



The Things Network Stack V3

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The Things Network on YouTube

ANNOUNCING THE THINGS NETWORK STACK V3

- Supports LoRaWAN versions: 1.1, 1.0.2 and 1.0
- Features Gateway Agent, Gateway Server, Network Server, Application Server, Join Server, Identity Server and Console
- Runs as single binary or as micro services in clusters
- Supports peering within The Things Network ecosystem
- Supports roaming and third party Join Servers within the LoRa Alliance ecosystem
- MVP release in March 2018, May 2018 for private networks and June 2018 for the public network
- All components are open source, MIT licensed



DEPLOYMENT SCENARIOS

Public networks

Public community network and operated public networks



Private networks

Software-as-a-service, on-premises, pico and offline networks

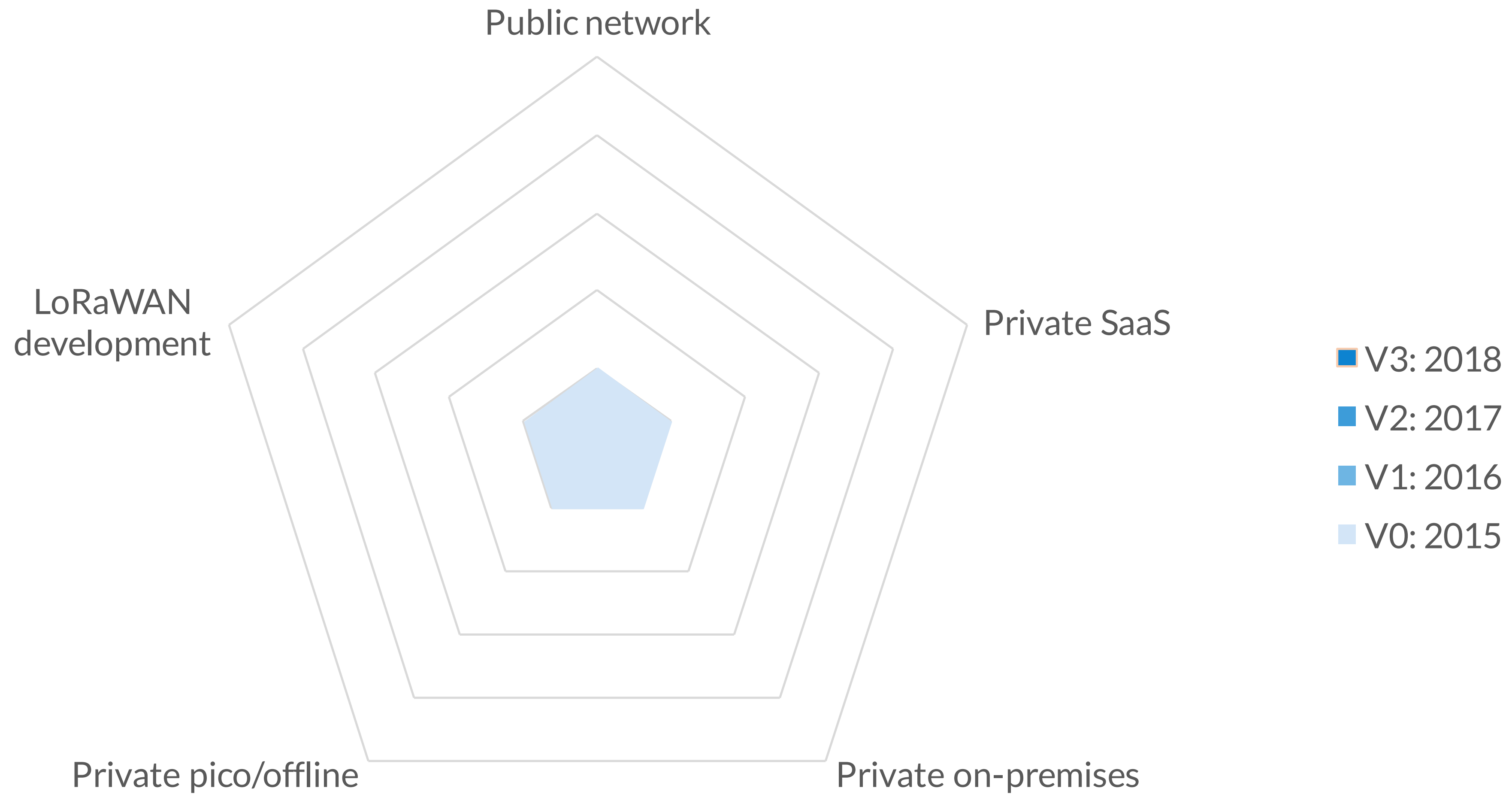


LoRaWAN development

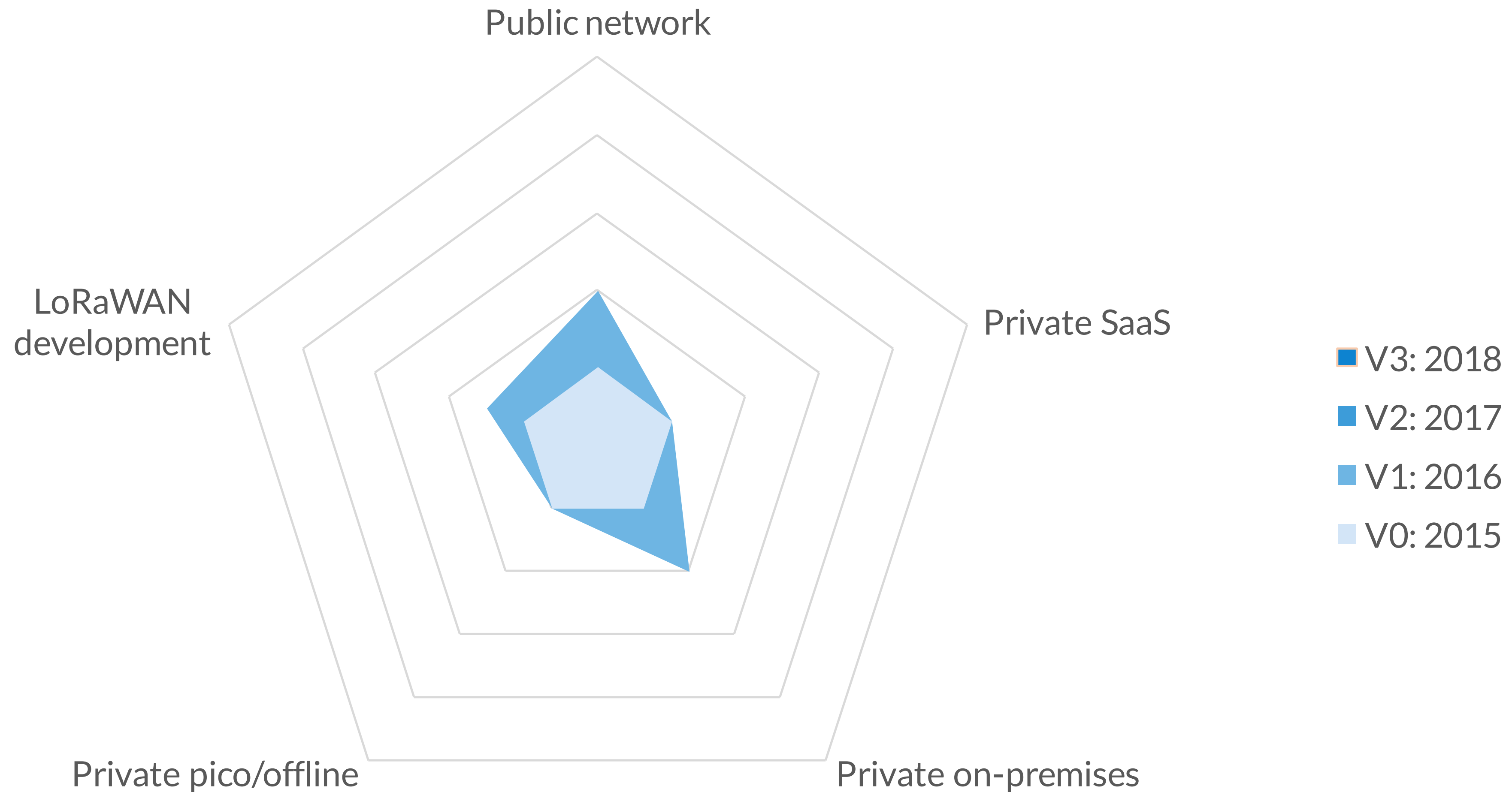
For device makers, application developers and prototype development



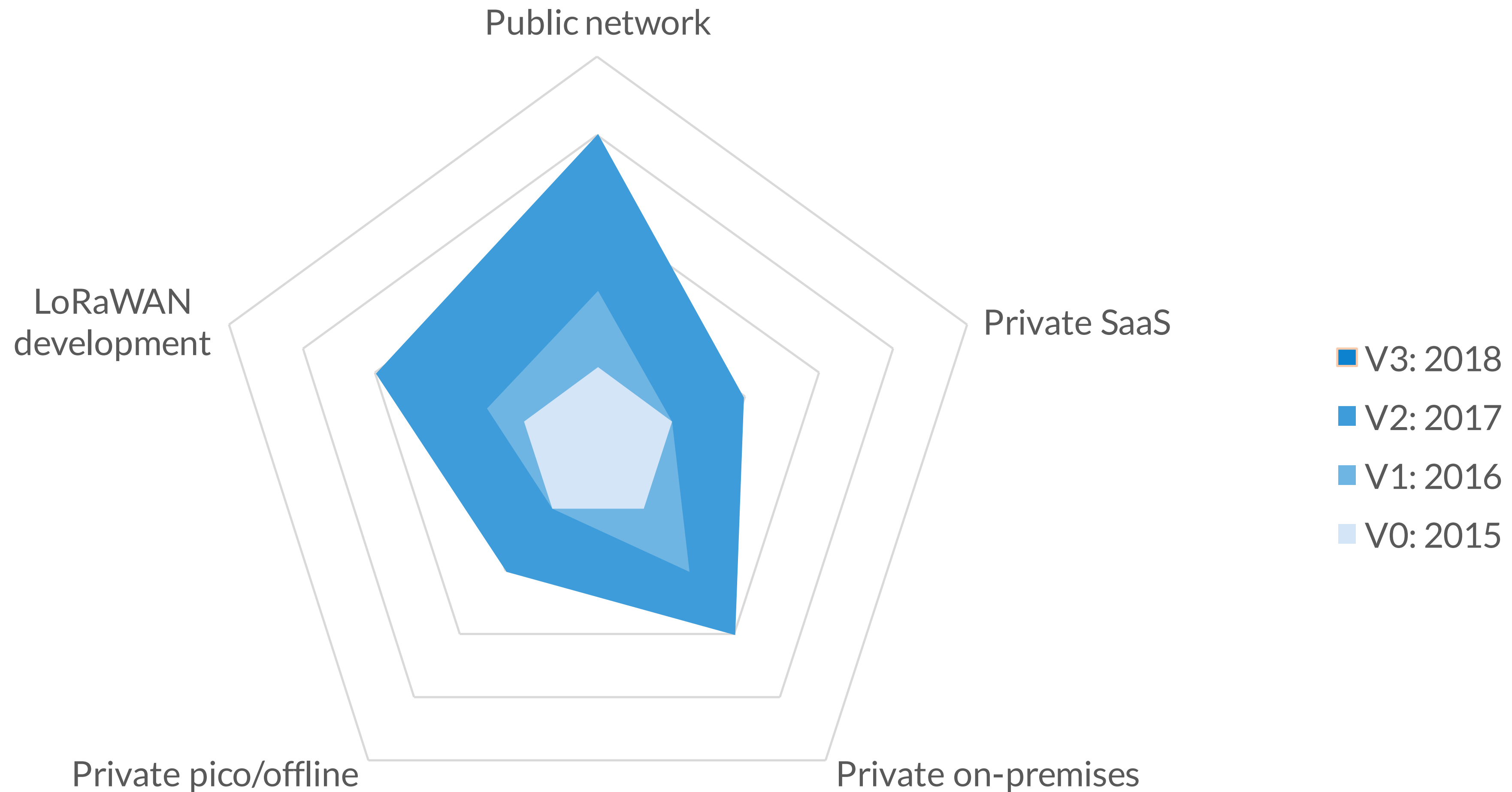
V0: BOOTSTRAPPING



V1: GOOD IDEA, BAD EXECUTION



V2: BETTER IDEA, STABLE AND FAST





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Get Tickets

In this guide we will get everything up and running on your local machine (on `localhost`). We will rely on the community account server of The Things Network (`account.thethingsnetwork.org`) so that you can use your TTN Account to manage devices in your local network. If you don't want your environment to use community accounts, you can implement your own account server that is compliant with the [Account Server API Specification](#).

