5G
PRODUCTS

THE INTELLIGENT CORE FOR 5G ADVANCED & BEYOND

i2i 5G CORE NETWORK

info@i2i-systems.com
www.i2i-systems.com

i2i Systems
innovation to integration

About i2i Systems

i2i Systems is an international information technology company that specializes in developing innovative ideas and solutions. With its highly experienced team in the Telecommunications industry it offers a diverse variety of products in Telco OSS/BSS domains, as well as 5G network solutions.

i2i Systems delivers Next Generation Converged Revenue Management solutions enabling CSPs to unlock new business models, mitigate competition, reduce costs, and quickly monetize new use cases. This is being achieved through systems that are fully convergent, cloud-native, API-first, interoperable, low-code / no- code and modular. The offerings are highly scalable and support subscriber bases ranging from tens of thousands to tens of millions, harmoniously. i2i Systems improves its experience and skills by adapting new technologies and investing in research and development to provide best quality, efficient and visionary products to its customers. In accordance with its disruptive vision, i2i Systems further invests in 5G core-network, offering an end-to-end integrated cloud-based BSS and Network solution for optimizing and converging Service Providers IT and Network landscape thus increasing efficiency and enabling new revenue streams.

Our Customers – Telecom (CSP) & Industry

Partners

i2i 5G CORE NETWORK

THE INTELLIGENT CORE FOR 5G ADVANCED & BEYOND

The i2i 5G Core is a carrier-grade, 3GPP Release 18 compliant, cloud-native 5G Standalone core; purpose-built for MNOs and enterprises demanding deterministic performance, linear scalability, and zero-downtime operations. Built on a fully standards-compliant Service-Based Architecture, it supports both Standalone deployments and seamless EPC interworking.

It is designed to support Mobile Public Networks, Mobile Private Networks (MPNs), and Fixed Wireless Access (FWA) deployments across a wide range of operator and enterprise environments. The i2i 5G Core is engineered specifically to meet the demands of Mobile Network Operators (MNOs) and large-scale enterprises.

Figure 1 (below) summarizes the i2i 5G Core at a glance: the 3GPP-compliant network functions in the Control and User Planes, the supported platforms (bare-metal, VNF, and CNF running on Kubernetes or Red Hat OpenShift), and the four core value propositions — Future-Ready, High Performance, Operational Efficiency, and Secure & Reliable.

