2. Technical Descriptions for Packet Switched Serving Arrangements

Call Detail Recording Reports (Packet) (1003)

This service will provide the ESP with a data record of all calls made to their telephone number. The record will include called and calling NTN (Network Terminal Number), date, time of day, number of segments and the duration of the call.

The call details will not be delivered in real time, but as a paper or magnetic tape output. The technology to provide Call Detail Recording is resident in two systems: first, the packet switch where the call originates must have recording capability; and second, the BOC's data processing system must be able to sort the recording information and extract the call details on calls made to the ESP's called number.

Generic Name of ONA Service	Product Name	BSE or CNS
Call Detail Recording Reports (Packet)	BA - Monthly Detailed Connection File	BSE
	NX - Call Detail Recording Reports-Packet	BSE or CNS
	PB - Call Detail Recording Reports	*
	SWB - Reports	BSE
	Qwest - Access Service Billing Information	BSE

FEATURE OPERATION:

See above description.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. Two reports may be provided either as paper or magnetic tape output, the Summary Report or the Detailed Report. The two reports may be sorted by three key elements:

   — NUI - Network User Identification

   — Calling NTN (Network Terminal Number)

   — Called NTN (Network Terminal Number)

2. The actual information and report format may vary by company.

3. References:

   - GR-301 Public Packet Switched Network Generic Requirements (PPSNGR), Issue 2, December 1997 (replaces TR-TSY-301, Issue 2).

This service, if offered as a BSE, is associated with the Packet Switched X.25 and X.75 basic serving arrangements.

* Pacific Bell does not consider "paper or magnetic tape output" as a Basic Service Element. Pacific Bell does and will continue to provide call detail information to its customers.

Call Redirection - Packet (1004)

Call Redirection is an optional intraLATA Public Packet Switched Network (PPSN) feature that allows the network to automatically redirect calls to a predefined backup DTE (Data Terminal Equipment) under specified conditions. The primary DTE may designate a list of secondary DTEs called a back-up list. The network may be able to search the list in sequence until a connection can be established.

Generic Name of ONA Service	Product Name	BSE or CNS
Call Redirection - Packet	AM - Call Redirection	BSE
	BA - Call Redirection	BSE
	BS - Call Redirection	BSE or CNS
	NX - Call Redirect	BSE or CNS
	PB - DTE Backup	BSE
	SWB - Packet Call Redirection	BSE
	Qwest - Backup/Redirection	BSE

FEATURE OPERATION:

The PPSN will provide the calling clients DTE/CPE with the address and reason for redirection of the call to a secondary DTE. The network will also provide the secondary DTE with data in the incoming call packet as to why the call was forwarded and the address of the primary DTE.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. The Packet Switch, Access Concentrator or ISDN Packet Handling Function should support X.25 direct access interface.

2. LEC ISDN interface to PPSN should support recommendation X.75' of the International Telecommunication Union-Telecommunication Standardization Sector (ITU-TS) [formerly CCITT].

3. PPSN supports both individual and hunt group DTE access. Call Redirection applies to all addresses associated with subscriber access.

4. Call Redirection is limited to interfaces within a single LATA.

5. References:

   - GR-301 Public Packet Switched Network Generic Requirements (PPSNGR), Issue 2, December 1997 (replaces TR-TSY-301, Issue 2).

   - TR-NWT-001249, X.25 Call Redirection and Call Deflection Generic Requirements, Issue 1, December 1992.

This service, if offered as a BSE, may be associated with the Packet Switched X.25 and X.75 basic serving arrangements.

Closed User Groups - Packet (1005)

Closed User Group (CUG) is a Public Packet Switched Network feature that controls communication between Data Terminal Equipment (DTEs) belonging to the same CUG. Various CUG feature options are designated by the user such as:

- Incoming Calls Barred With CUG, allows a member of a CUG to originate calls to other members of the CUG, but cannot receive incoming calls.
- CUG With Incoming Access, allows a member of a CUG to receive incoming calls from any DTE not in the CUG.
- Outgoing Calls Barred With CUG, allows a member of a CUG to receive calls from other members of that CUG, but cannot originate any calls.
- CUG With Outgoing Access, allows a member of a CUG to make outgoing calls to any DTE.

A DTE can be a member of more than one CUG.