Preparation

- Install and start [Redis](#).
- Install and start [RabbitMQ](#) and its [MQTT](#) plugin.
 - You should also create a `ttn.handler` exchange using the web interface or with `rabbitmqadmin declare exchange name=ttn.handler type=topic auto_delete=false durable=true`.
- Create a working directory. In this document we will use `~/ttn`. All commands are executed from this directory.
- Download `ttn` (`master` branch) [macOS](#), [64 bit Linux](#), [32 bit Linux](#) or [arm Linux](#).
- Download `lora-gateway-bridge` (`master` branch) for [macOS](#), [64 bit Linux](#), [32 bit Linux](#) or [arm Linux](#). We did not test this guide on Windows, but that might work too :)

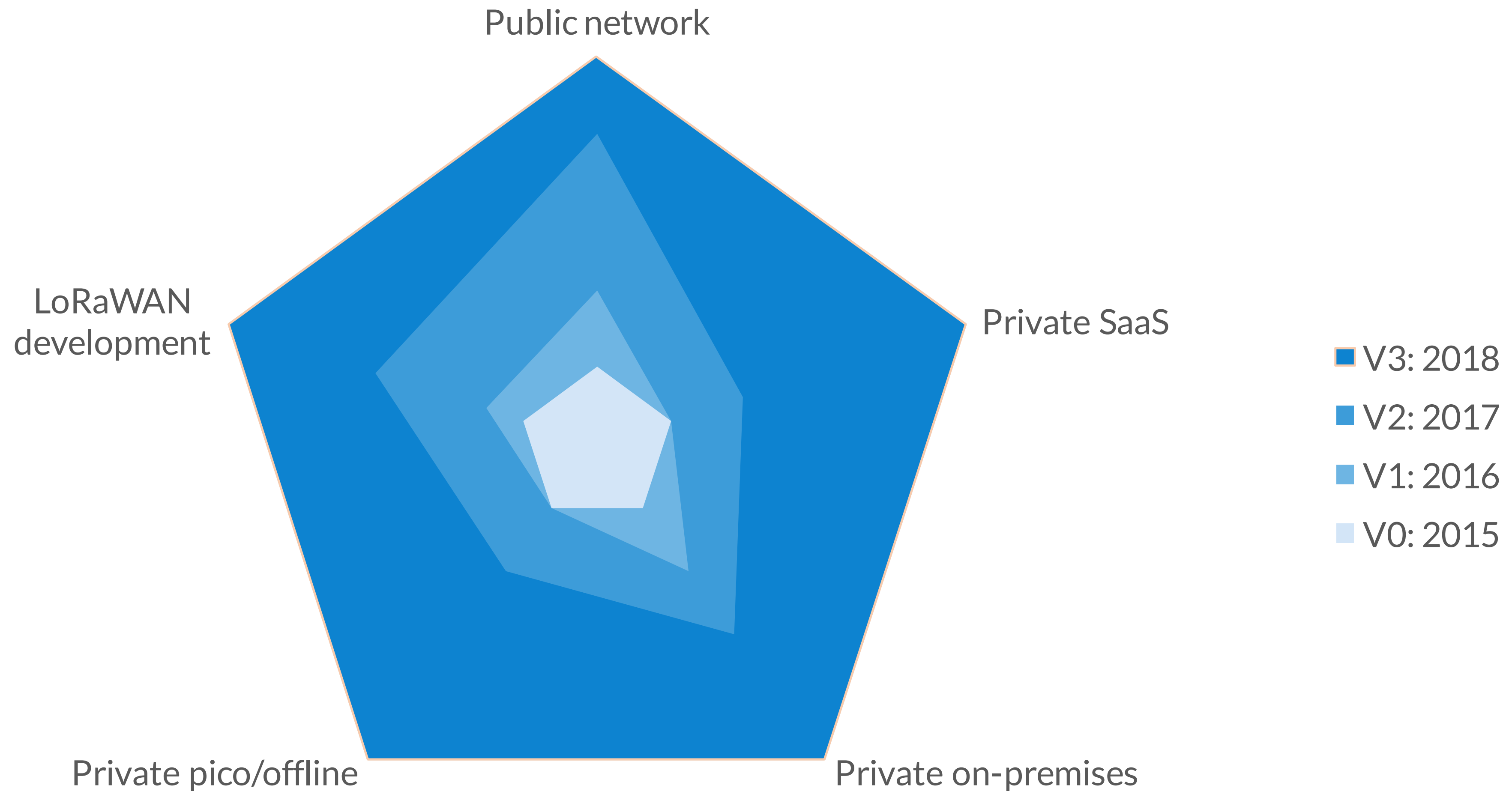
The Discovery Server

The configuration for the Discovery server will be stored in `~/ttn/discovery/ttn.yml` :

