

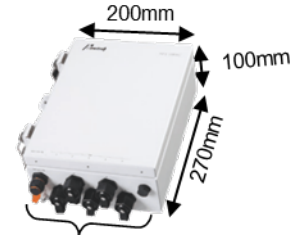
Resilient Network Platform and Rural IoT Platform

NerveNet

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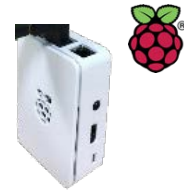
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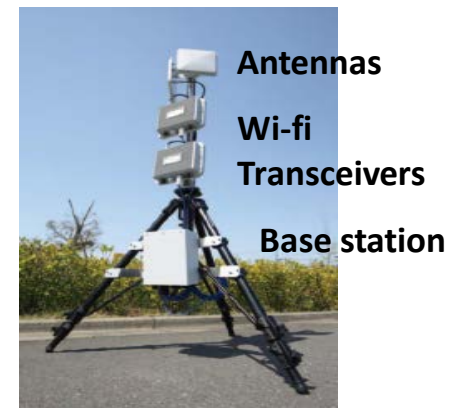


Ethernet (10/100/1000base-T PoE+)

NerveNet NPS-108AC
(HIRAKAWA HEWTECH)



Raspberry Pi 3
(RS Components)

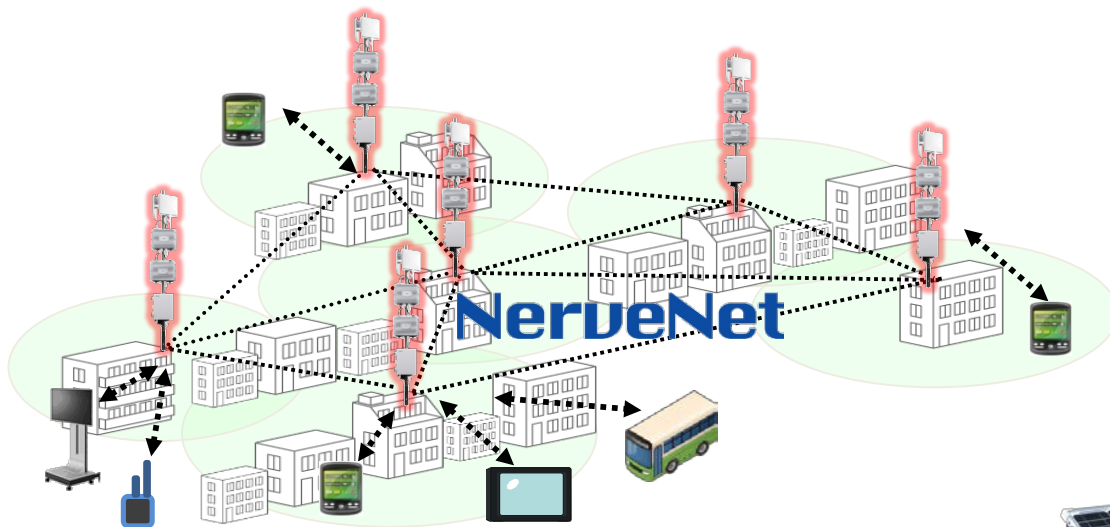


Antennas
Wi-fi
Transceivers
Base station

NerveNet is a solution for providing both daily and emergency info-com services to a local area in resilient and secure way.

System Overview

- In-network distributed “data processing” and “resilient communication” functions
- Enables resilient information sharing and communications including IoT devices
- Composed of base stations interconnected by Ethernet-based wired and wireless systems
- Forms line, star, tree, or mesh topology network



