--------------------------|-----------|------|---------|
| Earliest Generic Release | 1AE11.03* | 5E7* | BCS30* |

* ESP and end user's serving central offices must be interconnected with SS7.

2. The ESP's customer premises equipment (CPE) used to receive and interpret the SMDI data must use the same signaling and data communications protocol as the telephone office Input/Output channel. This channel uses a standard Electronic Industries Association (EIA) RS232 asynchronous 1200 or 9600 baud ASCII interface.
3. Interconnection to the CPE is via standard outside plant cable, tip and ring connections.
4. Interface Description - Interface Between Customer Premises Equipment, Simplified Message Desk and Switching System: 1A ESS, Issue 1, July 1985.
5. References:
 - Ameritech Message Signal Interface (AMSI) and Ameritech Message Signal Interface - Expansion AM-TR-OAT-000065, Issue 1, July 1990.
 - Technical Reference for Call Forwarding Busy Line and Call Forwarding Don't Answer can be found in GR586 LSSGR: Call Forwarding Subfeatures, FSD 01-02-1450, Issue 2, April 2002 (replaces TR-TSY-000586 Issue 1 & GR-586 Issue 1).

This service, if offered as a BSE, is associated with the Dedicated Network Access Link serving arrangement.

Message Waiting Indicator - Activation (Visual) (1076)

This capability allows an ESP to indicate to its client that a message is waiting for retrieval. With this capability, the ESP can activate a visual alerting signal (usually a lamp) on the ESP's client's line.

| Generic Name of ONA Service | Product Name | BSE or CNS |
|---|--|------------|
| Message Waiting Indicator - Activation (Visual) | AM - Remote Activation of Message Waiting | BSE |
| | BA - Messaging Services Interface | BSE |
| | BS - SMDI | BSE |
| | PB - Electronic Business Set Message Waiting | BSE |
| | Qwest - Message Delivery Service | BSE |

FEATURE OPERATION:

MWI - Activation (Visual) is a central office software and hardware capability that allows an ESP with CPE, to activate a visual lamp or LCD on their subscriber's line when messages are being held (see MWI - Ability to Receive Visual Message Waiting). The subscriber's line, also with special CPE and central office software/hardware, would flash at 60 IPM when activated. After a subscriber picked up their messages, the ESP would have the ability to deactivate the client's visual message waiting indicator.

Message Waiting Indication, visual or otherwise, is controlled by a software package in the central office switch, usually Simplified Message Desk Interface (SMDI) or Message Desk Service. The software package will activate or deactivate a client's message waiting indication based on signals passed over an interface from the Message Desk Provider to the central office interface.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

| Switch Type | 1A ESS | 5ESS | DMS-100 |
|--------------------------|--------|-----------------|---------|
| Earliest Generic Release | 1AE8 | 5E4.2* *ISDN | BCS29 |

2. The lamp is off when the ESP's client is offhook or there are no messages queued and the client is on-hook.
3. This feature can only be offered on an intraoffice basis.
4. References: Qwest reference publication 77335 - "Qwest Message Waiting Indication - Visual," September 1990.

This service, if offered as a BSE, is associated with the Dedicated Network Access Link basic serving arrangement.

Message Waiting Indicator Activation (Visual) - Expanded (1101)

When an end user subscribes to Voice Message/Reminder service the end user should have the ability to forward calls to the Enhanced Service Provider's voice messaging service, leave a detailed message for those who may be calling, and have a recorded voice message left in response. When messages are left for the end user, a message waiting indicator should be provided indicating a message is waiting. The ability to remotely activate message waiting indicator to end user's lines not located in the same central office, but in the same Local Access Transport Area (LATA) as the ESP (Voice Message Provider), is made possible through the Common Channel Signaling System 7 (SS7) network.

| Generic Name of ONA Service | Product Name | BSE or CNS |
|--|---|------------|
| Message Waiting Indicator Activation (Visual)- Expanded | AM - Remote Activation of Message Waiting- Expanded | BSE |
| | BA - Premier Messaging Services Interface | BSE |
| | Qwest - Message Delivery Service- Interoffice | BSE |

FEATURE OPERATION:

The subscriber to the ESP's service has calls forwarded to the ESP's 7 or 10 digit telephone number. The end user can use Call Forwarding Busy Line, Call Forwarding Don't Answer, Call Forwarding Variable, or direct call to reach the ESP's voice message service. The ESP can activate a message waiting indicator for end users not served by the same central office switch as the ESP as long as the called subscriber (end user) and the ESP's central office are connected via the SS7 network and are equipped with the appropriate software packages.

