Q&A
Sustainable Cities & Communities: Scaling IoT Webinar (July 2020)

1. How do you see NB-IoT technology supplementing LoRaWAN? - Dano Jose, Enzen

IoT is a way of deploying technology which is best suited to the use case application. It has been stated by the LoRa Alliance that approximately 75% of use cases for IoT can be achieved using LoRaWAN as a primary technology. NB-IoT will be best suited to about 40% over all and therefore there is an overlap between the two technologies. We see that overall the right technology should be selected for the right use case. LoRaWAN is best suited for applications which require low bandwidth and where users want to take advantage of the cost benefit of LoRaWAN. NB-IoT is best suited for mains powered and high bandwidth solutions.

NNNCo has built a solution in N2N-DL which is a data platform that aggregates the data from multiple network technology solutions. This further facilitates the potential for NB-IoT and LoRaWAN to be complementary.

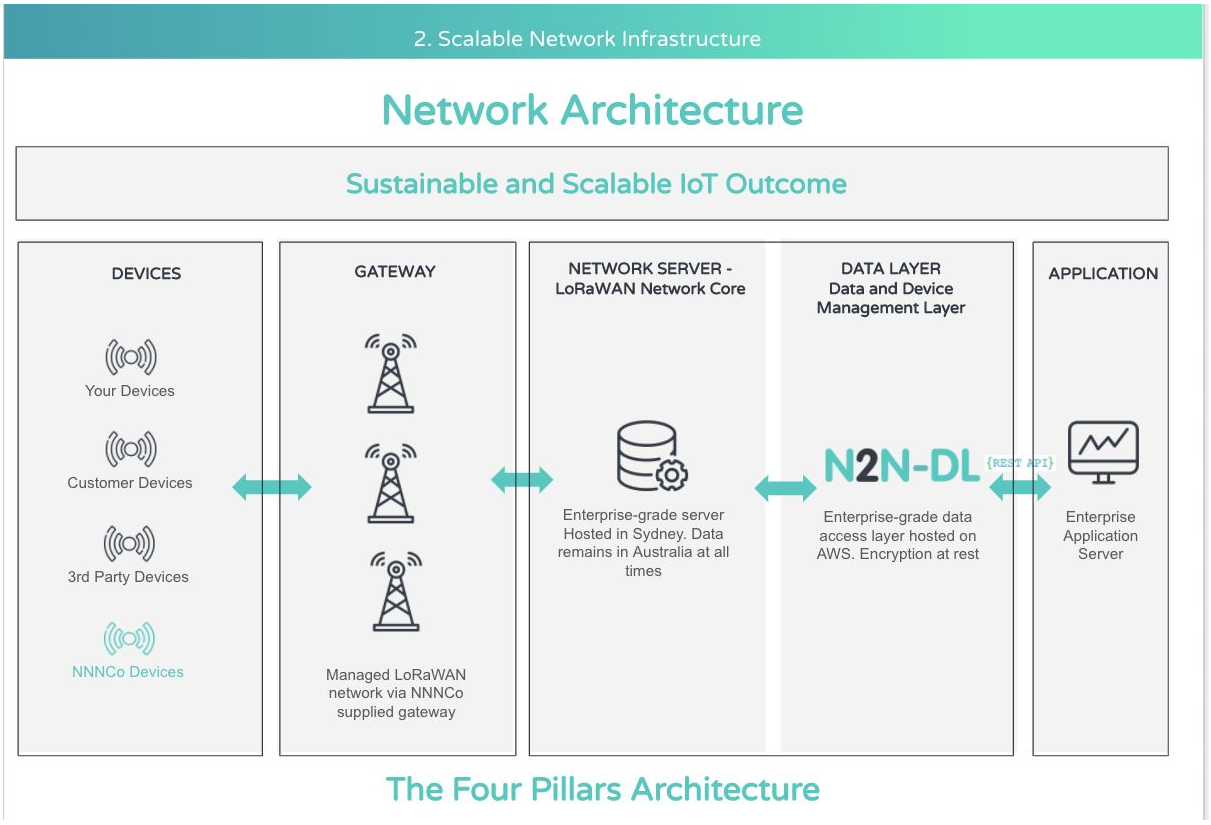
2. Is packet broking now available? E.g. if I'm using an NNNCo network, and there are other LoRaWAN networks that are seeing the packets I want, can they be brokered from the other network to the NNNCo network? - Rian Sullings, City West Water

Packet brokering / roaming between networks can be done at multiple locations within the technology stack. If we consider the LoRaWAN application stack and what I refer to as the four pillars architecture (see diagram below) you will notice there are a couple of locations we can complete an aggregation of data from various networks.

