SOLUTION BRIEF

Core Network Platform for Public Protection & Disaster Relief (PPDR)

Druid Software is a core network software company that leads the market in providing scalable, low-footprint cellular core solutions.

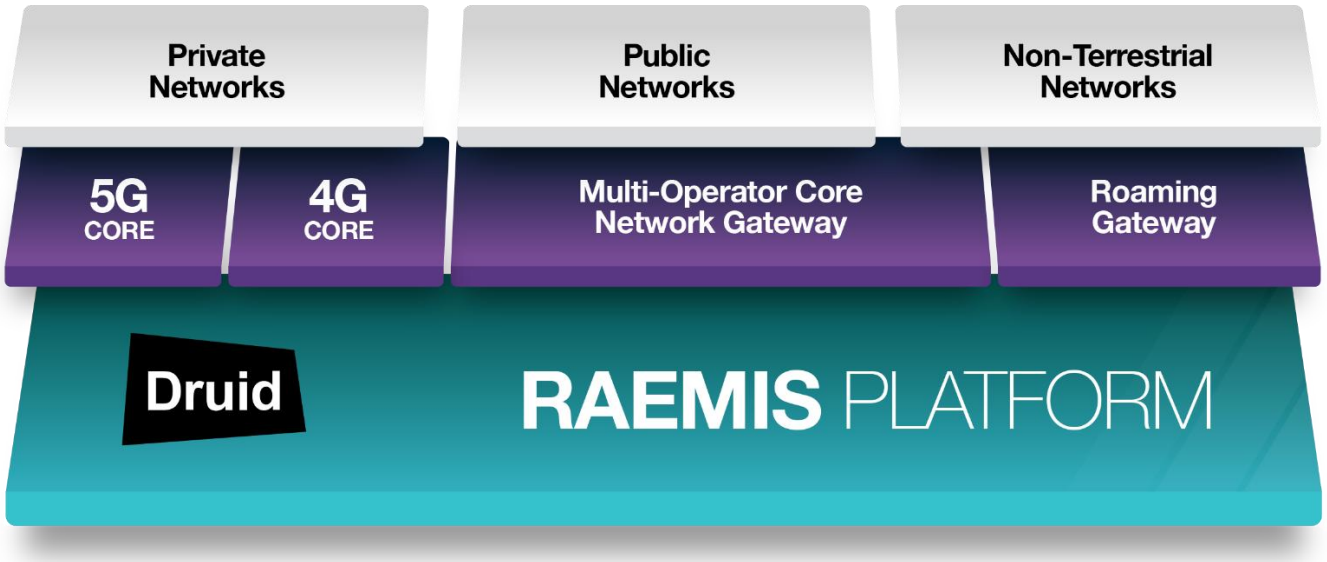
Established in 2000, Druid has built a strong track record in meeting the requirements of healthcare, industry, defense, public safety and other market segments for robust, high-quality mobile wireless connectivity. Druid harnesses the power of 3GPP technology to build specialized solutions for a wide variety of complex use-cases.

This document describes how Druid's cellular core technology can be used to implement a fully reliable, highly secure core network for a public protection & disaster relief (PPDR) communications service used by police forces, first responders and other public safety organizations.

Raemis™ Platform

All of Druid's products and solutions are built on the Raemis™ platform. Raemis provides an ultra-efficient, highly scalable, base platform for a wide variety of cellular core network functions across multiple mobile network technologies.

It is a mature, field-tested platform that includes an extensive set of unique features specifically designed for use by mission-critical applications. With over 5,000 deployments, Raemis is one of the most widely used core network platforms in the market today.



Public Protection & Disaster Relief Networks – Market Evolution

Mission critical communications (PPDR) networks have a long history in serving the needs of emergency services, police forces and other public safety organizations for an ultra-resilient form of wireless communications that can always be depended on when required. Legacy narrowband private mobile radio technologies such as TETRA and P25 offered extensive voice and basic messaging features which for a time were adequate for the needs of their users. A big advantage of these technologies was that they operated at frequency ranges that allowed countries to cost-effectively build nationwide networks dedicated for MCC users offering good coverage for these basic services.