Generic Name of ONA Service	Product Name	BSE or CNS
Closed User Groups - Packet	AM - Closed User Group	BSE
	AM - Closed User Group	CNS
	BA - Closed User Groups	BSE or CNS
	BS - Closed User Group	BSE or CNS
	NX - Closed User Group	BSE or CNS
	PB - Closed User Group	BSE
	SWB - Closed User Group	BSE
	Qwest - Closed User Group	BSE

FEATURE OPERATION:

Closed User Groups provide a mechanism for controlling communication that is defined by the client/user when the service is requested. A preferential CUG may be chosen at subscription and the preferential CUG will automatically be selected if a specific CUG is not designated in the call request packet. Screening of the CUG may be performed at the originating and terminating interfaces as well as the PPSN X.75 interface. The call request is cleared if found invalid at any screening point.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. The PPSN and ISDN Packet Handling Facility (PHF) should be capable of supporting more than 100 CUGs on an X.25 interface.
2. The PPSN Access Concentrator should be capable of supporting up to 10 CUGs on an X.25 interface.
3. The PPSN X.75 interface should support 100 CUG codes.

4. References:

   - GR-301 Public Packet Switched Network Generic Requirements (PPSNGR), Issue 2, December 1997 (replaces TR-TSY-301, Issue 2).

This service, if offered as a BSE, is associated with the Packet Switched X.25 and X.75 basic serving arrangements.

Direct Call - Packet (1006)

Direct Call is an optional Public Packet Switched Network (PPSN) feature which enables the calling Data Terminal Equipment (DTE) to automatically initiate a call request without supplying the called destination address.

Generic Name of ONA Service	Product Name	BSE or CNS
Direct Call - Packet	AM - Packet - Direct Call	CNS
	BA - Auto Call Ports	CNS
	BS - Direct Call	CNS or BSE
	NX - Direct Call	BSE or CNS
	PB - Direct Call	CNS
	SWB - Packet Direct Call	CNS
	Qwest - Auto Call	CNS

FEATURE OPERATION:

The Direct Call feature allows the PPSN Access Concentrator (AC), or ISDN Packet Handling Facility (PHF) to set up calls to a presubscribed address with minimal input from the user. The presubscribed address is established by the customer at the time the service is provisioned. This address, which is assigned a logical channel number, is used in an originating call request whenever no called address is provided by the calling DTE.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. The PPSN Access Concentrator should support X.25 direct access and dial in interfaces.

2. The PPSN Access Concentrator should support asynchronous direct access and dial in interfaces.

3. The ISDN Packet Handling Facility (PHF) should support the X.25 standard interface and future protocol requirements.

4. The ISDN default throughput class value is 9600 bps for all X.25 interfaces. The range of throughput class values that should be supported on all ISDN X.25 interfaces is: 75, 150, 300, 600, 1200, 2400, 4800, and 9600 bps. For B-channel and 64 kbps D-channel interfaces, the following throughput class values should be supported in addition: 19.2, 48, 56 and 64 kbps (the last two values as soon as codepoints are assigned).

5. References:

   - GR-301 Public Packet Switched Network Generic Requirements (PPSNGR), Issue 2, December 1997 (replaces TR-TSY-301, Issue 2).

   - International Telecommunication Union-Telecommunication Standardization Sector (ITU-TS) [formerly CCITT] 1980, 1984 and 1988 recommendations for X.25 and asynchronous interface requirements.

This service, if offered as a BSE, is associated with the Packet Switched X.25 basic serving arrangement.

Fast Select Acceptance - Packet (1007)

Fast Select Acceptance is an optional feature which works in conjunction with the Fast Select Request facility. This capability allows the called Data Terminal Equipment (DTE) to receive user data in the call setup packet. The terminating (called) DTE must be subscribed to the Fast Select Acceptance facility to receive Fast Select call. If the terminating DTE does not subscribe to Fast Select Acceptance, the Data Circuit Terminal Equipment (DCE) would respond to the Fast Select Request call of the origination DTE with a clear indication packet, indicating that Fast Select Acceptance is not subscribed to.

Generic Name of ONA Service	Product Name	BSE or CNS
Fast Select Acceptance - Packet	AM - Fast Select Acceptance	BSE
	BA - Fast Select Acceptance	BSE
	BS - Fast Select	BSE or CNS
	NX - Fast Select Accept	BSE or CNS
	PB - Fast Select Acceptance	BSE or CNS
	SWB - Fast Select	BSE
	Qwest - Fast Select Acceptance	BSE

FEATURE OPERATION:

The Fast Select Acceptance feature permits the calling DTE to send up to 128 octets of user data in the call setup packet to a called DTE subscribed to the Fast Select Acceptance feature. The service is available in a restricted and unrestricted mode. In the unrestricted mode the called DTE has an option to accept the call request and exchange data packets. In the restricted mode the call request is cleared and only data associated with call setup and clearing is exchanged.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is defined in the International Telecommunication Union-Telecommunication Standardization Sector (ITU-TS) [formerly CCITT] X.25, X.75 and X.75' utilities as always required.

2. The PPSN Access Concentrator (AC) should support X.25 direct access and dial-in interfaces.

3. The ISDN Packet Handling Facility should support the X.25 direct access interface to the user and the X.75' interface to the PPSN.

