

Multiplexing Digital (9014)

Multiplexing is a technique that uses a single transmission facility to provide several transmission channels, such as by sharing the time slots of the channel (time-division multiplexing) or superimposing many frequencies at the same time (frequency-division multiplexing) in order that many signal sources and links may communicate during a given time period. This capability may include multiplexing such as:

- **DS0 To Subrates** – This capability provides for the time division multiplexing of multiple digital data signals operating at the subrate speeds of 2.4 Kbps, 4.8 Kbps, or 9.6 Kbps with a 64 Kbps DS0 digital signal.
- **Multiplexing – DS1/Analog or DS0** – This capability provides for the pulse code modulation and/or time division multiplexing of multiple analog voice and/or multiple 64 Kbps DS0 digital signals into a 1.544 Mbps data stream for the purposes of reducing the number of transmission links required between two points.
- **Multiplexing – DS1 To DS0** – This capability provides for the time division multiplexing of up to twenty-four 64 Kbps DS0 digital signals into a 1.544 Mbps DS1 digital signal.
- **Multiplexing – DS1 To Voice Grade** – This capability provides for the pulse code modulation and time division multiplexing of up to twenty-four 4 kHz voice grade channels into a 1.544 Mbps DS1 digital signal.
- **Multiplexing – DS3/DS1** – This capability provides for the time division multiplexing of up to twenty-eight 1.544 Mbps DS1 digital signals into a 44.736 Mbps DS3 digital signal.

Generic Name of ONA Service	VERIZON Product Name	BSE or CNS
Multiplexing - Digital	Multiplexing Arrangements	BSE

References:

- TR-TSY-000009 Asynchronous Digital Multiplexes Requirements and Objectives, Issue 1, May 1986 (no longer listed).
- TR-TSY-000010 Synchronous DS3 Add-Drop Multiplex (ADM 3/X) Requirements and Objectives, Issue 1, February 1988.

This service, if offered as a BSE, is associated with the Dedicated Voice Grade and the Dedicated High Capacity basic serving arrangements.

Remote Call Forwarding (9006)

This capability utilizes a Directory Number (DN) to automatically forward all incoming calls to another DN. The forwarded number can be in the same central office switch or in another central office switch.

The remote call forwarding directory number is not directly associated with an access connection arrangement, but rather is a software translation programmed within the central office switch. All calls dialed to that directory number will forward to another number automatically. The subscriber to this capability does not have a station set for termination of calls made to their remote call forwarding number.

Generic Name of ONA Service	VERIZON Product Name	BSE or CNS
Remote Call Forwarding	Remote Call Forwarding	BSE

FEATURE OPERATION:

See description above.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

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

Switch Type	Earliest Generic Release
DCO	15.1
EWSD	9
GTD-5	1.6.2.1
DMS-10	404.2
1A ESS	1AE9
5ESS	5E5
DMS-100	BCS30
#TEAX	1.2.9.1

2. Reference:

- LSSGR (FR-NWT-000064), GR-581 LSSGR Remote Call Forwarding, FSD 01-02-1402, June 2000.

Saved Number Redial (9002)

This capability provides the ESP's client with the ability, at any point during a call, or upon encountering a busy or no-answer, to automatically save the called number by dialing an access code

Generic Name of ONA Service	VERIZON Product Name	BSE or CNS
Saved Number Redial	Saved Number Redial	CNS
	Last Number Saved Number Redial	CNS

FEATURE OPERATION:

To activate Saved Number Redial, the ESP's client dials an activation code of the form *XX at any point during a call or upon encountering a busy or no-answer.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

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

Switch Type	Earliest Generic Release
EWSD	9
GTD-5	1.6.2.1

2. The ESP's client may place any number of calls after the number is stored and then may call the stored number by dialing another access code of the form *XX.

Inband Signaling (9015)

Signaling arrangements extend line circuit or signaling circuit alerting information on metallic or fiber facilities from one customer premises location to another customer premises location. The signaling arrangement can be terminated on trunk-like or line side interfaces of the LEC switch. This capability may include signaling such as the following:

- **Dual Tone Multifrequency Address Signaling**— This option allows reception of called party address signals from the customer in the form of Dual Tone Multifrequency (DTMF) signals.
- **Rotary Dial Station Signaling** - This option provides for the transmission of called party address signaling from rotary dial stations for originating calls.
- **Signaling System 7 (SS7) Out of Band Signaling**— This option is provided in conjunction with Common Channel Signaling System 7 (CCS7) Access Service and provides common channel out of band transmission of address and supervisory SS7 protocol signaling information.
- **Tandem Switch Signaling** allows for the passing of the Carrier Identification Code (CIC) and the OZZ code or circuit code information needed to perform tandem switching functions.

