

Technology Primer

→ Mitel 3300 IP Communications Platform Networking

The purpose of this primer is to provide details of the features supported on the Mitel® 3300 IP Communications Platform (ICP) when using the DPNSS, Q.SIG and IP networking protocols.

This will enable Solution Providers and customers to understand the different types of connectivity available, and define the features supported across the relevant protocols.

Overview

Mitel has a long standing experience in developing and implementing voice solutions globally and in voice networking. This experience has been migrated into the 3300 ICP voice platform using an IP infrastructure. This experience has delivered an industry-leading voice platform that has exceptional strength in networking capabilities and features.

3300 ICP IP Networking

Thanks to the inherent power of the 3300 ICP networking capability, the 3300 ICP is regularly being implemented as both an IP gateway and a fully functional VoIP platform. The 3300 ICP can interwork up to 250 3300 ICPs over a fully integrated IP network. By using 3300 ICP Controllers as gatekeepers, multiple groups of 3300 ICPs can be connected together to create a virtual network of hundreds of systems. The Mitel 3300 ICP can be integrated into any vendor's LAN, and subsequently WAN, to ensure that the investment protection of the voice and data network is maximized. The Mitel 3300 ICP supports the same features across an IP network as it does across a DPNSS network. These features are listed below.

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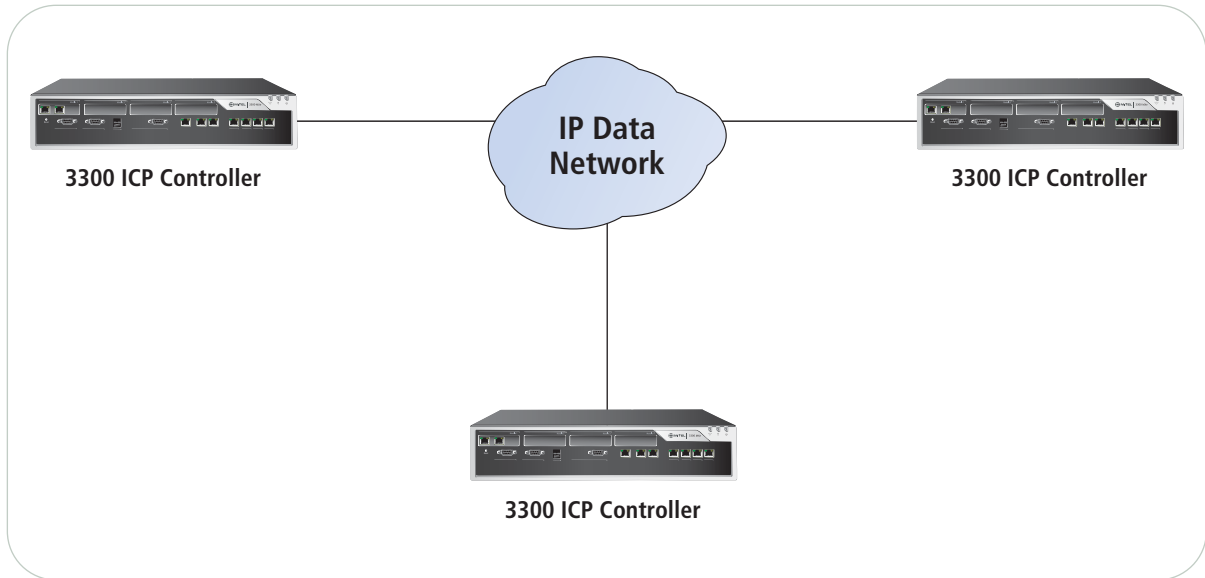


Figure 1: Topology of a 3300 ICP IP Network using IP Networking

3300 ICP ISDN Interworking

The 3300 ICP can interwork with other compatible systems using traditional ISDN connectivity. This connectivity will use either the DPNSS or Q.SIG protocol. The 3300 ICP supports ISDN connectivity through the Embedded Trunk modules or the Universal Network Service Unit (NSU).

The diagram below shows a network entirely made up of Mitel 3300 ICP systems; however one or two of the systems could be a different manufacturer’s voice platform – care should always be taken when assessing the standard DPNSS and Q.SIG features supported between different manufacturers equipment.