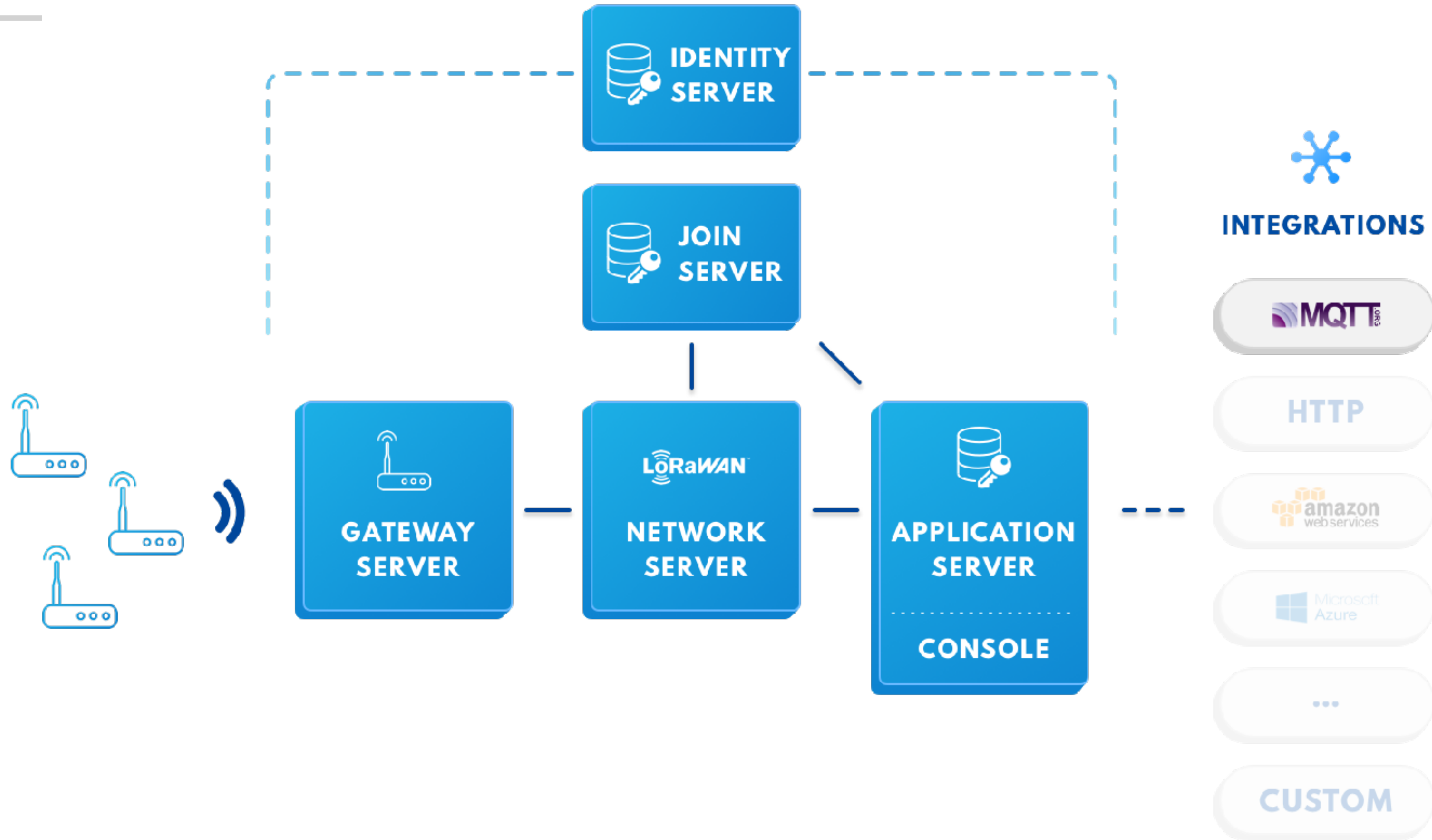
THE THINGS NETWORK STACK V3

The new stack for all LoRaWAN deployments

V3: ONE ALMIGHTY STACK



V3 BASE COMPONENTS



V3 GATEWAY AGENT AND SERVER

- Gateway Agent runs on any Linux based gateway
- Gateway Server replaces V2 Router
- Authenticated and encrypted connection
- The Agent works with a local packet forwarder
- Allows for remote configuration and updates
- Packages for popular gateway models
- Low bandwidth mode for cellular and satellite



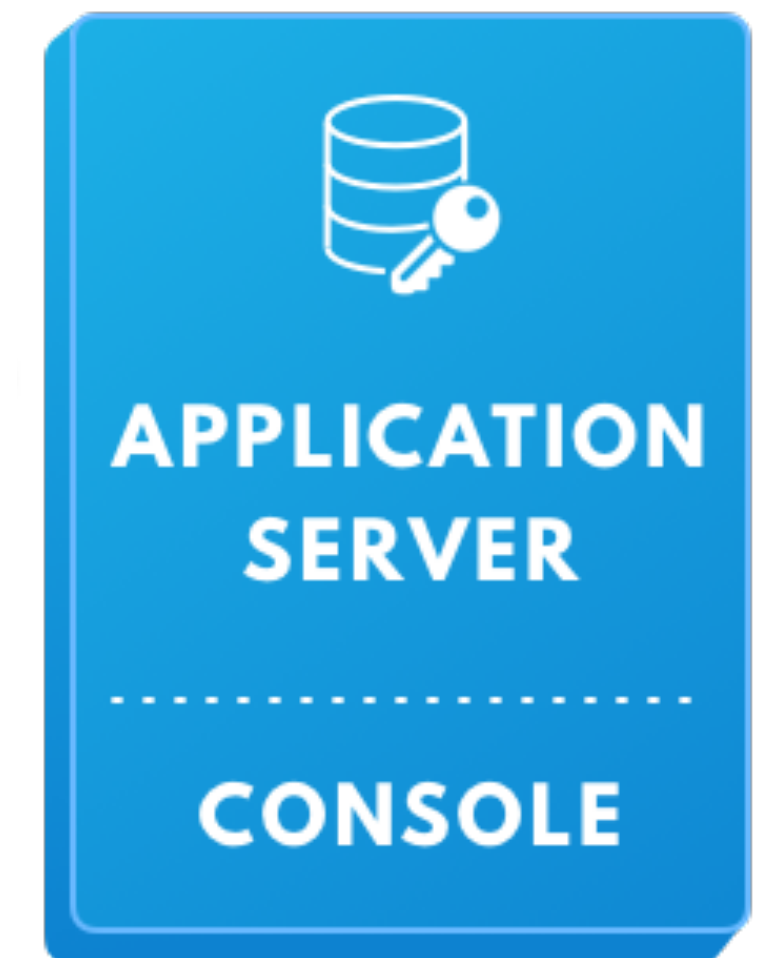
V3 NETWORK SERVER

- Replaces V2 Broker and Network Server components
- Handles LoRAWAN MAC layer: 1.1, 1.0.2 and 1.0
- Supports class A, B and C
- Keeps MAC state per device
 - LoRaWAN and Regional Parameters version
 - Radio settings, including RX1 timings, RX2 data rates, etc



