TIA-102 Services

What standard services can P25 systems offer?

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NSW Telco Authority

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Acknowledgement of Country

NSW Telco Authority acknowledges, respects and values Aboriginal peoples as the Traditional Custodians of the lands on which we live, walk and work. We pay our respects to Elders past and present. We recognise and remain committed to honouring Aboriginal and Torres Strait Islander peoples' unique cultural and spiritual relationships, and continuing connection to their lands, waters and seas. We acknowledge their history here on these lands and their rich contribution to our society. We also acknowledge our Aboriginal employees who are an integral part of our diverse workforce, and recognise the knowledge embedded forever in Aboriginal and Torres Strait Islander custodianship of Country and cultures.

The 'Connecting Communities' artwork used here is by

Alison Williams, a proud Gumbaynggirr woman.

NSW Telco Authority

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Introduction

Most TIA-102 standards are approved as P25 standards.

The standards are voluntary. Manufacturers aren't required to implement every service the standards define on each interface, and they often don't.

You must ask the manufacturer which TIA-102 services their product supports on which interfaces. Manufacturers often use their own names for these services.

Manufacturers also add their own proprietary services and features, in addition to the standard ones.

The bottom of slides below show which interfaces the standards allow that service to support. This information is based on the Project 25 TIA-102 Documentation Suite Overview (TSB-102-D) document.

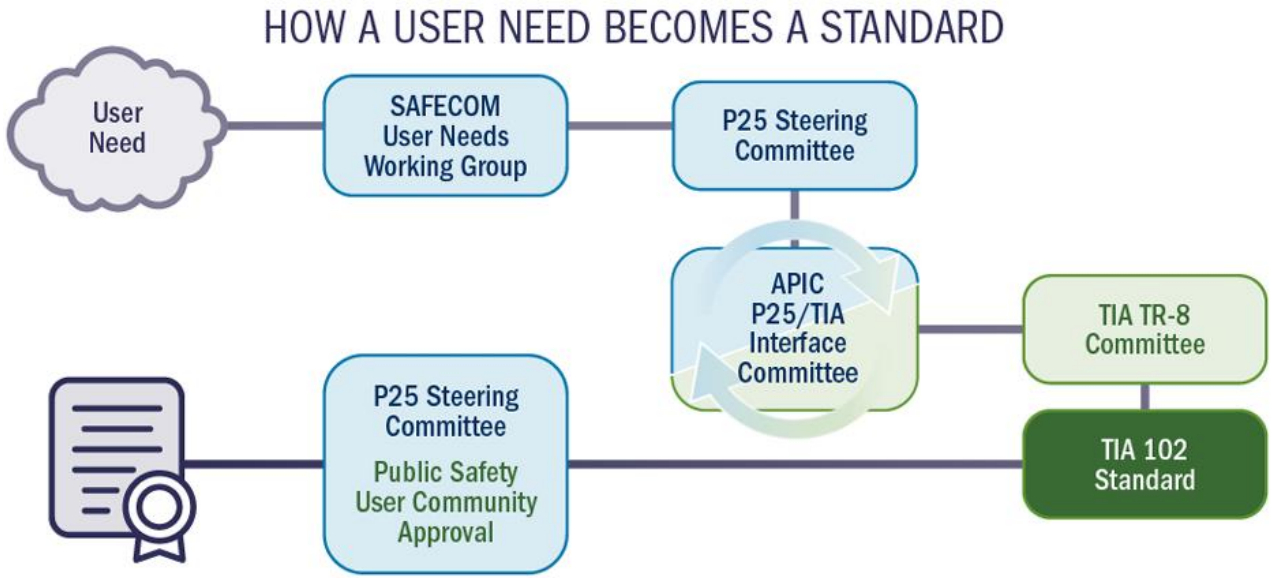


Figure 2 from P25 Steering Committee Representative Handbook

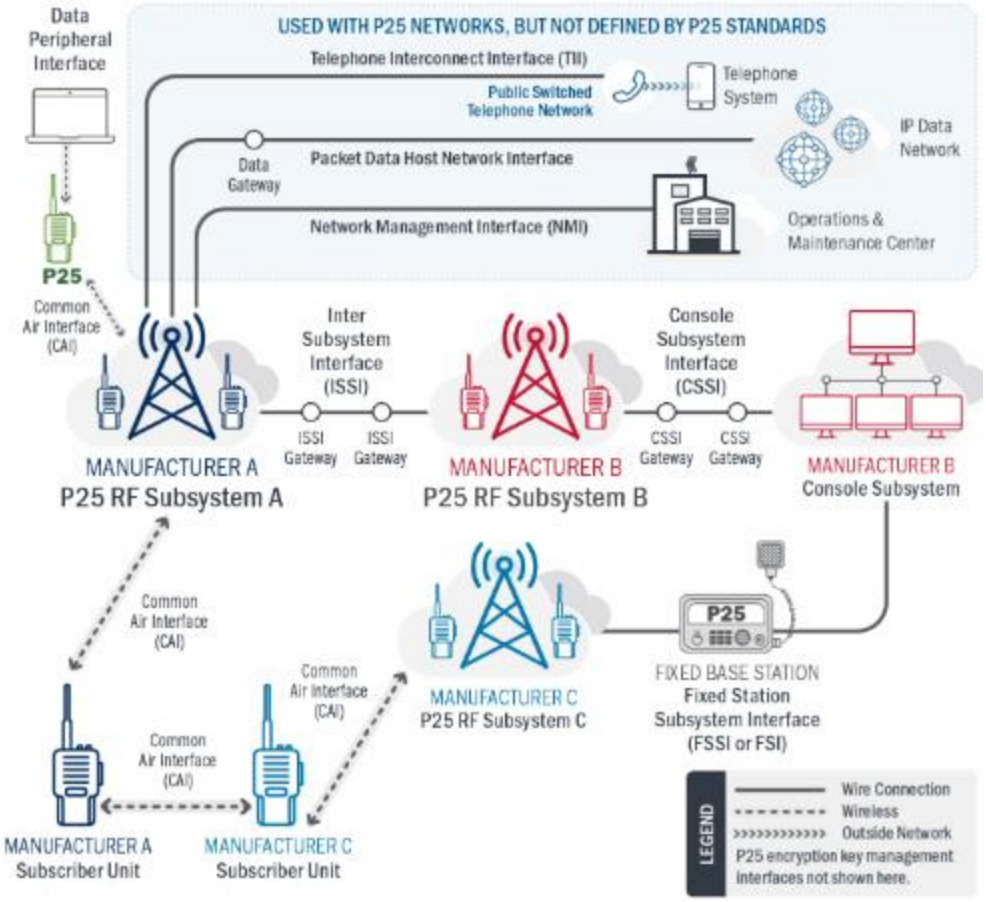
Selected Definitions

RFSS: Radio Frequency (RF) Subsystem. Fixed infrastructure that provies TIA-102 services. RFSS can be combined to create a System. Systems can be combined to create a Wide Area Communications Network (WACN).

SU: Subscriber Unit. A portable (handheld) or mobile (vehicle mounted) radio.

CAI: Common Air Interface. Over the air RF interface between an RFSS and an SU, or between an SU and another SU. Allows an SU made by one manufacturer to interoperate with RFSS and SU made by a different manufacturer.

ISSI: Inter-RF Subsystem Interface. Allows an RFSS to be connected to another RFSS, regardless of manufacturers. Manufacturers can also support multiple RFSS within one system with proprietary connections, rather than using ISSI.

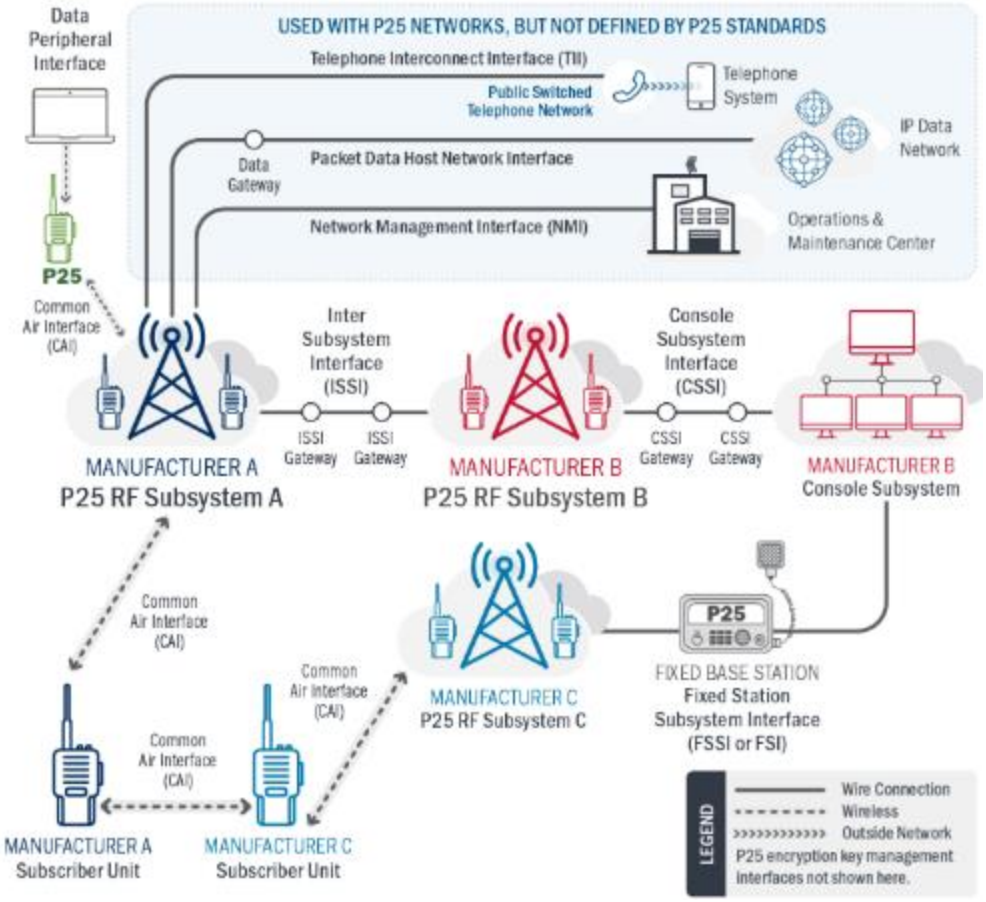


P25 System Model from Statement of P25 User Needs (SPUN)

Selected Definitions

CSSI: Console Subsystem Interface. Allows Dispatch Console Subsystems made by one manufacturer to be connected to an RFSS made by a different manufacturer. Manufacturers can also support their own Dispatch Console Subsystems inside an RFSS using proprietary connections, rather than CSSI.

FSSI: Fixed Station Subsystem Interface. Also known as Fixed Station Interface (FSI). Varities of FSI include Analog Fixed Station Interface (AFSI) and Digital Fixed Station Interface (DFSI). Both support conventional operation, but not trunked operation. Allows conventional RF / Repeater Site hardware to be connected to an RFSS, or connected to a Dispatch Console Subsystem, regardless of manufacturer.



P25 System Model from Statement of P25 User Needs (SPUN)

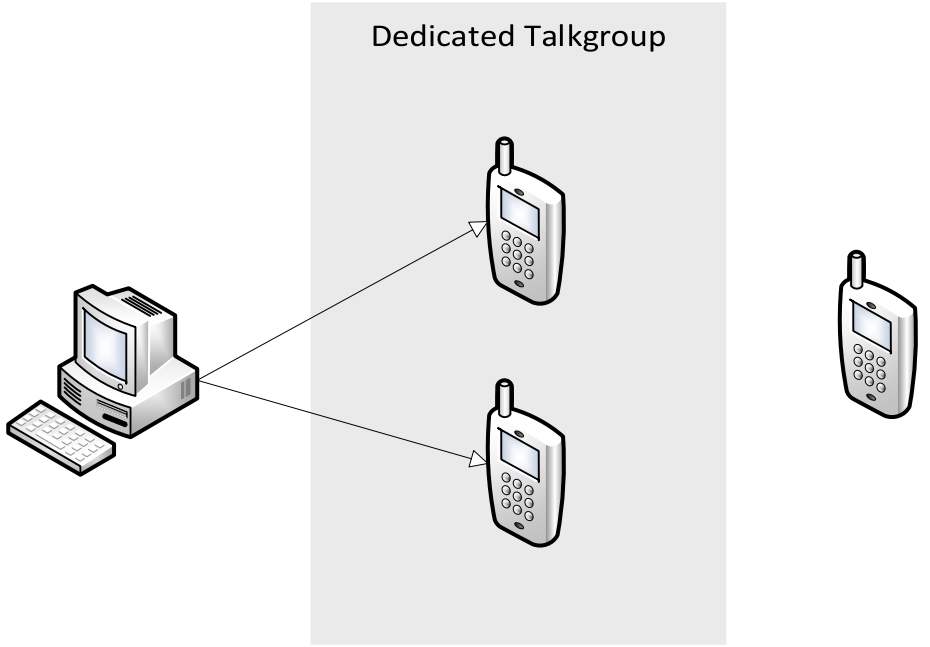
Teleservices

Broadcast Voice Call

Allows a one-way call to one or more users in a dedicated talkgroup.

The target group can be all system users, or it can include only selected users.

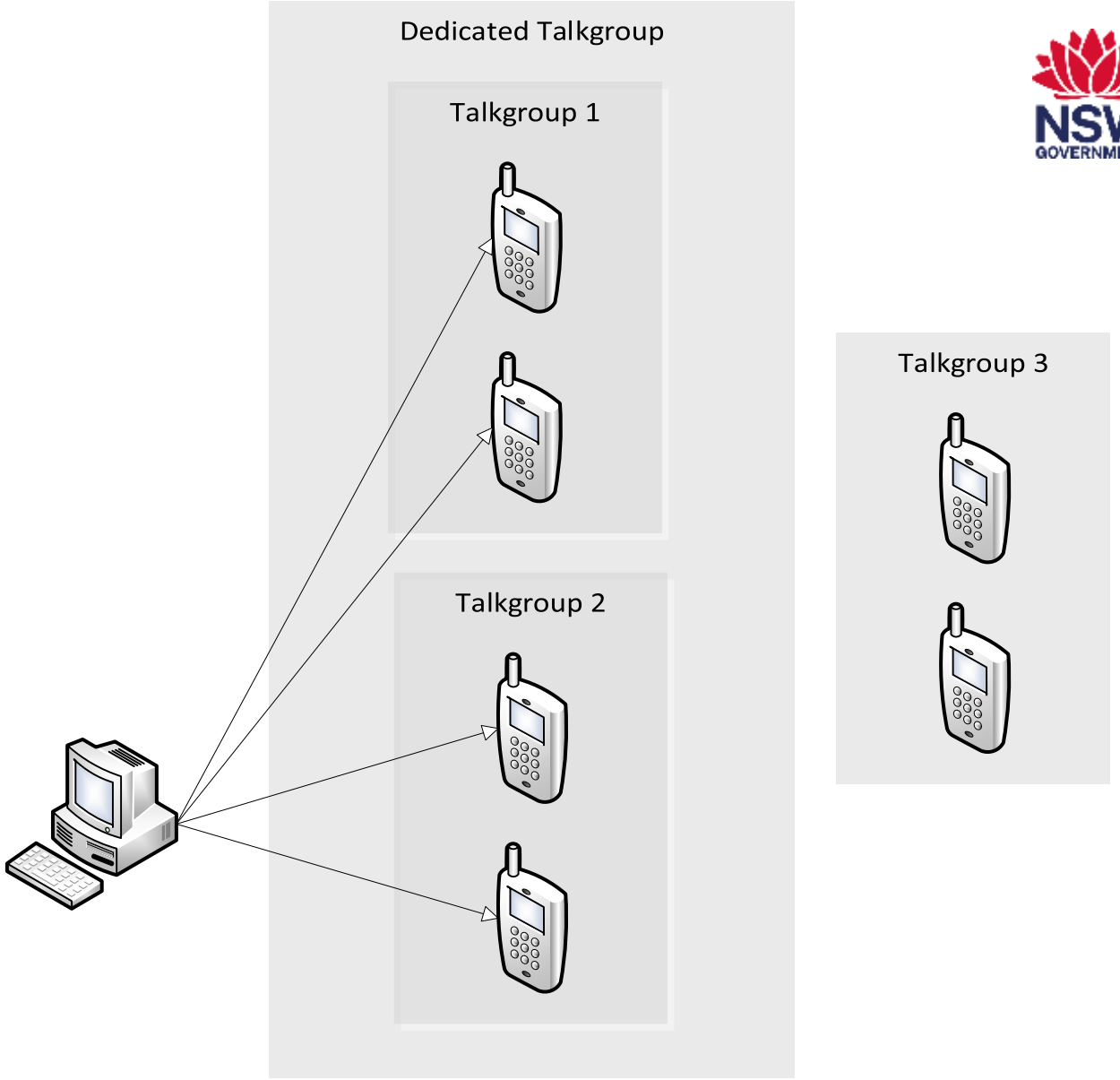
Only the initiator is allowed to transmit; and once that transmission is complete, the RFSS terminates the call.



Teleservices	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Broadcast Voice Call	No	Yes	No	Yes	No

Announcement Group Call

Allows a console or SU to call a collection of talkgroups by using a dedicated talkgroup.



Teleservices	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Announcement Group Call	No	Yes	No	Yes	No

Unaddressed Voice Call

This feature only applies to conventional, not trunked.

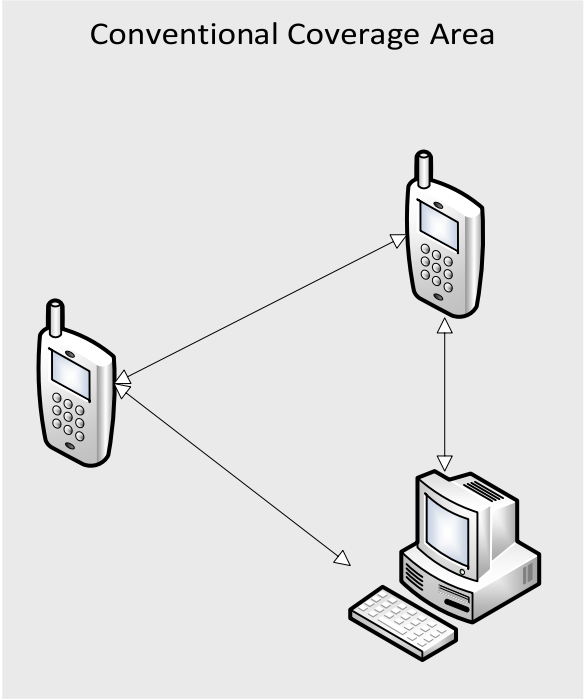
Allows two-way voice calls with all other users in within the same coverage area.

All users in the same coverage area can hear each other.

Because the scope of the call is dependant on the coverage area, not by addresses, the group could be all system users or only some of the system users.

SU operating in this mode don’t consider Talkgroup ID when deciding to unmute and allow calls to be heard.

This is equivalent to Normal Squelch Mode.



Teleservices	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Unaddressed Voice Call	Yes	No	Yes	No	Yes

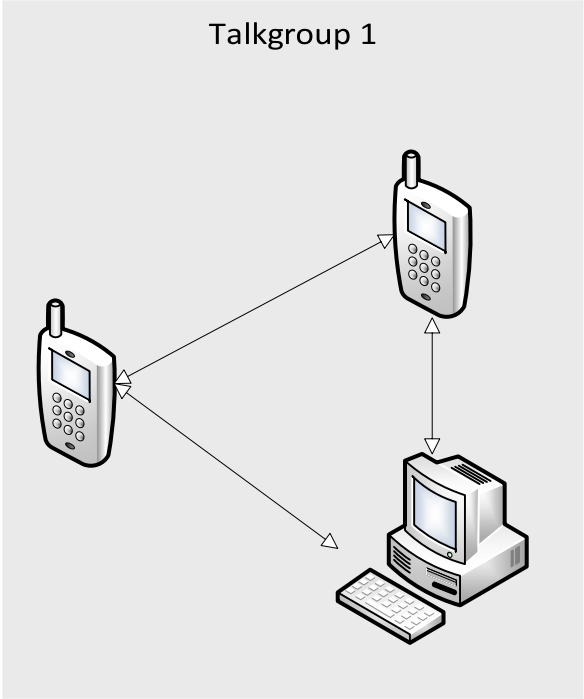
Group Voice Call

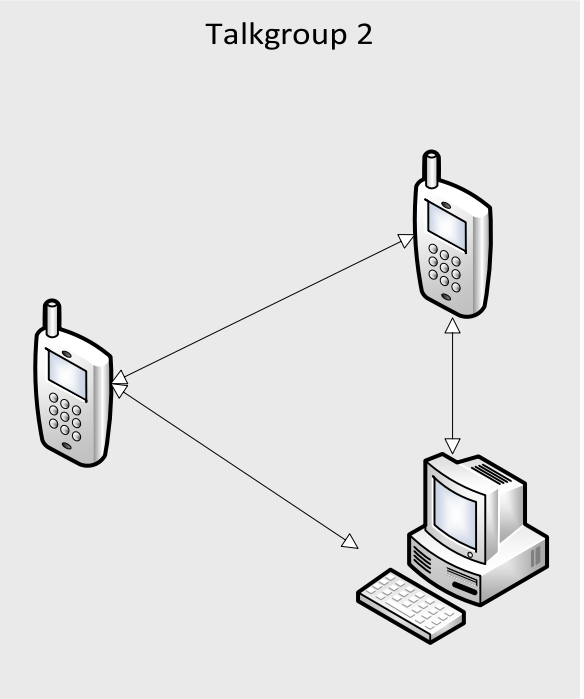
Allows two-way voice calls between all users in the same talkgroup. Users in the same talkgroup can hear each other.