4. References:

   - GR-301 Public Packet Switched Network Generic Requirements (PPSNGR), Issue 2, December 1997 (replaces TR-TSY-301, Issue 2).

This service, if offered as a BSE, is associated with the Packet Switched X.25 and X.75 basic serving arrangements.

Fast Select Request - Packet (1008)

Fast Select Request is a Public Packet Switched Network PPSN optional per-call feature that allows user data to be included in the originating call request packet sent from the calling Data Terminal Equipment (DTE) to the called DTE. The called or terminating DTE must be subscribed to the Fast Select Acceptance facility to receive Fast Select Request calls.

Generic Name of ONA Service	Product Name	BSE or CNS
Fast Select Request - Packet	AM - Fast Select	CNS
	BA - Fast Select Request	CNS
	BS - Fast Select	BSE or CNS
	NX - Fast Select Request	BSE or CNS
	PB - Fast Select Initiate	BSE or CNS
	SWB - Fast Select	BSE
	Qwest - Fast Select Acceptance	BSE

FEATURE OPERATION:

The Fast Select Request service permits the calling DTE to send up to 128 octets of user data in X.25 call setup packets. The service can be provided in a restricted and unrestricted mode. In the unrestricted mode the called DTE has an option to accept the call request and exchange data packets. In the restricted mode the call request is cleared and only data associated with call setup and clearing is exchanged.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is defined in the International Telecommunication Union-Telecommunication Standardization Sector [formerly CCITT] X.25, X.75 and X.75' utilities as always required.

2. The PPSN Access Concentrator (AC) should support X.25 direct access and dial-in interfaces.

3. The ISDN Packet Handling Facility should support the X.25 direct access interface to the user and the X.75' interface to the PPSN.

4. References:

   - GR-301 Public Packet Switched Network Generic Requirements (PPSNGR), Issue 2, December 1997 (replaces TR-TSY-301, Issue 2).

This service, if offered as a BSE, may be associated with the Packet Switched X.25 and X.75 basic serving arrangements.

Hunt Groups - Packet (1009)

Hunt Groups is an optional subscription Public Packet Switched Network (PPSN) feature which allows a subscriber to associate a single address with a group of asynchronous or X.25 direct interfaces. Incoming calls routed to the group address are distributed based on the type of hunting requested by the subscriber. The PPSN Hunt Group feature may vary in operation and capabilities provided by specific packet switch vendors.

Generic Name of ONA Service	Product Name	BSE or CNS
Hunt Groups - Packet	AM - Hunt Groups	BSE
	BA - Multiple Channel Hunt Groups	BSE
	BS - Hunt Group	BSE or CNS
	NX - Hunting	BSE or CNS
	PB - Hunt Group (INT/EXT)	BSE
	SWB - Packet Hunt Group	BSE
	Qwest - Multiple Port Hunt Group	BSE

FEATURE OPERATION:

The PPSN Access Concentrator (AC) or ISDN Packet Handling Facility (PHF) will provide as a subscription option a hunt group capability that distributes incoming calls to a single packet network address. Three hunting arrangements that may be provided by packet vendors are:

— Sequential Hunt - all calls are delivered to the first access interface. If busy, calls will be delivered to the second interface. If that interface is busy, calls will be delivered to the third, and so on until the call is completed. If all sequential access interfaces are busy, the call will be cleared.

— Uniform Hunt - hunting arrangement keeps track of the last incoming call and delivers the next call to the next interface on the hunt list. The call is cleared when all interfaces are busy.

— Load Sharing Hunt - the user specifies the number of calls per interface before moving to the next address. If the last interface is busy the process repeats from the first address on the list.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. The PPSN Access Concentrator (AC) should support asynchronous and X.25 direct access interfaces.

2. The ISDN Packet Handling Facility (PHF) should support X.25 direct access interfaces.

3. The AC should support at least ten X.25 direct access interfaces.

4. References:

   - GR-301 Public Packet Switched Network Generic Requirements (PPSNGR), Issue 2, December 1997 (replaces TR-TSY-301, Issue 2).

This service, if offered as a BSE, may be associated with the Packet Switched X.25 and X.75 basic serving arrangements.

Menu Access Translator - Gateway (1010)

Gateway Service is an optional Public Packet Switched Network (PPSN) service that provides a directory of information providers.

Generic Name of ONA Service	Product Name	BSE or CNS
Menu Access Translator - Gateway	Qwest - Community Link	BSE

FEATURE OPERATION:

The PPSN Access Concentrator (AC) or ISDN Packet Handling Facility (PHF) should provide the user with an abbreviated address for ESPs listed in the Gateway. Upon selection of the desired address, the Gateway will set up a call and route the calling DTE (Data Terminal Equipment) or dialup computer to the ESP. Service capability and details of operation will vary in each regional Bell Operating Company.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. The PPSN Access Concentrator (AC) should support X.25 and asynchronous direct and dialup interfaces.