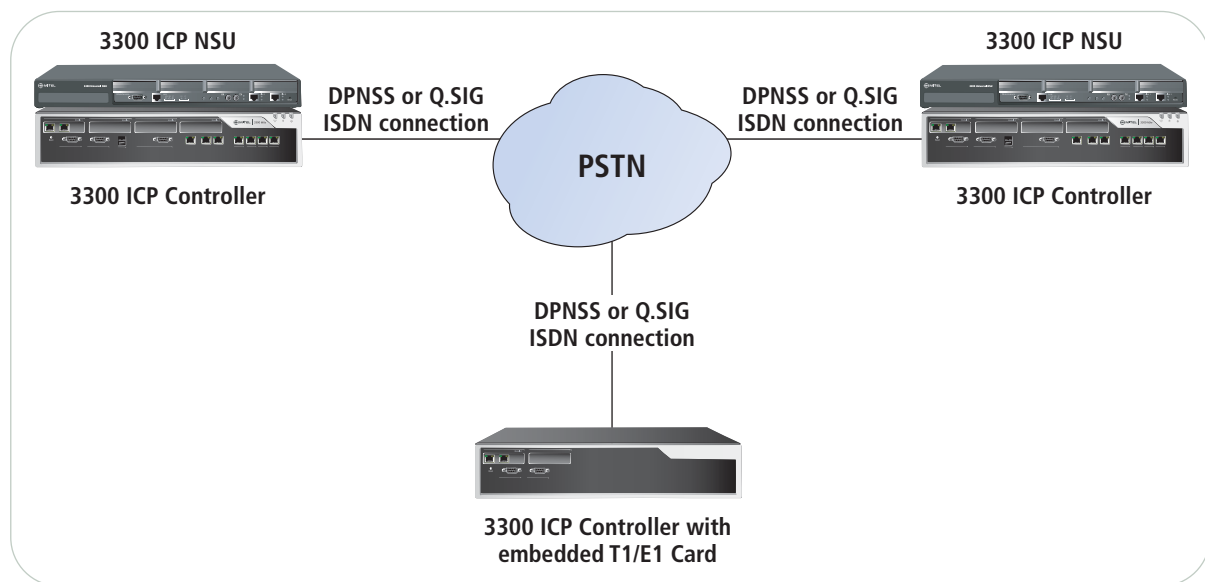


Figure 2: Topology of Traditional DPNSS or Q.SIG Connected network

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3300 ICP supported features using IP networking and DPNSS

Below is the list of features supported when multiple 3300 ICPs are connected together via either IP networking or traditional DPNSS connections. When the 3300 ICP is connected to another manufacturer's PBX via a DPNSS connection, care should be taken to ensure that the relevant features are supported on all platforms and that they interwork correctly with the 3300 ICP.

Answered Line Identity

- Displays the identity of the party who actually answers the call, as opposed to the identity of the party to whom the call is directed.

Attendant Individual Trunk Access

- Allows the attendant to seize a nominated analog or digital trunk.

Attendant Serial Call

- Allows the attendant to have a call originating on a DPNSS trunk extended to a destination within the 3300 ICP environment, and automatically returned to the console after the call is completed so the originating caller maybe connected to another party by the attendant.

Call Failure Display

- If an outgoing call fails, a message indicating the cause of the failure is received by the originating 3300 ICP. The telephone then displays the call failure indication on the set display.

Call Forwarding

- Users who are absent or busy can have their calls forwarded to a third party based on busy, no reply or immediately.

Call Hold and Three-Party Working

- The Call Hold supplementary service permits an extension user to hold an existing call to a second party, either for privacy reasons or in order to make use of another supplementary service.
- The Three-Party supplementary service permits an extension user, while holding an existing call, to place a call to a third party.
- The Three-Party – On Busy supplementary service permits an extension user to return to the holding call upon hearing the busy tone.

Conference Split

- Enables a user involved in a three-party conference to speak privately with one of the other parties.

Callback on Busy / No Answer

- Call back when free offers a user:
 - Who meets busy, the possibility of having the call completed automatically when the called extension becomes free.
 - Who meets no answer, the possibility of having the call completed automatically after the called extensions next completed call.