The NNNCo network is capable of integrating data and roaming from multiple network servers and via appropriate roaming arrangement both technically and commercially. In all LoRaWAN low value networks the delivery of data will happen at the egress of the network server. In the case of the NNNCo network, data delivery occurs at the value point which is at the egress of N2N-DL data platform. This means that customers who are provided their data from N2N-DL will get the advantage of network management and device and data management.

- Self Enrolment
- Self Decode
- Network Management
- Access to the NNNCo secure installation and commissioning application.
- Group management.
- Secure access
- access from any device from any network.

In this way we can take the feed from a LoRaWAN network server other than NNNCo's and take the payload data directly into the ingress of N2N-DL. Apply all the benefits of N2N-DL and then deliver a harmonised and normalised data model to our customers.



3. What has been your approach re running IoT and SCADA in parallel? Do you see there always being need for two distinct systems or eventually a hybrid single system? - Adrian Flather, City West Water, Intelligent Networks & Assets Team Leader

LoRaWAN and SCADA are completely complementary in nature. SCADA is typically expensive to deploy and maintain but is used in a private network and mission critical applications. LoRaWAN however provides a communications network for the delivery of low-cost low-bandwidth use cases which would typically not fit into a SCADA network. For example, there is a myriad of sensing data which will not fit into the communications and integration model for SCADA solutions. LoRaWAN and IoT in general are perfectly suited to bringing data in from multiple sources including SCADA as an additional input and should be considered an overarching way for organisations to benefit from all that IoT and LoRaWAN can provide.

4. My question is regarding the use of IoT data after it's acquired, for example, the Bin Monitoring project. Does the data stop at a dashboard or does it integrate into another system to improve processes end-to-end? Also, is the data published into a repository for partners or even the public to consume? - Mike Musskopf, Solution Engineer, Wisen

To answer this question it is important to understand where data comes from, who owns this data and how this data is shared securely and utilised. The organisation that owns the sensor which creates the data owns the rights to that data and as such data should only be shared in accordance with the data owner.

Having said that, NNNCo's data platform N2N-DL has the capability to securely share data in a multi-tenanted, multi-tiered environment via a standardised data model and REST API. Owners of data can share data from N2N-DL to anyone they provide access to via a groups-based and multiple end point allocation.

For example a bin monitoring solution has waste management experts who have engaged to work out the value proposition in that field ie: vertically integrated solutions providers (VISP). The data which is fed to the VISP application can simultaneously be shared, with permission, to multiple end points from N2N-DL without reducing or interfering with the value brought by the VISP. In addition, the data from multiple sensors can be shared into a horizontally focused application which can be used for a wide range of data analysis.

5. What are the main differences between LoRaWAN and Sigfox, and why should we choose LoRaWAN over Sigfox? - Carlos Granados, Sice

LoRaWAN - up to 50Kbps, Bi-directional, non-proprietary open ecosystem of devices.
Sigfox - up to 12kbps, almost entirely one-directional, proprietary closed ecosystem of devices.

Feature	LoRaWAN	Narrow-Band (eg: Sigfox)	NB-IoT	3G/4G
Cost	Low	Low	Moderate	High
Max. packet size	242 bytes[1]	12 bytes	Flexible	Flexible
Max # msgs/day	Unlimited	Uplink: 140 msgs/day	Unlimited	Unlimited
Max Data Rate (kbps)	27	0.3	200	300
Deployment	Macro, micro, pico gateways (provides ubiquitous coverage)	Macro-based	Macro-based	Macro-based
Battery Life	High	High	Low	Low
Frequency	AS923 MHz	900 MHz	700-2000 MHz	Multiple Bands
Default Spectrum	ISM[2]	ISM	Licensed	Licensed
Resistance to Interference	Very High	Low	Medium	Low
Gateway Mode (Bi-Directional Traffic)	Full or Half Duplex	Half Duplex	Half Duplex	Full or Half Duplex
Standardisation	LoRa Alliance Global Standard	Single Source Network Proprietary	3GPP	3GPP
Network Topology	Star	Mesh	Star	Star

1. Max payload of 242 bytes at SF7; smallest possible payload of 11 bytes at SF10. 2. Reserved internationally for the use of radio frequency energy for industrial, scientific, and medical purposes (ISM)