Each talkgroup has an ID number, and each SU can be configured to switch between multiple talkgroups.

Confirmed calls make a best effort to include all resources required to ensure all talkgroup members receive the call. Such calls are queued until all required resources are available, or until a timeout is experienced.

Unconfirmed calls don't guarantee participation and start immediately upon transmission.

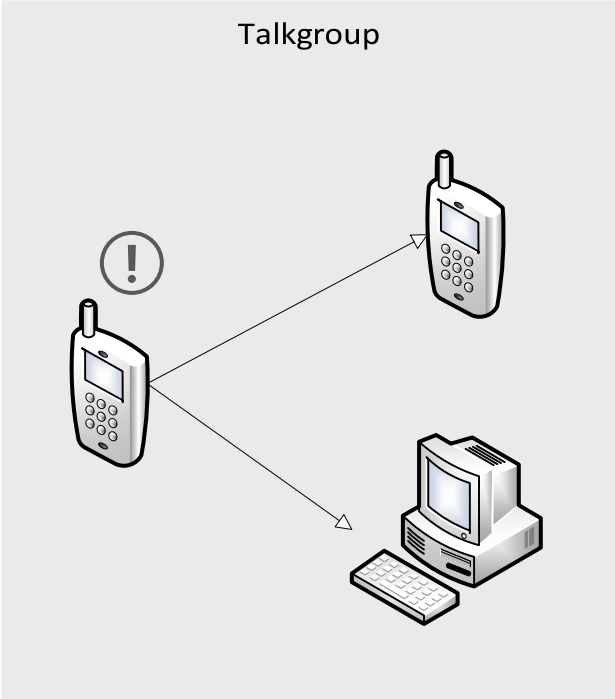




Teleservices	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Group Voice Call	Yes	Yes	Yes	Yes	Yes

Emergency Group Voice Call

Allows an SU to make a group call with highest priority level.



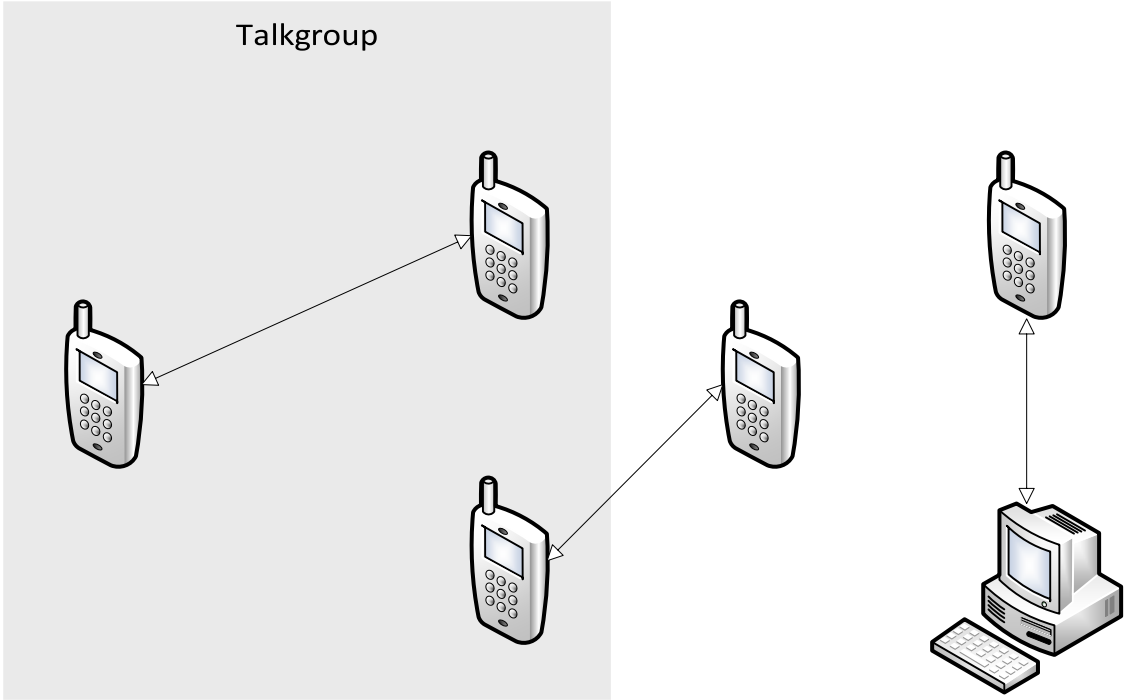
Teleservices	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Emergency Group Voice Call	Yes	Yes	Yes	Yes	Yes

Individual Voice Call

Allows a two-way voice call from one system user to any other individual system user.

Even though these are device to device calls that don't use a talkgroup, they still go through the system. They aren't direct mode / simplex calls directly from SU to SU.

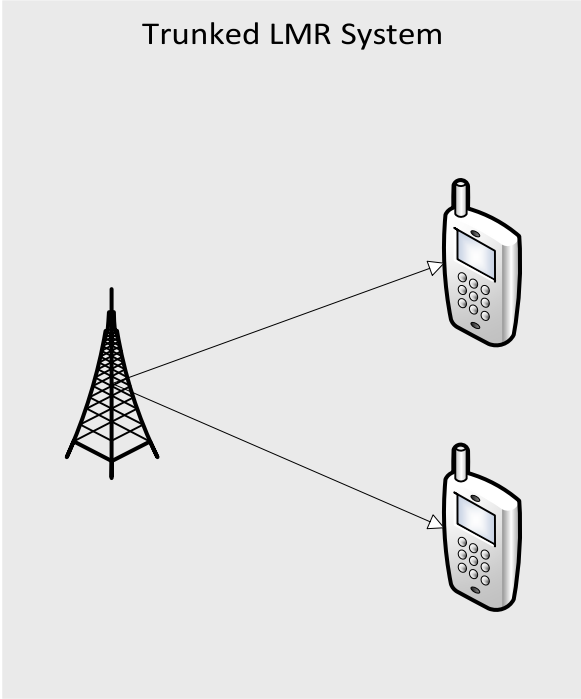
Depending on manufacturer, such calls can be made using SU ID or aliases that are assigned to SU ID.



Teleservices	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Individual Voice Call	Yes	Yes	Yes	Yes	Yes

System Call

Allows a trunked LMR system to make a call to every SU in the system through use of a reserved group ID.

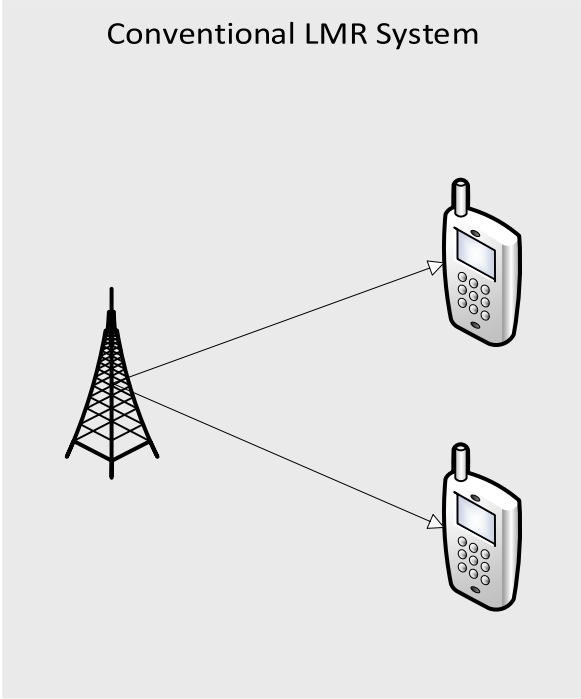


Teleservices	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
System Call	No	Yes	No	No	No

All Call

Also known as System Wide Call.

Allows a conventional LMR system to make a call to every SU in the system through use of a reserved group ID.



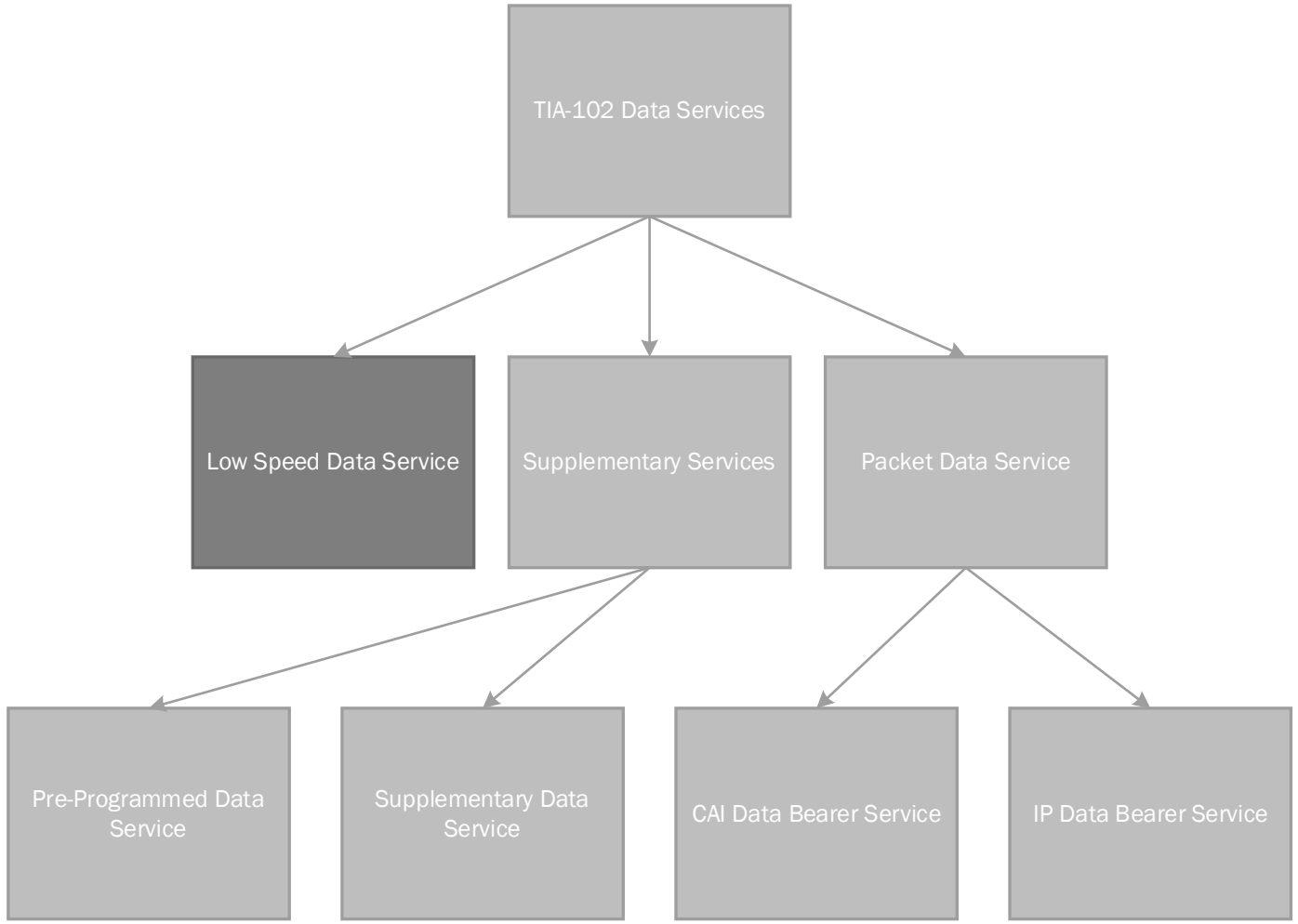
Teleservices	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
All Call	Yes	No	Yes	No	Yes

Data Services

Low Speed Data Service

Low Speed Data Service includes data with voice traffic, which means it doesn't require a data channel.

The TIA-102 standards do not define the data payload itself.

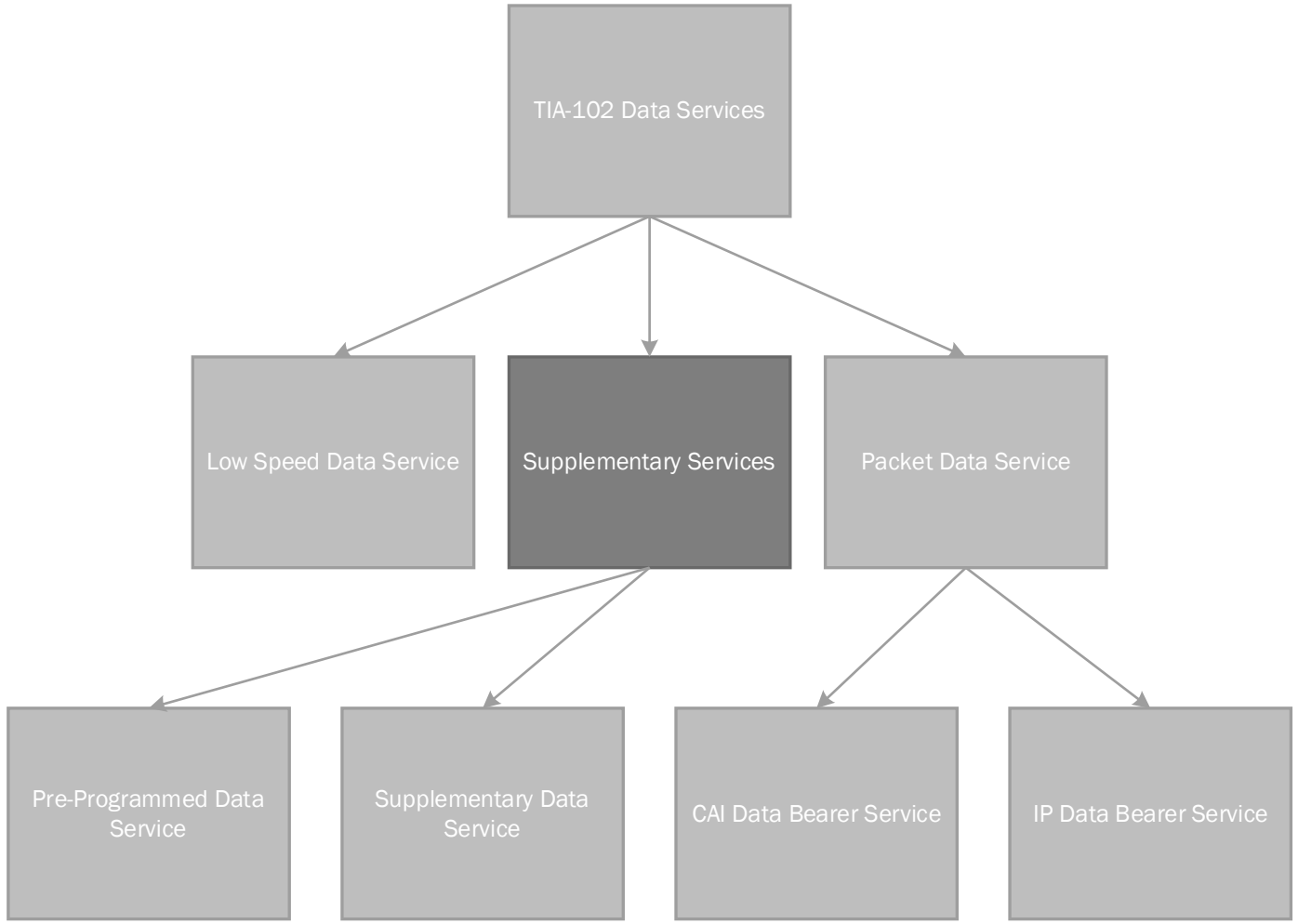


Data Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Low Speed Data Service	No	No	No	No	No

Supplementary Services

Supplementary Services provide some voice based services, such as Radio Unit Monitoring and Telephone Interconnect.

Pre-Programmed Data Service and Supplementary Data Service are two types of TIA-102 Data Services that are also considered Supplementary Services.



Data Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Supplementary Services	Yes	Yes	Yes	Yes	Yes

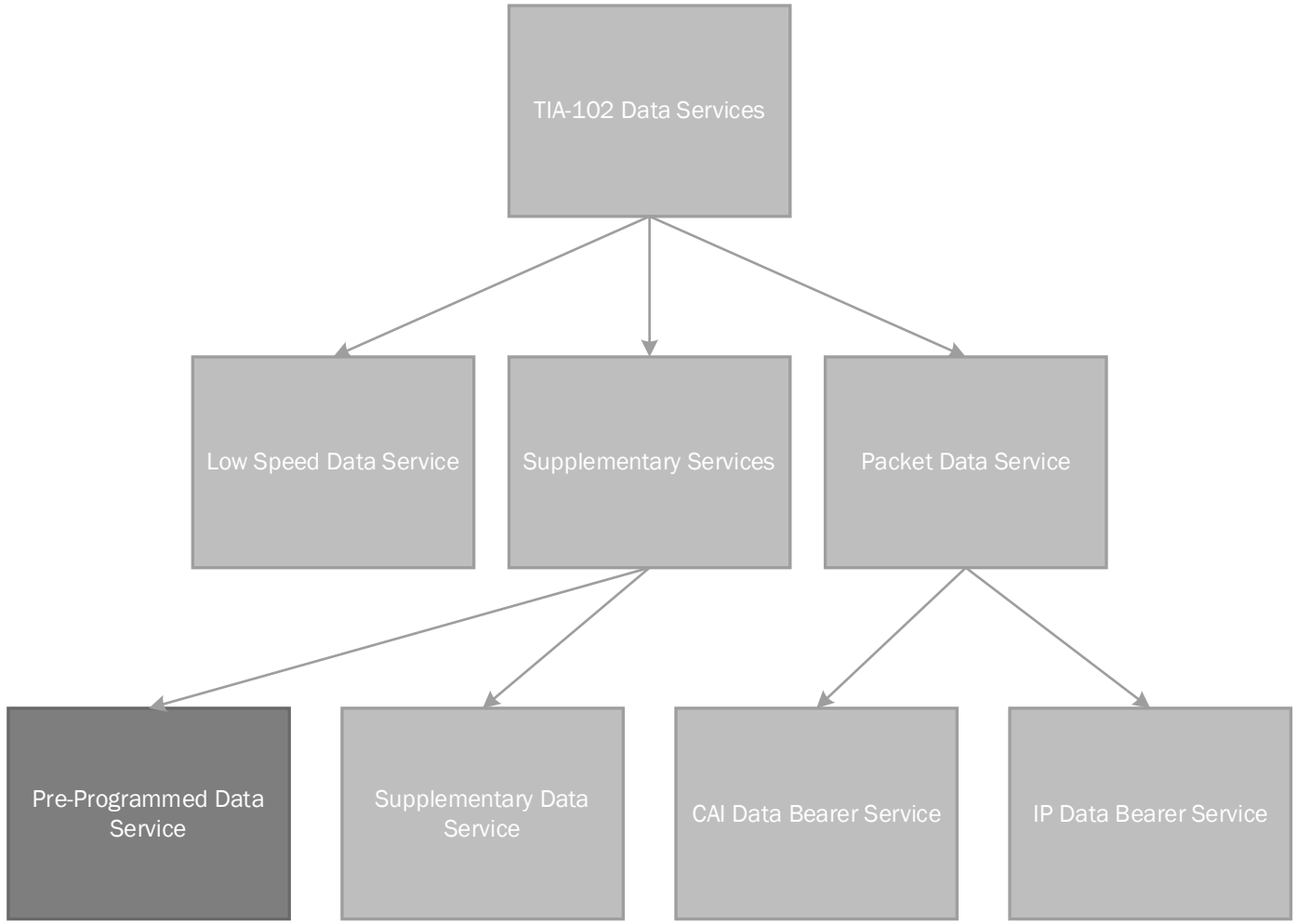
Pre-Programmed Data Service

Pre-Programmed Data Service

Pre-Programmed Data Service is a data service that allows two-way delivery of messages that are agreed in advance.

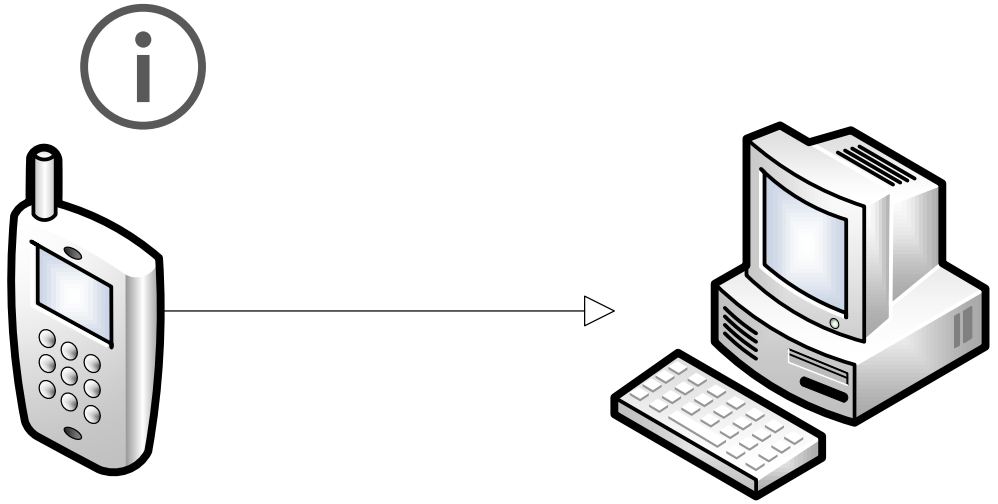
This allows the messages to be triggered using very little bandwidth, rather than sending the full message.