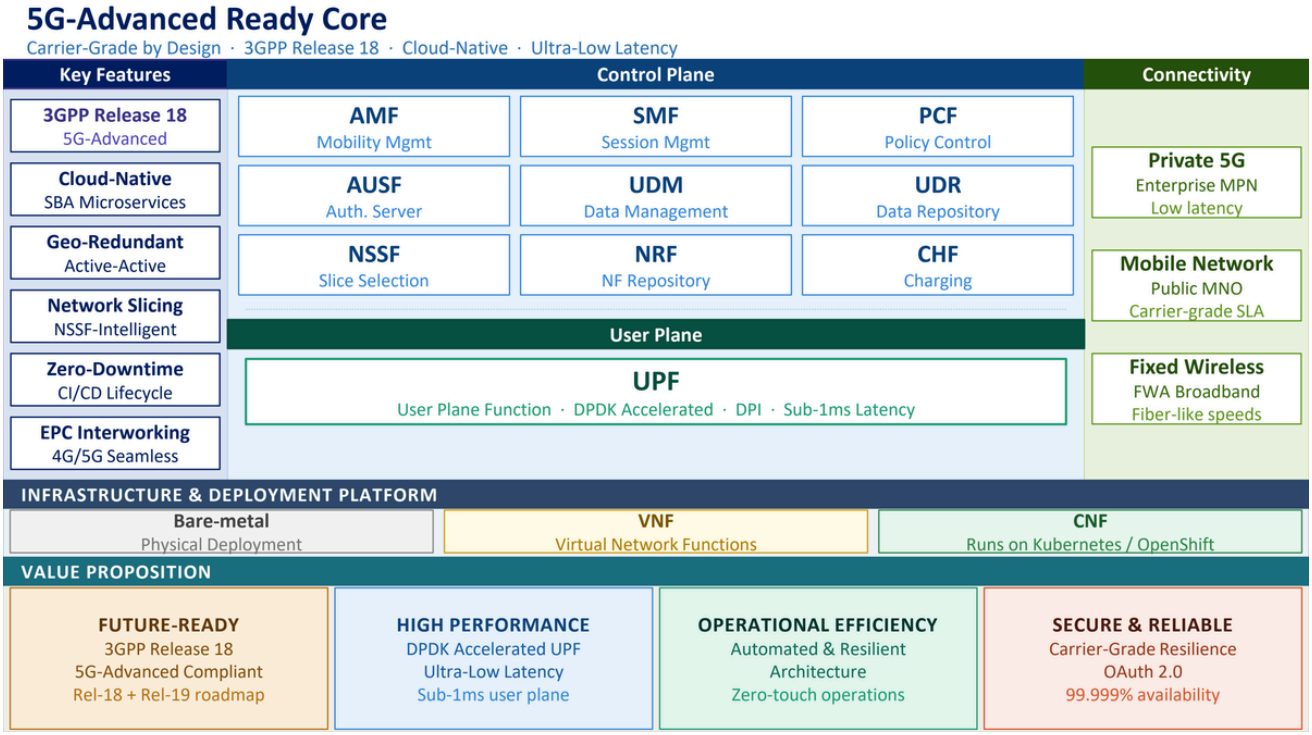

Figure 1: i2i 5G Core — 5G-Advanced Ready Core Overview

Deployment Models

i2i 5G Core supports multiple commercial scenarios:

5G Mobile Public Network

Carrier-grade 5G connectivity for MNOs, delivered over a nationwide public network infrastructure. Designed for tens of millions of subscribers with geo-redundant active-active architecture and carrier-grade SLAs.

5G Mobile Private Network (MPN)

A dedicated 5G network tailored for enterprise environments, ensuring enhanced security, performance, and operational control. Ideal for manufacturing, logistics, and critical infrastructure requiring isolated data planes and sub-10ms latency.

5G Fixed Wireless Access (FWA)

High-speed broadband delivered wirelessly to homes and businesses, providing fiber-like performance without the need for wired infrastructure. Accelerates broadband rollout in underserved areas with rapid site activation and scalable subscriber management.

Architecture & Design Principles

i2i 5G Core is built around modern cloud-native telecom engineering principles spanning cloud-native architecture, scalability, security, and operational resilience:

- 3GPP Release 18 compliant
- Service-Based Architecture
- Stateless microservices architecture
- Bare-metal, VNF, and CNF deployment support
- Hybrid cloud (Private / Public) readiness
- High availability (intra-site and inter-site)
- Active-Active geo-redundant architecture
- State decoupling with real-time data replication
- Automated CI/CD lifecycle management
- Zero-downtime upgrades
- Horizontal scalability with real-time state decoupling
- Unified data management architecture
- Integrated observability & performance monitoring
- Reliable & secure connectivity

Figure 2 (below) illustrates the end-to-end cloud-native architecture of the i2i 5G Core: the Control Plane NFs (AMF, SMF, PCF, AUSF, UDM, UDR, NRF, NSSF, CHF) and the User Plane (UPF) deployed on Kubernetes and Red Hat OpenShift. The solution includes a dedicated O&M Center — the core network's own management system with web-based user interfaces — covering Subscriber Provisioning, Configuration, Performance, Fault and Log Management. Additional layers include a Security module (IAM, SSO, RBAC), session and subscriber databases, a CI/CD toolchain (Git, Jenkins, Helm, SonarQube, Podman), and a full observability stack (Prometheus, Grafana, Elasticsearch, OpenTelemetry, Istio).

