About Provisioning

Home Area Network (HAN) devices connect directly to Advanced Metering Infrastructure (AMI) meters using a Zigbee Smart Energy Profile (SEP) radio. Most modern AMI meters include a Zigbee radio that supports SEP 1.1b. For security reasons, HAN devices are uniquely identified and paired with only one meter. The meter is in control of the Zigbee network and must be provisioned with the HAN device's unique credentials in order to allow it to join the Zigbee network.



The provisioning process is achieved using the meter vendor's backend meter control/configuration software. The key information needed is the meter number and the HAN device MAC ID and Install Code. This information must somehow be communicated to the meter control module, which sends the HAN device credentials through the AMI network to the meter. Only then will the HAN device be able to connect to the meter.

Program Tradeoffs

The method of collecting the provisioning information is critical to the quality of the user experience and the utility costs for a HAN device program. Unfortunately, these two goals are often at odds.

The best user experience results from 'white glove' programs in which HAN devices are pre-purchased and distributed by the utility. In this scenario, the utility recruits and pre-screens applicants, and it purchases the approved devices in bulk from the vendor. Then the device labels are scanned, and the device data is used to provision the meters in advance of sending the devices to the participants. When the devices arrive, they just work. This is great for the program participants, but it is very costly for the utility.

Another program model, the 'laissez faire' approach, where the users purchase devices on the open market and contact the utility to get their meter provisioned, has lower upfront costs, but may require substantial ongoing operating resources.

There are a number of criteria that need to be met in order for a meter to be provisioned for a HAN device:

- Applicants must be authorized to retrieve data from the requested meter.
- Devices must be FCC and Zigbee certified, and be compatible with the meter.
- Applicants must have an eligible meter that is within wireless range.

All of these criteria are difficult to enforce once the user has already purchased the device and can result in considerable support effort. In addition, HAN device credentials are long

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numbers, and errors can occur when communicating them to the utility. In fact, incorrect digit entry is the number one root cause of customer support issues.

Also, users must wait until the provisioning process is complete before their device will function. This causes frustration, and requires at least two interactions (application, confirmation) between the user and the utility.

These issues contribute to the utility cost of operating the program, and it makes sense for the utility to make some upfront investments to mitigate these program operating costs:

- The most common utility investment is to build a web portal that allow users to enter their HAN device information themselves. It replaces onerous manual alternatives such as phone calls, individual emails, or paper forms.
- Most utilities perform lab validations and post a list of approved devices on their website.
- The most successful programs use an online marketplace or store to distribute HAN devices. This allows for user, account, and device screening to increase the chances of success, and, if proper fulfillment is set up with product scanning, the entire provisioning process can be hidden from the user, eliminating almost all of the associated issues. In addition, the users are contributing to the upfront cost of the HAN devices. This has two benefits: the program ROI is improved; and the participants are literally 'buying in' and are more likely to make use of a device they have invested their own money into.

There is one more level of automation that a utility can invest in to reduce the cost and complexity of provisioning HAN devices, and that is to automate not only the inputs, but also the provisioning process itself.

Our Platform

The Rainforest OSPREY provisioning platform is a cloud-based system that connects to the utility's backend meter control software. It eliminates the errors, support, and expense associated with manual provisioning.

Our platform not only automates the provisioning process, but also integrates it with a variety of input mechanisms:

- Bulk Input – a simple CSV file can be uploaded with a list of meter numbers and device credentials. The OSPREY system then takes care of provisioning all of the meters in the list. This is ideal for Low Income programs in which the HAN devices are purchased in bulk by the utility and given away to participants.
- Web Portal – a webform is provided with a deep link from the utility website, allowing users to enter the data themselves. This is for programs in which participants obtain their own HAN devices.
- Mobile App – allows users to scan the HAN device label to reduce data entry errors (the largest source of support calls) for user self-entry.

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- Online Marketplace – a direct integration with a web-based marketplace. This can be a custom online store provided by Rainforest, along with an automated fulfillment service, or an integration with an existing marketplace using our Online Marketplace Network Interface (OMNI) API. This has the great advantage of hiding the entire provisioning process from the user, providing the best user experience.