Other names for this service are “short message”, “message”, “message update”, “message update request”, “short data message”, and “status update/query”.



Status Update

Allows an SU to send the current status of the SU, and the current status of the user, to a defined target address.



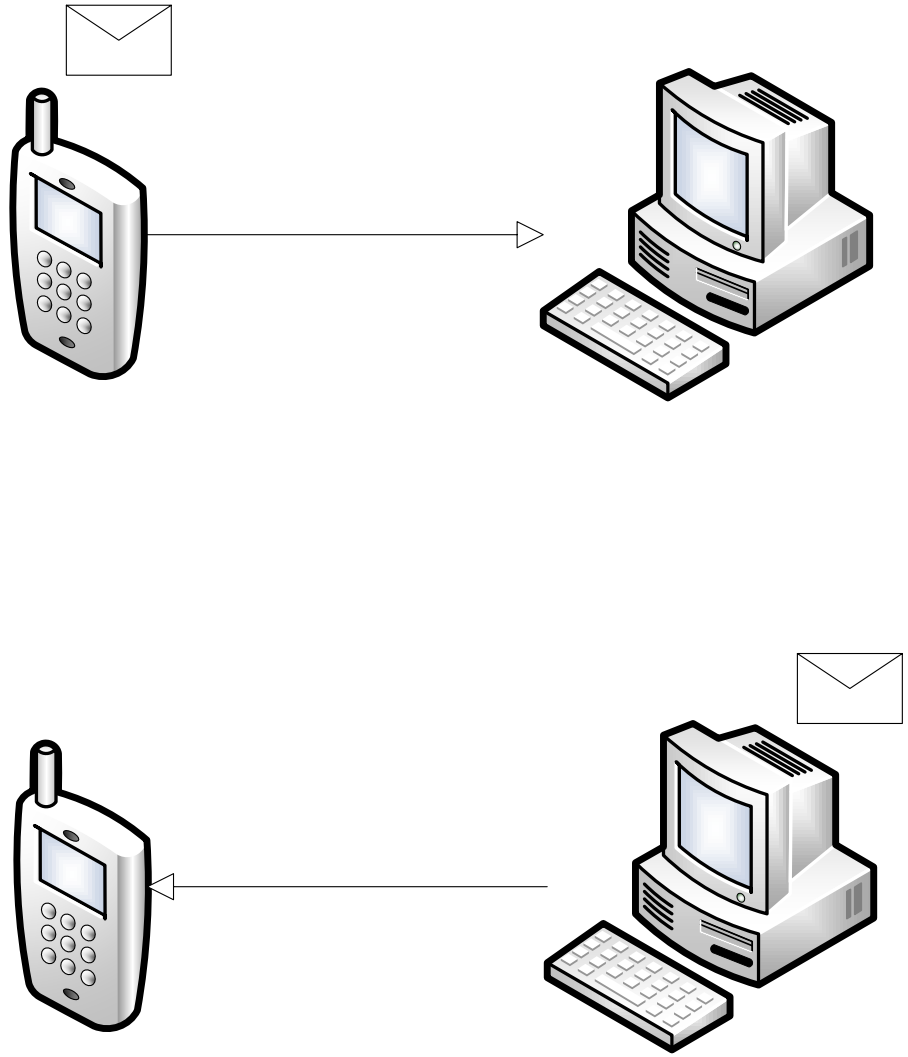
Pre-Programmed Data Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Pre-Programmed Data Messaging: Status Update	Yes	Yes	Yes	Yes	Yes

Short Message

The Short Message Feature allows an SU or console to send short messages to each other.

The message codes can be displayed at the receiving side; and if a code table is searched, the actual messages can also be displayed.

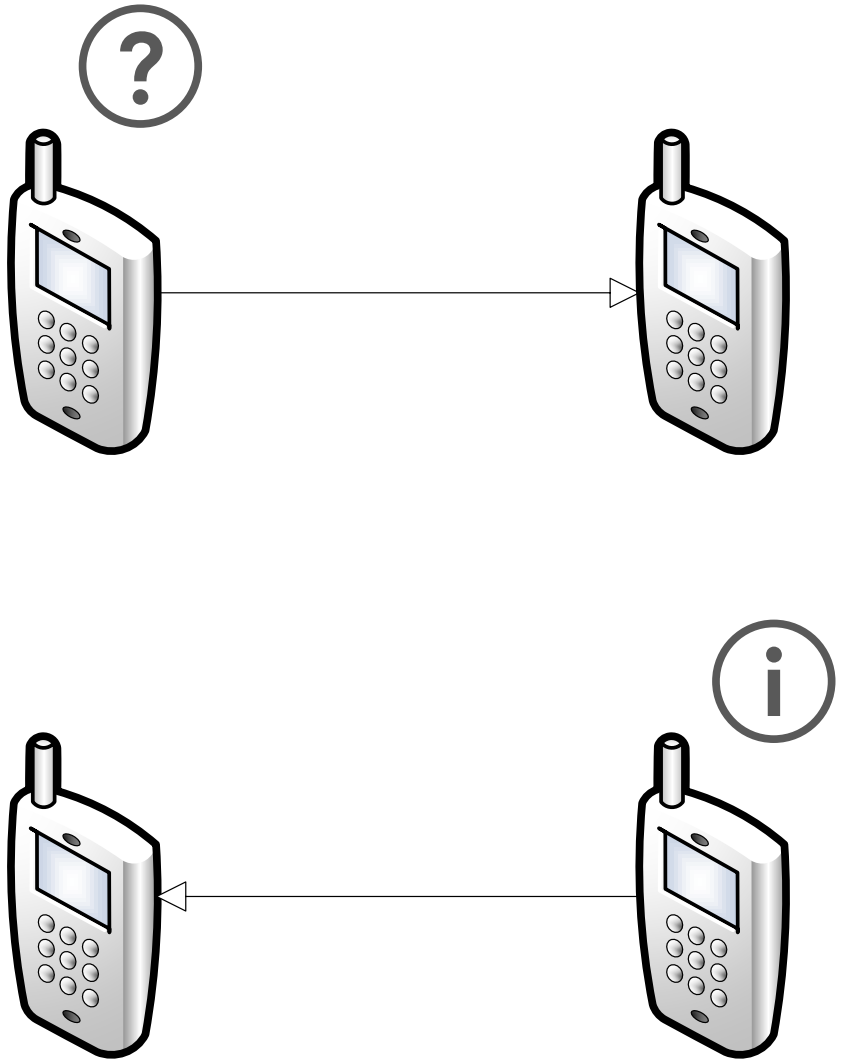
The sender's identity is included when these messages are sent.



Pre-Programmed Data Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Pre-Programmed Data Messaging: Short Message	Yes	Yes	Yes	Yes	Yes

Status Query

The Status Query feature allows an SU to request a target report its status back to the requesting SU.

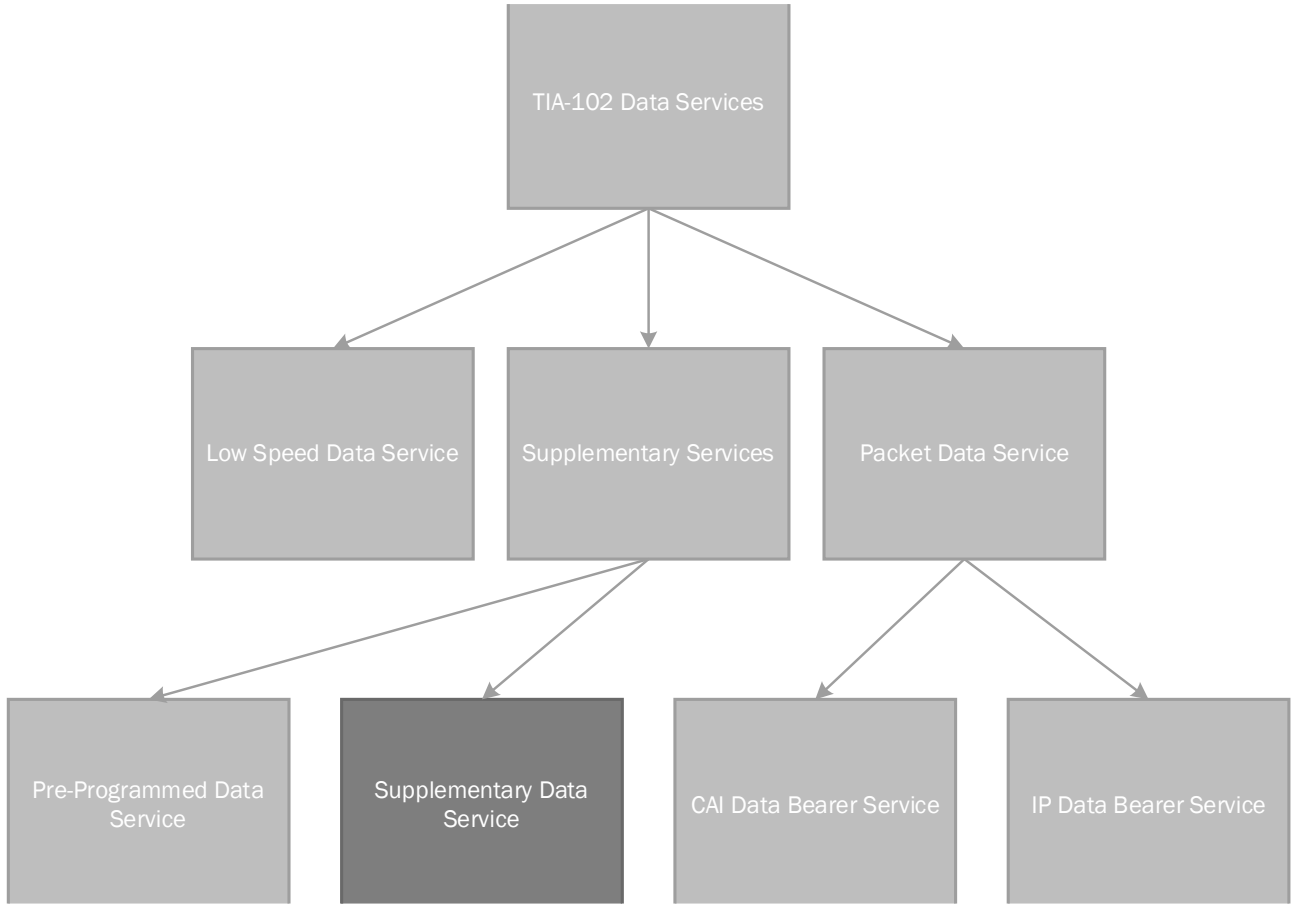


Pre-Programmed Data Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Pre-Programmed Data Messaging: Status Query	Yes	Yes	Yes	Yes	Yes

Supplementary Data Services

Supplementary Data Services

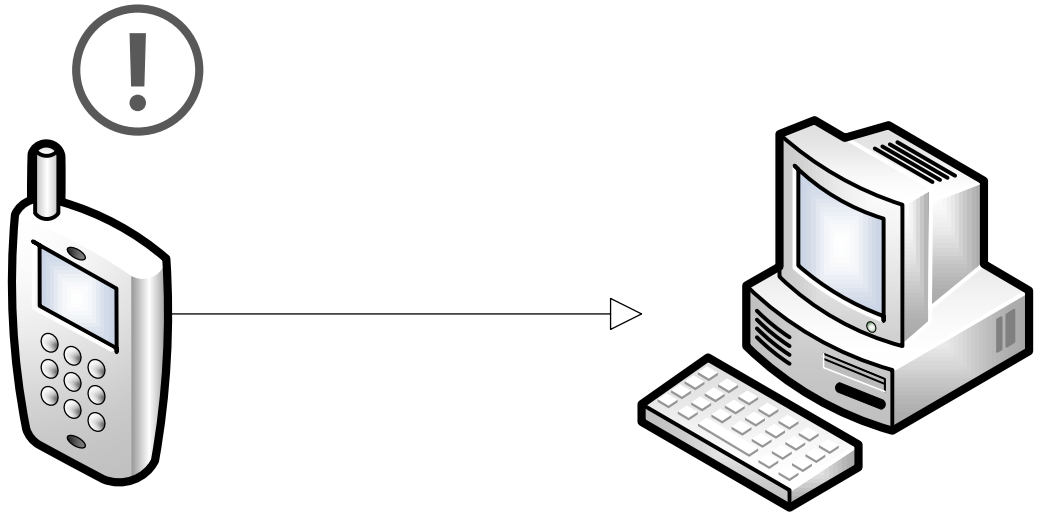
Supplementary Data Services are all data services that aren't Pre-Programmed Data Service, but which are still considered Supplementary Services.



Emergency Alarm

Emergency Alarm allows an SU to send a notification to a console that the user has an emergency.

Depending on SU manufacturer and model, an emergency condition may be triggered by events such as the user pushing an emergency button, the SU being horizontal for too long, and in other ways.

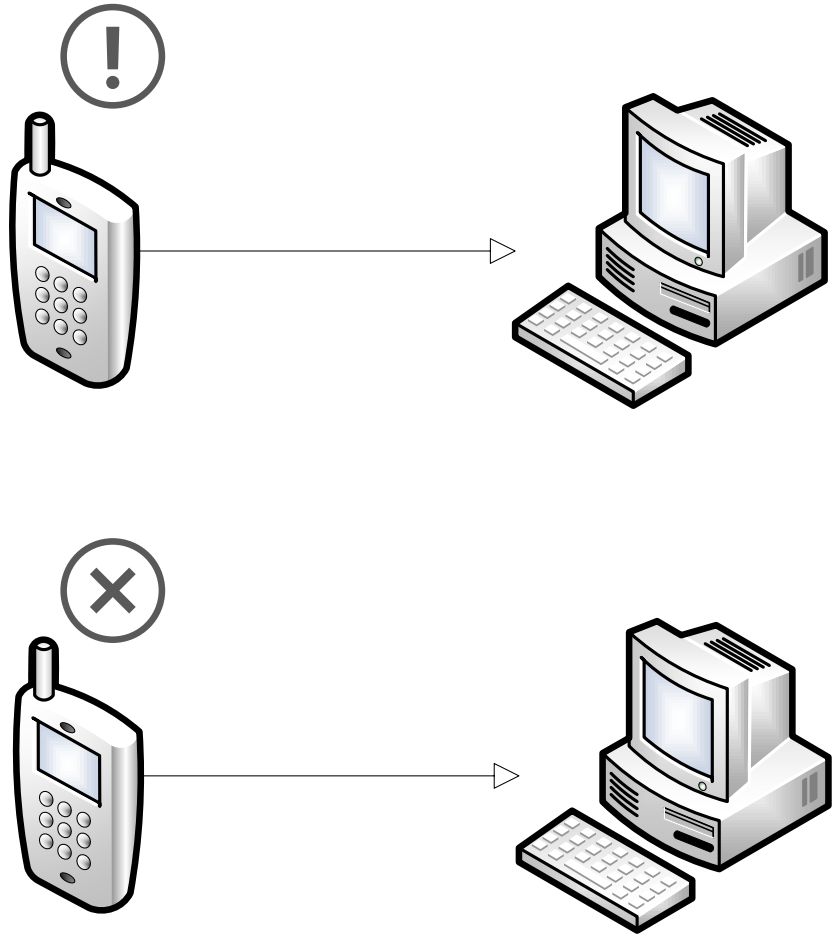


Supplementary Data Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Emergency Alarm	Yes	Yes	Yes	Yes	Yes

Emergency Alarm Cancel

Emergency Alarm Cancel allows an SU to notify a console via the RFSS that the user no longer has an emergency.

Depending on console manufacturer and model, dispatch operators may also be able to do things like acknowledge an emergency alarm or knock down the alarm.

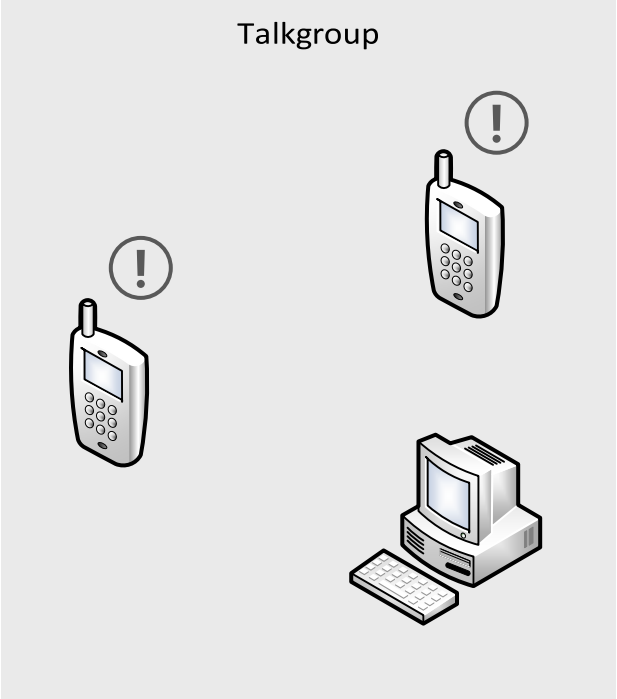


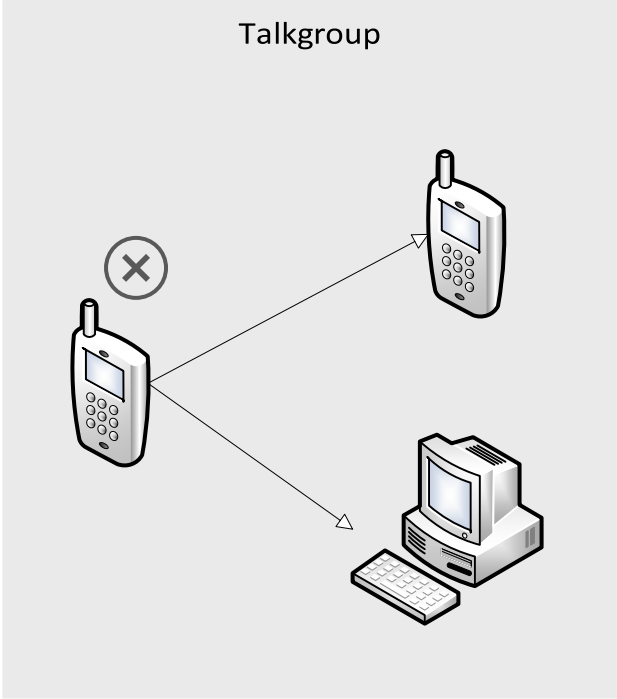
Supplementary Data Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Emergency Alarm Cancel	Yes	Yes	Yes	Yes	Yes

Group Emergency Cancel

Group Emergency Cancel allows both SU and consoles to cancel an emergency state for a group.

When a console receives such a cancellation from an SU, it can be from a specific individual or for a talk-group.



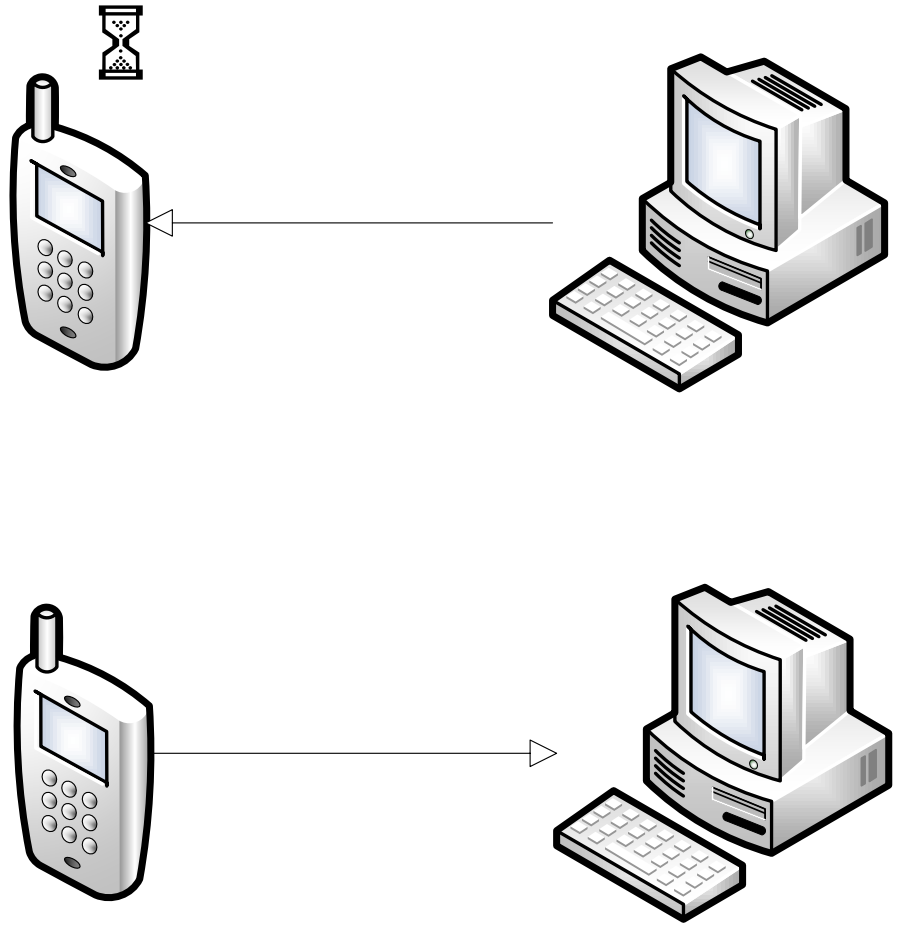


Supplementary Data Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Group Emergency Cancel	No	Yes	No	Yes	No

Call Alert

Call Alert is supplemental for Individual Calls.