Generic Name of ONA Service	VERIZON Product Name	BSE or CNS
Inband Signaling	Signaling Arrangements	BSE

FEATURE OPERATION:

See description above.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. DTMF Signaling is available with FGA or BSA-A.
2. Rotary Dial Signaling is available with FGB or BSA-B where conditions permit.
3. SS7 Signaling is available with Switched Access FGD or BSA-D service, 500 SAC Access, 800 SAC Access and 900 SAC Access Services and are available with the DS1 Digital, DS3 Digital interface arrangements. Tandem Switch Signaling is only available on FGD Switched Access, 500 SAC Access and 900 SAC Access services.
4. Tandem Switch Signaling is available with FGD Switched Access, 500 SAC Access, and 900 SAC Access.

Do Not Disturb (9010)

This capability provides the ESP's client with the ability to select up to 12 customer telephone numbers from which calls are to be received. All other calls are intercepted and routed to a recorded announcement that informs the caller that the customer is not accepting calls. Calls from numbers outside the specified LEC exchanges will ring normally.

Generic Name of ONA Service	VERIZON Product Name	BSE or CNS
Do Not Disturb	Do Not Disturb	CNS
	Special Call Acceptance	CNS

FEATURE OPERATION:

See description above.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

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

Switch Type	Earliest Generic Release
DCO	17.2
EWSD	9
GTD-5	1.6.2.1
DMS-10	404.4
1A ESS	1AE9
5ESS	5E9.1
DMS-100	BCS31

Special Call Waiting (9009)

This capability provides the ESP's client with the ability to select up to 12 customer telephone numbers which can activate Call Waiting. Incoming calls placed from numbers not selected by the customer receive busy signals when the customer's line is busy.

Generic Name of ONA Service	VERIZON Product Name	BSE or CNS
Special Call Waiting	Special Call Waiting	CNS
	Special Call Acceptance	CNS
	Select Call Waiting	CNS

FEATURE OPERATION:

See description above.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

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

Switch Type	Earliest Generic Release
DCO	17.2
EWSD	9
GTD-5	1.6.2.1
DMS-10	404.4
1A ESS	1AE9
5ESS	5E9.1
DMS-100	BCS31

2. Customers may not subscribe to Call Waiting and Special Call Waiting on the same line.

Three Way Calling (9005)

Three Way Calling (TWC) allows an ESP's client to add a third party to an existing conversation without operator assistance. The party initiating TWC may hold one party with privacy exclusion while dialing and talking with another party and can later include the held party in TWC.

Generic Name of ONA Service	VERIZON Product Name	BSE or CNS
Three Way Calling	Three Way Calling	CNS

FEATURE OPERATION:

A customer subscribing to TWC is able to add a third party to a stable call regardless of which party originated the call. The subscribing customer flashes his switch-hook, receives recall dial tone, dials the third party, and flashes the switch-hook again. The third party may be added to the call while the station is receiving ringing or the subscribing customer may speak with the third party in private prior to adding the third party to the stable call.

The third party will be disconnected from the call if the party initiating the TWC flashes the switchhook.

If the party initiating the TWC disconnects, all parties are disconnected.

If a party other than the party initiating the TWC disconnects, the remaining two parties may continue the call.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

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

Switch Type	Earliest Generic Release
DCO	15.1
EWSD	9
GTD-5	1.6.2.1
VIDAR	7.0.1.2
DMS-10	210.4
1A ESS	1AE8
5ESS	5E2
DMS-100	BCS17
#2EAX	1.2.9.1

2. Recursive use of TWC is limited only by resources of the switching system and transmission capabilities (A adds on B, B adds on C, C adds on D, etc.)

3. Dialing restrictions of a station continue in effect when dialing a party to be added on.
4. Speed Calling can be used when adding a party.
5. The initiator of TWC should not receive a Call Waiting tone. Other parties on the call can receive and respond to a Call Waiting tone.
6. Either or both legs of a three way call may be an interexchange or international call.
7. TWC is not available on lines with two or more parties.
8. References:
 - GR-577 LSSGR: Three-Way Calling, FSD 01-02-1301 (A Module of LSSGR, FR-64), Issue 1, June 2000 (replaces TR-TSY-000577 Issue 1 & Revision 1 – no technical changes).

2. Appendix 1 - Region Specific Services - Technical Descriptions for Packet Switched Access Arrangements

Priority - Packet (9018)

This capability allows the Enhanced Service Provider (ESP) the ability to establish a "priority" status to the ESP's data as it processes through the network.