2. The ISDN Packet Handling Facility (PHF) should support X.25 direct access interface to the user and X.75 to the PPSN.

3. The PPSN should support X.75 to the IC/ESP.

4. References:

   - GR-301 Public Packet Switched Network Generic Requirements (PPSNGR), Issue 2, December 1997 (replaces TR-TSY-301, Issue 2).

This service, if offered as a BSE, is associated with the Packet Switched X.25 and X.75 basic serving arrangements.

Message Waiting Indicator - Packet Access (1011)

This capability allows an ESP to indicate to its subscriber that a message is waiting for retrieval. With this capability, the ESP can activate/deactivate an audible signal, e.g., stutter dial tone, on the ESP's client's line. This capability provides the ESP access to the MWI function in many end offices via dialup or dedicated access to the LEC packet switched network. The packet switched network will deliver the message waiting indicator activation/deactivation request to the ESP's client's end office.

Generic Name of ONA Service	Product Name	BSE or CNS
Message Waiting Indicator - Packet Access	SWB - Digital Customer Alerting	BSE

FEATURE OPERATION:

This capability allows packet switched access to the central office Simplified Message Desk Interface (SMDI) feature for providing ESP client delivery of the Message Waiting Indication (MWI) activation and deactivation messages for stutter dial tone. Access is made to the SMDI port through the public packet switched network.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

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

Switch Type	5ESS	DMS-100
Earliest Generic Release	5E4.2	BCS30

2. This capability could be used in conjunction with services Call Forwarding - Busy Line & Call Forwarding - Don't Answer and Direct Inward Dialing. Due to the limitation of central office switches which can be equipped with SMDI, this capability will be offered only in selected 5ESS and DMS-100 equipped serving offices.

This service, if offered as a BSE, is associated with the Packet Switched X.25 and X.75 basic serving arrangements.

Preselection for Data Services (1013)

Preselection for Data Services is an optional International Telecommunication Union-Telecommunication Standardization Sector (ITU-TS) [formerly CCITT] defined Public Packet Switched Network (PPSN) per call subscription feature that provides the user with the ability to select a preferred Interconnect Carrier (IC) on internetwork/interLATA calls. This feature will automatically select an IC when the calling DTE (Data Terminal Equipment) does not identify the Data Network Identification Code (DNIC) of the called IC in the Recognized Private Operating Authority (RPOA) field.

Generic Name of ONA Service	Product Name	BSE or CNS
Preselection for Data Services	BA - RPOA Preselection	BSE or CNS
	BS - RPOA Preselect	BSE or CNS
	NX - RPOA Preselection	BSE or CNS
	PB - IC/VAN Preselection	BSE or CNS
	SWB - RPOA Preselection	CNS

FEATURE OPERATION:

The PPSN Access Concentrator (AC) and ISDN Packet Handling Facility (PHF) should provide the capability for an originating DTE user to select a preferred IC at subscription. The AC and PHF should access the preselected DNIC/ INIC from the subscriber's profile and route the call to the IC over an X.75 interface.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. The PPSN AC should support asynchronous and X.25 direct or dialup interfaces.

2. The ISDN PHF should support X.25 direct interfaces.

3. References:

   - GR-301 Public Packet Switched Network Generic Requirements (PPSNGR), Issue 2, December 1997 (replaces TR-TSY-301, Issue 2).

This service, if offered as a BSE, is associated with the Packet Switched X.25 and X.75 basic serving arrangements.

Reverse Charge Acceptance - Packet (1014)

Reverse Charge Acceptance is an optional per-call Public Packet Switched Network (PPSN) subscription feature that allows a call from an originating Data Terminal Equipment (DTE) to be charged to the terminating DTE. Upon receiving a reverse charge indication the incoming DTE may accept or reject the call.

Generic Name of ONA Service	Product Name	BSE or CNS
Reverse Charge Acceptance - Packet	AM - Reverse Billing	BSE
	BA - Reverse Charge Acceptance	BSE
	BS - Reverse Charging	BSE or CNS
	NX - Reverse Charge Acceptance	BSE or CNS
	PB - Reverse Charge Acceptance	BSE
	SWB - Reverse Charge Acceptance	BSE
	Qwest - Reverse Charge Acceptance	BSE

FEATURE OPERATION:

The PPSN Data Circuit Terminating Equipment (DCE) and the ISDN Packet Handling Function (PHF) should deliver the reverse charging call request to the called DTE/DCE or CPE/PHF only when the interface is configured for reverse charging, otherwise the call is cleared. A Network User Identification (NUI) parameter may be signaled in the call accept packet.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. Reverse billing for the packet charges is allowed by assigning the packet feature "Reverse Charge Acceptance" to the ESP's voice grade line circuit switched termination on the Packet Switch.

