Destinataires : Tout le personnel du CATI SICPA

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Configurer Telegraf entre MQTT et InfluxDB

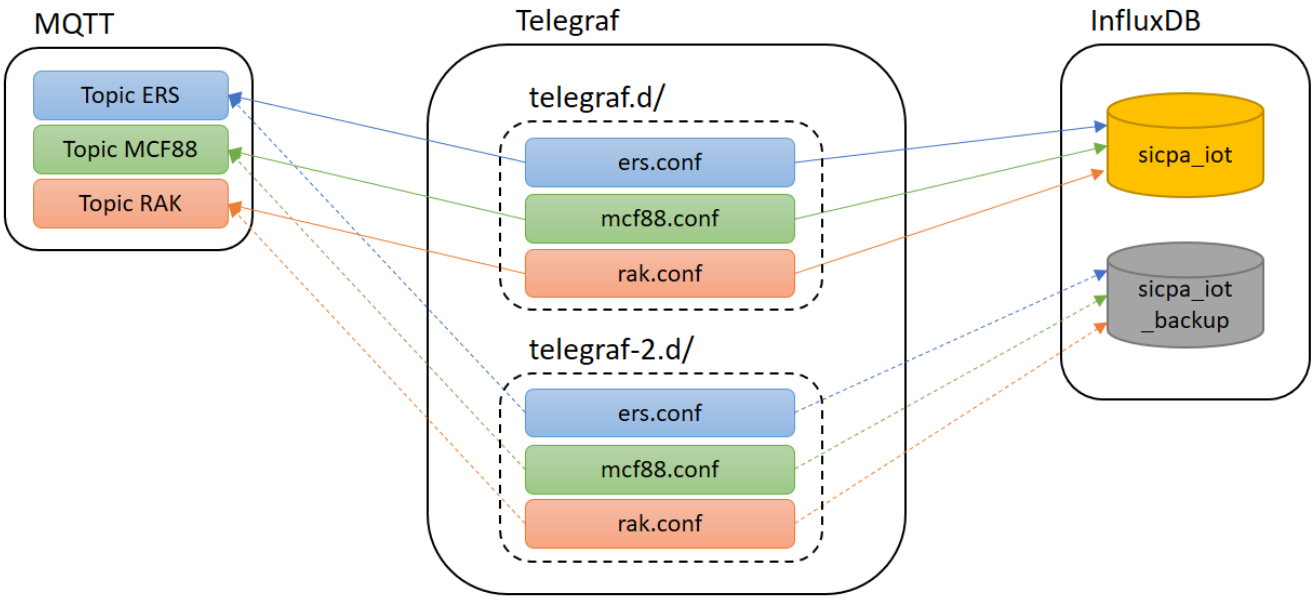
Table des matières

Avant de commencer

Dans cette documentation, je vais partir sur un exemple concret : je dois sauvegarder toutes les données issues de 3 capteurs de types différents exactement une fois *(pas de perte de données, pas de duplication de données entre MQTT et InfluxDB)* en utilisant l'horodatage de la passerelle comme clé de la donnée. Comme il arrive parfois que la passerelle ne fournisse pas son horodatage, je sauvegarde également les données dans une base de sauvegarde avec comme clé de la donnée l'horodatage d'insertion dans InfluxDB.

Pour isoler le flux de sauvegarde entre Telegraf et InfluxDB, je suis obligé de lancer une seconde instance de Telegraf. Je stocke donc les fichiers de configuration de la base principale dans le dossier **/etc/telegraf/telegraf.d/** et ceux de la base de sauvegarde dans le dossier **/etc/telegraf/telegraf-2.d/**

Voici donc le flux à monitorer :



Note : En annexe 1, vous trouverez les trames JSON des 3 capteurs.

Au cours de cette documentation, je traduirais les notions « InfluxDB » comme suit :

- database : base
- field : champ
- measurement : mesure
- tag : label
- timestamp : horodatage

1. Schémas de données pour la sauvegarde :

Ci-dessous, j'ai surligné la partie « donnée » de la mesure, le reste étant des métadonnées.