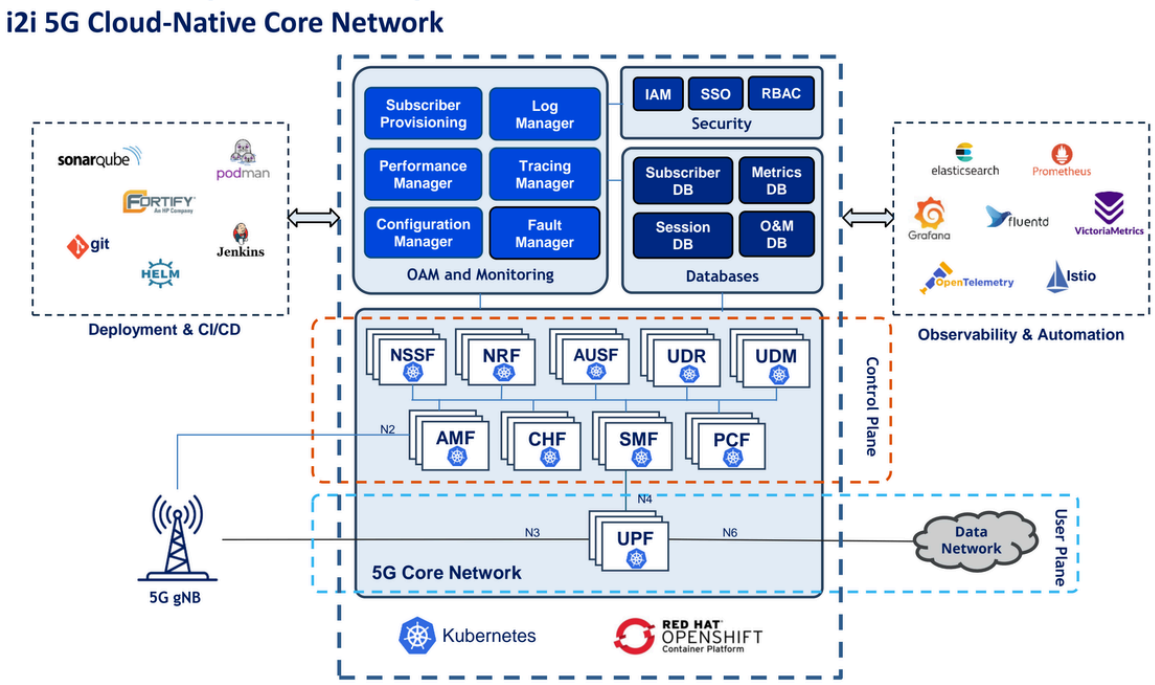

Figure 2: i2i 5G Core — Cloud-Native Deployment Architecture

5G Core Network Functions (CNFs)

i2i 5G Core includes all mandatory 5G SA network functions:

- Access and Mobility Management Function (AMF)
- Session Management Function (SMF)
- User Plane Function (UPF)
- Policy Control Function (PCF)
- Authentication Server Function (AUSF)
- Unified Data Management (UDM)
- Unified Data Repository (UDR)
- Network Slice Selection Function (NSSF)
- Network Repository Function (NRF)
- Charging Function (CHF)

All functions are fully SBA-compliant and interoperable with multi-vendor RAN and ecosystem components.

Key 5G Core Capabilities

The i2i 5G Core puts the full power of 5G in the hands of MNOs and enterprises, with a complete set of 3GPP-defined capabilities across every domain of the network. It keeps subscribers seamlessly connected through mobility and access management, handover and roaming, while intelligent session and policy control delivers every service with precision, and monetizes it with ease. Rich user services such as emergency and location services are reinforced by enterprise-grade security and 5G network slicing, while built-in integration with existing networks and regulatory environments makes the i2i 5G Core a complete, standards-compliant core that's ready for any deployment scenario. Figure 3 (below) provides a comprehensive view of the i2i 5G Core's capabilities across mobility management, session control, security, network slicing, and interworking.