V3 APPLICATION SERVER

- Replaces a big part of the V2 Handler
- Extended support for payload formats
 - Encoder and decoder JavaScript payload functions are there to stay
 - Adding an open source device repository on GitHub with payload functions for off-the-shelf devices
 - Set the payload format per device to allow for different models and versions
- Manage devices in groups
- Integrate third-party geo-localization services using LoRa TDOA/RSSI and WiFi scan and lookup



V3 INTEGRATIONS

- V3 features the popular MQTT and HTTP integrations
- More optional, zero effort, commercial integrations for leading IoT platforms
- Easier to build your own integration



INTEGRATIONS



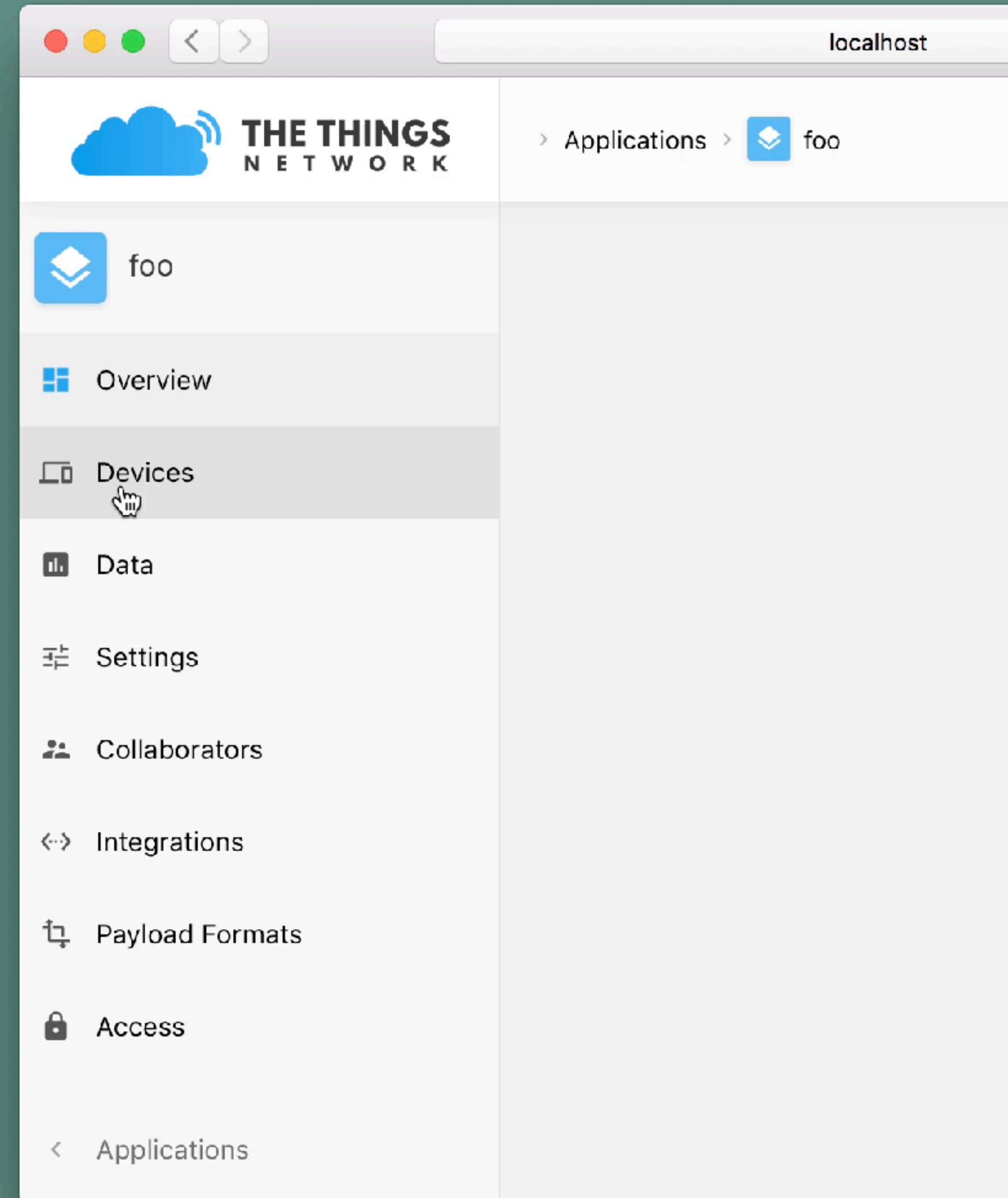
HTTP



CUSTOM

V3 CONSOLE

- Replaces closed source V2 Console
- V3 Console is open source
- Runs next to the Application Server for faster response times
- New look and improved navigation