Callback When Free

- See above.

Callback When Next Used

- As callback on No Answer.

Callback with Digit Modification

- Ensures that the Callback feature will work in networks with non-uniform numbering plans.

Called Line Identity

- Displays the identity and state of the called party on the calling party's display set or console.

Calling Line Identity

- Displays the identity of the incoming party on the recipient's console or display set.

Camp On

- The Call Waiting service enables the calling party to indicate to the busy dialed party that another call is being offered. When a party is on a call, the Camp On feature can be used to indicate that another call is waiting.

Clustering

- A group of 3300 / SX2000s interconnected via DPNSS all sharing the same primary node identifier.

Conference

- Allows the conferencing of digital trunks.

Direct Trunk Select from Multiline Telephone Sets

- Allows individual digital trunks to be assigned to line keys on multiline sets.

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Distinctive Ringing

- Allows stations to distinguish between off-net and on-net calls.

Do Not Disturb

- Sends a Do not Disturb tone (and a message, if the calling station has display capabilities), when a station with DND set is called by a party on another 3300.

DPNSS Callback Messaging

- Allows users of Mitel display telephones to view callback messages that have been set on their extension. The called telephone extension is sent a message containing the caller's name and telephone number.

DSS / BLF

- A Busy Lamp Field (BLF) allows the status (busy, ringing, DND or idle) of a directory number or device to appear next to a telephone line key or programmable key module key .
- The key associated with the lamp will act as a Direct Station Selection (DSS), allowing the user to direct calls based on the call states of the set hosting the lamp and the device or group being monitored.
- The monitored device may be on the same system, or another system, within the same cluster.

Gateway

- Interconnects an incoming DPNSS trunk with an outgoing analog trunk and vice versa.

Interworking

- Allows messages not understood by a transit system to be passed on to the next system as a transparent message.

Last Number Redial

- Allows the user to have the system redial the last external number dialed.

Loop Avoidance

- Prevents calls from passing through the same node repeatedly, creating a looping effect and tying up network resources.

Malicious Call Trace

- Provides a record of malicious calls in the SMDR records. Each time the Tag Call feature is invoked, a Malicious Call Indication request is sent, and two SMDR records are generated.
- Intrusion - Restricted offers PABX-defined functionality to restrict intrusion rights on individual extensions. This is achieved via Class of Service.
- Redirection - When the Tag Call is accepted, a malicious call indication is sent, and "Thank You" is shown on the set display of the user who tagged the call.

Meet Me Answer

- Lets a user respond to a Group Page that was missed, even if the identity or location of the person who paged is unknown. Each page group has one Meet Me Answer timer; up to 15 minutes is possible to respond to the most recent page by using this feature.

Network Attendant Recall

- When an attendant extends an external trunk call to any station in the network the call will recall the attendant.

Network SMDR

- Allows an SMDR report to trace the path of a DPNSS call through a network.

Network Voice Mail Forwarding Party Information (Subscriber Node)

- Allows the forwarding party information such as node identification, directory number and the call forward type information to be sent across the network.

Network Voice Mail-Forwarding Party Information (Voice Mail Node)

- The feature decodes the forwarding party information received over the DPNSS trunk for the purpose of:
- Displaying node ID and extension on voicemail set
- Outputting the Node ID and extension number to voice mail ports with the ONS interface

Network Voice Mail – Message Waiting

- When the voice mail system initializes a message waiting indication, the 3300 will determine where the extension resides i.e., main or remote site and the relevant message will be sent to the correct location.

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Network Voice Mail Message Retrieval

- Display and message key sets are able to read messages set by the voice mail. The subscriber can place a call back to the voice mail by pressing the appropriate key.

Override

- Offers users of selected extensions, who meet busy, the possibility of intruding on the established conversation.
- Provides call redirection over a DPNSS network of mixed-vendor (Mitel and other) systems supporting the DPNSS call-redirection protocol. It provides Attendant Recall functionality over a mixed-vendor DPNSS network.

Route Optimization

- Offers the facility of obtaining a new connection between two end PABXs using a preferred route, in the event that an established call through a DPNSS network did not follow the optimum route.