Commercially available



NerveNet Base Station

Power sources



+



or



or



Off Grid System

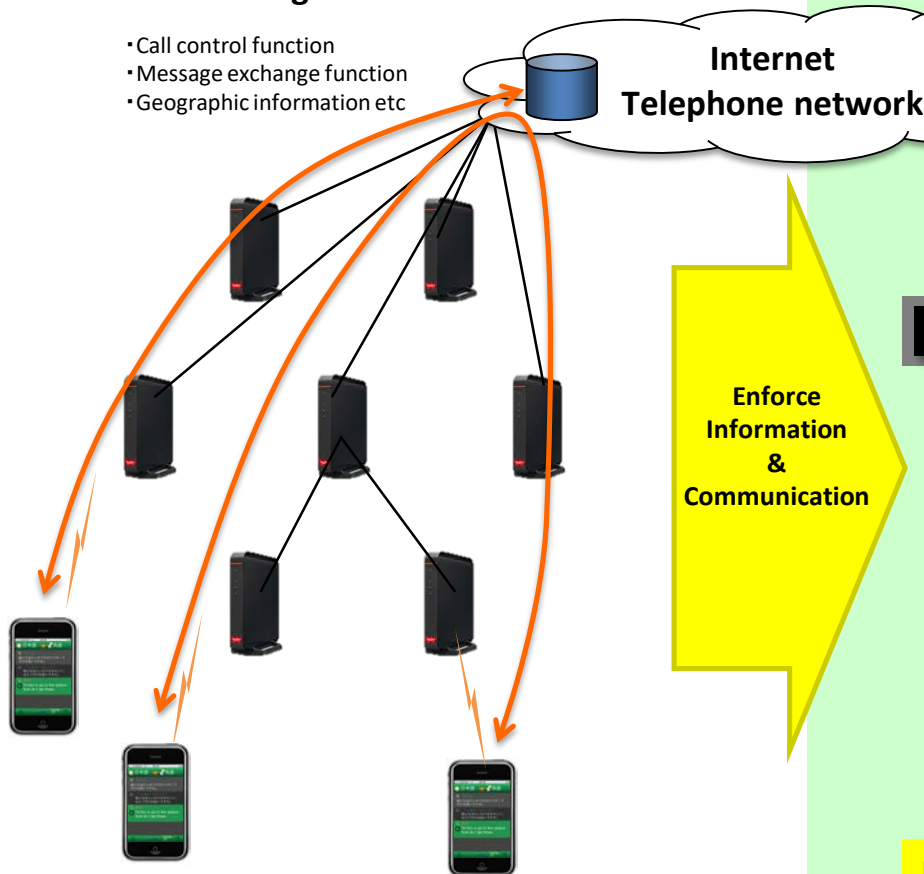
AC power

DC 12V

Mobile network, telephone network, public wireless LAN network

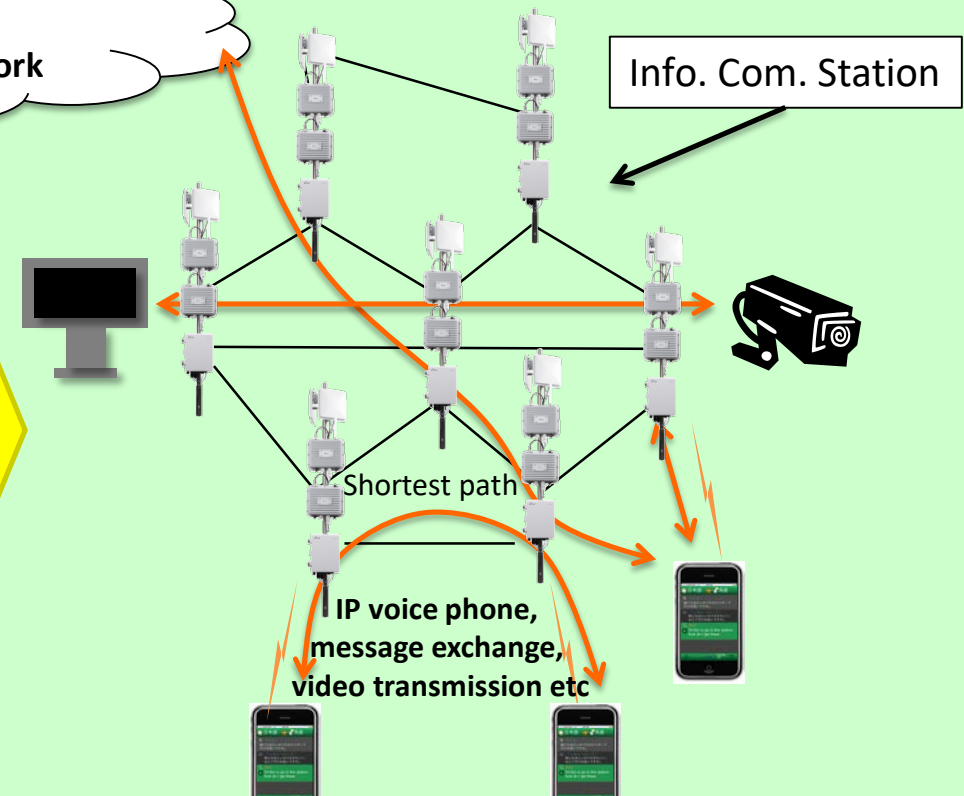
- Tree topology ("Communication" vulnerability)
- All information and functions are concentrated in the Internet (Vulnerability due to Information exists remotely and concentrate 1 stations)
- Communication between neighborhoods also via remote