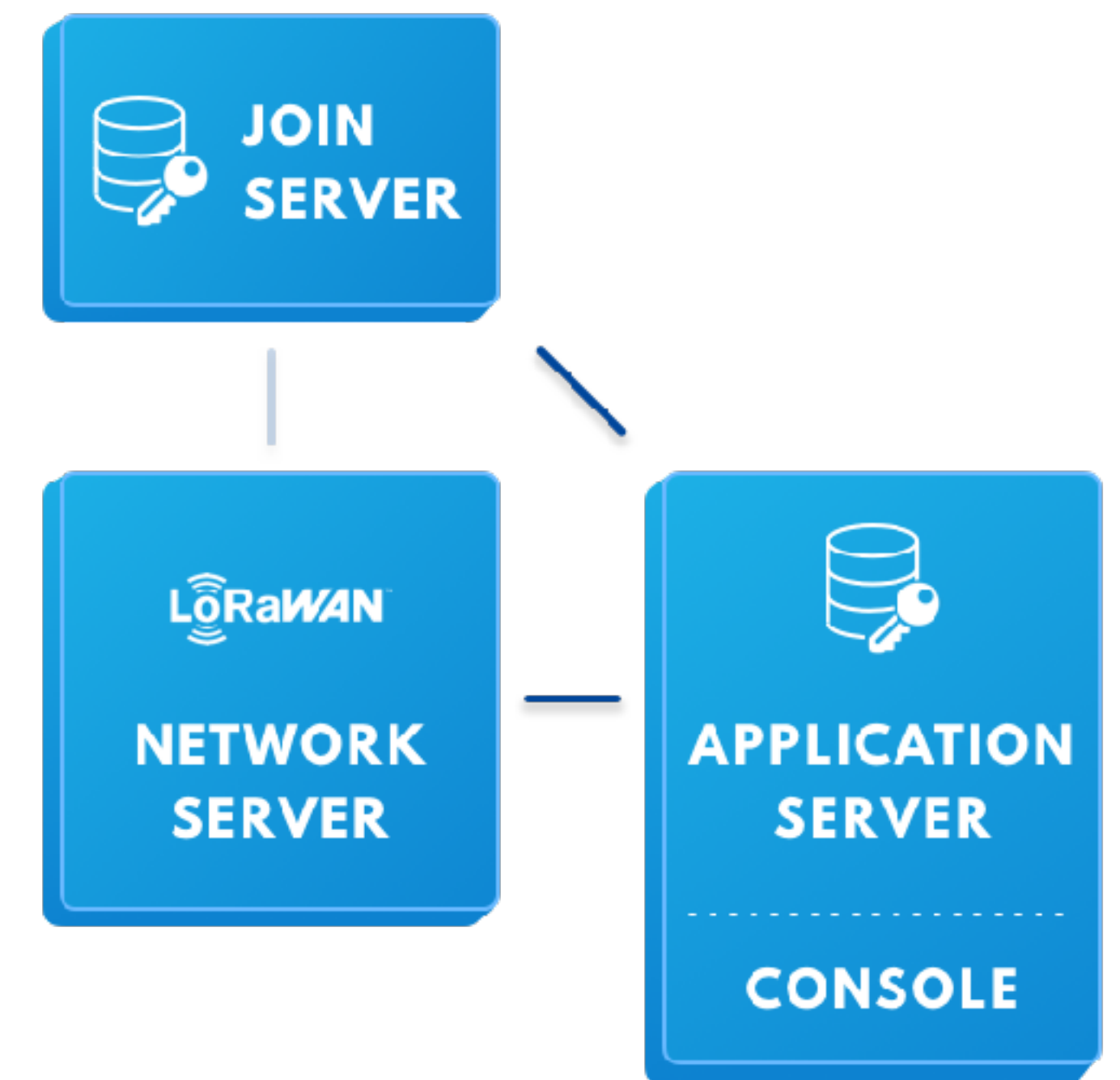
V3 IDENTITY SERVER

- Replaces closed source V2 Account Server
- V3 Identity Server is open source
- Issues security tokens
- Contains user, application and gateway registry
- Supports user organizations and inherited rights

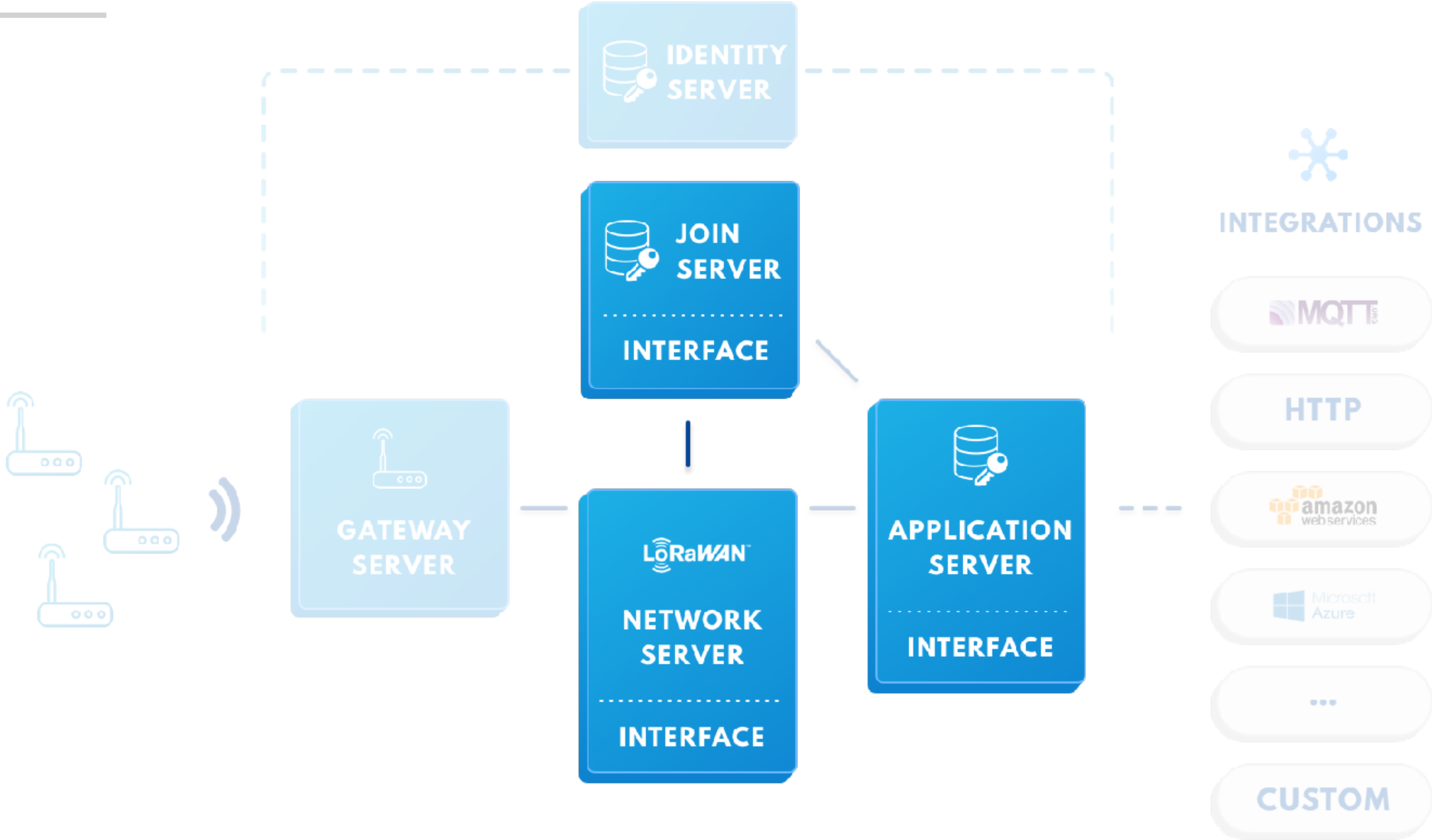


V3 JOIN SERVER AND SECURITY

- The Join Server replaces the V2 Handler join part
- Stores the LoRaWAN root keys and derives session keys
- You can deploy the Join Server inside or outside a V3 cluster, i.e. on-premises in a trusted domain
- Control your security keys in your Join Server while using any V3 deployment scenario
- Gives you the power to switch V3 clusters: public to private, private to public and private to private



