Summary of Changes

Managing gateways in Semtech LoRaWAN Localization

- "gatewayId" and "ownerId" now mandatory
- Gateway EUI no longer required to be a hex number- now replaced with a free-form text "label"
- "chipId" is added as a property
- Gateways are assigned a "uniqueId" when being provisioned
- Property "success" is removed from the response object for gateways and owners
- The entire gateway or gateway owner object is now returned from an 'update' or 'add' operation of either a gateway or an owner.
- Parameter and property "id" is replaced with "ownerId" when managing GW Owners

Semtech LoRaWAN Location algorithm changes

- Minor performance improvements
- Accuracy is set to "null" instead of "0" if accuracy is unknown
- If no "antennaId" is provided in a location query it will be taken as "0"

Semtech LoRaWAN Location algorithm bug fixes

- Invalid json now leads to an "parsing error" instead of "unknown error"
- Improved error messages generally
- "null" values for "rssi" and "toa" are now accepted and ignored
- A query to DecryptToa endpoint that contains some failures will now return a list of successful and unsuccessful results.

Release deployment date: 3rd May 2018,

Release deployment time: 09:00 CEST

Version	ECO	Date	Changes and/or Modifications
1	-	10 April 2018	New document.
2	-	2 May 2018	Update release date

Contents

1. Detailed changes

1.1. Managing gateways in Semtech LoRaWAN Localization

In many networks, gateways are referred to by a label that is not a HEX EUI. Semtech's locatlization algorithms have now been significantly updated to make the management of the gateways more flexible and to allow queries to be more easily formed from network servers.

There are also changes that will mean that the decryption key cutting for gateways will be embedded into Collos making the gateway provisioning much smoother and allowing a completely hands-off approach without the gateway owner needing to get the decryption key.

New mandatory properties

It has now been made mandatory to include gatewayId and ownerId in the gateway provisioning to ensure that all gateways are correctly associated with an owner organization.

New properties

In order to facilitate the automatic cutting of decryption keys for gateways, a new property chipId has been added. This property can be captured from the hardware of the gateway and is the only information that is required to generate the decryption key. This means that as networks add new gateways to their deployment, there is no longer any need to handle secure keys. This can all be handled within Semtechs gateway management in Collos.

Gateways are now assigned a "uniqueId" when provisioned. Since this property is able to uniquely identify the gateway within Semtech's localization in Collos, this uniqueId can be used when passing LoRaWAN frames between networks such as roaming or using a packet broker. Thus it is possible to keep the identity of the gateway separate from any name that it might be given within its own network.

Changed responses

The property "success" and object "ownerId" has been replaced with the entire owner object in order that the user can check everything has been performed correctly instead of making a call to 'update' followed by another call to 'get'.

The property "success" and object "gatewayId" has been replaced with the entire gateway object in order that the user can check everything has been performed correctly instead of making a call to 'update' followed by another call to 'get'.

For clarity the property "id" is replaced with "ownerId" when managing GW Owners.

1.2.   Semtech LoRaWAN Localization Query changes

There are no changes to the contract, however there are some significant improvements to the flexibility.

With this version, gateways have multiple potential ways of being identified within queries sent to location ingredients or recipes (ie. The "gatewayId" parameter can refer to the following):

1.   "gatewayId" = "label" from when GW was provisioned, in which case a location **is not** required
2.   "gatewayId" = "uniqueId" from when GW was provisioned, in which case a location **is not** required
3.   "gatewayId" = "chipId" from when GW was provisioned, in which case a location **is not** required
4.   "gatewayId" = "chipId" from a GW that is not provisioned, in which case a location **is** required
5.   "gatewayId" = "temporary label" from a GW that is not provisioned, in which case a location **is** required

Using the 'temporary label' choice does not support the decryption of encryptedToa fields since there is no way to cut the decryption key. All other choices have the possibility to support TDOA base location since the key can either be cut automatically using the chipId data or, it can be cut during the provisioning process.

1.3.   Semtech LoRaWAN Location algorithm changes

There have been a number of algorithmic improvements to the location ingredients.

In the case where location has been determined by a single gateway, the location of the gateway is returned. In this case the position error is unknown and will be returned as "null" whereas, in previous versions it returned "0".

In a query where the "antennaId" is not specified the system will assume that it is "0". Thus, those gateways with a single antenna can safely leave the "antennaId" out. For those gateways with more than one antenna, then either all the antennae shall have an "antennaId" or, one shall be missing *and* all other antennae shall have and "antennaId" non-zero. Any gateway with multiple antenna where they are not unique will result in that gateway being discarded entirely.

1.4.   Semtech LoRaWAN Location algorithm bug fixes

Any query with an in valid json format will lead to a "parsing error" instead of "unknown error"

Error messages have been made more helpful and improved in clarity in a number of places.

Location queries with "null" values for "rssi" and/or "toa" are now accepted and handled gracefully.

2.   Deprecations

Due to the gateway management changes detailed above the database format of the gateway provisioning has changed. All existing provisioned gateways have been moved to the new format, however, the following endpoints have been deprictated. All usage of the deprecated endpoint should be immediately migrated to the v2 endpoints.

- Gateway owner add/remove/update:
  https://api.preview.collos.org/gateway-management/v1/gatewayowners
- Gateway add/remove/update:
   https://api.preview.collos.org/gateway-management/v1/gateways

End of document