2. The reverse charging acceptance allows the X.25 ESP to accept their end users' applicable packet charges on calls that their customers initiate with a billing designation of the terminating Data Terminal Equipment (DTE). During the call setup, the originating DTE signals that reverse charging is being requested by setting the reverse charging facility field in the call request packet. This is done on a per call basis. If the terminating DTE subscribes to the reverse charge acceptance service, then the terminating DTE will receive the associated call packet with the reverse charging field set. If the terminating customer does not subscribe to the reverse charging acceptance service, the call will be cleared and the originating DTE will receive a response indicating that the reverse charge acceptance is not an acceptable option.

3. References:

   - GR-301 Public Packet Switched Network Generic Requirements (PPSNGR), Issue 2, December 1997 (replaces TR-TSY-301, Issue 2).

This service, if offered as a BSE, may be associated with the Packet Switched X.25 and X.75 basic serving arrangements.

3. Technical Descriptions for Dedicated Access Arrangements

Access To Clear Channel Transmission (1026)

This capability provides for 64 Kbps clear channel transmission on 1.544 Mbps dedicated lines.

Generic Name of ONA Service	Product Name	BSE or CNS
Access To Clear Channel Transmission	AM - Access To Clear Channel Conditioning	BSE
	BA - Clear Channel Capability	BSE
	BS - Access To Clear Channel Transmission	BSA *
	NX - Access To Clear Channel Transmission	BSE
	PB - Access To Clear Channel Transmission	BSE
	SWB - Clear Channel Capability On 1.544 Mbps	BSE
	Qwest - Clear Channel Capability	BSE

FEATURE OPERATION:

This service offers 64 Kbps channel capacity on a dedicated point-to-point 1.544 Mbps high capacity circuit between two customer-designated premises. It allows a customer to transport an all-zero octet over a DS1/1.544 Mbps high capacity channel, providing an available combined maximum 1.536 Mbps data rate. This arrangement requires the customer signal at the channel interface to conform to Bipolar with eight (8) Zero Substitution (B8ZS) line code as described in Technical References TR-NPL-000054 and TA-TSY-000342.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This service requires the customer to obtain a dedicated 1.544 Mbps point-to-point circuit for transport of multiple 64 Kbps channels and is subject to the availability of facilities.

2. References:

   - GR-54 DS1 High-Capacity Digital Service End User Metallic Interface Specifications, Issue 1, December 1995 (replaces TR-NPL-000054, Issue 1).

   - GR-342 High-Capacity Digital Special Access Service Transmission Parameter Limits and Interface Combinations, Issue 1, December 1995 (replaces TR-INS-000342, Issue 1).

   - Pacific Bell document PUB L-780077 Service Description and Interface Requirements for Alternate Access Arrangements to Pacific Bell/Nevada Bell Digital Data Services, Issue 3, September 1993.

   - Qwest publication 77323 DS-1 Clear Channel Capability, Issue B, June 1989.

This service is associated with the Dedicated High Capacity Digital (1.544 Mbps) basic serving arrangement.

* BellSouth will offer this as a BSA alternative.

Access To Operations Support Systems Information (1027)

This service will offer the ESPs a common, mechanized presentation system for access to Network Management products, such as network reconfiguration, while also providing customer access to internal operations support systems for additional information and control of their network.

Access to this service will be through a customer provided terminal, with the choice of dial access or dedicated private line. This service will provide a secure and user friendly interface to the customers in providing capabilities and support in some or all of the following areas of service management: (1) Administration, (2) Security, (3) Performance, (4) Fault Management, (5) Reconfiguration, and (6) Accounting.

Generic Name of ONA Service	Product Name	BSE or CNS
Access To Operations Support Systems Information	BS - Administrative Management Service (AMS)	BSE or CNS

FEATURE OPERATION:

The customer will be able to access a common, mechanized presentation system on either a dial-up or dedicated basis. It will allow the customer access to information from selected telephone company administrative Operations Support Systems through a secure gateway and provide basic, integrated access to other existing network management products.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is independent of central office switch type.

2. References:

   - BellSouth technical reference TR 73531 Interfaces Between Miscellaneous Control and Status Functions of BellSouth SPCS Central Offices and Customer Premises Equipment, May 1989.

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

Automatic Protection Switching (1028)

Automatic Protection Switching provides the ability to monitor a non-switched facility between the ESP premises and the wire center serving the premises and to automatically switch to a spare facility if the performance of the original facility degrades or fails. It requires compatible equipment at both the ESP premises and the serving wire center.