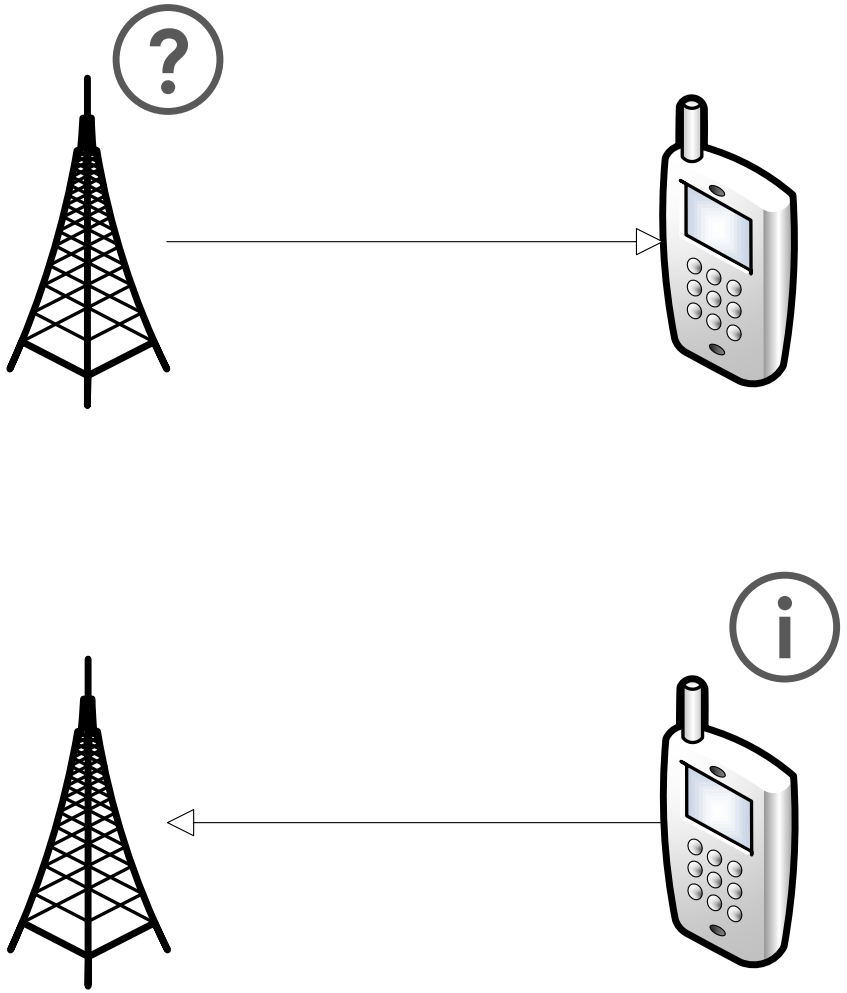
It allows the caller to leave their identity with the person they attempted to call, prompting that person to return the call later.



Supplementary Data Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Call Alert	Yes	Yes	Yes	Yes	Yes

Radio Check

Allows an RFSS to attempt to determine if an SU is currently registered or available.

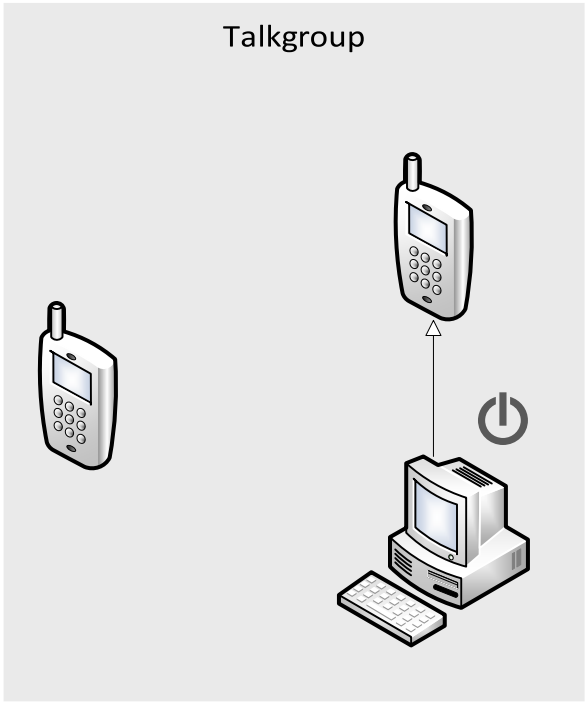


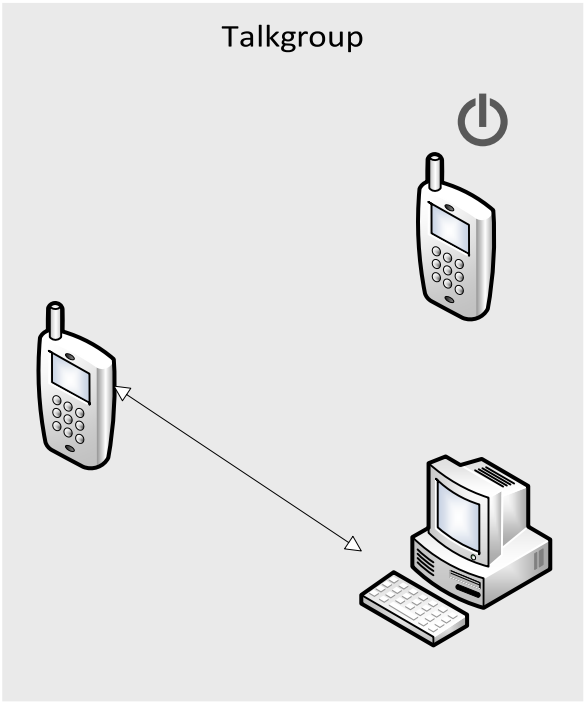
Supplementary Data Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Radio Check	Yes	Yes	Yes	Yes	Yes

Radio Unit Inhibit/Uninhibit

When an SU is inhibited, it appears to be powered off; and it will not accept any user input or provide any user output.

Uninhibiting will return the SU to normal operation.





Supplementary Data Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Radio Unit Inhibit/Uninhibit	Yes	Yes	Yes	Yes	Yes

Radio Detach

Applicable only to trunked systems.

Notifies an SU that its current registration with an RFSS has been cancelled.

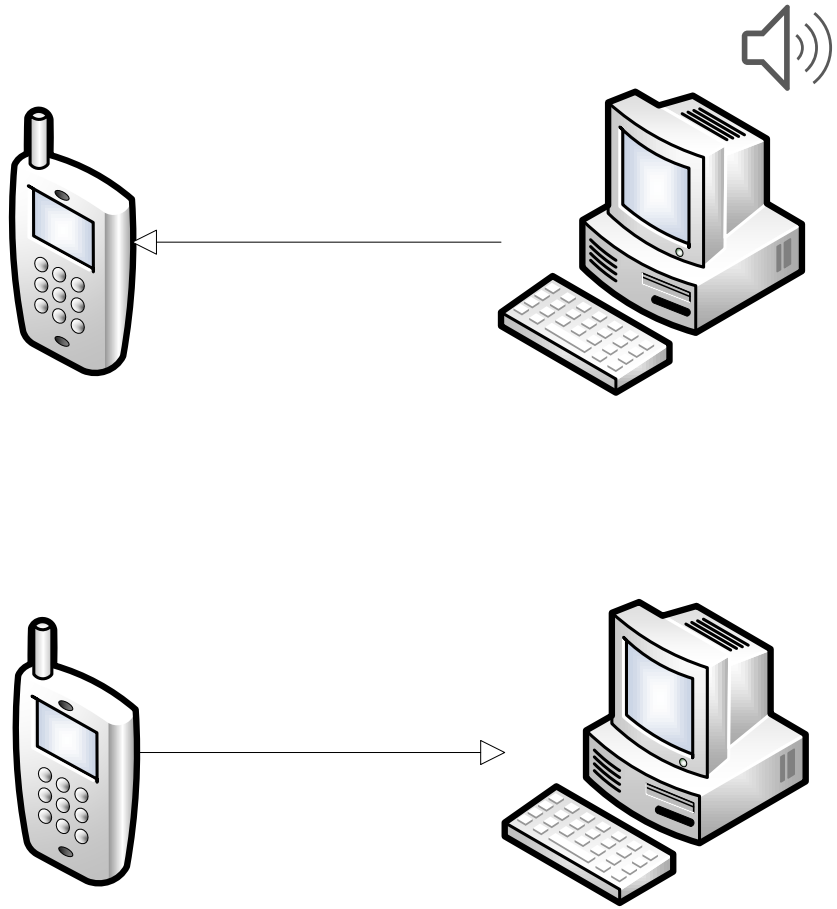
Supplementary Data Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Radio Detach	No	Yes	No	Yes	No

Radio Unit Monitoring

Supplemental to both individual calls and group calls.

Causes the SU to automatically initiate a call, without the user pushing the PTT button.

Allows a dispatcher to monitor audio at the SU location.

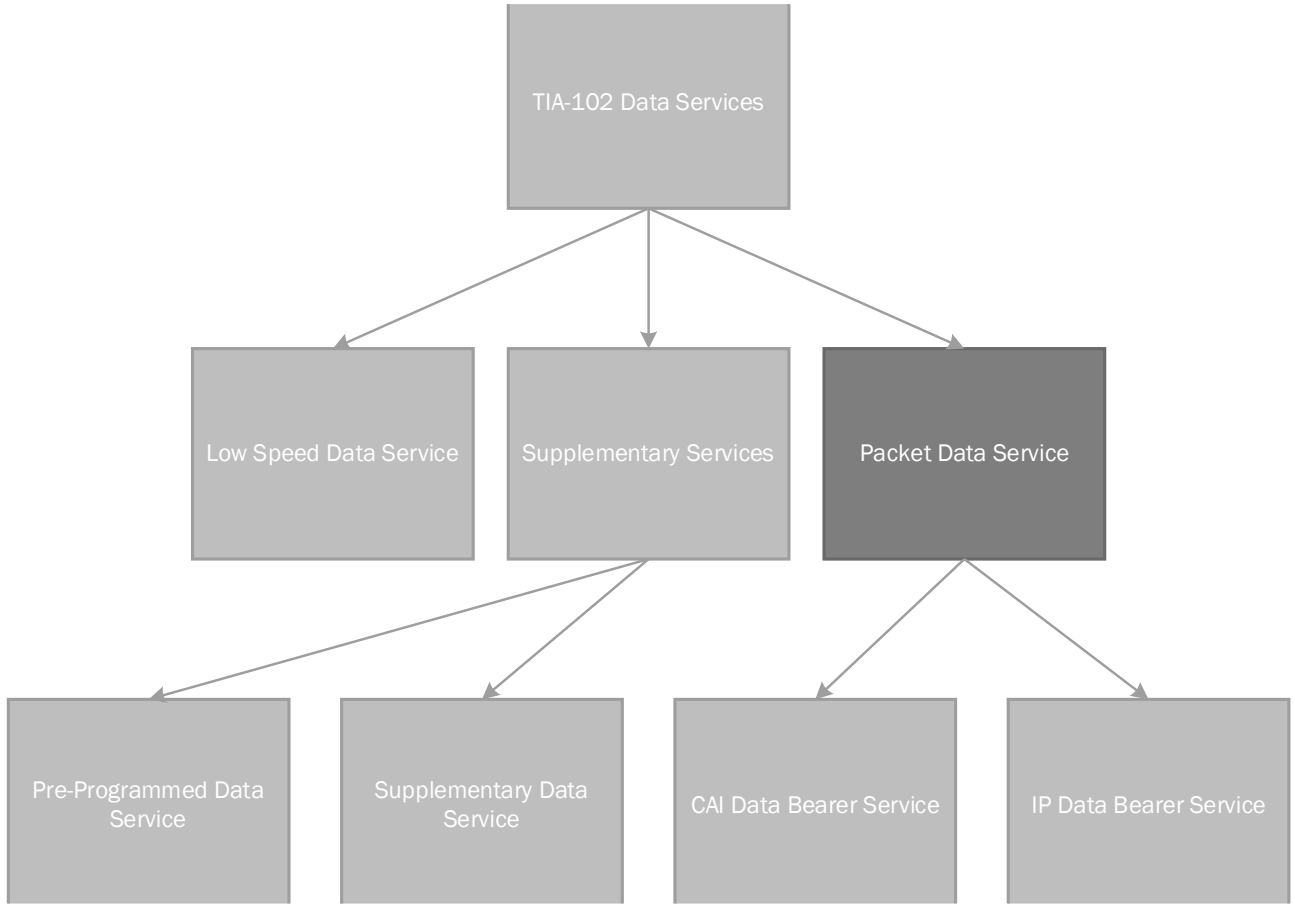


Supplementary Data Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Radio Unit Monitoring	Yes	Yes	Yes	Yes	Yes

Packet Data Services

Packet Data Services

Packet Data Services are divided into the CAI Data Bearer Service and the IP Data Bearer Service.



Data Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Packet Data Service (Packet Data Network Access)	Yes	Yes	No	Yes	Yes

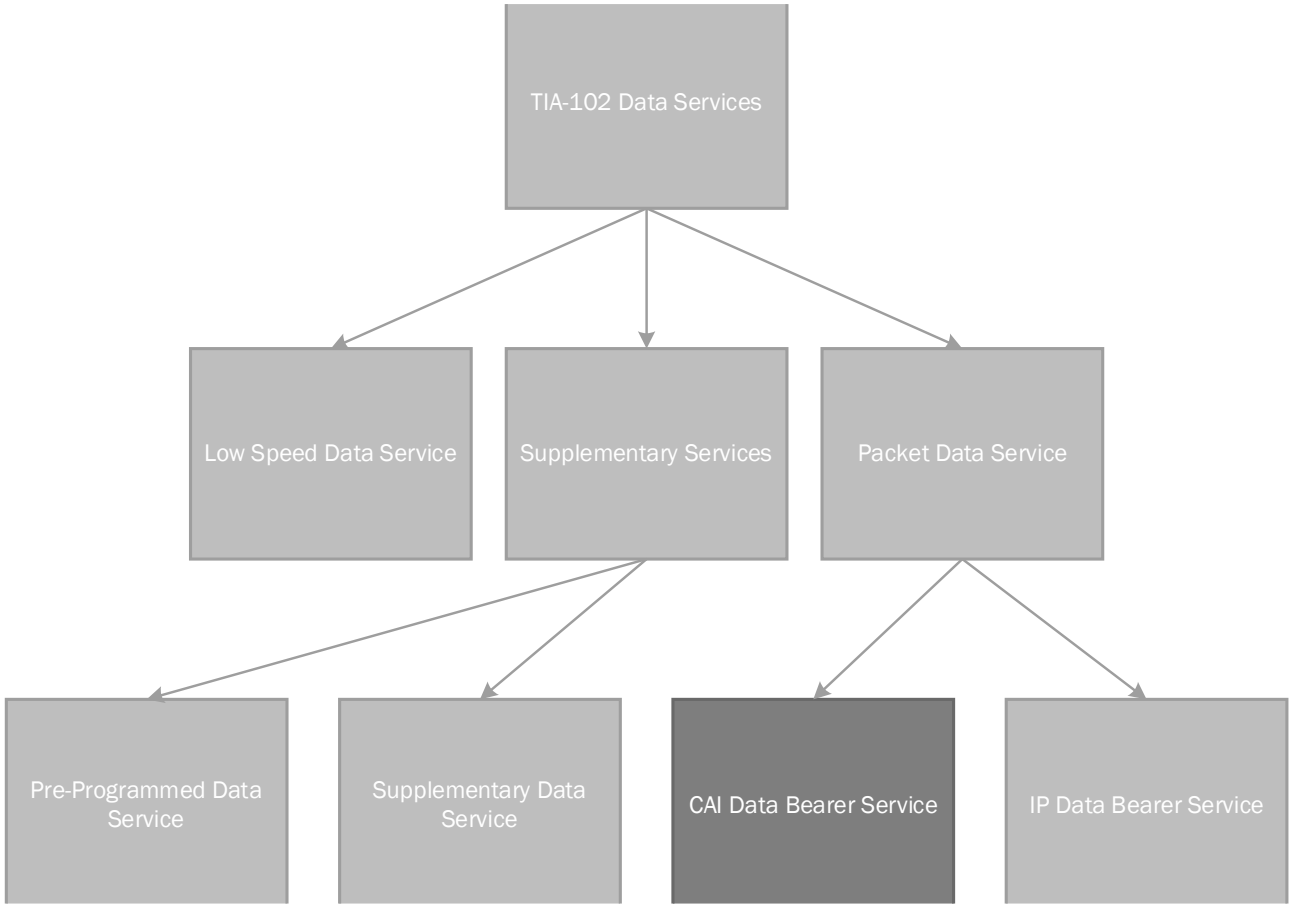
CAI Data Bearer Service

Allows data packets to be sent over the CAI.

Unlike the IP Data Bearer Service, the data payload can be in any format, but it isn't routable via standard IP methods.

This service supports the following data configurations:

- Direct Data (SU to SU)
- Repeated Data (SU to Repeater to SU)
- Conventional FNE Data (SU to Convenitonal RFSS)



Packet Data Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
CAI Data Bearer Service	Yes	No	No	No	Yes

IP Data Bearer Service

Allows IPv4 data packets to be sent over the CAI.

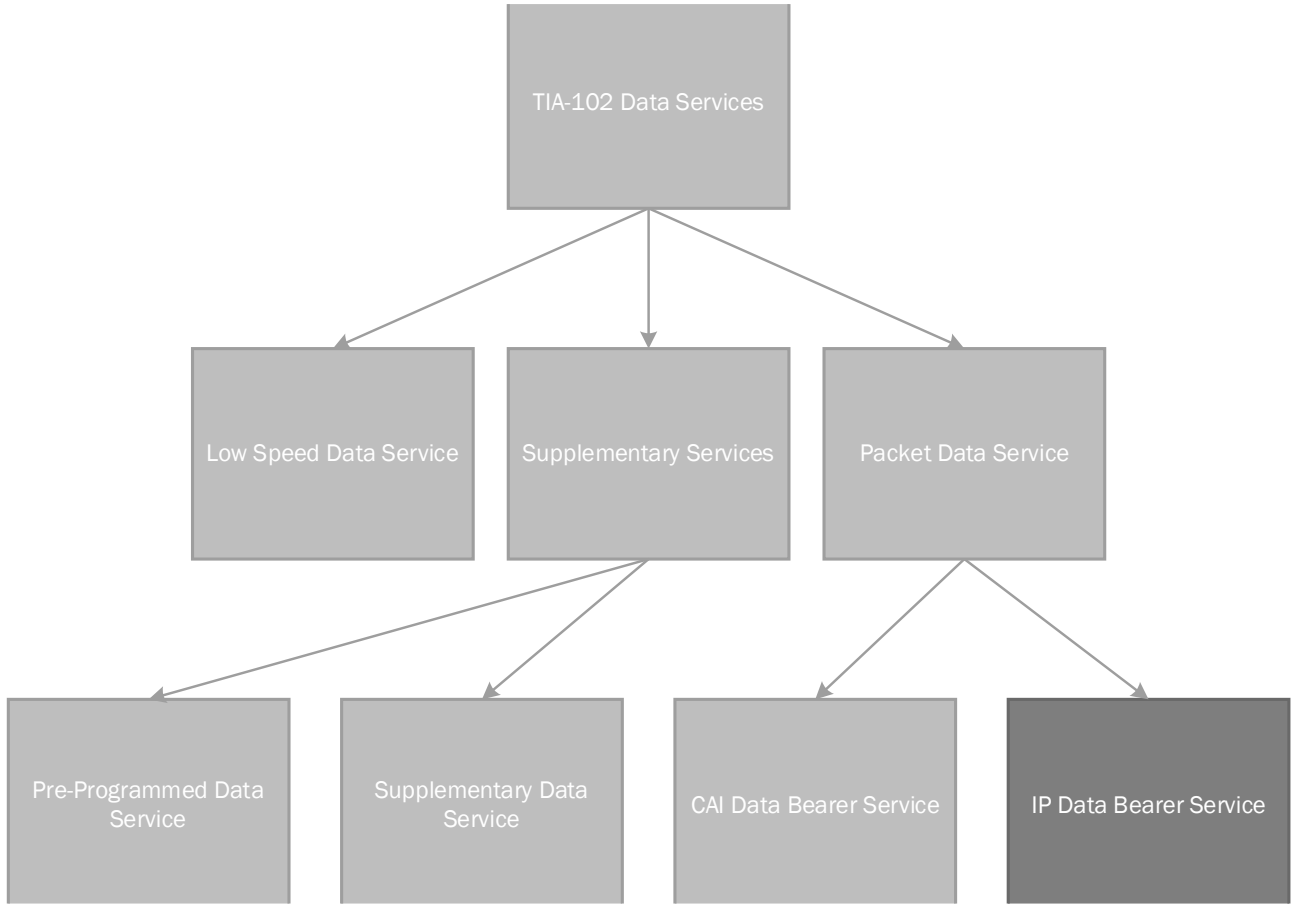
Unlike the CAI Data Bearer Service, data packets are routable via standard IP methods, as is usually preferred.