Capteur ERS

timestamp *(integer)*

tagKeys ***(tagTypes)***
host *(string)*
topic *(string)*

fieldKeys ***(fieldType)***
adr *(string)*
altitude *(float)*
application_id *(string)*
application_name *(string)*
device_eui *(string)*
device_id *(string)*
device_name *(string)*
dr *(float)*
fCnt *(float)*
fPort *(float)*
frequency *(float)*
gateway_id *(string)*
gateway_utc_timestamp *(string)*
humidity *(float)*
insert_utc_timestamp *(string)*
latitude *(float)*
light *(float)*
loRaSNR *(float)*
longitude *(float)*
motion *(float)*
rssi *(float)*
temperature *(float)*
uplink_id *(string)*
vdd *(float)*

Capteur MCF88

timestamp *(integer)*

tagKeys ***(tagTypes)***
host *(string)*
topic *(string)*

fieldKeys ***(fieldType)***
CO2_1 *(float)*
CO2_2 *(float)*
adr *(string)*
altitude *(float)*
application_id *(string)*
application_name *(string)*
battery *(float)*
device_eui *(string)*
device_id *(string)*
device_name *(string)*
dr *(float)*
fCnt *(float)*
fPort *(float)*
frequency *(float)*
gateway_id *(string)*
gateway_utc_timestamp *(string)*
humidity_1 *(float)*
humidity_2 *(float)*
illumination_1 *(float)*
illumination_2 *(float)*
insert_utc_timestamp *(string)*
latitude *(float)*
loRaSNR *(float)*
longitude *(float)*
pressure_1 *(float)*
pressure_2 *(float)*
rssi *(float)*
temperature_1 *(float)*
temperature_2 *(float)*
uplink_id *(string)*
voc_1 *(float)*
voc_2 *(float*

Capteur RAK

timestamp *(integer)*

tagKeys ***(tagTypes)***
host *(string)*
topic *(string)*

fieldKeys ***(fieldType)***
adr *(string)*
altitude *(float)*
analog_input_4 *(float)*
analog_input_8 *(float)*
application_id *(string)*
application_name *(string)*
device_eui *(string)*
device_id *(string)*
device_name *(string)*
dr *(float)*
fCnt *(float)*
fPort (float)
frequency *(float)*
gateway_id *(string)*
gateway_utc_timestamp *(string)*
humidity *(float)*
insert_utc_timestamp *(string)*
latitude *(float)*
loRaSNR *(float)*
longitude *(float)*
pressure *(float)*
rssi *(float)*
temperature *(float)*
uplink_id *(string)*

2. Consommer des données dans MQTT

Pour consommer des données depuis MQTT dans des topics MQTT, je vais avoir besoin du plugin **inputs.mqtt_consumer** de Telegraf. La configuration du plugin va permettre la scrutation des topics spécifiés et la consommation des données qu'ils contiennent. Voici comment le configurer, par l'exemple, pour le capteur RAK :

```
[[inputs.mqtt_consumer]]
  # je fournis ici l'adresse du serveur hébergeant les topics pour des capteurs de type RAK
  servers             = ["ssl://mon.serveur.fr:8883"]
  # je fournis ici les topics de capteurs de type RAK (topics séparés par des virgules)
  topics              = ["application/1/device/ccccccccccccccc/event/up"]
  # je fournis ici la qualité de service de MQTT à utiliser
  # 0 : au plus une fois la donnée (possibilité de perte de donnée)
  # 1 : au moins une fois la donnée (possibilité de duplication de donnée)
  # 2 : exactement une fois la donnée
  qos                 = 2
  # j'indique que je souhaite maintenir active la connexion à MQTT (nécessaire pour les QoS 1 et 2)
  persistent_session = true
  # j'indique l'identifiant de la session MQTT (nécessaire pour les QoS 1 et 2)
  client_id           = "Rak"
  # j'indique l'identifiant de l'utilisateur MQTT
  username            = "mqtt_user"
  # j'indique le mot de passe de l'utilisateur MQTT
  password            = "mqtt_password"
  # j'indique le format du message MQTT (ici JSON)
  data_format         = "json"
  # je renseigne les informations à propos du certificat SSL du serveur
  tls_ca              = "/etc/ssl/mon_serveur_fr/mon_serveur_fr_ca.crt"
  tls_cert            = "/etc/ssl/mon_serveur_fr/mon_serveur_fr_cert.crt"
  tls_key             = "/etc/ssl/mon_serveur_fr/mon_serveur_fr.key"
  # je précise quels champs du message doivent remonter comme labels
  # note : tous les champs de type "string" doivent être remontés en tant que labels, même si l'on veut
  # les stocker comme champs, sous peine de les perdre.
  # La transformation en champ se fera via les processeurs telegraf (voir paragraphe 4)
  tag_keys            = [
    "adr",
    "applicationID",
    "applicationName",
    "deviceName",
    "devEUI",
    "rxInfo_0_gatewayID",
    "rxInfo_0_name",
    "rxInfo_0_time",
    "rxInfo_0_uplinkID"
  ]
  # je précise quels champs du message doivent remonter comme champs
  fieldpass            = [
    "fCnt",
    "fPort",
    "object_analogInput_4",
    "object_analogInput_8",
    "object_barometer_6",
    "object_humiditySensor_7",
    "object_temperatureSensor_2",
    "rxInfo_0_location_altitude",
    "rxInfo_0_location_latitude",
    "rxInfo_0_location_longitude",
    "rxInfo_0_loRaSNR",
    "rxInfo_0_rssi",
    "txInfo_dr",
    "txInfo_frequency"
  ]
  # j'utilise le champ "time" de rxInfo comme timestamp en le parsant
  # format de parsage : Go
  # https://golangbyexample.com/parse-time-in-golang/
```

```
  json_time_format    = "2006-01-02T15:04:05.999999999Z"
  json_time_key       = "rxInfo_0_time"
  json_timezone       = "UTC"
```