Generic Name of ONA Service	Product Name	BSE or CNS
Automatic Protection Switching	AM - Automatic Loop Transfer	BSE
	BA - Automatic Loop Transfer	BSE
	BS - Automatic Protection Switching	BSE or CNS
	NX - Automatic Loop Transfer	BSE
	PB - Automatic Loop Transfer	BSE
	PB - Digital Data Service	BSE
	SWB - Automatic Loop Transfer	BSE
	Qwest - Automatic Loop Transfer	BSE

FEATURE OPERATION:

Automatic Protection Switching (APS) can be offered in two configurations. It can be offered as a stand alone APS for use with T1 carrier or as DS1 APS incorporated into a DS3/1 multiplexer unit.

The stand alone unit, in conjunction with an identical unit at the opposite end of the T1 carrier facility to be protected, switches from the primary T1 carrier facility to a standby facility upon detection of a loss of the 1.544 Mbps signal or of an unacceptable Bit Error rate. There are two T1/1.544 Mbps inputs from the line side of the unit, a primary input and the standby input. The inputs normally terminate on a cross connect device and are connected to the DS1 Access Link carrier facilities between the Serving Wire Center and the Customer Premises.

There is one 1.544 Mbps output port on the APS unit. In the central office it will be terminated on a digital cross connect frame for interconnection with other DS1 facility terminations or switch appearances. On a customer premises, it will be terminated on a standard Network Interface.

The DS1 APS method is accomplished by means of circuitry contained within the DS3/1 multiplexer. The low speed DS1 cards can have an optional APS capability on a DS3 basis. Some levels of protection are 1 for 4 and 1 for 7, depending upon the manufacturer of the multiplexer unit. This equipment is part of a DS3 or higher level transmission system and cannot be applied to metallic-based T1 carrier. The facility side DS1 is internal to the multiplexer. The DS1 output of the multiplexer is terminated on a DS1 cross connect frame in the Serving Wire Center.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This capability must be deployed on a circuit by circuit basis when offered in a stand-alone configuration.

2. There is no feature interaction.

3. References:

- GR-474 OTGR Section 4: Network Maintenance: Alarm and Control for Network Elements (A Module of OTGR, FR-439), Issue 1, December 1997 (replaces TR-NWT-000474, Issue 4)

- GR-833 OTGR: Network Maintenance: Network Element and Transport Surveillance Messages, Issue 2, November 1996, Issue 3, February 1999, Issue 4, June 2000, component of FR-482 OTGR Section 12.0: Operations Applications Messages (replaces TR-NWT-000833, Issue 5)

- TA-TSY-000435 DS1 Automatic Facility Protection Switching (AFPS) Feature For Digital Terminal System Requirements and Objectives, Issue 1, February 1987

- TR-TSY-000238 Digital Channel Bank Dual-Tone Multifrequency (DTMF) Code Select Signaling Channel Unit, Issue 1, December 1986

- SR-NWT-001756 Automatic Protection Switching for SONET, Issue 1, October 1990

This service, if offered as a BSE, may be associated with the Dedicated Digital (< 64 kbps), Dedicated High Capacity Digital (1.544 Mbps) and Dedicated High Capacity Digital (> 1.544 Mbps) basic serving arrangements.

Bridging (1029)

Bridging allows the connection of three or more customer designated premises through a telephone company hub or bridge. The following are different types of bridging:

- Central Office Bridging provides the ability to connect multiple customer-designated premises with 2 or 4 wire voice grade circuits.
- Series Bridging provides a tip-to-tip and ring-to-ring series completion of a metallic pair to up to 26 customer-designated premises in a central office.
- Telegraph Bridging provides the ability to connect multiple customer designated premises with 2 or 4 wire telegraph circuits.
- Three Premises Bridging provides a tip-to-tip and ring-to-ring connection in a central office of a metallic pair to a third customer designated premises.

Generic Name of ONA Service	Product Name	BSE or CNS
Bridging	AM - Bridging	BSE
	BA - Bridging	BSE
	BS - Bridging	BSE or CNS
	NX - Central Office Bridging	BSE
	NX - Series Bridging	BSE
	NX - Telegraph Bridging	BSE
	NX - Three Premises Bridging	BSE
	NX - Bridging	BSE
	PB - Bridging	BSE
	SWB - Bridging	BSE
	Qwest - Bridging	BSE

FEATURE OPERATION:

See above description.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is independent of central office switch type.
2. Note that some LECs may not offer this feature in conjunction with the Category 3, Type K - Dedicated Digital (64 Kbps) BSA.

3. References:

- See Definition only, Bridge Lifters, SR-504 SPCS Capabilities and Features (A Module of LSSGR, FR-64), Issue 1, March 1996 (replaces TR-NWT-000504, Issue 2)

- GR 672 LSSGR: Bridge Services On An IDLC System, FSD 20-02-2010 (A Module of LSSGR, FR-64), Issue 1, June 2000 (replaces TR-TSY-000672, Issue 1 – no technical changes)

This service, if offered as a BSE, may be associated with the Dedicated Metallic, Dedicated Telegraph, Dedicated Voice Grade, Dedicated Program Audio and Dedicated Digital (< 64 kbps) basic serving arrangements.