PPDR users now expect access to a wide array of data-intensive applications and video services, so these narrowband legacy networks are no longer sufficient. Providers of PPDR networks have therefore turned to the latest generation of wireless technologies based on 3GPP standards for a solution to their needs. A number of different options are available for using 3GPP 4G and 5G wireless technologies for servicing PPDR users.

A dedicated 4G or 5G network can be built exclusively for PPDR and public safety organizations, offering good coverage in urban areas but may not adequately cover rural areas.

PPDR networks can use an MVNO model to allow their users to access wireless coverage provided by one or more commercial mobile network operators.

PPDR networks and mobile network operators may also access a shared RAN built by a third party, providing coverage at stadiums, arenas and other high-capacity indoor venues.

PPDR Networks – RAN Options

Raemis Platform Features for PPDR Networks

Raemis' flexible, multi-purpose and high-availability architecture makes it the ideal core network platform for a PPDR service. It is fully 3GPP compliant, and can host 5G, 4G, 3G and 2G networks in a single deployment instance. It is cloud-native, and can be deployed on virtual machines, containers, directly on COTS hardware, or on a public cloud hyperscaler.

Coverage

Raemis ensures that PPDR users always have coverage options available to them. They can access a dedicated RAN built for the PPDR network, roam onto coverage provided by a commercial MNO, or access a shared RAN built by a third party.

Security

The Raemis platform has security features designed to maintain the integrity of communications on a PPDR network. The onboard EIR ensures that only authorized handsets can access the network, and subscriber management features enable controlled access & authentication.

Services

Raemis provides users with access to the necessary PPDR and telephony services they require to fulfil their roles and respond to different emergencies. The onboard IMS layer supports native voice, messaging, and data services, and the Raemis API supplies dedicated PPDR applications with direct access to network functions.

Capacity & reliability

The Raemis core is highly scalable ensuring capacity is always available when needed by PPDR users. Raemis can be deployed in a fully redundant, high-availability architecture to meet the most strenuous uptime requirements for first responders and other emergency services.

Coverage Options Provided by Raemis

4G CORE

Raemis 4G Core provides a fully 3GPP compliant Enhanced Packet Core (EPC) for 4G and LTE networks. It implements all the core network functions required to provide a full set of IP, mobility, and authorization services to network subscribers.