Messages from the Voice Message Provider:

Two message types may be sent by the voice message provider to the serving central office via a Dedicated Network Access Link (See: Message Desk (SMDI) - Expanded). The first message activates the Message Waiting Indicator (MWI) feature on a specified directory number, the second message deactivates the indicator. The ESP's serving central office does not acknowledge receipt of these messages unless it encounters a problem when attempting to execute the request.

There are two types of failure messages, invalid and blocked. The invalid message results from an attempt to activate or deactivate MWI on a directory number not assigned the MWI option. The failure message can also be generated when a directory number is transmitted with incomplete or inaccurate information. The blocked message indicates that the central office was momentarily unable to execute the message request.

The ESP's serving central office does not expect an acknowledgment signal indicating the activation/deactivation of MWI for the ESP.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

| Switch Type | 1A ESS | 5ESS | DMS-100 |
|--------------------------|-----------|------|---------|
| Earliest Generic Release | 1AE11.03* | 5E7* | BCS30* |

* ESP and end user's serving central offices must be interconnected with SS7.

2. The ESP's customer premises equipment (CPE) used to receive and interpret the SMDI data must use the same signaling and data communications protocol as the telephone office Input/Output channel. This channel uses a standard Electronic Industries Association (EIA) RS232 asynchronous 1200 or 9600 baud ASCII interface.
3. Interconnection to the CPE is via standard outside plant cable, tip and ring connections.
4. Interface Description - Interface Between Customer Premises Equipment, Simplified Message Desk and Switching System: 1A ESS, Issue 1, July 1985.
5. References:
 - Ameritech Message Signal Interface (AMSI) and Ameritech Message Signal Interface- Expansion AM-TR-OAT-000065, Issue 1, July 1990.
 - Technical Reference for Call Forwarding Busy Line and Call Forwarding Don't Answer can be found in GR-586 LSSGR: Call Forwarding Subfeatures, FSD 01-02-1450, Issue 2, April 2002 (replaces TR-TSY-000586 Issue 1 & GR-586 Issue 1).

This service, if offered as a BSE, is associated with the Dedicated Network Access Link BSA.

Network Reconfiguration (1038)

This feature provides ESPs flexibility in managing and reconfiguring their dedicated facilities. This arrangement involves providing to a customer access to a control port on a digital cross-connect system (DCS). This service enables the re-connection (grooming) of one to 24 DS0 channels within a group of DS1s such that the destination of each DS0 can be changed. Reconfiguration at higher or lower transmission speeds may also be provided. A subscriber could control their dedicated channels in any combination between locations designated on their privatenetwork.

| Generic Name of ONA Service | Product Name | BSE or CNS |
|-----------------------------|--|------------|
| Network Reconfiguration | AM - Ameritech Network Reconfiguration Service | BSE |
| | BA - INTELLIMUX SM | BSE |
| | BS - FlexServ [®] | BSE or CNS |
| | NX - Network Reconfiguration Service | BSE |
| | PB - Customer Network Reconfiguration | BSE |
| | SWB - Network Reconfiguration | BSE |
| | Qwest - COMMAND A LINK SM | BSE |

FEATURE OPERATION:

Network Reconfiguration under ESP control is initialized by setting up a database for ESP access consisting of circuit identifications, customer locations, security passwords, etc. This database is then accessed by the ESP to make their own DS1 or DS0 routing rearrangements within a Digital Cross-connect System (DCS).

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available only in conjunction with Digital Cross-connect System (DCS) frames located in the telephone company Hub and/or Digital Serving Node locations. ESP/ESP's client facilities will have to route to the above-mentioned DCS frames.
2. Check with your local telephone company in order to determine availability of Extended Superframe Format (ESF) with Network Reconfiguration.
3. All bridging and subrating of services is to be provided outside of the DCS devices. The DCS devices are only used for cross-connecting DS0s.
4. References:
 - TR-NWT-000170 Digital Cross-Connect System (DSC 1/0) Generic Criteria, Issue 2, January 1993.
 - TR-NWT-000233 Wideband and Broadband Digital Cross-Connect Systems Generic Criteria, Issue 3, November 1993, (replaces TA-NWT-000233, Issue 4), component of FR-440.

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[®] FlexServ is a registered trademark of BellSouth Corporation.

SM COMMAND A LINK is a service mark of Qwest Corporation.

- Ameritech reference AM-TR-TMO-000064, Issue 2, August 1991, Ameritech Reconfiguration Interface Specifications.
- Qwest publication 77371 COMMAND A LINKSM Technical Descriptions and Interface Combinations, Issue B, November 1994.

This service, if offered as a BSE, is associated with the Dedicated Network Access Link or Dedicated High Capacity digital (1.544 Mbps) basic serving arrangements, as indicated in each individual ONA plan.

APPENDIX 1

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