Tampnet Offshore Private 5G Networks:

Architecture & Case study

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Internal 5G installed

Drones and AUV's

Connected worker and remote collaboration

M2M / Process

Sensors

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Phased approach for current and future initiatives

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- On-asset coverage can be enabled in **stages** as the facility develops and implements new technologies for asset integrity, remote monitoring, inspection and safety applications.

- Mobile facilities (e.g. Rigs, FPSO's) can be set up to enable cloud connectivity for critical communications, while maintaining onsite network for local breakout. Cost & operational efficiency benefits

Phase 1: 5G Ready

- Install 4th Sector network
- Integrate Leaky Feeder system
- Reliable onsite connectivity.
- Eliminate WiFi and drop-outs

Phase 2 – Private Network Lite

- 5G Macro Core and leaky feeder to generate 100% onsite coverage
- Local core & Local breakout.
- Suitable for Sensors, Remote work and Robotics/Drones

Phase 3 – Offshore Private Network 5G PMEC

- All analytics possible
- Greater autonomy
- Island mode possible for 'transit'
- Local calls and remote worker applications via onsite core
- MCX ready /VoLTE
- Edge Compute enabled with Microsoft Azure

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Offshore Private 5G Networks

- Future-ready and secure design to meet the needs of current digitalisation standards and technology

- On-premises edge compute is suitable for processing large data volumes and carry out analysis.

- Improved effectiveness of processes, e.g. :
  - Robotics
  - Condition Monitoring and Predictive Maintenance
  - Safety and risk assessment
  - Video analytics

- Low latency to support remote collaboration and AI applications requiring large-scale data collection, usage and rapid inferencing.

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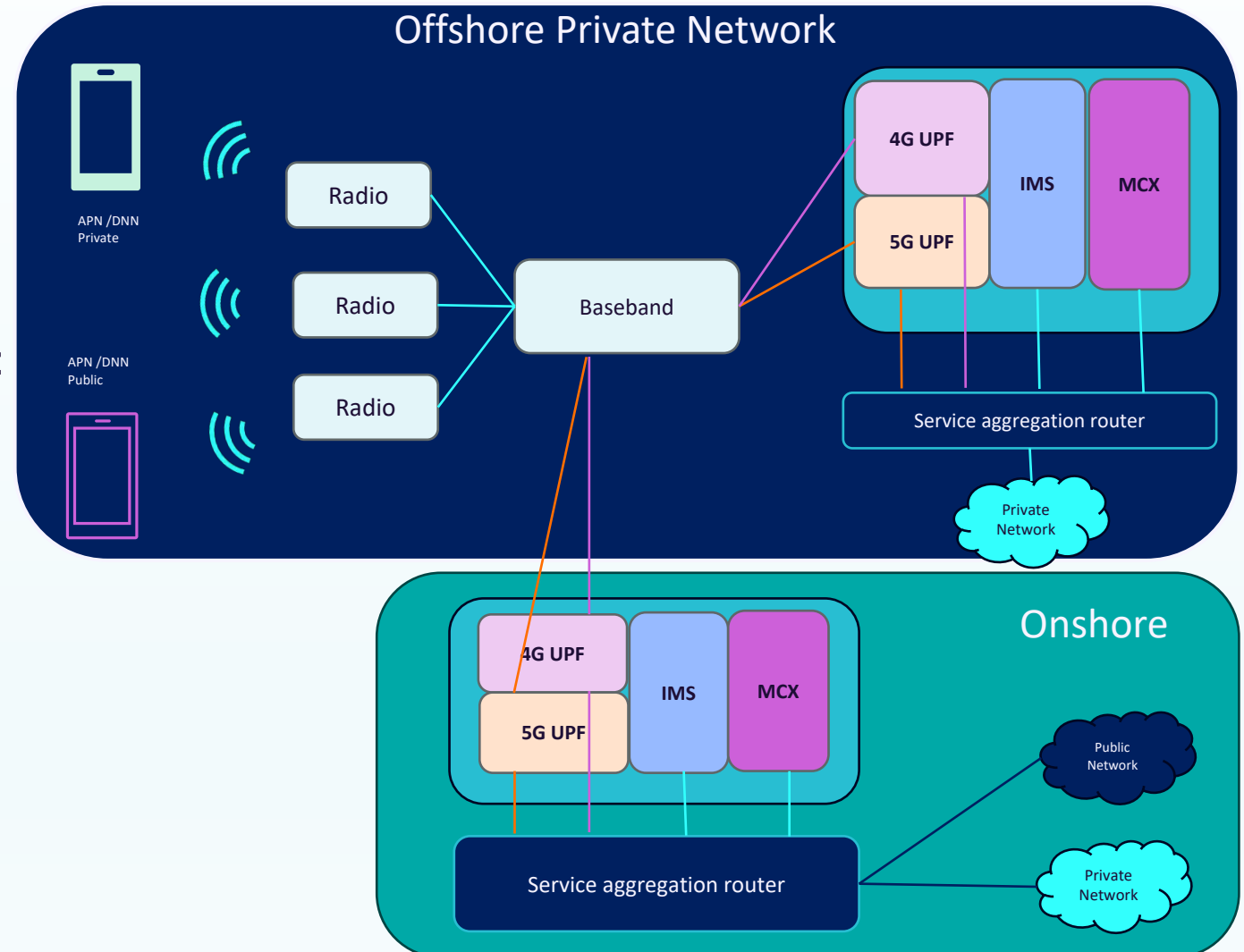
Tampnet Private 5G enables digitization of mission critical operations on offshore assets - extending the reach of Azure