- Call control function
- Message exchange function
- Geographic information etc



NerveNet

- Information communication station with communication function and information processing function can be configured by connecting wired and wirelessly
- Mesh topology ("Communication" Robustness)
- Provide services such as IP voice phone, message exchange, video transmission etc without Internet (Enforce "information")

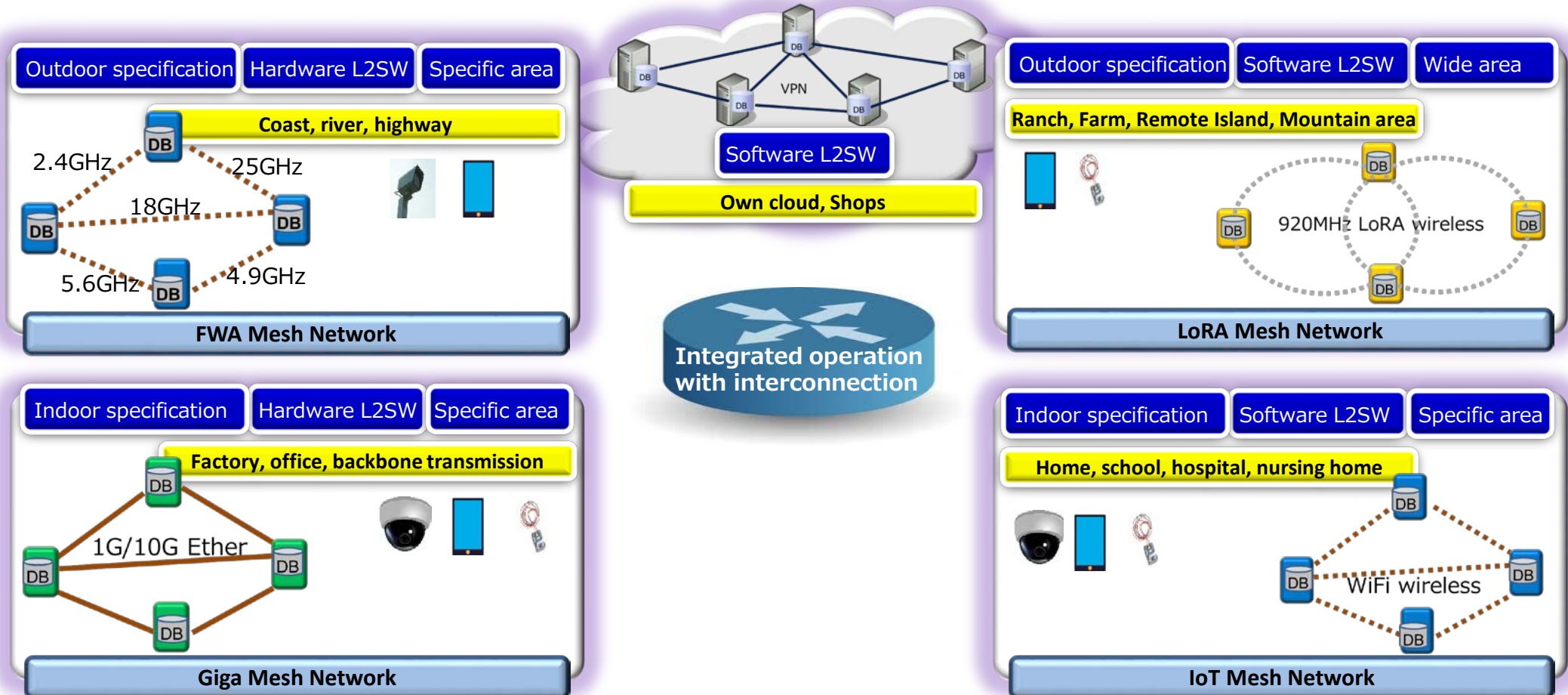


Platform of information & communication for community