Route Optimization Flag in SMDR

- Generates an SMDR call record for both the pre-optimized and post-optimized trunks.

Serial Call

- Extends the functionality of the Attendant Serial Call feature over the digital network by allowing a centralized attendant to set up serial calls for users on remote systems, using the DPNSS protocol. MSDN / DPNSS Serial Call extends this functionality over the digital network, with the same appearance to users and attendants.

Stepback

- Allows a call to backup one or more nodes in the event that it encounters congestion and is not completed, then attempt an alternative path to its destination.

SMDR

- Collects data on outgoing and incoming trunk calls and also for calls made between stations within the system.

Tandeming

- Allows the interconnection of a DPNSS trunk to another DPNSS trunk for the purpose of completing a call across a network.

Timed Recall

- Provides a timed recall for unanswered calls and calls transferred to a busy extension. The call is returned to the originating party.

Transfer to a Busy Device

- Allows a user to transfer an incoming trunk or station across the network to a busy device. The transferred party is automatically camped on to the busy device.

3300 ICP supported features using Q.SIG

Below is the list of features supported when multiple 3300 ICPs are connected together via Q.SIG connections. When the 3300 ICP is connected to another manufacturer's PBX via a Q.SIG connection, care should be taken that the relevant features are supported on all platforms and that they interwork correctly to the 3300 ICP.

Advice of Charge(Europe only)

- Allows a caller to determine the cost of an outgoing toll call. When a caller makes a toll call, the CO establishes the call and sends meter pulses to the system. The system calculates the call charge based on these meter pulses and then displays the charge on the caller's phone display. The system can also be configured to record meter pulses for the caller in the Station Message Detail Records (SMDR).

Callback

- Can be set against a busy station or a station that doesn't answer.

Calling Name Identification Presentation

- Enables a network to display calling name identification to users.

Calling Line Identification Presentation

- Enables a network to display calling line identification to users.

Calling Name Identification Restriction

- Enables a network to restrict calling name identification from being displayed to users.

Calling Line Identification Restriction

- Enables a network to restrict calling line identification from being displayed to users.

Connected Line Identification Presentation

- Enables a network to display connected line identification.

Connected Line Identification Restriction

- Enables a network to restrict connected line identification from being displayed to users.

Call Forward Deflection

- Enables users to divert calls to another location by pressing the Forward softkey when notified of a new call (if HCI is implemented this may happen automatically).

Call Forward Unconditional

- Enables users to always have their calls forwarded to a third party.

Call Forward Busy

- Enables users who are busy to have their calls forwarded to a third party.

Call Forward No Reply

- Enables users who are absent to have their calls forwarded to a third party.

Call Offer

- Permits a calling user to request that the call be offered to a user at a busy destination and that the called user be given the choice to accept, reject or ignore the waiting call.

Call Transfer (by join)

- Permits an extension user, while holding an existing call, to place a call to a third party and transfer the existing call to the third party.

Message Waiting

- Enables users to set or cancel message waiting indications on the set of another party to indicate that they wish to be called back.

Path Replacement

- Offers the facility of obtaining a new connection between two end PABXs using a preferred route, in the event that an established call through a Q.SIG network did not follow the optimum route.

Recall

- Provides a timed recall for unanswered calls and calls transferred to a busy extension.

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Glossary

DPNSS	Digital private networking signaling system. An ISDN30 protocol that is used predominantly in the UK to network PBXs together.
ECMA	ECMA International. An industry association founded in 1961 dedicated to the standardization of information and communication systems.
HCI	Human-computer interaction??
ISDN	Integrated Services Digital Network.
ISDN30	A 30-channel digital interface typically used to connect systems to the public network or to connect PBXs together to create private networks.
Off-net	A call that has originated outside of the customer network but is destined for an extension within the customer network.
On-net	A call that has originated within, and is destined for an extension within, the customer network.
Q.SIG	An ISDN-based protocol from ECMA for signaling between nodes of a private integrated services network (PISN). Mitel supports both the ETSI and ISO variants of Q.SIG.
Universal NSU	Universal network services unit used to connect the 3300 to the public network via ISDN 30 circuits.

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