Conditioning (1030)

Conditioning provides assured transmission quality on analog private lines for technical parameters such as frequency response, envelope delay distortion, signal to C-notched noise ratio and nonlinear distortion.

Generic Name of ONA Service	Product Name	BSE or CNS
Conditioning	AM - Conditioning	BSE
	BA - Conditioning	BSE
	BS - Conditioning	BSE or CNS
	NX - Conditioning	BSE
	PB - Channel Conditioning	BSE
	SWB - Conditioning	BSE
	Qwest - Private Line Conditioning	BSE

FEATURE OPERATION:

See above.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is independent of central office switch type.

2. References:

   - Data Communication Using Voiceband Private Line Channels (MDP-326-584), Issue 1, October 1973.

   - High Performance Data Conditioning - Type D5 for Multipoint Private Line Data Channels (MDP-326-461), Issue 1, September 1982.

This service, if offered as a BSE, is associated with the Dedicated Voice Grade basic serving arrangement.

Data Over Voice (DOV) Service (1031)

Data Over Voice (DOV) service provides a point-to-point derived data channel over the same pair of wires used to provide local service. DOV can be used to connect a client to an ESP or between two ESP locations.

Generic Name of ONA Service	Product Name	BSE or CNS
Data Over Voice (DOV) Service	BA - Dedicated Derived Channel	BSA*
	BS - Derived Data Channel	CNS
	NX - DOVPATH®	BSA**
	PB - Digital Data Over Voice	CNS
	SWB - DovLink℠	CNS
	Qwest - Simultaneous Voice and Data Service	BSA***

FEATURE OPERATION:

DOV is established via a service order placed with the telephone company. Each line to be provisioned for DOV will be equipped with a Voice Data Multiplexer (VDM) at the end user's location (CPE) and in the serving central office. The VDM at the serving central office directs voice traffic to the circuit switched network and the data traffic to another VDM, special access line, or to a data switch. Back-to-back VDMs will allow the ESP to connect to a client or another ESP location.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is independent of central office switch type.
2. The derived data channel may support speeds up to 19.2 Kbps.
3. Interoffice back-to-back VDM arrangements may be offered by some LECs.
4. The pair of wires between the end user's location and the central office must be non-loaded.
5. This service is not compatible with range extension or subscriber carrier equipment.

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* Bell Atlantic will provide this with the Dedicated Derived Channel BSA.

® DOVPATH is a registered service mark of NYNEX.

** NYNEX will provide this with the Dedicated Derived Channel BSA.

℠ DovLink is a registered service mark of Southwestern Bell Telephone Company.

*** Qwest will provide this with the Dedicated Derived Channel BSA.

6. References:

- SR-NPL-000665 Network Interface Specification: DOV/DVM Type 1, Issue 1, January 1987.
- Bell Atlantic technical references TR 72009 Bell Atlantic Data/Voice Multiplexer Service Network Access Interface Specifications, January 1986 and TR 72017 Bell Atlantic Data/Voice Multiplexer Service Interface Specifications, March 1987.
- NYNEX Technical Reference NTR-74374 "Universal Data Voice Multiplexer Access to Digital Data Over Voice (DOV) Network Interface Specification, Issue 2, May 1990."
- Qwest Document 77330 "Data Over Voice Multiplexer Network Access Interface Specifications for Phase Coherent FSK" Issue A, February 1989.
- Qwest Document 77331 Simultaneous Voice and Data Service (SVDS) (Digital Data Over Voice Technology) Digital Access Arrangements, Network Interface Specifications, Issue D, July 1995.
- Southwestern Bell Telephone Document TP76620 Digital Data Over Voice (DDOV) Network Interface Specification, Issue B, January 1993.

Derived Channels (Monitoring) (1032)

This capability provides an ESP's client with a connection via low-speed derived channel to a scanning device located in the central office. The scanning device communicates with a subscriber terminal unit (STU) on the ESP client's premises. The scanner transmits to the ESP (1) alert signals from the STU and (2) notification of breaks in the subscriber's local loop. Breaks can generally be detected within a 30- to 90-second interval.

Generic Name of ONA Service	Product Name	BSE or CNS
Derived Channels (Monitoring)	AM - Notification of Subscriber Line Breaks	CNS
	BA - REACT[SM]	CNS
	BS - WATCHALERT[®]	CNS
	NX - PULSENET[SM]	CNS
	PB - POLLSTAR[SM]	CNS
	PB - ALARM PLUS [SM]	CNS
	Qwest - ScanAlert[SM]	CNS

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. A Subscriber Terminal Unit (STU) is placed on the client's premises by the ESP and is connected to the line and the client's alarm sensor.