< Distinctive Function 1 >

Provide Software in All in One

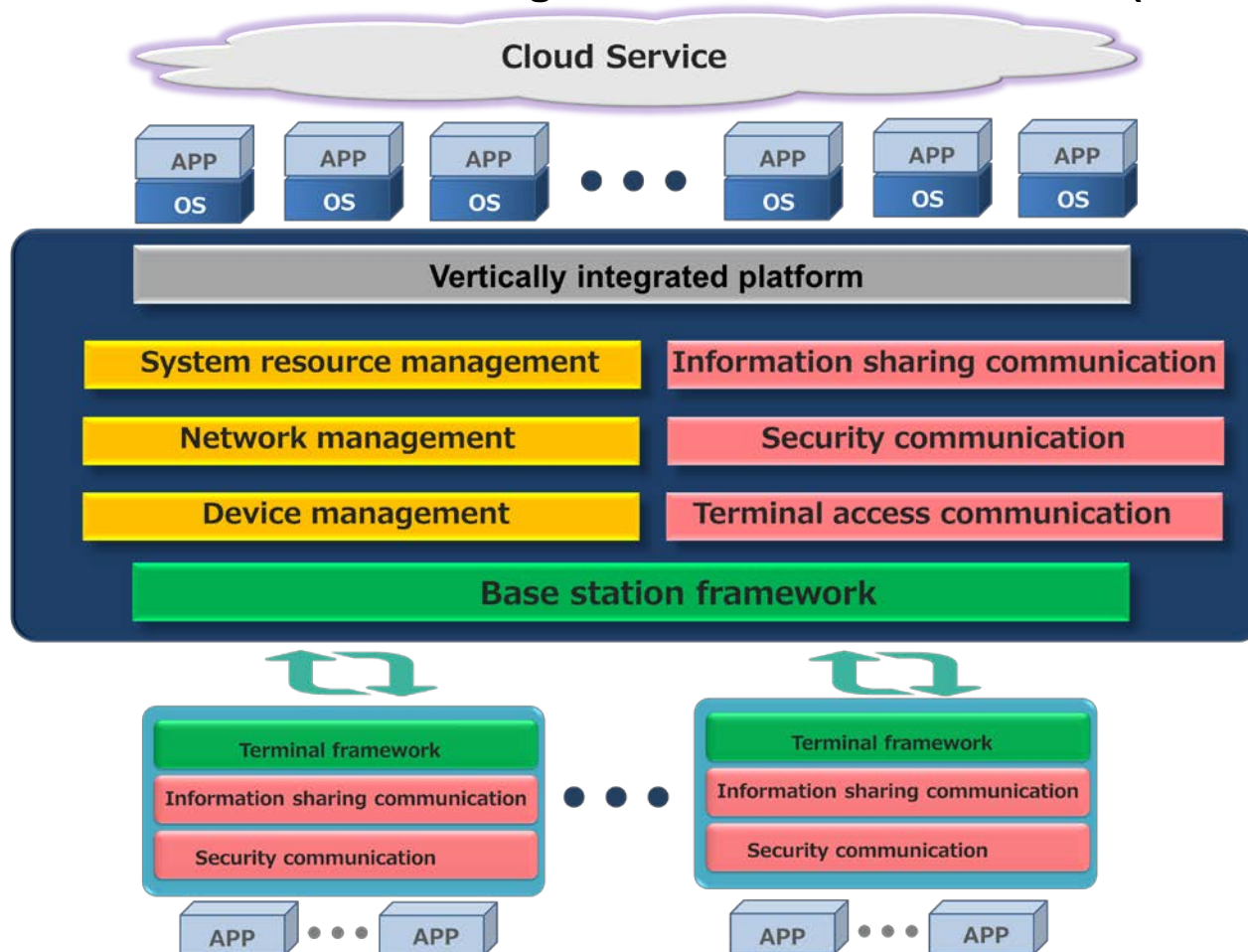
- Communication network resistant to disasters and obstacles that are not limited to wired / wireless
- Multipurpose available IoT / M2M service platform
- Intelligent network system with Installation environment, Bandwidth characteristics, Service-adapted
- Is it possible to expand from a specific area to a wide area using Wi-Fi, FWA, wired (Gbit), LPWA etc.
- Integrated operation management from system, network and terminal