V3 LORA ALLIANCE INTEROP



V3: FREE PUBLIC NETWORK

The Things Network Foundation

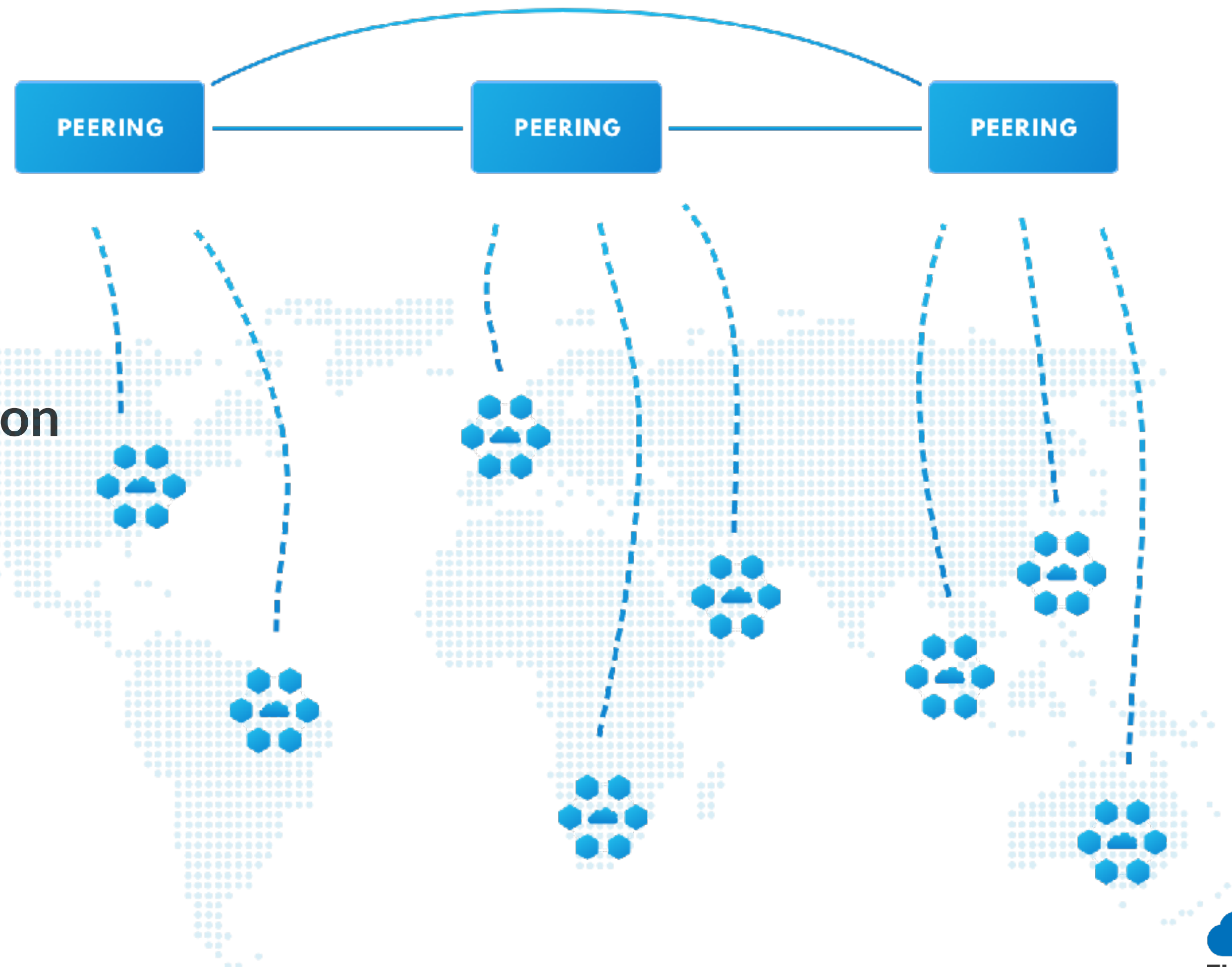


Open Network Infrastructure Association



In progress or RFP

Meshed

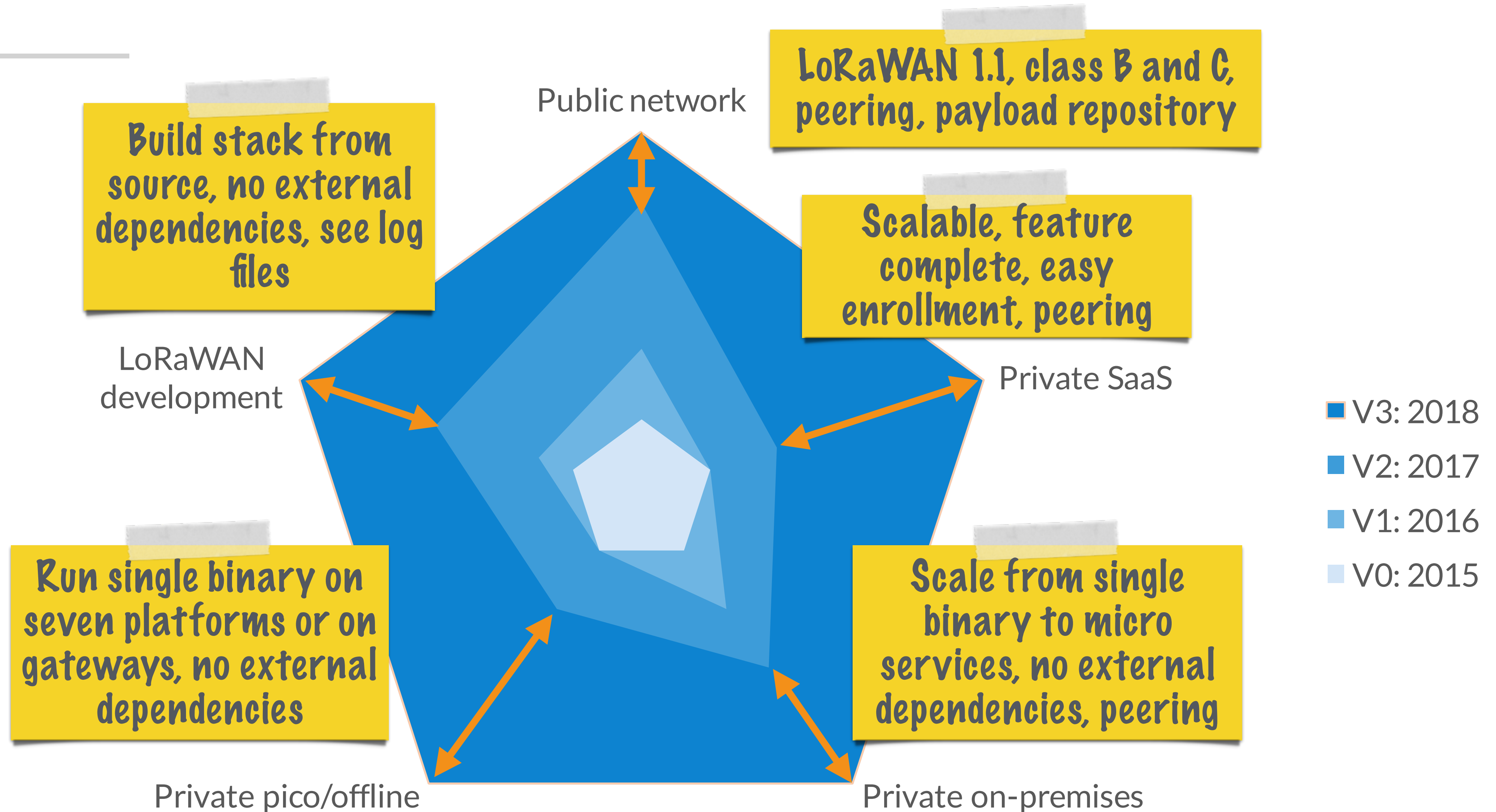


V3 PRIVATE NETWORKS

PEERING

- You can operate your own private cluster
- Private clusters can run fully independent
- Private clusters can also peer with the public community network for uplink and downlink traffic
- Use coverage and contribute coverage to the public network