Generic Name of ONA Service	Product Name	BSE or CNS
Priority - Packet	Priority - Packet	BSE

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

3. Appendix 1 - Region Specific Services - Technical Descriptions for Dedicated Access Arrangements

High Capacity Digital Hand-Off Service (9024)

This capability provides the Enhanced Service Provider (ESP) the ability to aggregate their intralexchange telecommunications services between their premises and the local serving wire center onto a digital local loop. The digital transmission rate available is either DS1 (1.544 Mbps) or DS3 (44.736 Mbps). The services which can be combined include private line and switched services, intralexchange, intraLATA and interLATA services.

Generic Name of ONA Service	VERIZON Product Name	BSE or CNS
High Capacity Digital Hand-Off Service	ControlLink@DCS	BSE

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This service provides only the common link between the customer and the local serving wire center. End-to-end private line and exchange services will utilize this digital link to the customer's premise, rather than the analog loop which might otherwise be provided.
2. This service will be available on a digital basis at the network interface on the customer's premises.
3. Normal analog channel network interface specifications will be superseded by the electrical specifications of the 1.544 Mbps (DS1) or 44.736 Mbps (DS3) channel which is actually terminated. Each digital channel will have an identity only as a "time slot" within a DS1 or DS3 loop.
4. Comparable digital to analog conversion equipment must be provided by the customer to derive the desired channelized services. Any Channel Service Units (CSUs) necessary for digital services are the responsibility of the customer.

4. Appendix 1 - Region Specific Services - Technical Descriptions for Dedicated Network Access Link Serving Arrangements

Message Waiting Indication – Audible Ring Burst (9022)

This capability provides the Enhanced Service Provider (ESP) with the ability to activate an alerting signal in the form of a special ringing cadence to their client's line to inform them that a message is waiting. The reminder will be repeated at a specific interval programmed by the Telephone Company.

Generic Name of ONA Service	VERIZON Product Name	BSE or CNS
Message Waiting Indication – Audible Ring Burst	Message Waiting Indication – Audible Ring Burst	BSE

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

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

Switch Type	Earliest Generic Release
GTD-5	1.7.1.1

2. This feature is in addition to the stutter dial tone that normally represents a message waiting.

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

Premier Messaging Services Interface (PMSI) (9026)

Premier Messaging Services Interface (PMSI) is an optional enhancement to the Messaging Services Interface BSE. PMSI is similar to the Messaging Services Interface BSE, except that it utilizes the Signaling System 7 (SS7) Network to pass calling and called number information between central offices. With PMSI capability, the customer is not required to obtain a Voice Grade Dedicated Network Link to each Telephone Company central office switch where messaging capability is desired. With PMSI, the customer can provide messaging capability to all end users in a LATA area provided those end users reside in central offices that are interconnected via SS7 and are equipped with the required software.

Generic Name of ONA Service	VERIZON Product Name	BSE or CNS
Premier Messaging Services Interface (PMSI)	Premier Messaging Services Interface (PMSI)	BSE

References: not available.

Signaling System 7 Message Waiting Indicator (SS7MWI) (9025)

Signaling System 7 Message Waiting Indicator (SS7MWI) Signaling Service permits the customer to provide Signaling System 7 (SS7) Message Waiting Indicator (MWI) Transaction Capabilities Application Part (TCAP) messages to the Telephone Company for delivery to Telephone Company switches that serve suitably equipped lines of those end users who subscribe to the customer's voice messaging service. MWI TCAP messages are originated by the customer's equipment and addressed and delivered to a designated Telephone Company Signaling Transfer Point (STP) pair in the LATA in which the customer's subscribing end user receives service.

SS7MWI Signaling Service is offered only to provide signaling to Telephone Company switches within the LATA in which the signaling was handed off to the Telephone Company, and will be available only in LATAs where the Telephone Company has STPs available to accept SS7 messages associated with the service. A list of LATAs where the Telephone Company has STPs is available from the Telephone Company tariff. The customer must hand-off only those messages that are intended for end users served by capable Telephone Company switches in that LATA.

SS7MWI Signaling Service is not available in LATAs where the Telephone Company does not have STPs. In those LATAs, services utilizing a Messaging Service Interface (MSI) or Premier Messaging Service Interface (PMSI) can be used to communicate message waiting status to end users' lines.

Generic Name of ONA Service	VERIZON Product Name	BSE or CNS
Signaling System 7 Message Waiting Indicator (SS7MWI)	Signaling System 7 Message Waiting Indicator (SS7MWI)	BSE

References: not available.

5. Appendix 2 – VERIZON (former GTE Properties) ONA CONTACT

Company	Name	Phone
Verizon (former GTE properties)	Jeffrey Pallone	518-426-5862 jeffrey.a.pallone@verizon.com

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