5G NSA

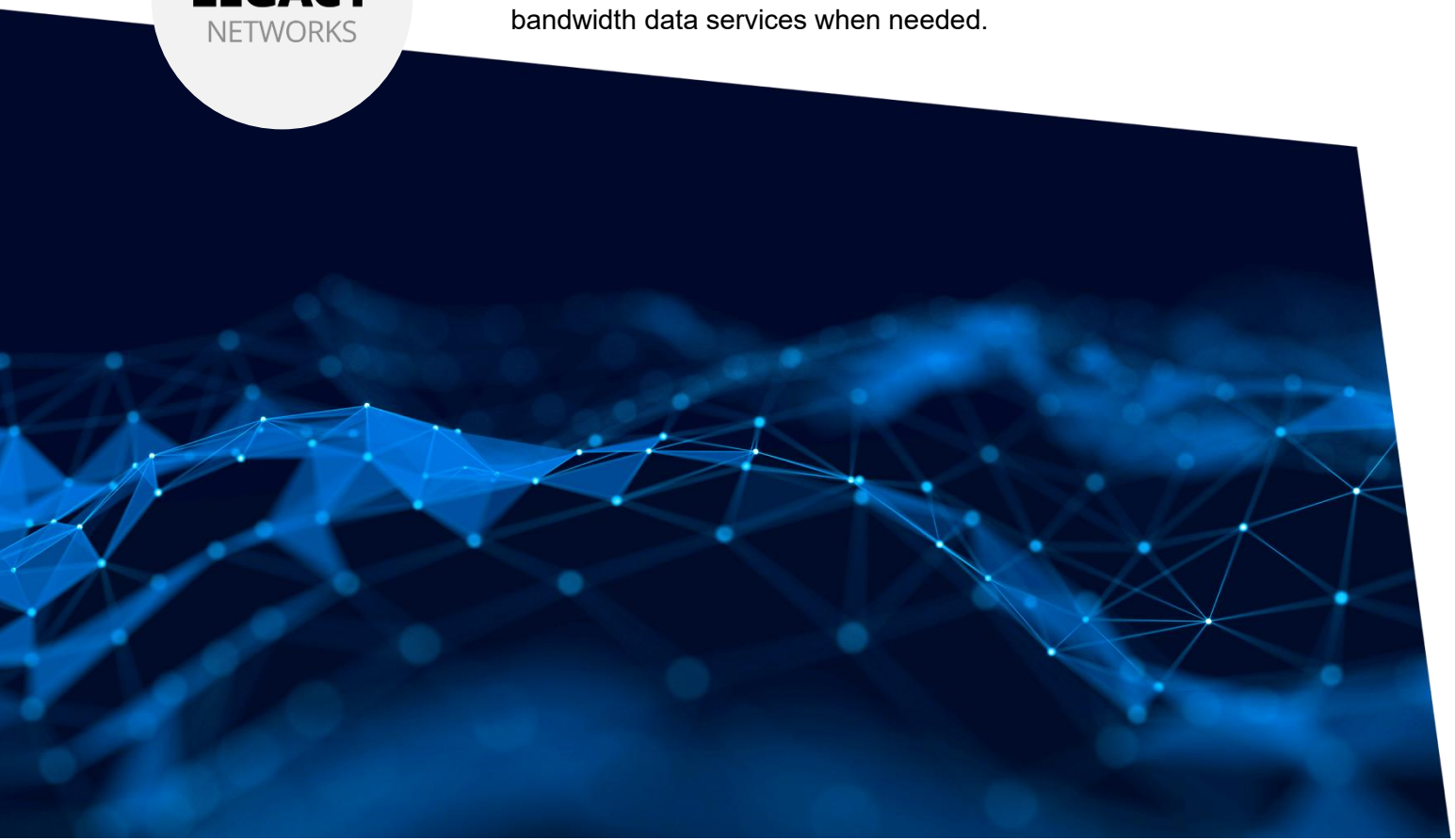
A 5G NSA (Non-Standalone) network creates an evolutionary path from 4G to 5G by allowing a 5G New Radio RAN to connect to an existing 4G core. It gives users access to some of benefits of 5G such as higher bandwidth while full 5G capabilities remain dependent on the deployment of a dedicated 5G core.

5G SA

Raemis 5G SA (Standalone) core provides customers with a 3GPP 5G compliant core that implements all the advanced capabilities of the 5G standard. Built on cloud-native principles, its CUPS architecture enables separation of user plane and control plane functions, allowing each layer to scale independently.

