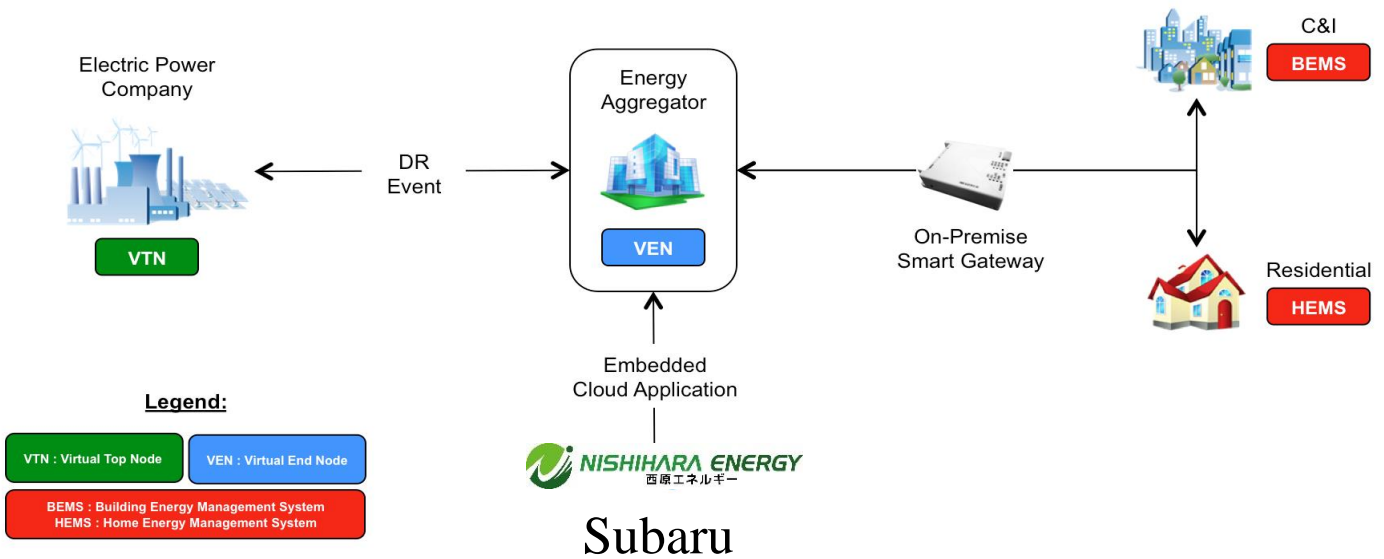


SUBARU

Demand Response Application



Flow of Demand Response



In the past, utility companies invested in grid capacity to meet the peak hour consumption. Demand Response seeks to adjust the demand for power instead of adjusting the supply. Demand response provides an opportunity for consumers to play a significant role in the operation of the electric grid by reducing or shifting their electricity usage during peak periods in response to time-based rates or other forms of financial incentives.

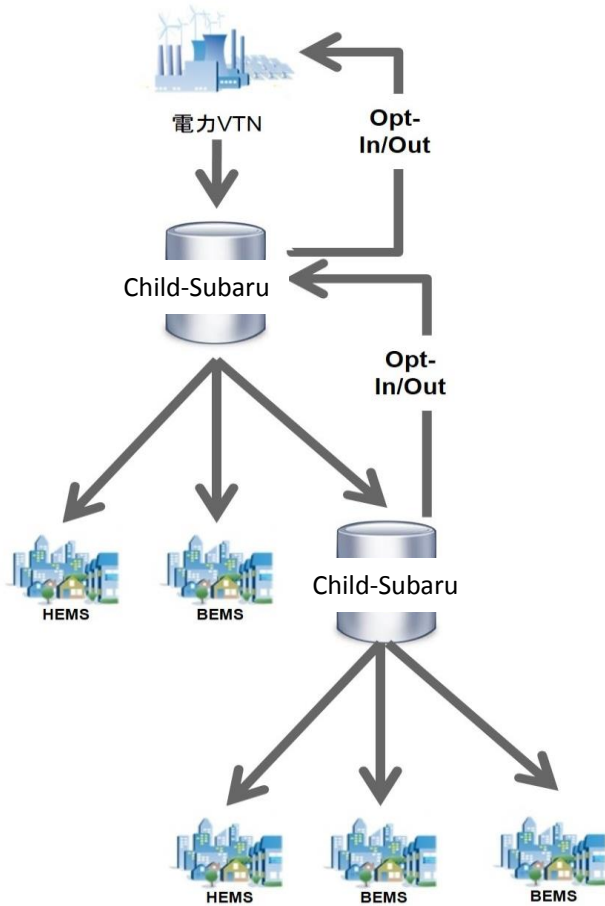
Subaru is an OpenADR2.0b certified



cloud-based Virtual End Node (VEN) solution for demand response aggregators.

Subaru enables aggregators to monitor, analyze, and manage DR events dispatched from utilities.

OpenADR (Open Automated Demand Response) is an open and standardized way for electricity providers and system operators to communicate DR signals with each other and with their customers using a common language over any existing IP-based communications network, such as the Internet.



Subaru's Features

- Subaru can filter and automatically distribute DR events to customers who are more likely to participate in an event. Automatic distribution works as follows:
 - Match DR event content with customer-declared schedule preferences (schedule that customer can/cannot participate), and distribute a DR event only to the customers who declared they could opt in that time slot.
- Subaru can select "automatic opt-in" setting by default. For instance, a Fast DR event leave customers with little response time. In this case, automatic opt-in features works highly effectively.
- Subaru can be set up as a stand-alone or a multiple-layer (VTN – Parent Subaru – Child Subaru). The latter hierarchical structure is suitable for an aggregator who makes DR transactions with sub-aggregators.
- Same tasks can be performed via REST API just like GUI. Collaboration with external software is possible via API.
- Subaru can connect to an outside server in times of log in authentication. Currently Subaru supports basic authentication.
- Subaru can send a DR notification email via external SMTP server. Subaru supports both HTML-based emails and text-based emails.

Subaru Specifications

Features

- Installed in the cloud
- Operational on Linux
- Subaru is a Java-based solution, therefore installation of Java Virtual Machine Standard Edition 7(JVM SE7) is required
- One port in a router is required for external communication

User Interface

- GUI (via Web browser)
- REST API (What can be done on GUI can be done via API)

OpenADR 2.0b Support

- Profile 2.0b certified
- Communication with VTN is done on SSL protocol for security reasons
- HTTP Protocol
- Subaru regularly polls to VTN to communication