This service supports the following data configurations:

- Direct Data (SU to SU)
- Repeated Data (SU to Repeater to SU)
- Conventional FNE Data (SU to Convenitonal RFSS)
- Trunked FNE Data (SU to Trunked RFSS)

Applications:

- Location Services
- Over the Air Rekeying (OTAR)



Packet Data Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
IP Data Bearer Service	Yes	Yes	No	Yes	Yes

Supplementary Voice Services

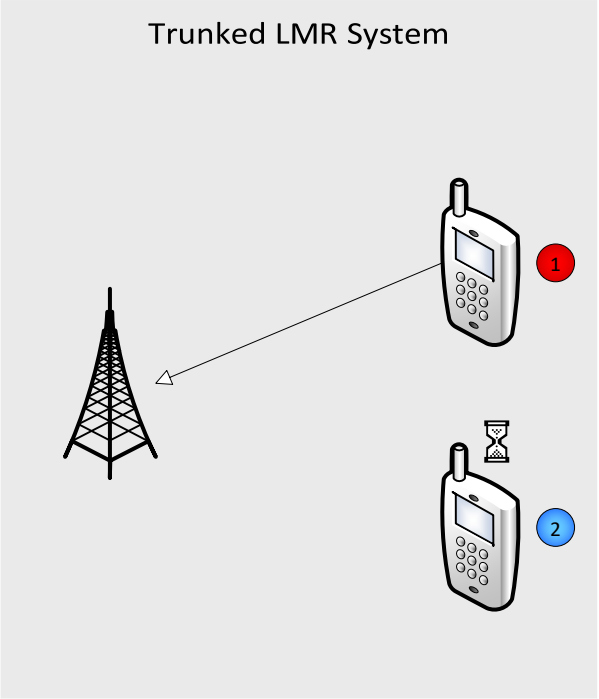
Priority Call

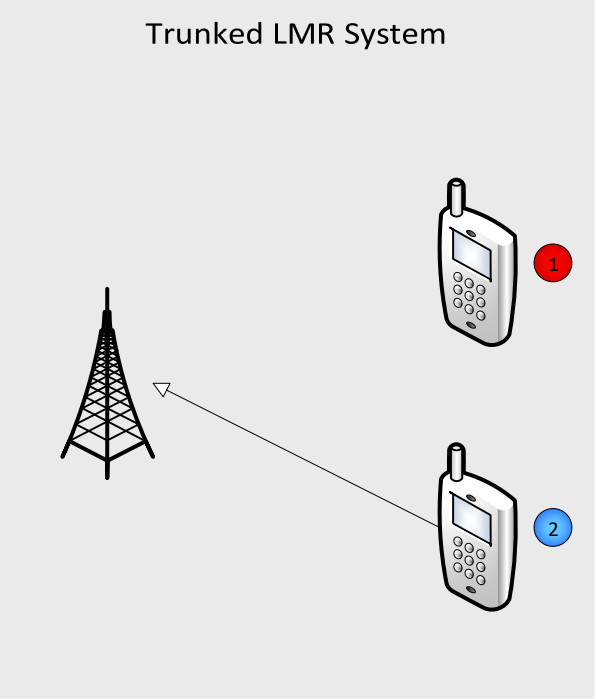
Supplemental for trunked calls.

Calls with priority are given preferential access to resources.

If the required resources are not available, priority calls will be queued before other calls with lower priority.

Supports multiple levels of priority.





Supplementary Voice Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Priority Call	No	Yes	No	Yes	No

Preemptive Priority Call

Also known as Emergency Priority.

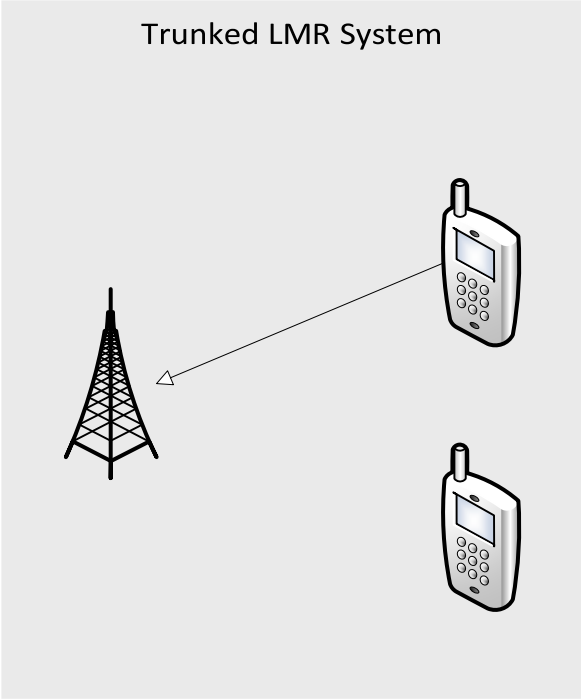
Supplemental for trunked calls.

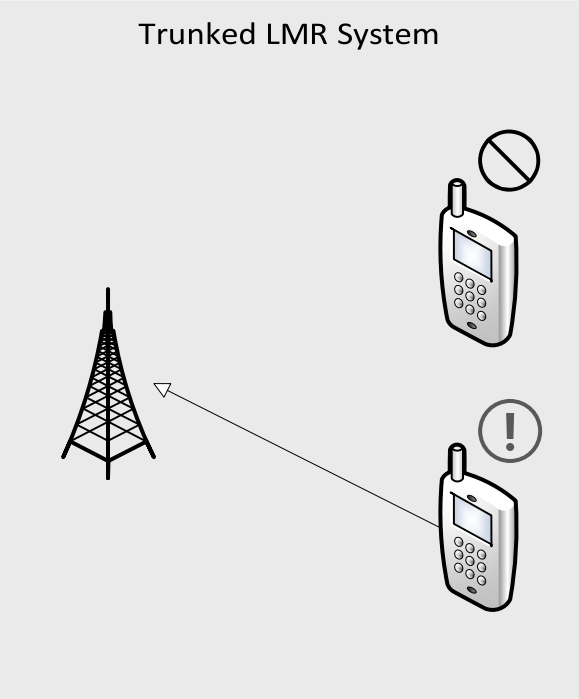
Calls with Preemptive Priority are given access to resources, even if that means disconnecting other calls.

Calls with the lowest priority will be disconnected first.

With FDMA, the RFSS can't preempt a transmitting SU, so the RFSS preempts the audio heard by other SU participating in the call.

With TDMA, the RFSS can preempt a transmitting SU.





Supplementary Voice Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Preemptive Priority Call	No	Yes	No	Yes	No

Dispatcher Audio Takeover

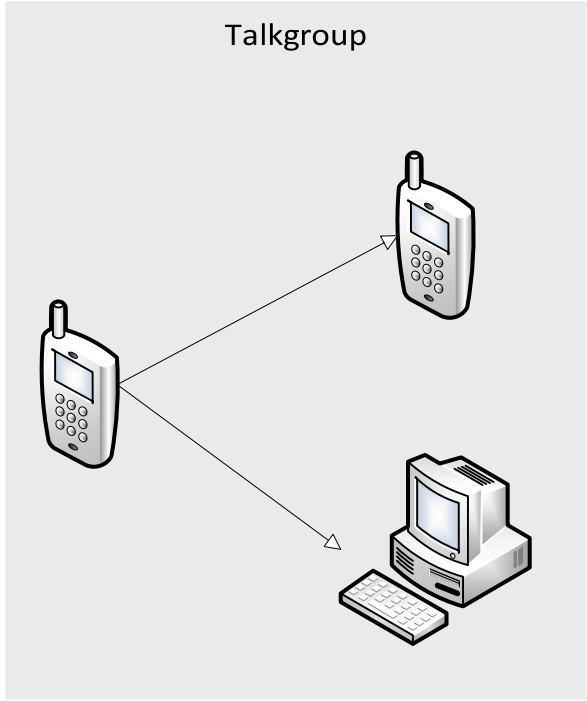
Also known as Console Priority.

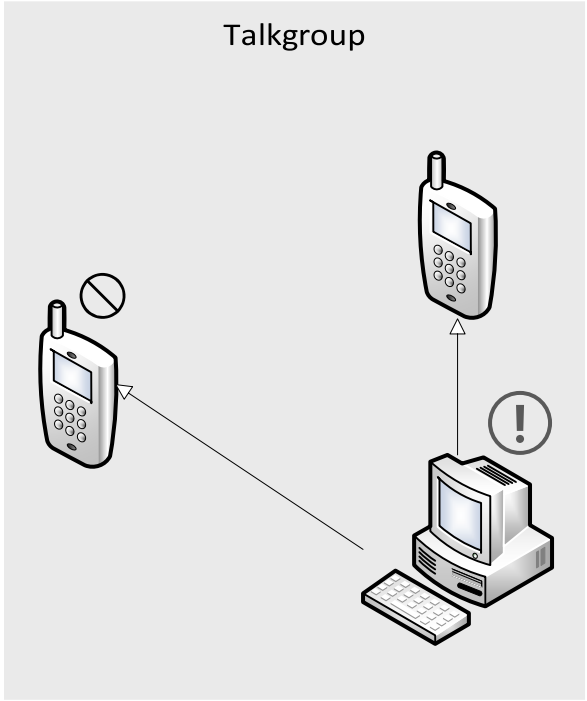
Allows a higher priority dispatcher's audio to be heard by all SU participating in a call, rather than the transmitting SU.

This audio will not be heard by the transmitting SU, unless the SU is capable of full duplex operation.

With FDMA, the RFSS can't preempt a transmitting SU, so the RFSS preempts the audio heard by other SU participating in the call.

With TDMA, the RFSS can preempt a transmitting SU.



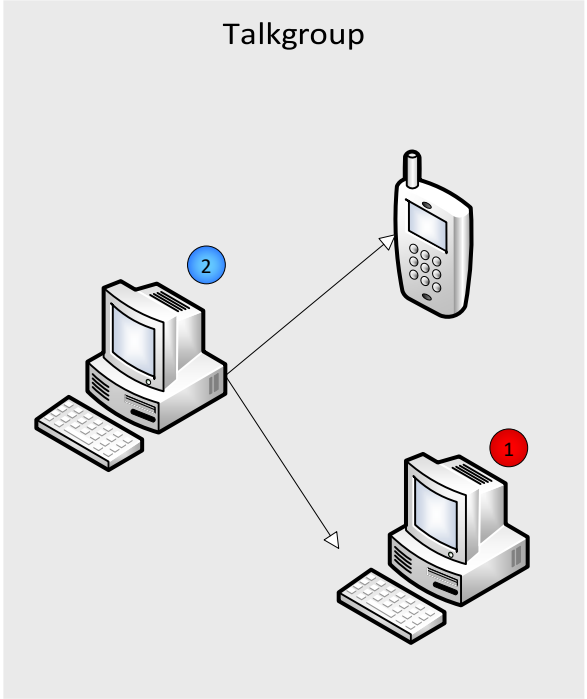


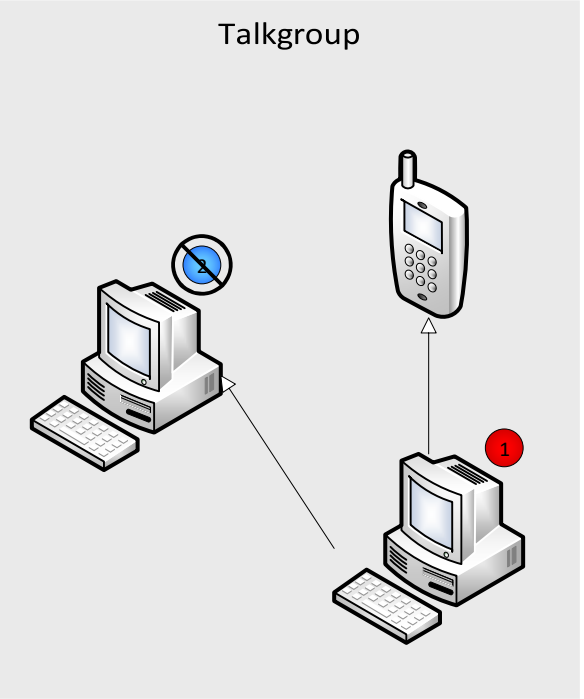
Supplementary Voice Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Dispatcher Audio Takeover	Yes	Yes	Yes	Yes	Yes

Console Take Over by Another Console

Console transmissions have multiple levels of priority, ranging from emergency calls to normal calls, and emergency calls usually have higher priority than normal calls; but these priorities are not the same as priority levels used for over-the-air transmissions.

This service allows a console to take over a group if it has higher priority than the console currently transmitting.

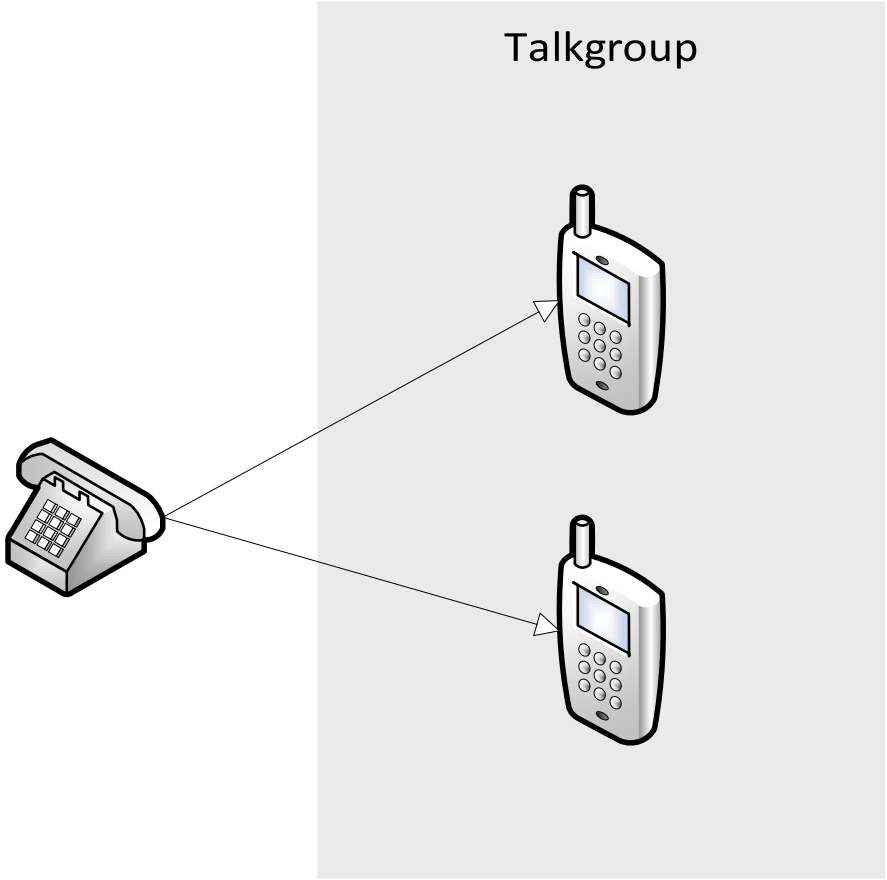




Supplementary Voice Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Console Take Over by Another Console	No	No	Yes	Yes	No

Group Telephone Interconnect

Allows a telephone network user to make a call to a group of LMR users.



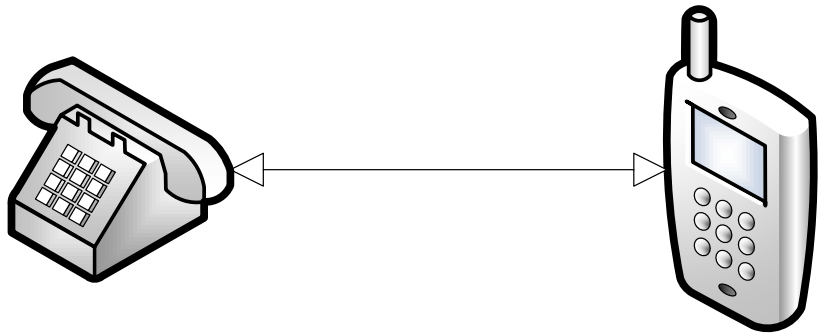
Supplementary Voice Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Voice Telephone Interconnect	Yes	Yes	No	No	No

Individual Telephone Interconnect

Allows calls between an LMR user and a user on the telephone network.

Calls can be initiated from either the telephone network or the LMR system.

Full duplex calls are supported.

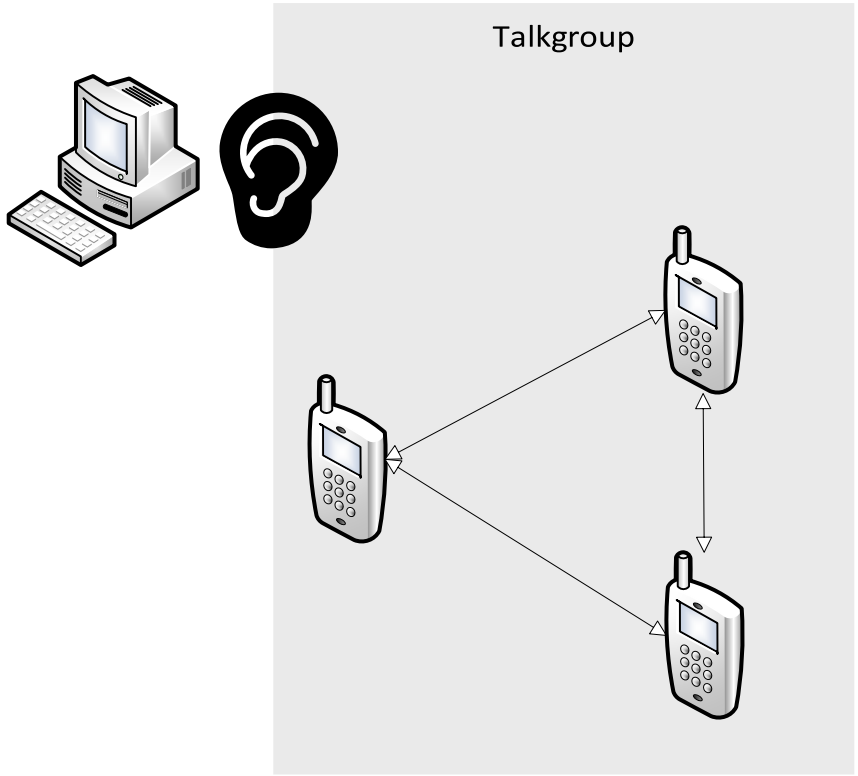


Supplementary Voice Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Voice Telephone Interconnect	Yes	Yes	No	No	No

Discreet Listening

Allows listening to any call.

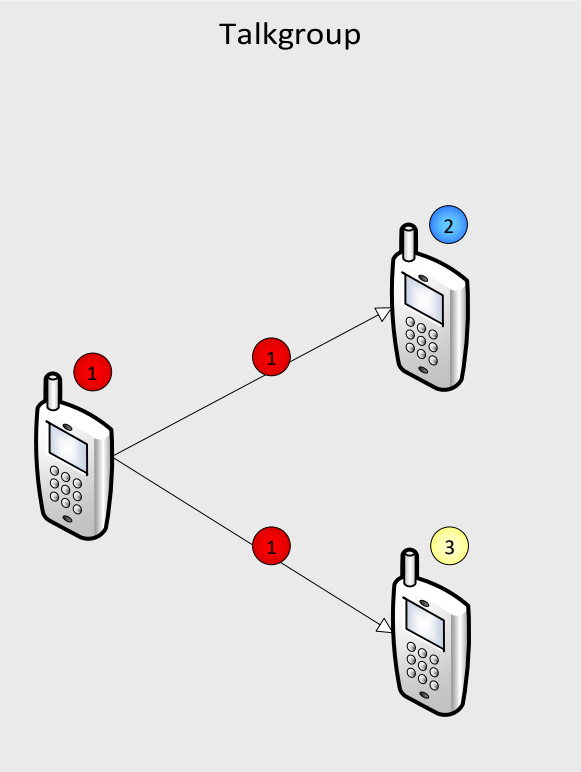
Choose which calls by selecting aspects such as Group ID.



Supplementary Voice Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Discreet Listening	Yes	Yes	No	No	Yes

Transport of Talking Party Identification

Allows the ID of the transmitting user to be transmitted to all receivers of the transmission.