< Distinctive Function 2 >

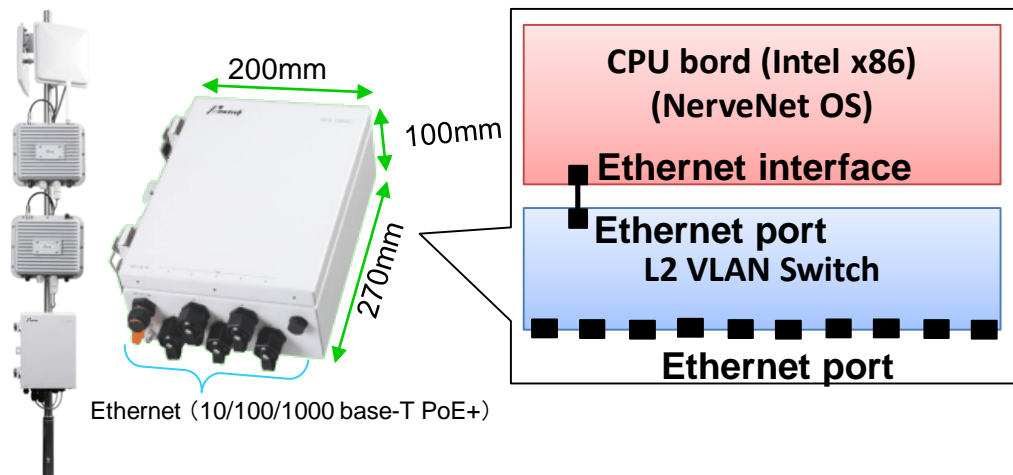
Vertically integrated platform that can cooperate with a wide variety of IoT / M2M services

- Realizing edge computing by providing virtualization infrastructure in cooperation with cloud services
- Provide security functions using terminal-to-terminal VPN (patent pending at NICT & NSC)
- Provide terminal framework for smartphone and sensor GW
- Provide base station framework for using base station distributed DB (clustering function)



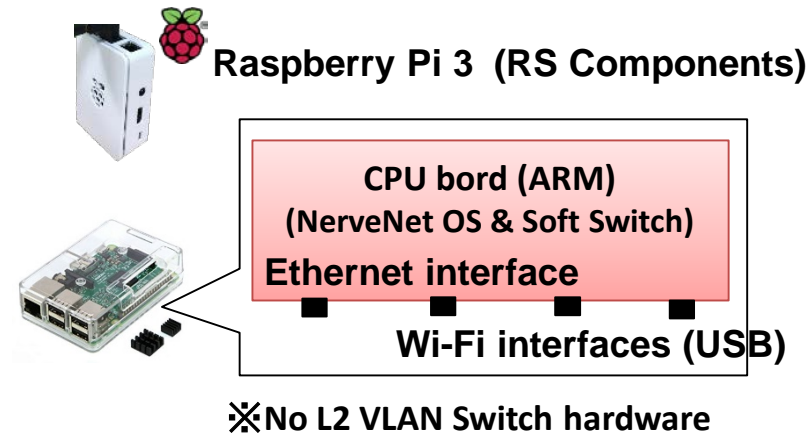
High-Performance Outdoor Type

NerveNet NPS-108AC (Hirakawa Hewtech)



Type	NPS-108AC
Network Interface	IEEE 802.3at(PoE+) Ethernet (10/100/1000 base-T) 5 ports
Operation Temp./Humidity	-10 ~ 50°C / 20 ~ 85%
Power input/consumption	DC12V / 25W average (100W max)
Protection class	IP65
Weight	5.5kg
Other interfaces	Serial ATA, PCI-E, USB, SD, Serial
Storage	2.5 inch SSD 8GB (default)
OS	Debian Linux 8 (NerveNet OS)
RAM	4GB
CPU	Intel Atom

All-Software Type



Type	Raspberry Pi 3 model B
Network Interface	Ethernet (10/100/1000 base-T) 1 port, Embedded Wi-Fi (11gn)
Operation Temp.	0 ~ 70°C
Power input/consumption	DC5V / 6.5W average (12.5W max)
Weight	120g
Other interfaces	USB2.0 x4 , micro SD, GPIO
Storage	2.5 inch SSD 8GB (default)
OS	Debian Linux 8 (NerveNet OS)
RAM	1GB
CPU Broadcom BCM2837	Quad Core 1.2GHz

Example 1: Early warning system of heavy rain disaster

In some countries and regions in ASEAN, hundreds of people have been hurt due to floods and landslides caused by heavy rain. One factor is lacking early warning systems.

Utilizing terrestrial digital broadcasting and NerveNet etc. which are technologies originating from Japan, we expect to help solving those problems.

We are planning to investigate the feasibility of an early warning system using NerveNet. We are looking for partners to do research with us about application of this technology.



Example 2: Infrastructure system to observe the care recipient

In some ASEAN countries, rapid declining birth rate and aging population are proceeding like Japan. There is a need for a mechanism to safely and efficiently capture the care recipients in a hospital, home, and surrounding areas.

A Japanese company has plan to demonstrate such a system for care recipient in collaboration with multiple hospitals in Thailand, where NerveNet will be used.

Care in each hospital room
in the hospital

Area to care at home