3. The scanner will periodically poll each client's line for a supervisory low tone. The tone status will indicate a line outage, alarm, or if the line is okay.

4. Upon detection of a line outage or an alarm signal, the scanner will transmit an alarm message to a telephone company provided host computer which then transmits the alarm message to the appropriate ESP over a private line connection.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is independent of the central office switch type.

2. The client's line must be one-party.

3. This service may not work when certain range extension or subscriber carrier equipment is used on the client's line (end to end metallic facilities may be required).

[SM] REACT is a service mark of Bell Atlantic Corporation.
[®] WATCHALERT is a registered service mark of BellSouth Corporation.
[SM] PULSENET is a registered service mark of NYNEX.
[SM] POLLSTAR is a service mark of Pacific Bell. ALERT PLUS is a service mark of Nevada Bell.
[SM] ScanAlert is a service mark of Qwest Corporation.

4. The STU must be connected to the client's line using an appropriate interface device. The STU and clients other CPE must be compatible with the central office scanner.

5. The coded low tone transmitted by the STU is at 37 Hz frequency.

6. Polling of the client's line varies from approximately every 6 seconds to approximately every 30 seconds depending on the type of scanner deployed by the telephone company.

7. The ESP connection to the telephone company host computer is via a 3000 series private line.

8. References:

   - Ameritech reference AM TR-MKT-000038 Ameritech Scan-Alert Transport Service Deployed With Base 10 Technology, Issue 1, May 1989.

   - BellSouth technical reference TR-73518 Description of the Network Interface for WATCHALERT® Service, October 1988.

   - BellSouth technical reference TR-73530 Description of the Network Interface at an Alarm Agency to WATCHALERT® Service, June 1989.

   - Qwest Document 77333 Qwest Alarm Signaling Transport - Scan-Alert℠, Issue A, July 1992.

This service, if offered as a BSE, may be associated with the Dedicated Voice Grade and Dedicated Alert Transport basic serving arrangements.

® WATCHALERT is a registered service mark of BellSouth Corporation.
℠ Scan-Alert is a service mark of Qwest Corporation.

Extended Superframe Conditioning (1033)

This feature enables the ESP to access up to 4 kbps of an 8 kbps extended superframe (ESF) data channel in a properly equipped Dedicated High Capacity Digital (1.544 Mbps) service for control and performance monitoring of the end-to-end service. Within the 8 kbps ESF conditioning data channel, the remaining 4 kbps are reserved for terminal synchronization and cyclic redundancy checking.

Generic Name of ONA Service	Product Name	BSE or CNS
Extended Superframe Conditioning	AM - Access To Extended Superframe Data Channel	BSE
	BA - High Capacity Digital Service	BSA *
	BS - Dedicated High Capacity Digital (1.544 Mbps)	BSA *
	NX - Access to Extended Superframe Data Channel	BSA *
	SWB - Extended Superframe Format	BSE
	Qwest - Access To Extended Superframe Data Channel	BSA *

FEATURE OPERATION:

ESF is an optional DS1 bit stream framing method available to the customer who purchases a high capacity 1.544 Mbps service. The overhead bits in the 1.544 Mbps bit stream are used for performance monitoring of the DS1 line. ESF extends the DS1 superframe structure from 12 to 24 frames and divides the framing bit previously used for basic frame synchronization into channels for redundancy checks, data link and framing. ESF creates additional channel capacity that can be made available for various network and customer functions.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This service requires a customer to obtain a DS1 high capacity 1.544 Mbps channel.

2. The DS1 equipment must have the ESF option capability. New vintage D4 and D5 channel bank equipment has ESF as an available option.

3. References:

   - GR-499, Transport Systems Generic Requirements (TSGR): Common Requirements (A Module of TSGR, FR-440), Issue 2, December 1998 (replaces TR-NWT-000499, Issue 5).

This service, if offered as a BSE, may be associated with the Dedicated High Capacity Digital (1.544 Mbps) basic serving arrangement.

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* For Bell Atlantic, BellSouth, NYNEX and Qwest, this is an alternative of the Dedicated High Capacity Digital BSA.

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 - Diagnostic Channel On DS0 Lines	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.

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
	Qwest - ScanAlert[SM]	CNS

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 dial-up 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.

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* 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.

[SM] ScanAlert is a service mark of Qwest Corporation.

4. References:

- Ameritech - AM-TR-MKT-000038
- Ameritech - AM-TR-MKT-000039
- Qwest - Document 77333 - Qwest Alarm Signaling Transport - ScanAlert[SM], Issue A, July 1992

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.

[SM] ScanAlert is a service mark of Qwest Corporation.