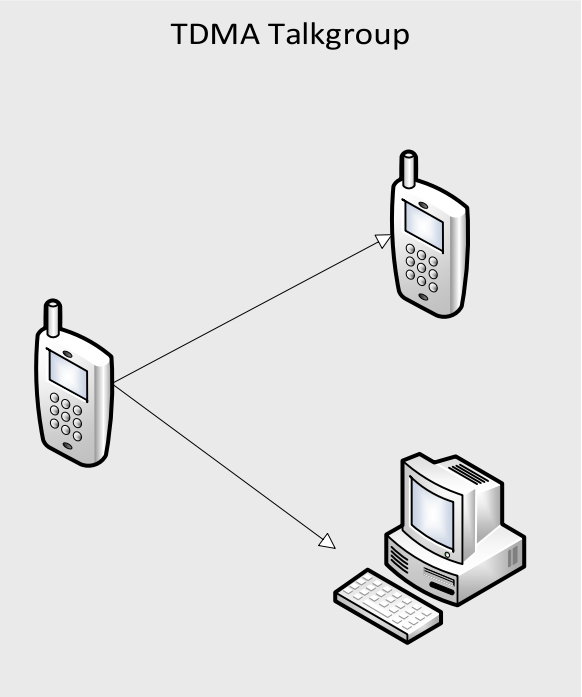
Supplementary Voice Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Transport of Talking Party Identification	Yes	Yes	Yes	Yes	Yes

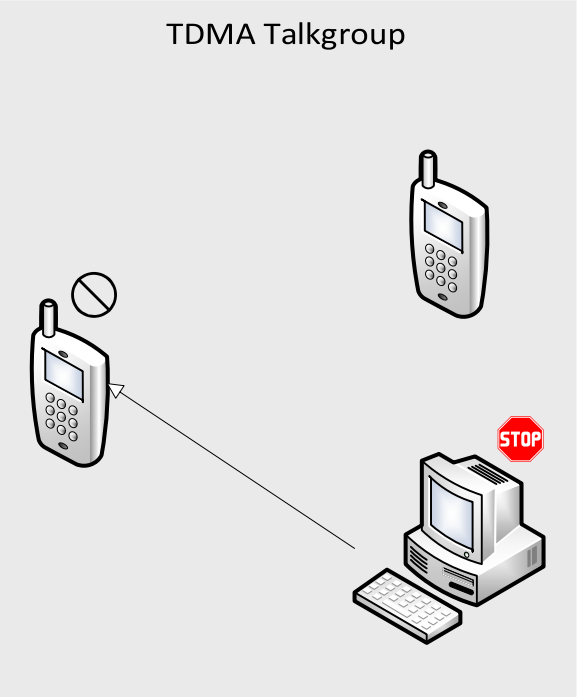
Transmitting Subscriber Forced Preemption

Applies only to TDMA.

Allows an RFSS to instruct a transmitting SU to stop transmitting.

Typically used during preemption.





Supplementary Voice Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Transmitting Subscriber Forced Preemption	No	Yes	No	No	No

Mobility and Registration Services

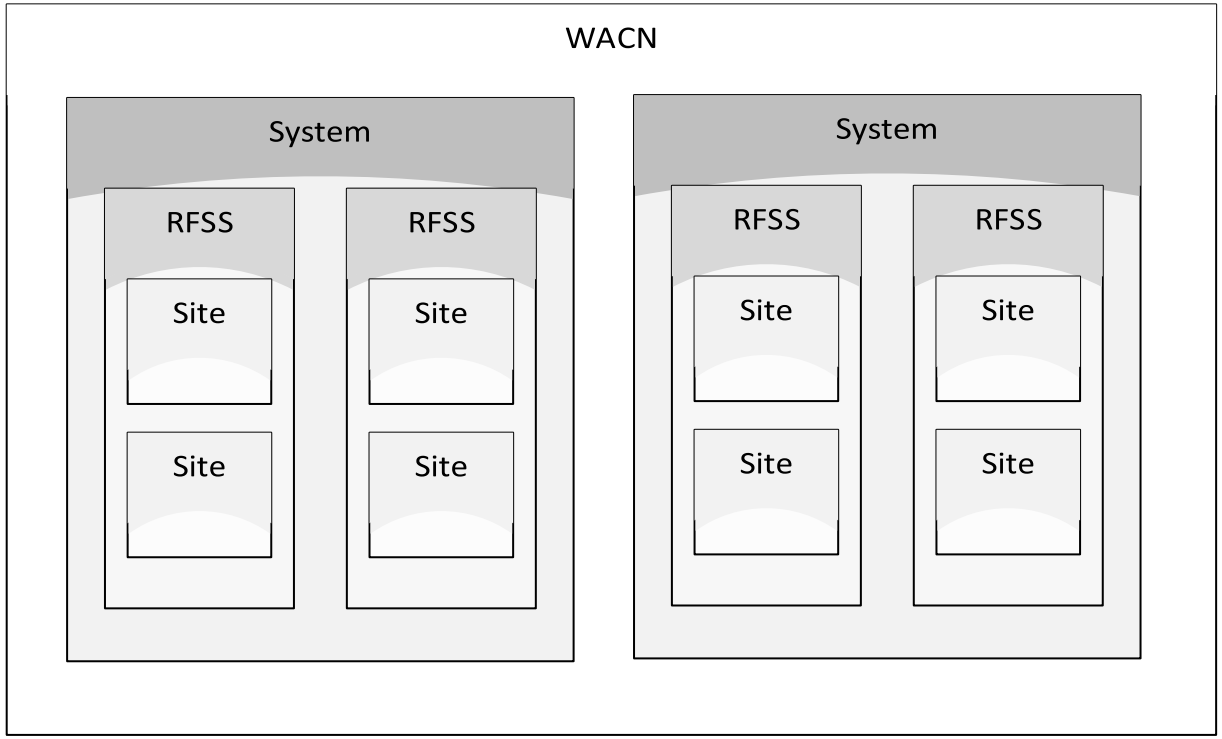
NSW GOVERNMENT

Number Ranges

Also known as Addressing.

To enable mobility management, each RF channel is associated with a WACN ID, System ID, RFSS ID, and Site ID.

- **WACN ID** is the ID of a larger Wide Area Communication Network.
- **System ID** is the ID of a system with multiple RFSS.
- **RFSS ID** is the ID of an individual Radio Frequency Subsystem.
- **Site ID** is the ID of an RF site within an RFSS.



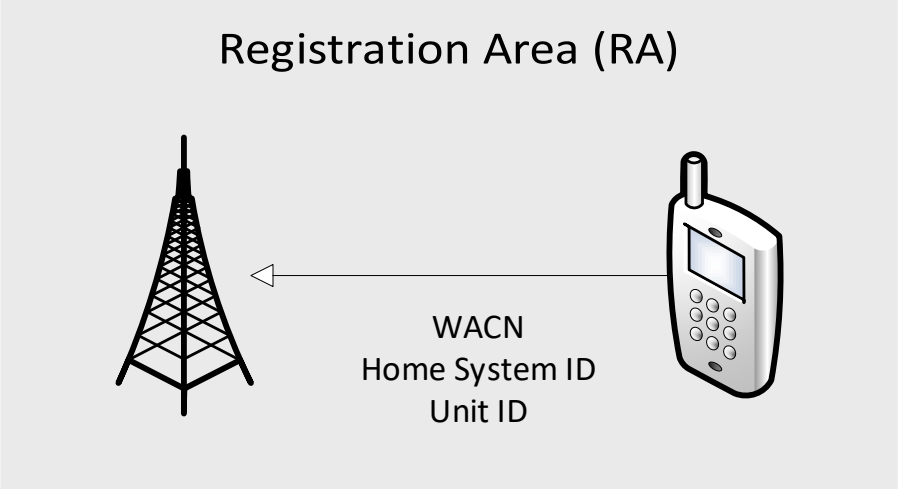
Mobility and Registration Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Number Ranges (Addressing)	No	Yes	Yes	Yes	No

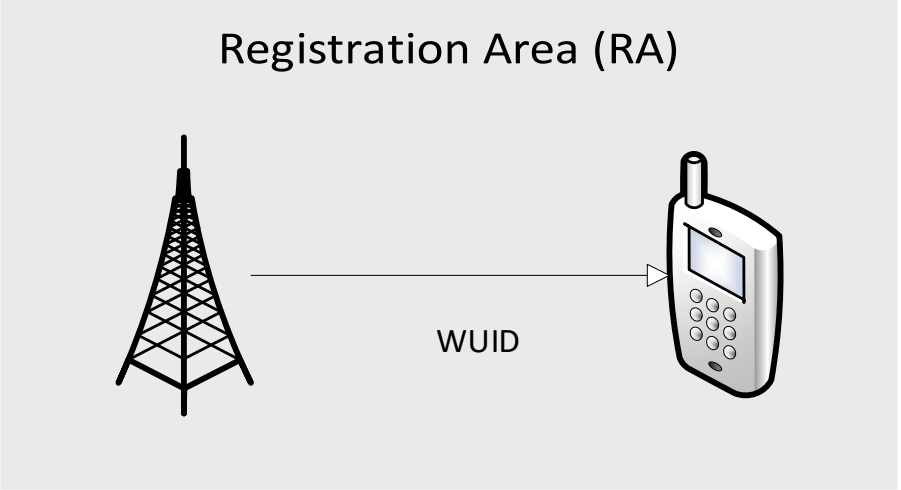
Full or Unit Registration

Each system constitutes a registration area (RA).

Full registration is performed when an SU is powered on or enters a new RA. During full registration, the SU sends its WACN, Home System ID, and Unit ID; and in return, the system provides the SU with a Working Unit ID (WUID).

An optional Authentication service can also be initiated during registration.





Mobility and Registration Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Full or Unit Registration	No	Yes	No	Yes	No

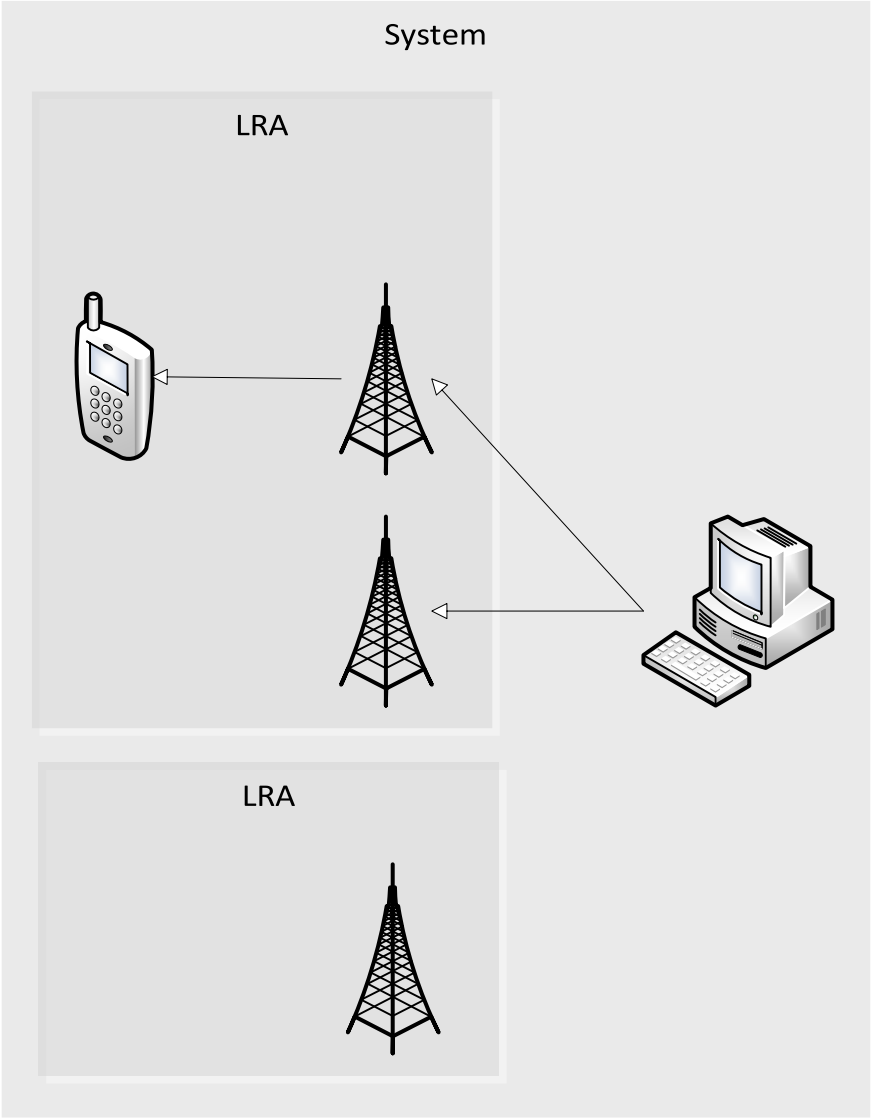
Location Registration

Each system can have one or more Location Registration Areas (LRA).

Each LRA includes one or more RF sites.

Location Registration is performed by the SU when it roams to an RF site either in the current LRA or a different LRA.

This allows the system to keep track of the location of the SU and efficiently route calls only to needed sites.



Mobility and Registration Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Location Registration	No	Yes	No	Yes	No

Deregistration

An SU can deregister from the system.

SU normally do this when they are powered off, or when the SU registers to another system.

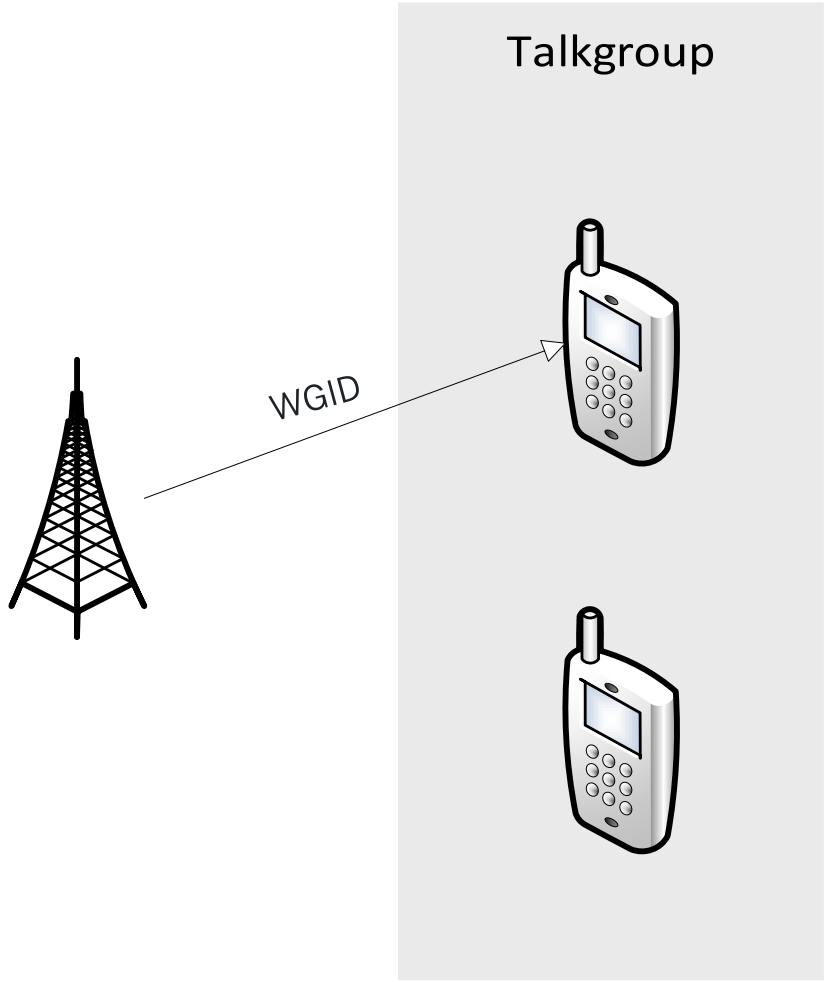
Mobility and Registration Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Deregistration	No	Yes	No	Yes	No

Affiliation

After unit registration is complete, an SU can affiliate with a talkgroup.

During affiliation, the system will assign the SU a unique Working Group ID (WGID).

The SU can subsequently change its affiliation to other talkgroups within the system.

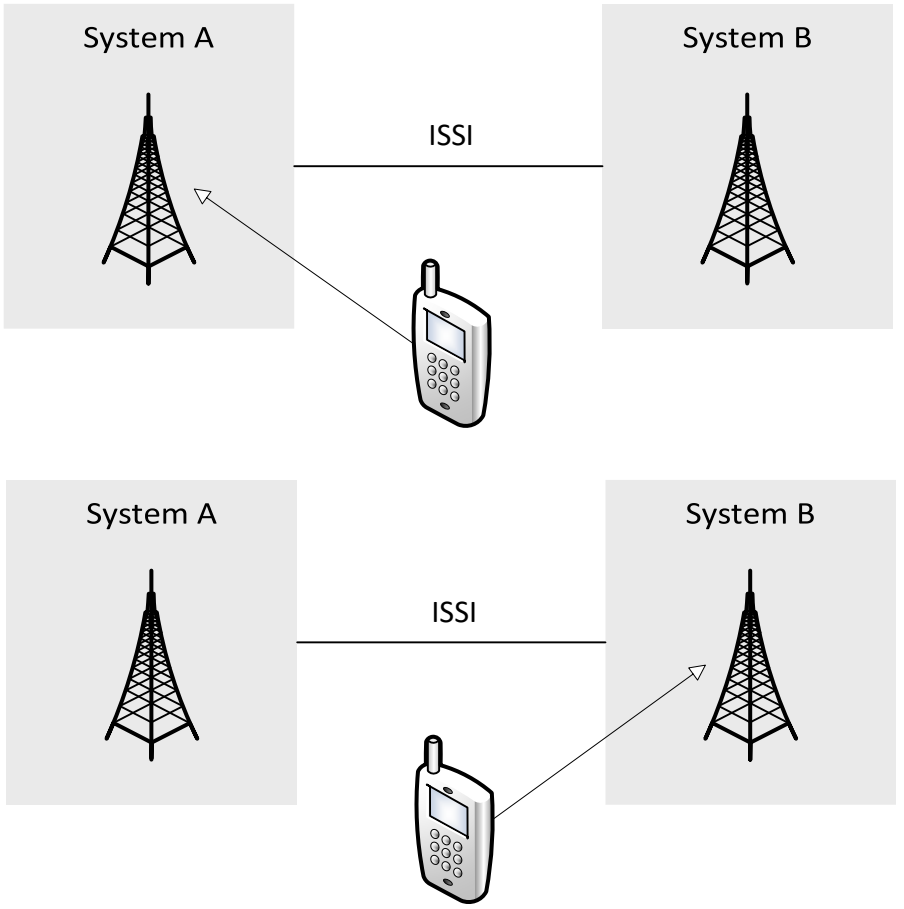


Mobility and Registration Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Affiliation	No	Yes	No	Yes	No

Inter-WACN/LMR System/RFSS Roaming

Allows an SU to automatically roam to RF sites in other Systems or RFSS.

This service can be provided over ISSI, if the systems or RFSSs are made by different manufacturers.

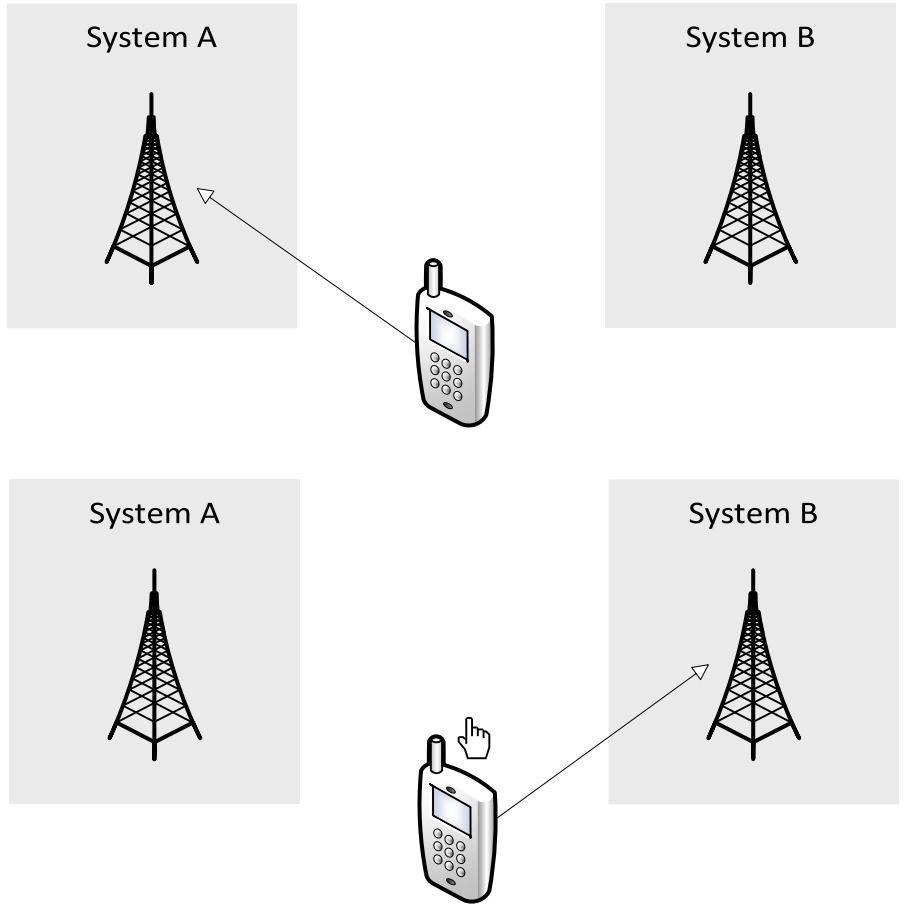


Mobility and Registration Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Inter-WACN/LMR System/RFSS Roaming	Yes	Yes	Yes	Yes	Yes

Inter-LMR System/RFSS Roaming (manual)

Allows an SU to manually roam to RF sites in other Systems or RFSS.

Requires information about each System and RFSS to be programmed into the radio in advance, and the user to manually switch between the Systems or RFSS.