- The Things Network Foundation charges a fee to cover costs for NetID usage and handling
- Private clusters with SLA are offered by The Things Industries and partners as-a-service and on-premises

V3: ONE ALMIGHTY STACK

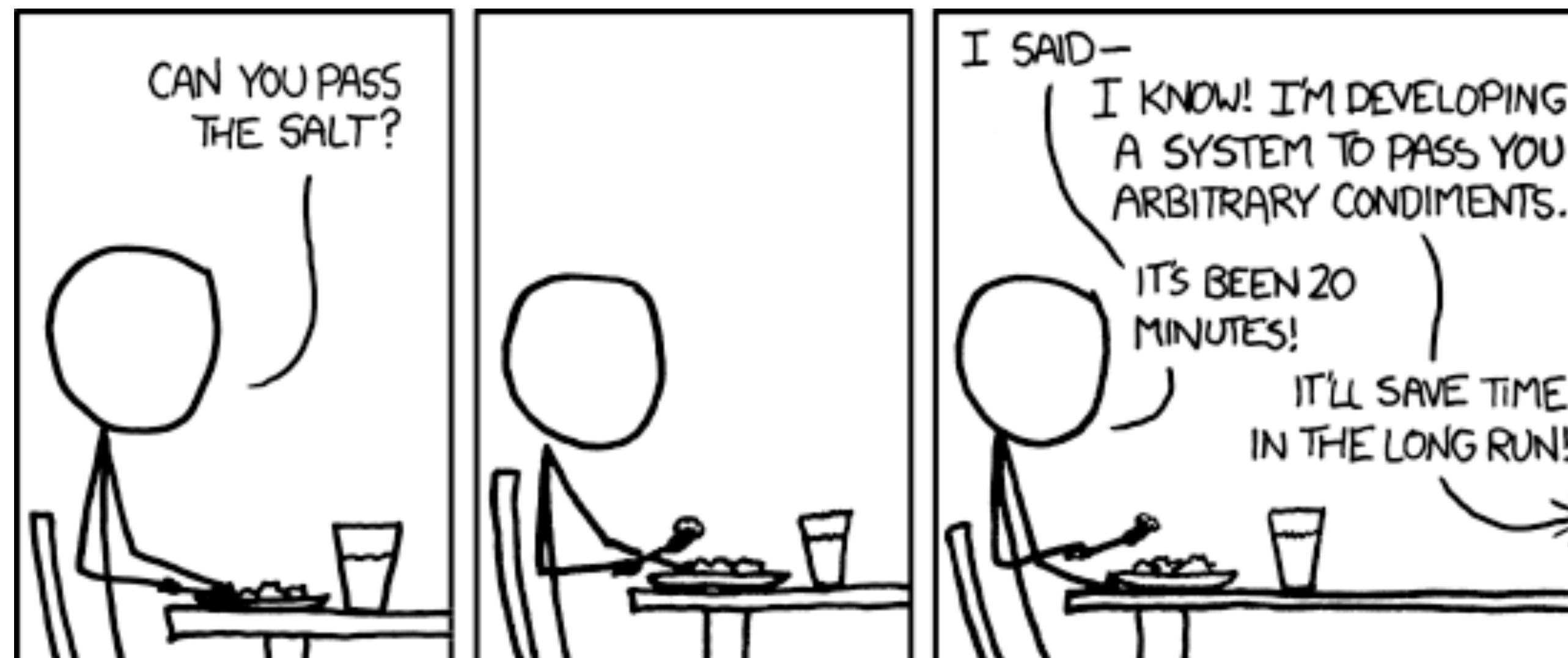


V3: WHEN?

March 2018: MVP + open on GitHub

May 2018: ready for private networks

June 2018: transition public network





QUESTIONS AND ANSWERS

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