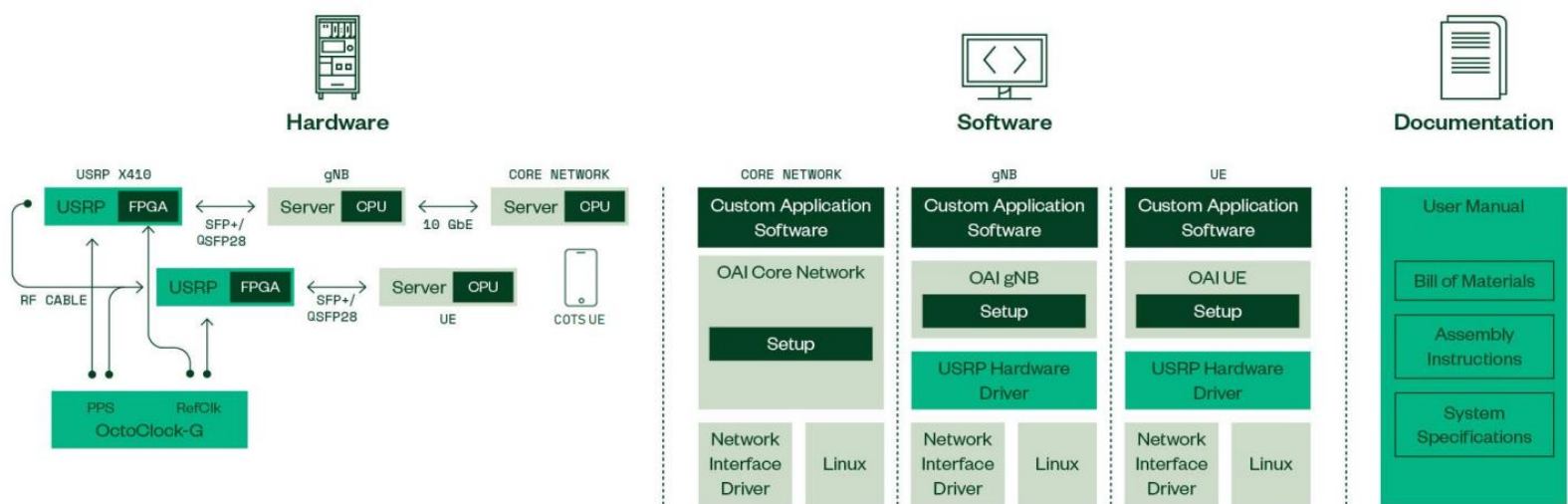


OAI Reference Architecture

End-to-end testbed with OAI and USRP X410 for 5G/6G

System Overview



The OAI Reference Architecture for 5G and 6G Research with the USRP is NI's blueprint for a system that meets key requirements of a hardware testbed for prototyping 5G/6G technology. It uses the very popular OAI 5G-NR protocol stack including 5G core network and outlines exactly how to create this extremely complex system setup and correctly configure all the parameters. It connects to wireless modem module user equipment (UE), commercial off-the-shelf (COTS) handset UE, and USRP based software UE. Follow NI's recommended solution to build up a real-time communication system as quickly as possible.

Based on the standard hardware configuration and open-source software, this solution is ideal for rapidly transitioning wireless IP through its development lifecycle: from software simulation to proof-of-concept demonstration.

Solution Benefits

Rich, open-source reference code for core network, gNB, and UE available on GitHub based on the popular OAI 5G-NR protocol stack

Open architecture for real-time 5G end-to-end network to enable research and demonstration of 6G candidate technologies

Detailed documentation, NI-validated system configuration including third-party components to ensure stable performance

Key Features

- Connects to wireless modem module UE, COTS handset UE, and USRP based software UE.
- User applications like video streaming and connection to the internet are possible.
- Supports multiple bands in FR1, including n77 (3330-4200 MHz) and n78 (3300-3800 MHz).
- Support for dual 10 Gbps Ethernet connectivity.
- External clock distribution module (OctoClock-G) with GPSDO and can be used for 1 PPS and 10 MHz reference signals.
- Scalable to multi-channel MIMO (Please check with OAI for the latest supported features).
- Allows both over-the-air (OTA) and cabled operation.

OAI Reference Architecture Configuration Options

System PN	System Name	Description
868063-01	USRP X410 OAI BUNDLE FOR 5G AND 6G RESEARCH Base	ETTUS USRP X410 (4 TX AND 4 RX, 400MHZ BW, 1 MHZ TO 7.2 GHZ SDR, GPSDO)
		OAI Welcome Card
868063-02	USRP X410 OAI BUNDLE FOR 5G AND 6G RESEARCH Standard	ETTUS USRP X410 (4 TX AND 4 RX, 400MHZ BW, 1 MHZ TO 7.2 GHZ SDR, GPSDO)
		Dual 100 Gigabit Ethernet PCIe Interface Kit for Ettus USRP X4xx
		VERT2450 VERTICAL ANTENNA (2.4-2.5 AND 4.9-5.9 GHZ) DUALBAND
		CABLE ASSY, SMA TO SMA, COAX, RG-402, 50 OHM, 1 METER
		PACKAGING BOM, CONTAINER 70 X 52 X 60 CM W/ PADPAK58-04
OAI Welcome Card		
868063-03	USRP N310 OAI BUNDLE FOR 5G AND 6G RESEARCH Base	USRP N310 (ZYNQ-7100, 4 CHANNELS, 10 MHZ - 6 GHZ, 10 GIGE) - ETTUS RESEARCH
		OAI Welcome Card
868063-04	USRP N310 OAI BUNDLE FOR 5G AND 6G RESEARCH Standard	USRP N310 (ZYNQ-7100, 4 CHANNELS, 10 MHZ - 6 GHZ, 10 GIGE) - ETTUS RESEARCH
		10 GIGABIT SFP+ ETHERNET CABLE, 3 M - ETTUS RESEARCH
		VERT2450 VERTICAL ANTENNA (2.4-2.5 AND 4.9-5.9 GHZ) DUALBAND
		SMA Male to SMA Male Cable, 50 Ohm, 1 m
		OAI Welcome Card
868063-05	USRP N321 OAI BUNDLE FOR 5G AND 6G RESEARCH Base	USRP N321 (NON-TPM, 2 TX/RX CHANNELS, 200 MHZ BW, W/LO DISTRIBUTION) - ETTUS RESEARCH
		OAI Welcome Card
868063-06	USRP N320 OAI BUNDLE FOR 5G AND 6G RESEARCH Base	USRP N320 (NON-TPM, 2 TX/RX CHANNELS, 200 MHZ BW) - ETTUS RESEARCH
		OAI Welcome Card

More Information

Brochure
:



Page Link: ni.com/en/solutions/electronics/5g-6g-wireless-research-prototyping/research-6g-technologies-using-openairinterface-software.html

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