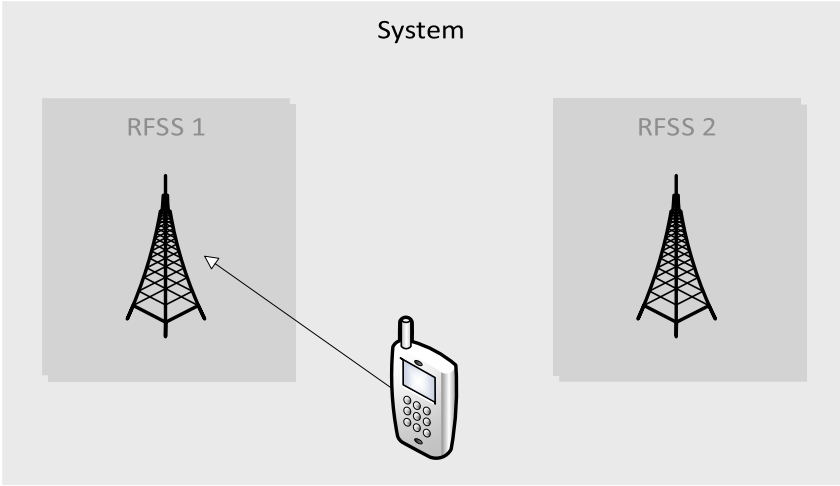


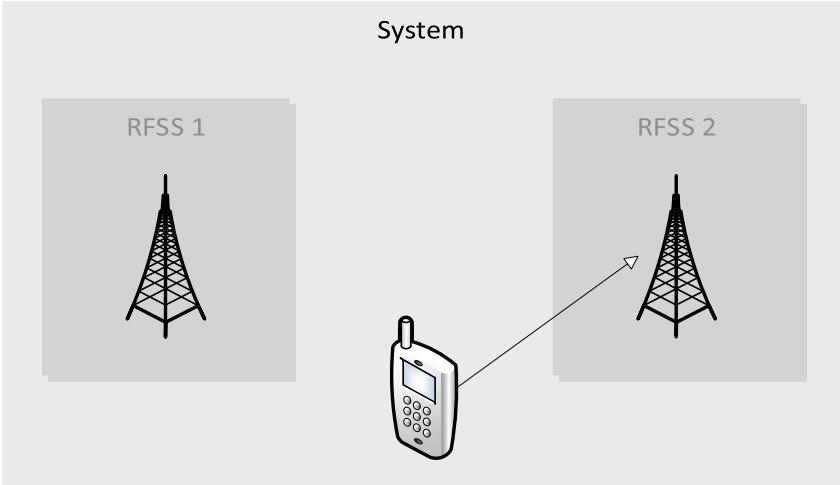
Mobility and Registration Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Inter-LMR System/RFSS Roaming (manual)	Yes	Yes	Yes	Yes	Yes

Intra-LMR System/RFSS Roaming (automatic)

Allows automatic roaming between RF sites within the same system.

This service can be provided over ISSI, if the system is made up of RFSS made by different manufacturers.





Mobility and Registration Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Intra-LMR System/RFSS Roaming (automatic)	No	Yes	No	Yes	No

Call Restriction

Allows the restriction of one or more services for a particular SU or talkgroup.

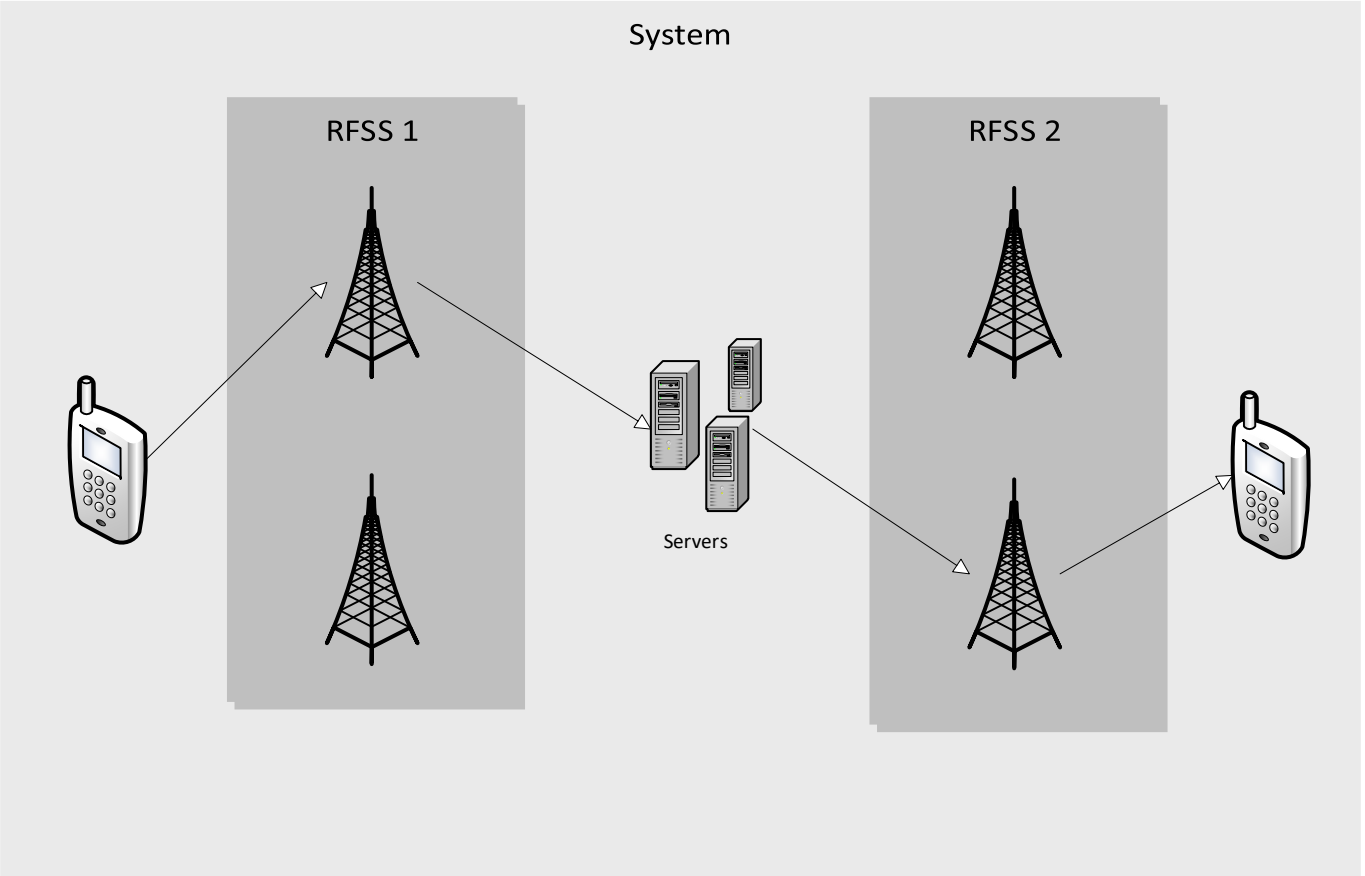
Restriction can be limited to specific times, specific sites, specific RFSS, or specific systems.

A system operator can initiate the restriction, or it can be pre-programmed into an SU.

Mobility and Registration Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Call Restriction	No	Yes	No	Yes	No

Call Routing

Allows an RFSS to determine how to process a call in an efficient manner and reach an intended target.



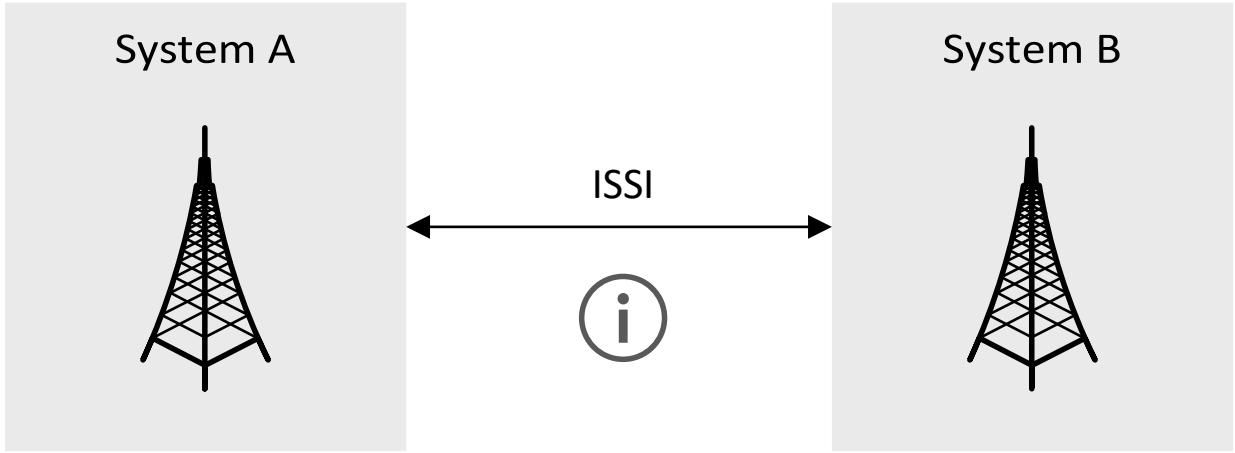
Mobility and Registration Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Call Routing	Yes	Yes	Yes	Yes	Yes

RFSS Service Capability Polling

Enables an RFSS to determine its ability to communicate with a different RFSS via ISSI.

If supported, the service also allows the RFSS to obtain service capability information from the other RFSS.

One RFSS can update another with new capability information, when this information changes.

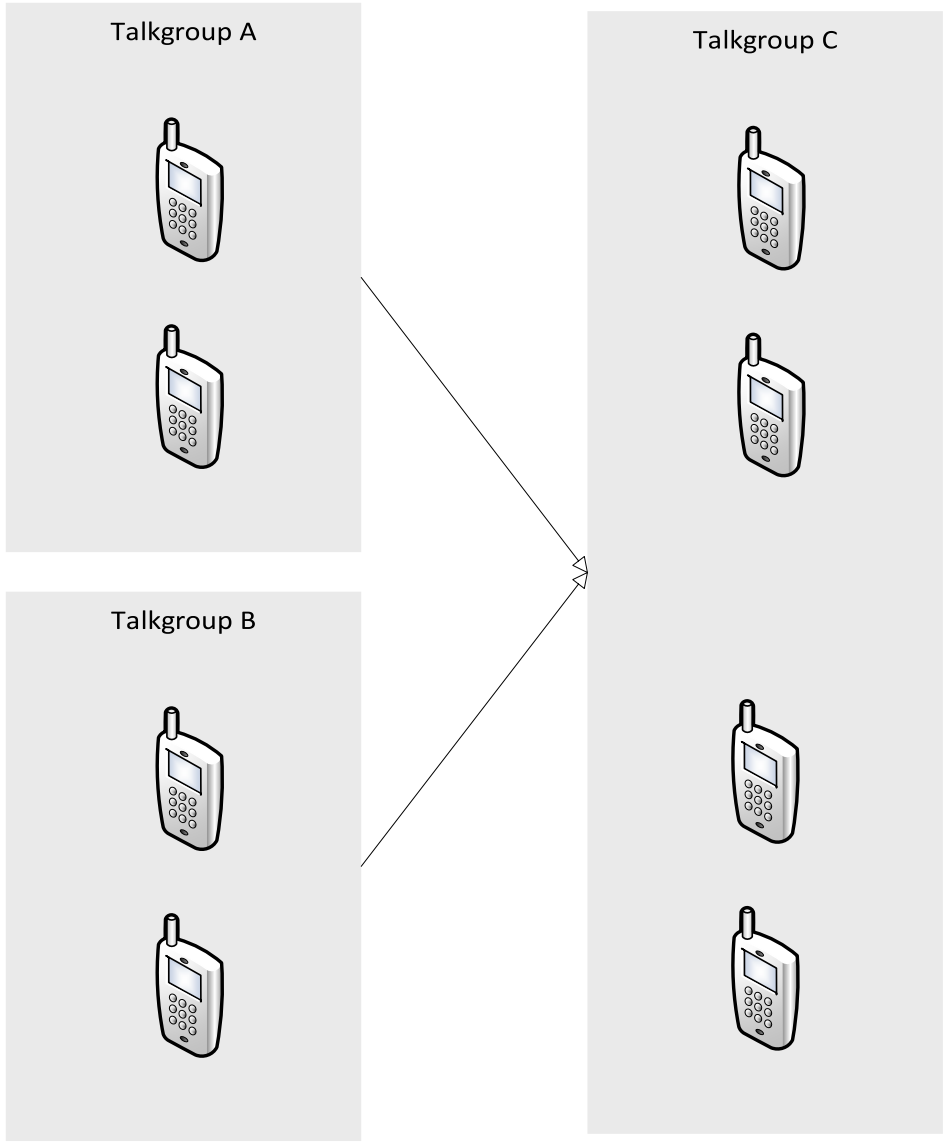


Mobility and Registration Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
RFSS Service Capability Polling	No	No	Yes	Yes	No

Dynamic Regrouping

Talkgroup regrouping allows talkgroups to be dynamically merged into a single talkgroup.

Individual regrouping allows individual SU to be dynamically merged into a single talkgroup.



Mobility and Registration Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Dynamic Regrouping	No	Yes	No	No	No

Security Services

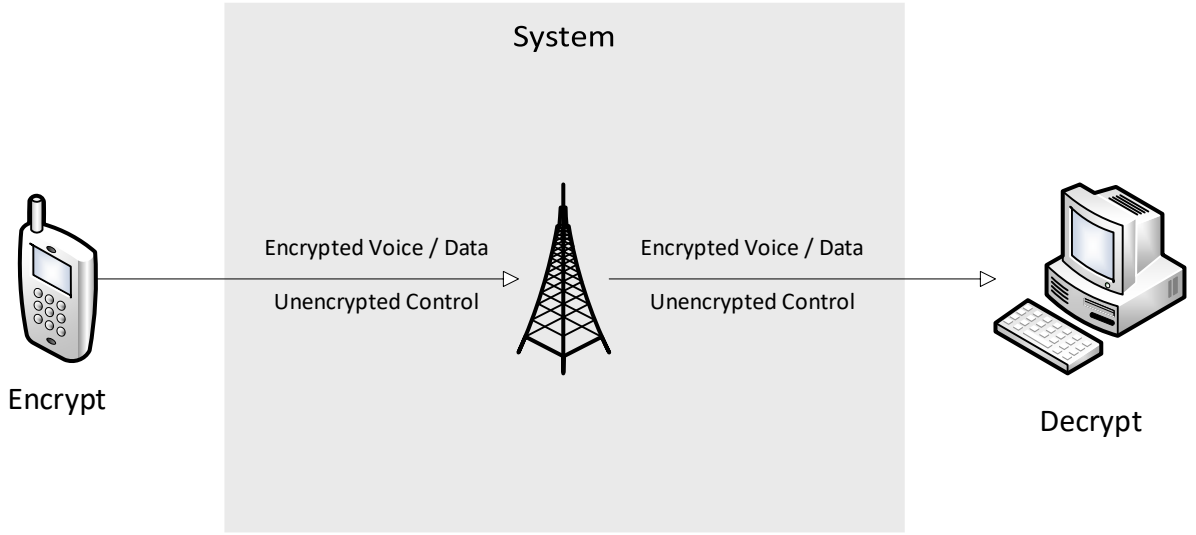
Encryption

Also known as End to End (E2E) Encryption.

Allows teleservices and bearer data to be encrypted.

Voice and data are encrypted at one end and decrypted at the other end, which can be outside the system.

Does not allow the Link Layer to be encrypted, as Link Layer Encryption (LLE) is still being standardized. This means control data, on the control channel and traffic channels, is not encrypted and can be intercepted or spoofed.



Security Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Encryption	Yes	Yes	Yes	Yes	Yes

SU Authentication

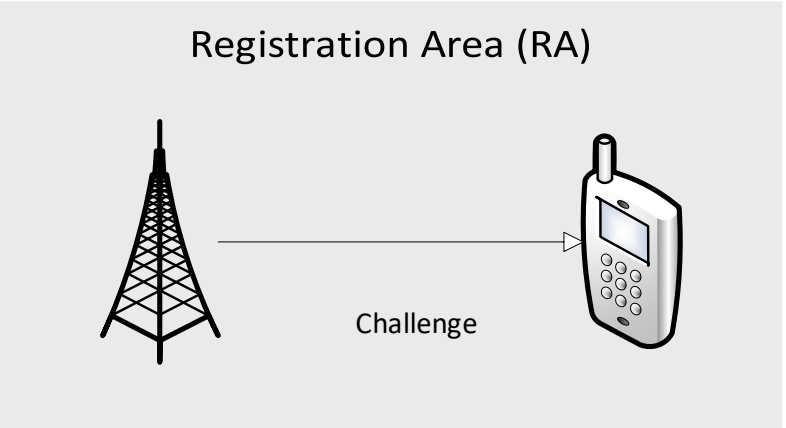
Allows a system to authenticate SU.

A system can initiate authentication during unit registration.

An SU can also request that a system initiate authentication, but the system is not required to do so.

Authentication is intended to prevent attacks such as impersonating an SU.

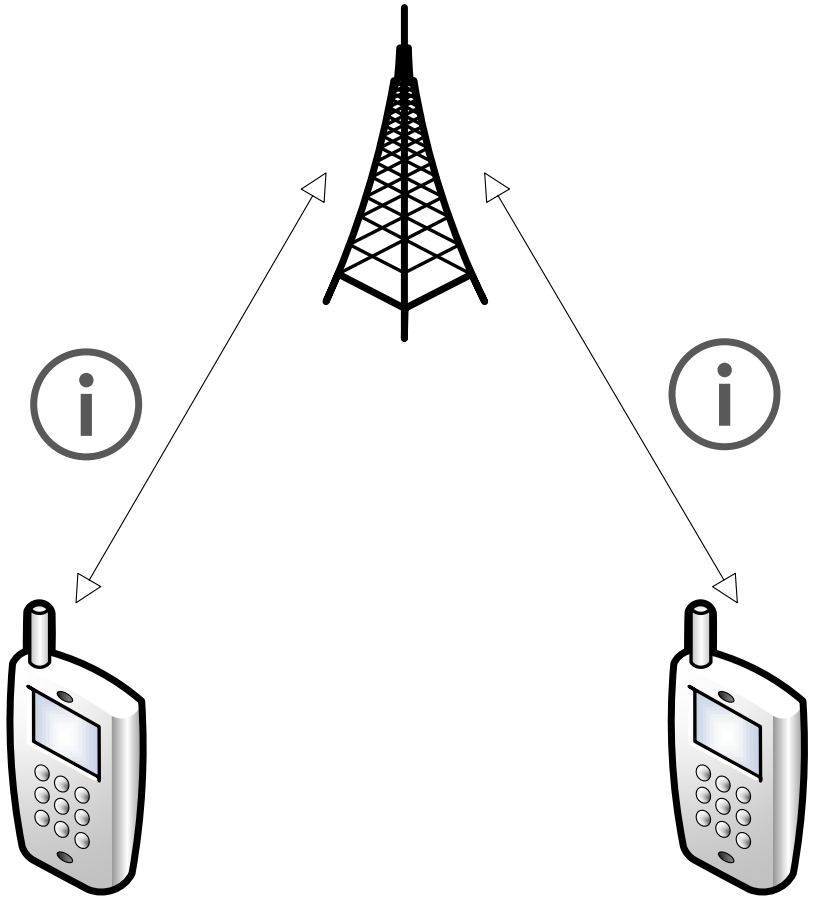
The standards also allow for mutual authentication, where the SU authenticates the RFSS; however, this is optional and both RFSS and SU need to support for this to work.



Security Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
SU Authentication	No	Yes	No	Yes	No

Encryption Key Update

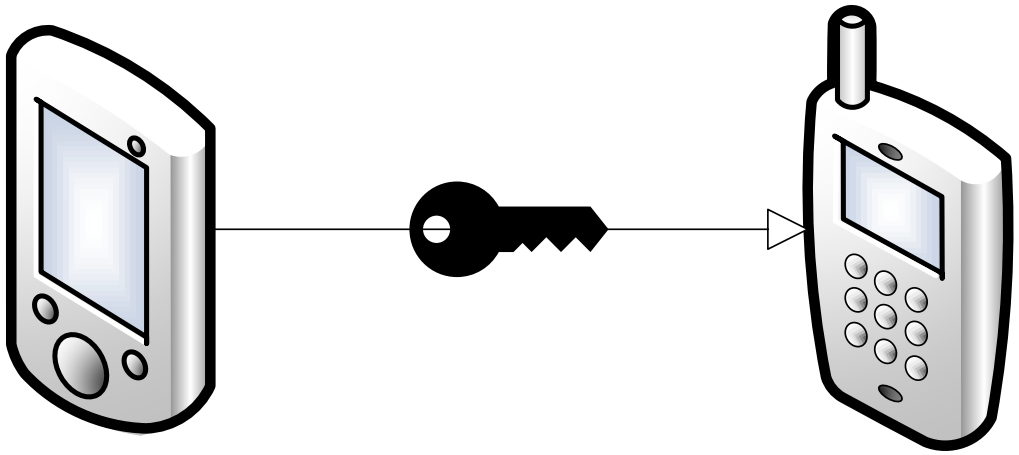
Enables SU to synchronize encryption information, such as current encryption key, while on the traffic channel.



Security Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Encryption Key Update	Yes	Yes	Yes	Yes	Yes

Manual (Wired) Rekeying or Key Fill

Allows a Key Fill Device (KFD) to be physically connected to an SU for the purpose of loading encryption keys.