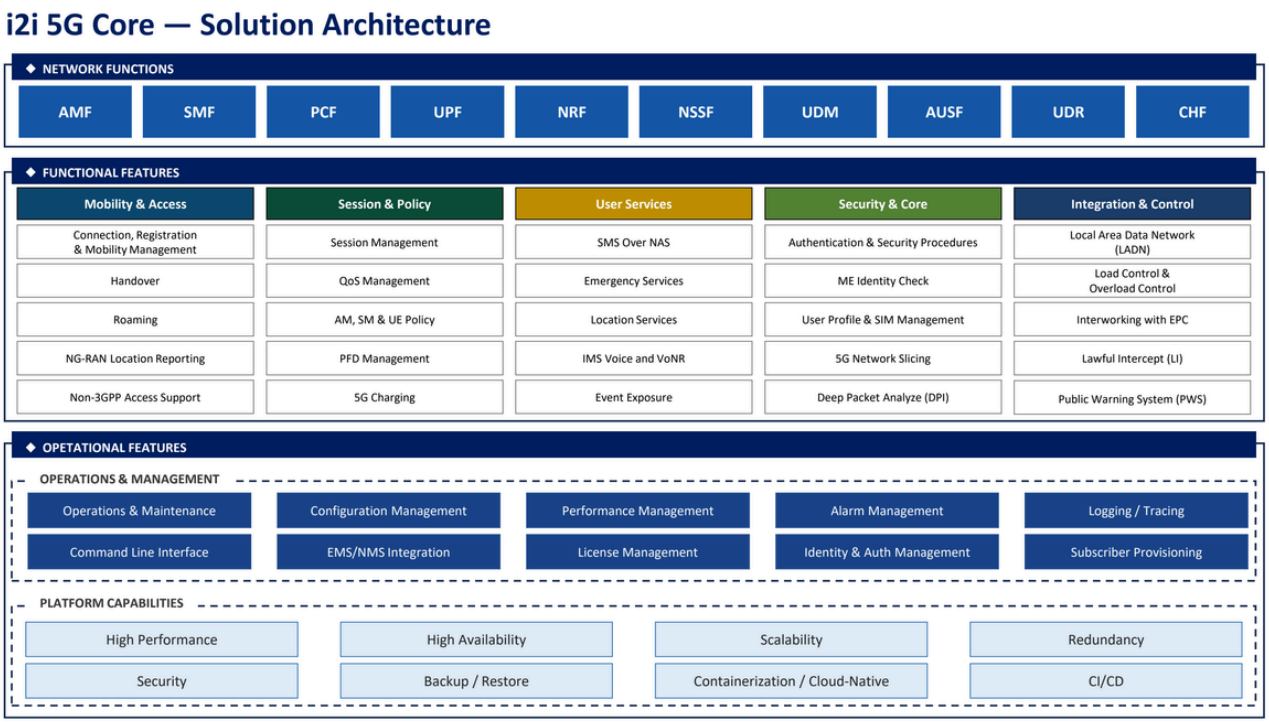

Figure 3: i2i 5G Core Capability Map

Technology & Performance

The i2i 5G Core is engineered to meet IMT-2020 performance targets. NFs (Network Functions) can be deployed on containerized or virtualized infrastructure using a distributed, redundant, and stateless architecture.

Scalability: By utilizing NF Sets, individual and functionally self-sufficient NF instances can be distributed across different locations. New instances can be added or removed seamlessly because the NFs are "stateless," storing all session information in a separate, centralized cluster.

The architecture supports intra-site and inter-site high availability with distributed deployment models and real-time subscriber/session synchronization.

Optimization:

- **Latency:** To achieve ITU IMT-2020 objectives, the system uses in-memory databases, caching mechanisms, and asynchronous, non-blocking messaging.
- **Protocol Efficiency:** Control plane NFs use HTTP/2 to reduce latency and increase scalability.
- **User Plane Acceleration:** The UPF utilizes the DPDK library to bypass OS kernel networking routines, significantly reducing latency. It also incorporates Deep Packet Inspection (DPI) capabilities, enabling traffic classification, application detection, and policy enforcement at line rate — essential for QoS management, fair-usage policies, and lawful interception.

The i2i 5G Core provides performance metrics, logs, alarms, and statistics via periodic or on-demand counters. Besides its owned management system, it also integrates with the CNCF observability stack for KPI measurement, performance monitoring and fault management.

The architecture enables linear scalability and deterministic latency performance across distributed data center environments. Figure 4 (below) summarizes the key technology and performance pillars underpinning the i2i 5G Core's architecture.