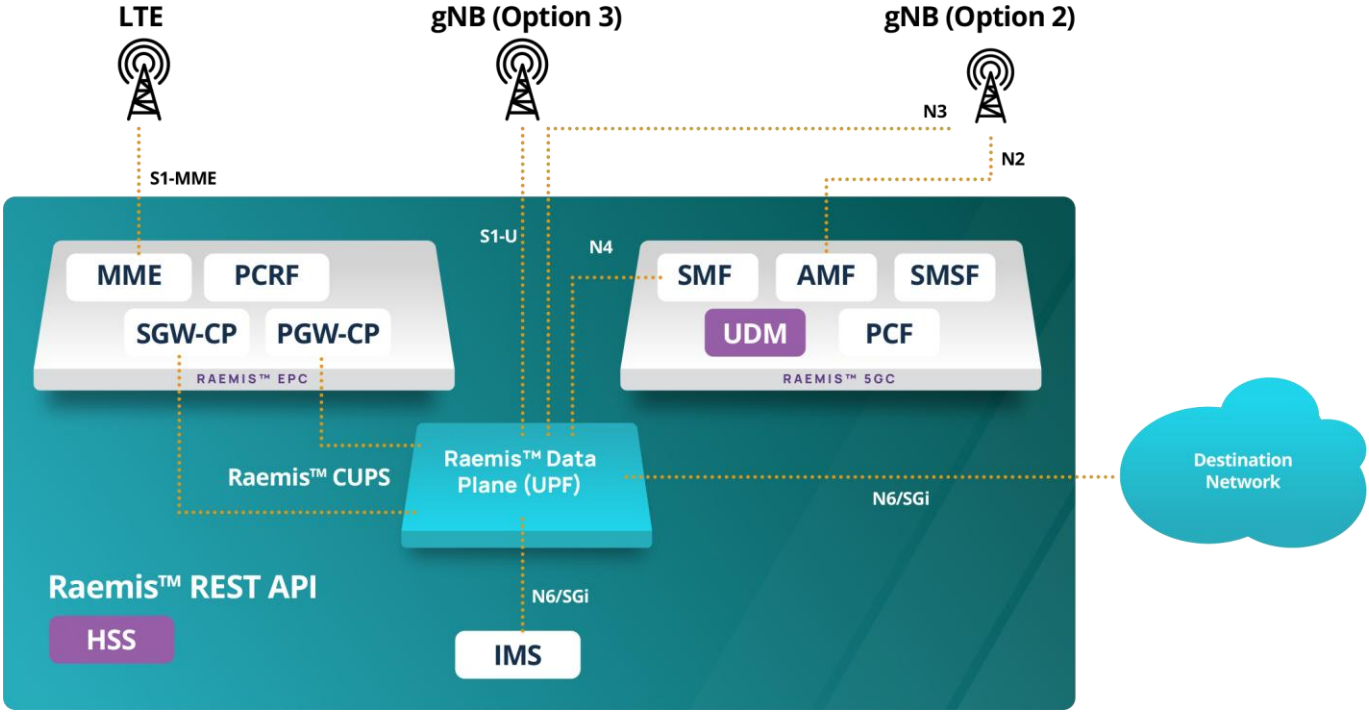
LEGACY NETWORKS

Raemis also offers a 3G and 2G core for seamless roaming on to legacy networks, ensuring support for basic voice, messaging and low-bandwidth data services when needed.



Core Network Architecture

Druid's cellular solutions for PPDR networks are built on its Raemis technology platform. The Raemis platform harnesses 5G, 4G, 3G, 2G and Wi-Fi radios from any vendor to implement standalone cellular core network solutions. It also integrates with mobile network operators using standard interfaces giving access to their full range of the radio resources.



Built-in REST API:

Raemis components are engineered from the ground up with a built-in API enabling seamless integration with external systems. The Raemis platform exposes its internal state through an HTTP API based on REST principles, making Druid solutions very easy to integrate with external PPDR applications. This also allows a dynamic best-in-class user interface for Druid's solutions.

Virtualised Solution:

The Raemis platform builds in virtualisation support for all Druid's solutions. Solutions can be delivered as virtual machines or even as containers with the Raemis built-in orchestration capabilities making it easy to deploy scalable and

Customizable Technology:

Having developed the Raemis from the ground up, Druid retains full ownership of its intellectual property and expertise. This allows for seamless customization of the platform to meet specific PPDR use cases.

4G/5G Network Slicing:

Adding 5G to private LTE networks is seamless. Raemis LTE core already slices 4G into dedicated networks for QoS and security, 5G RAN enhances this with improved separation, higher throughput, lower latency, and an easy upgrade path from 4G, all via the same user-friendly interface.

5G Migration path:

Raemis provides an easy migration path from LTE to 5G NSA and onwards from 5G NSA to 5G SA. The same Raemis platform can be used for all these technologies, even at the same time.

Druid

About Druid

Druid software is a core cellular network software company based in Ireland. Druid was established in 2000 and has evolved to become one of the global leaders in private and specialized cellular network solutions.

Enterprise Communications

Druid's solution is to deliver business critical mobile communications services in combination with leading-edge user devices.

Internet of Things

Cellular technology used to connect a myriad of mobile or remote autonomous devices to business applications.

Mobile Edge Computing

Druid have been implementing mobile edge computing solutions for over a decade now.

Public Safety

Cellular technology is the future for public safety communications with 4G & 5G LTE technology positioned to take dominance.

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