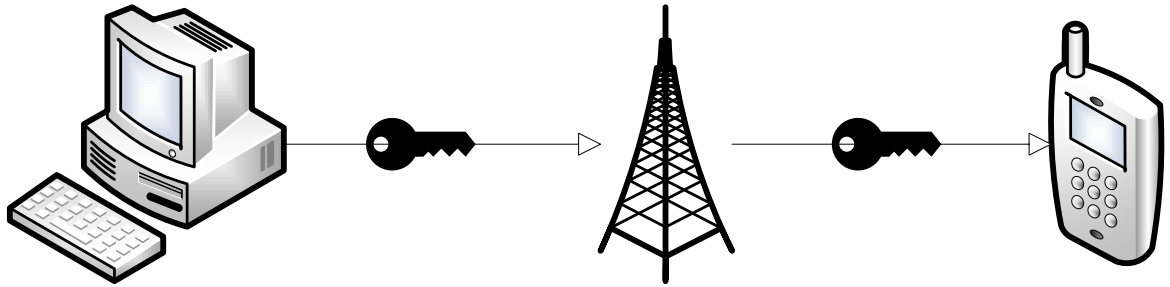
Security Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Manual (Wired) Rekeying or Key Fill	Yes	Yes	No	No	No

Over The Air Rekeying (OTAR)

Allows encryption keys to be sent directly to SU, over the CAI, from a Key Management Facility (KMF).

The encryption keys and key management messages are themselves encrypted with OTAR.

Should not be confused with Over the Air Programming (OTAP) which is not standardized.



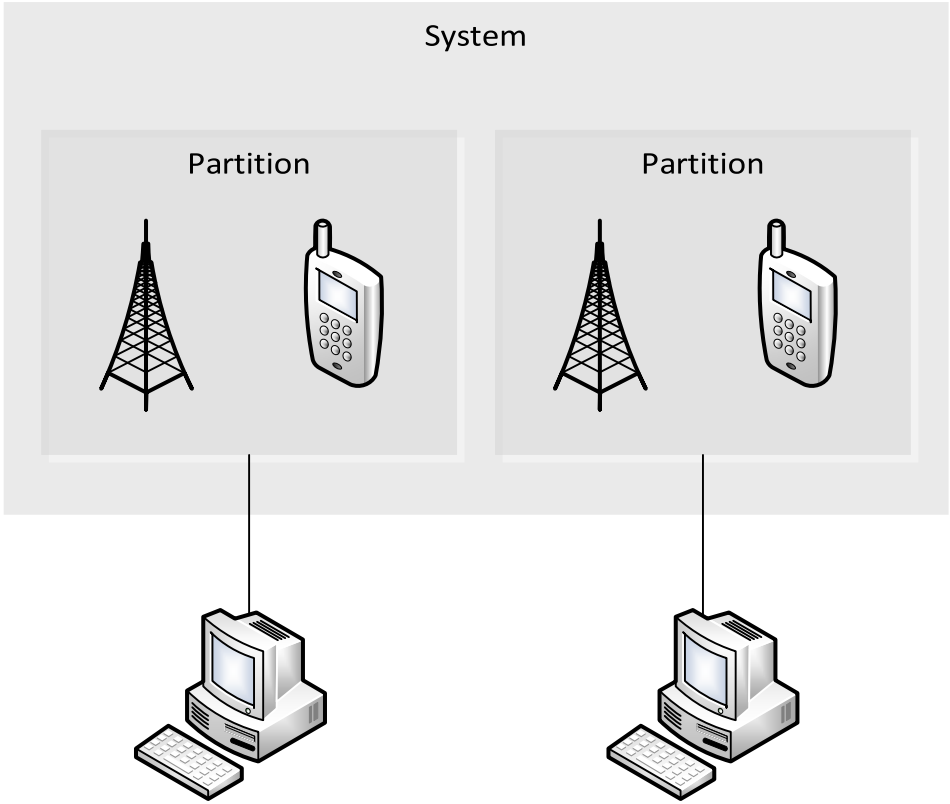
Key Management Facility (KMF)

Security Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Over The Air Rekeying (OTAR)	Yes	Yes	No	Yes	Yes

Network Management Services

Provisioning of the Network Management Interface

Allows vertical partitioning of system management and delegation of control for operation of each partition to different entities.



Network Management Services	Conventional CAI	Trunked CAI	Conventional ISSI	Trunked ISSI	DFSI
Provisioning of the Network Management Interface	Yes	Yes	No	Yes	Yes

Services Local to the Subscriber

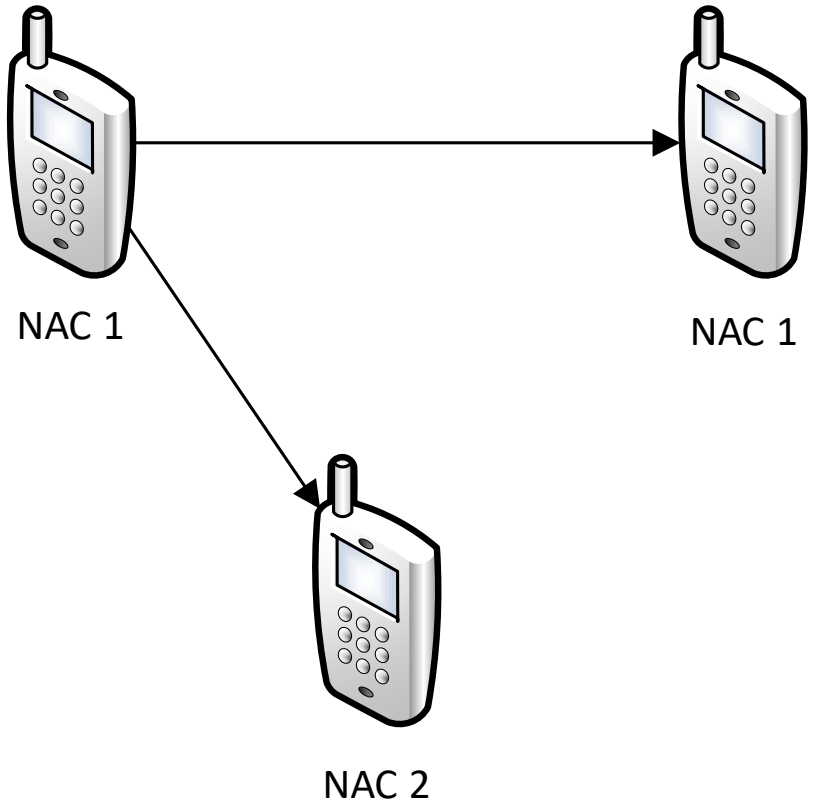
Monitor Squelch

Also known as Digital Carrier Squelch.

Applies to SU and consoles using Conventional CAI.

Receiver unmutes any time a voice signal is recognized.

Network Access Code, Talkgroup ID, and Destination ID are not used to selectively unmute.



Services Local to the Subcriber	Conventional CAI	Trunked CAI
Monitor Squelch (Digital Carrier Squelch)	Yes	No

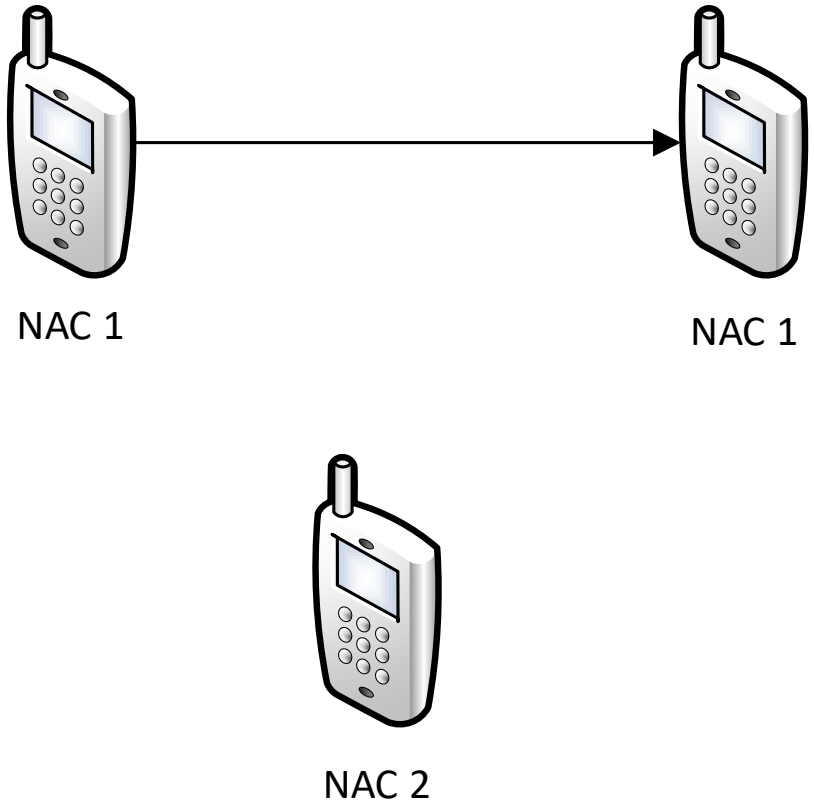
Normal Squelch

Applies to SU and consoles using Conventional CAI.

Receiver unmutes only when a voice signal has the correct Network Access Code.

Voice messages from other users on the same channel, but with a different Network Access Code, are muted.

Equivalent to Unaddressed Call mode.

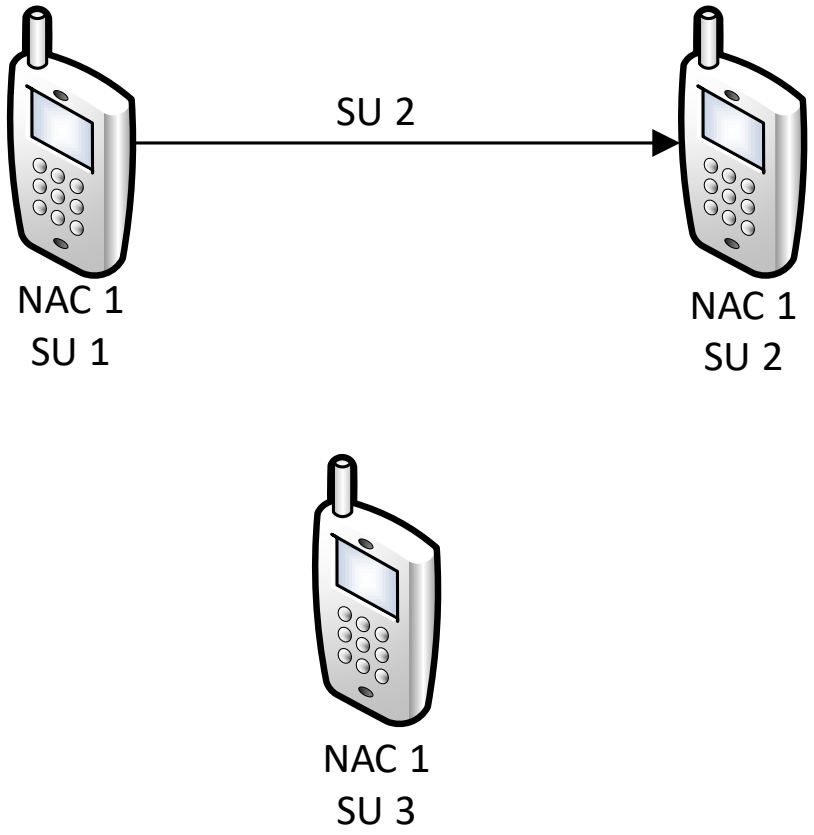


Services Local to the Subcriber	Conventional CAI	Trunked CAI
Normal Squelch (Unaddressed Call)	Yes	No

Selective Squelch

Applies to SU and consoles using Conventional CAI.

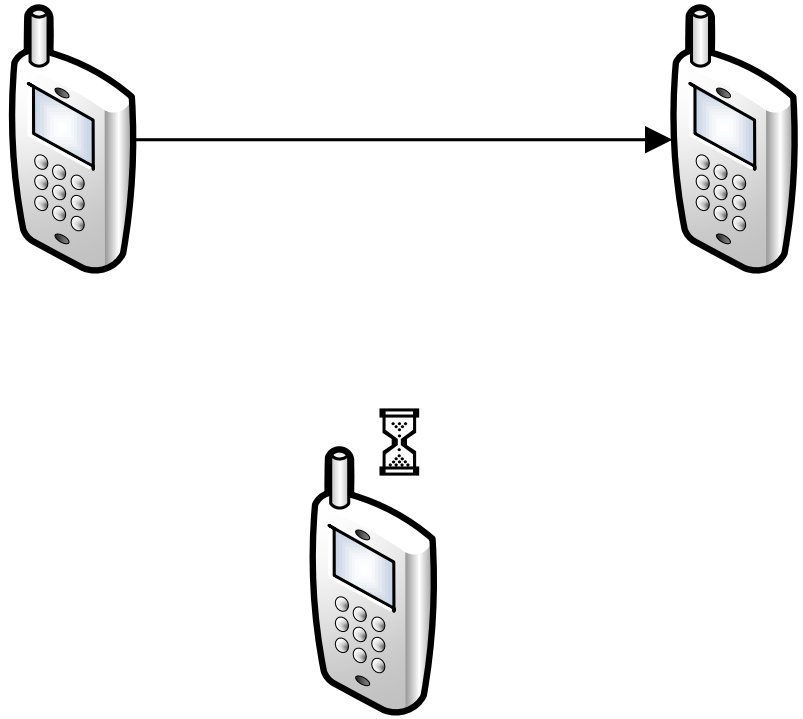
Receiver unmutes only when voice traffic is detected that is addressed to the receiver, the receiver's talkgroup, or all receivers or talkgroups.



Services Local to the Subcriber	Conventional CAI	Trunked CAI
Selective Squelch	Yes	No

Busy Channel Lockout

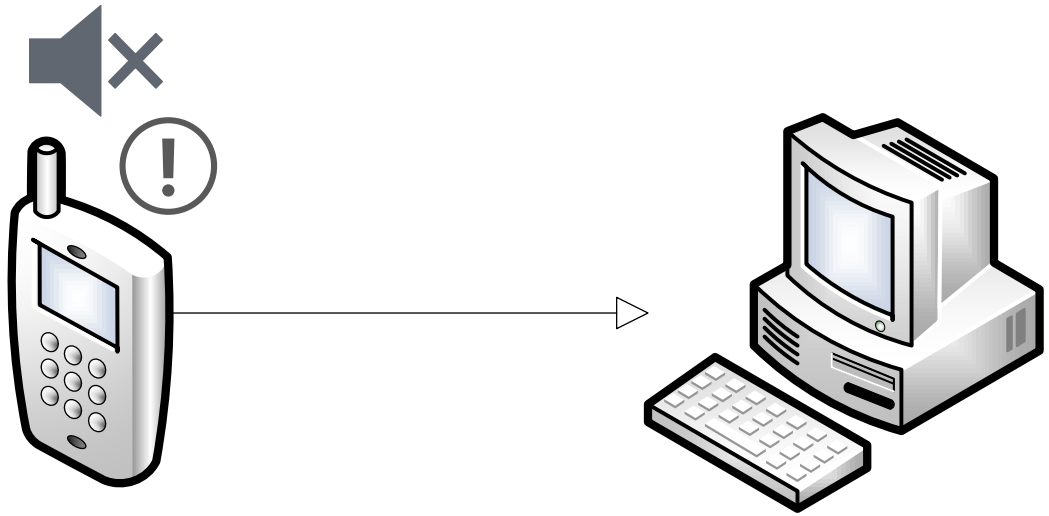
Allows a convention SU to detect if a channel is busy before attempting to transmit on that channel.



Services Local to the Subcriber	Conventional CAI	Trunked CAI
Busy Channel Lockout	Yes	No

Silent Emergency

Allows an SU to send an emergency alarm without any indication output via its own user interface.



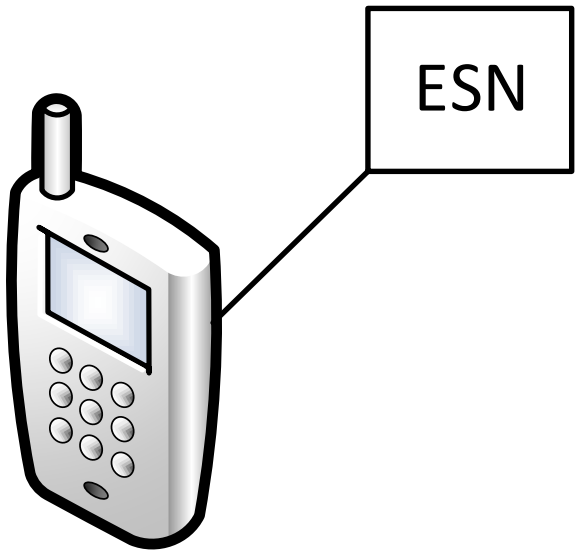
Services Local to the Subcriber	Conventional CAI	Trunked CAI
Silent Emergency	Yes	Yes

Electronic Serial Number

Embedded into the hardware of each SU is a unique Electronic Serial Number (ESN).

These ESN are in a format defined by the TIA-102 standards.

ESN are not transmitted over the air.

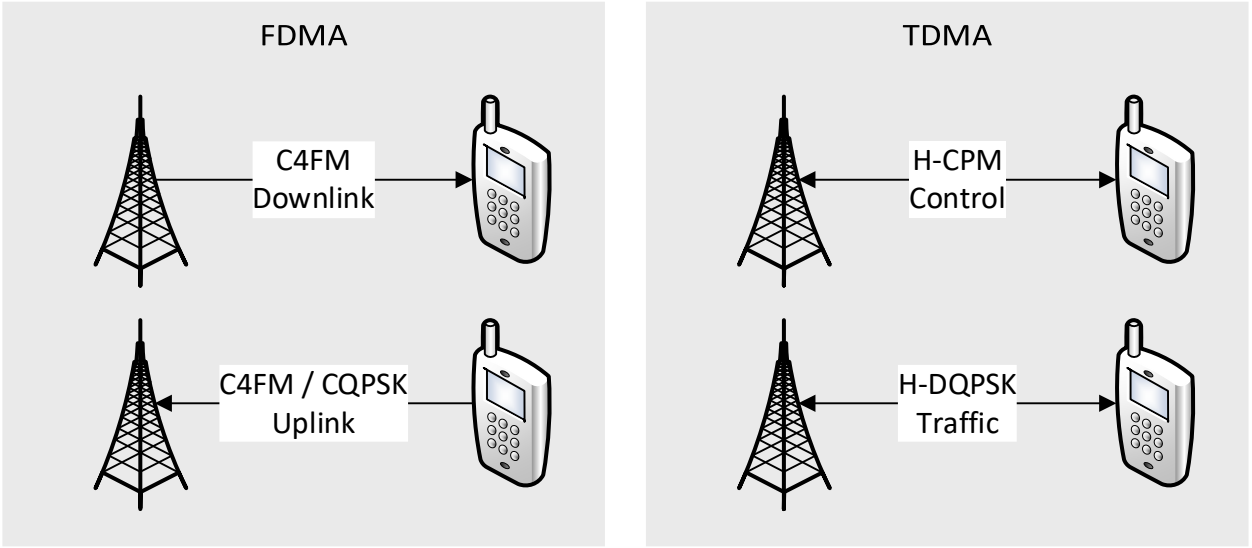


Services Local to the Subcriber	Conventional CAI	Trunked CAI
Electronic Serial Number	Yes	Yes

Reception of Modulations

C4FM and CQPSK modulations are used for transmission and reception of voice and data with FDMA.

H-CPM and H-DQPSK modulations are used for transmission and reception of voice and data with TDMA.

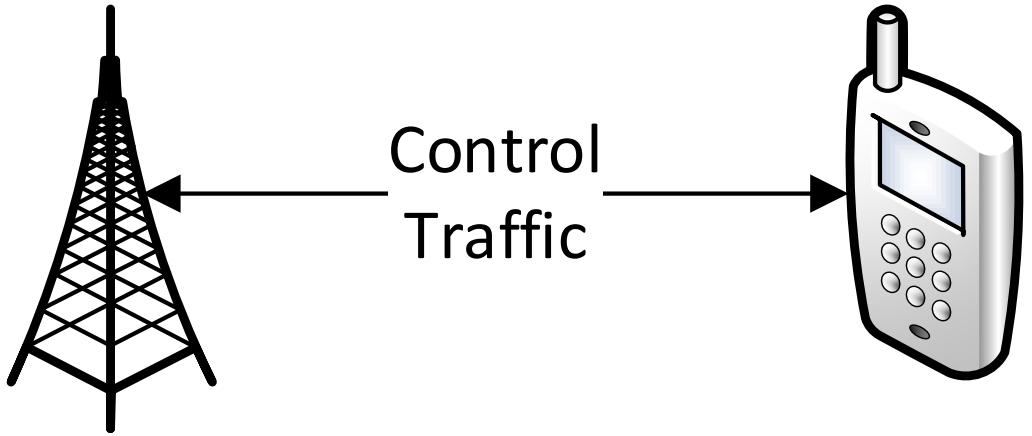


Services Local to the Subcriber	Conventional CAI	Trunked CAI
Reception of Modulations	Yes	Yes

Composite Control Channel

Also known as Single Site Station or Traffic on Control.

Allows a single channel to serve as both a control channel and a traffic channel.



Services Local to the Subcriber	Conventional CAI	Trunked CAI
Composite Control Channel (Single Station Site or Traffic on Control)	No	Yes

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