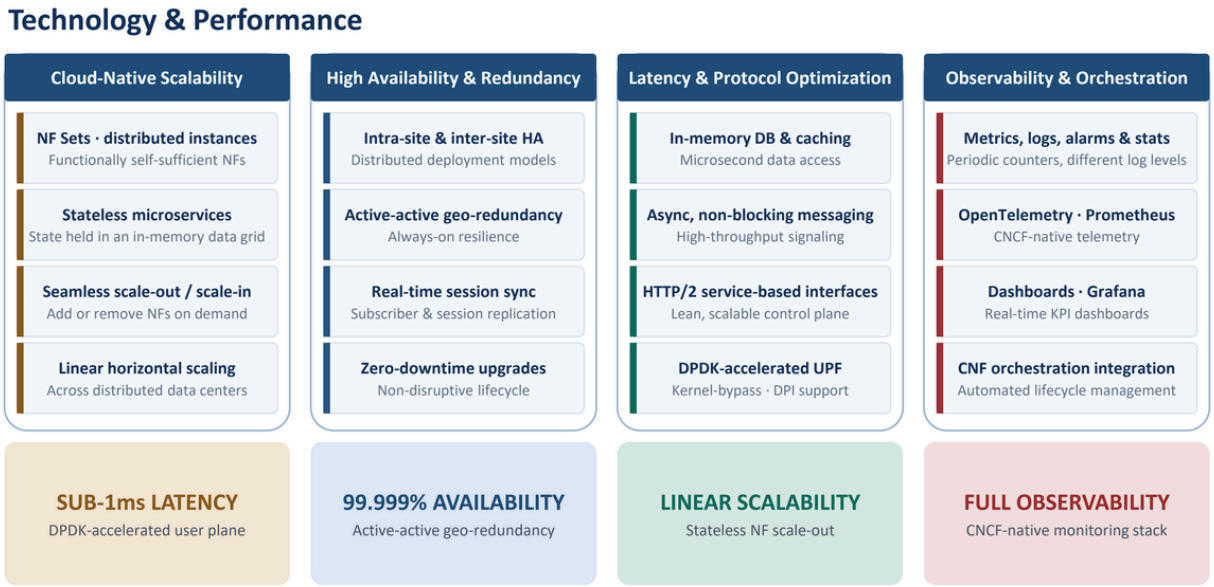

Figure 4: Technology & Performance Pillars

AI-Driven Operational Intelligence

i2i Systems integrates AI-powered automation capabilities leveraging carrier-grade platforms such as Red Hat OpenShift AI to enable:

- Intelligent capacity forecasting
- Adaptive resource allocation
- Automated anomaly detection
- Predictive fault management
- Accelerated service rollout

This enhances operational efficiency while reducing OPEX and time-to-market.

For example: predictive capacity management monitors live traffic patterns and pre-provisions resources before demand peaks, eliminating manual scaling and avoiding congestion events. Automated anomaly detection identifies and isolates faults within seconds, reducing mean time to repair (MTTR) and protecting SLA commitments.

Why i2i 5G Core?

The i2i 5G Core combines 3GPP Release 18 standards compliance with real-world deployment readiness. Unlike generic platform solutions, it is purpose-engineered for telecom-grade workloads: stateless microservices ensure linear scalability without re-architecture, active-active geo-redundancy eliminates single points of failure, and zero-downtime upgrade pipelines protect revenue-generating services during maintenance windows. The result is a core network that MNOs and enterprises can deploy faster, scale with confidence, and operate at lower total cost.

Get Started

To learn more about the i2i 5G Core, please contact the i2i Systems team:

Website: www.i2i-systems.com
E-mail: info@i2i-systems.com

i2i Systems

Red Hat

Empowering the 5G Era: i2i Systems Drives Innovation and Efficiency with Red Hat OpenShift AI

i2i Systems' 5G Core Network provides increased productivity and operational efficiency through Red Hat OpenShift AI, which enables intelligent automation, real-time analytics, and adaptive resource management. AI is poised to accelerate the delivery of innovative new experiences while significantly improving business processes and resource utilization, empowering i2i Systems to thrive in the 5G era.

www.i2i-systems.com

Head Quarter Office

Yıldız Teknik Üniversitesi Davutpaşa Kampüsü Teknoloji Geliştirme Bölgesi D-2 Blok K:1 No:Z-08 Esenler, İstanbul, Türkiye

+90 212 285 48 44

Get Directons

YTÜ Teknopark R&D Center

Yıldız Teknik Üniversitesi Davutpaşa Kampüsü Teknoloji Geliştirme Bölgesi D-2 Blok K:1 No:Z-08 Esenler, İstanbul, Türkiye

+90 212 285 48 44

Get Directons

Teknopark Istanbul R&D Center

Sanayi Mah. Teknopark Bulvarı, Teknopark Istanbul C1 Blok 9. Kat No:1901-1902 Kurtköy, Pendik, İstanbul, Türkiye

+90 212 285 48 44

Get Directons

info@i2i-systems.com

www.i2i-systems.com

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