- **4G/5G Combo core** deployed locally on private asset
- Local core provides for a local breakout and **full PMEC with Edge** functionality
- Fully redundant (High Availability cluster) provides Telco grade SLA
- **Island mode** support (Autonomous setup without any dependencies to central core) – increased end-to-end privacy
- **Supports IoT** (NB-IoT and Cat-M1)
- **Multiple APN/DNN support** for network segmentation within the PMEC
- **Meets OT security requirements** for sensors and robotics
- Ready for connection to **VoLTE and MCX** services hosted in the core.

Case study

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CASE STUDY:

International Offshore Drilling Contractor

A large international drilling services company wanted to reduce cost of operations while increasing efficiency.

To do this, they reviewed aspects of asset management, reliability of equipment, efficiency of workflows, and cost of mobilisations and logistics.

Improving Connectivity to Enable Digitalization

Challenge	Solution
- Existing hardware is **over 10 years old** - On-rig network availability was usually **only 15-20%** **Limited connectivity** in-transit and new regions - No standardised data flow **Complex workflow** with intensive administration and traditional paper methods. - Offshore mobility **infrastructure incomplete**	In 2021, Tampnet conducted a Proof of Concept with the Client and installed 4G LTE onsite to provide network access to all necessary areas throughout the rig, totalling **over 90% coverage.** **Digital Solutions implemented:** - Connected worker solutions including digital workflows and connection of smart phones and tablets. - Wireless sensors with 4G connectivity for live asset integrity monitoring and efficient maintenance planning. - IIoT Energy Monitoring for optimized consumption and behaviour analysis - Critical communications implemented with smartphone connectivity Connectivity set up on the Tampnet Offshore Network for **'island mode'** to maintain digital operations throughout rig moves.

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Goals Achieved

Over **90% on-site coverage** achieved allowing for implementation of digital technologies:

Cost reductions realized:

- Optimized energy management
- Live asset condition monitoring – reduced maintenance and logistics costs

Improvements realized:

- **Increased safety** on-site with Mission-Critical Push –to-Talk.
- **Job satisfaction** for crew with streamlined processes, efficient data access and confidence in decision-making.
- **Efficiency of operations** with remote collaboration and digital worker systems.
- **Data security -** data segregated via secure APN's for public and private network delivery

Remote Collaboration and Data Accessibility

Through the **Microsoft Azure edge** compute capabilities, IIoT data could be analysed on-site, while critical data could be transmitted to shore as required for remote collaboration and monitoring purposes.

The success of this project resulted in the installation of the **Tampnet Offshore Private 4G/5G Network** on 50% of the fleet **in 2023**, with the **remaining 50% of rigs** to be completed through 2024.

Contact us to discuss your needs and options.

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