Documentation : *https://github.com/influxdata/telegraf/tree/master/plugins/inputs/mqtt_consumer*
https://github.com/influxdata/telegraf/tree/master/plugins/inputs

Note : En annexe 2, vous trouverez les fichiers de configuration complets des 3 capteurs.

3. Ecrire des données dans InfluxDB

Pour écrire des données dans Influxdb, je vais utiliser le plugin **outputs.influxdb** de Telegraf. La simple configuration du plugin va permettre l'écriture automatique des données dans la base et la mesure spécifiée. Voici comment le configurer, par l'exemple, toujours pour le capteur RAK :

```
[[outputs.influxdb]]
  # je fournis ici l'adresse du serveur et le port de l'instance InfluxDB
  urls                   = ["https://mon.serveur.fr:8086"]
  # je précise la base dans laquelle écrire les données
  database               = "database"
  # je précise ici si je laisse telegraf créé la base de données (false) ou pas (true)
  skip_database_creation = true
  # j'indique l'identifiant de l'utilisateur InfluxDB
  username               = "influxdb_user"
  # j'indique le mot de passe de l'utilisateur InfluxDB
  password               = "influxdb_password"
  # je liste ici les patterns de mesures à insérer dans la base
  namepass               = ["device_*"]
  # je liste ici les patterns de mesures à ignorer
  namedrop               = ["device_"]
  # je renseigne les informations à propos du certificat SSL du serveur
  tls_cert               = "/etc/ssl/mon_serveur_fr/mon_serveur_fr_bundle.crt"
  tls_key                = "/etc/ssl/mon_serveur_fr/mon_serveur_fr.key"
  # je liste ici les patterns de champs à insérer dans la base
  fieldpass              = []
  # je liste ici les patterns de champs à ignorer
  fielddrop              = []
  # je liste ici les patterns de labels à insérer dans la base
  taginclude             = []
  # je liste ici les patterns de labels à ignorer
  tagexclude             = []
```

Documentation : *https://github.com/influxdata/telegraf/tree/master/plugins/outputs/influxdb*
https://github.com/influxdata/telegraf/tree/master/plugins/outputs

Note : En annexe 2, vous trouverez les fichiers de configuration complets des 3 capteurs.

4. Transformer les données entre MQTT et InfluxDB

Outre les plugins pour consommer des données et ceux pour écrire des données comme on a pu le voir précédemment, il existe plusieurs types de plugins pour manipuler la donnée :

- Des agrégateurs : https://github.com/influxdata/telegraf/tree/master/plugins/aggregators
- Des parseurs : https://github.com/influxdata/telegraf/tree/master/plugins/parsers
- Des processeurs : https://github.com/influxdata/telegraf/tree/master/plugins/processors
- Des sérialiseurs : https://github.com/influxdata/telegraf/tree/master/plugins/serializers

Dans l'exemple ci-dessous, toujours issus du fichier de configuration du capteur RAK, j'ai utilisé 4 processeurs :

- **processors.converter** permet de convertir :
  - un label *(processors.converter.tags)* en mesure ou en champ,
  - un champ *(processors.converter.fields)* en mesure, en label ou en un champ d'un autre type
  - Plus d'infos ici : https://github.com/influxdata/telegraf/tree/master/plugins/processors/converter

- **processors.date** permet de convertir l'horodatage de la mesure en un label *(tag_key)* ou un champ *(field_key)* lisible par l'œil humain
  - Plus d'infos ici : https://github.com/influxdata/telegraf/tree/master/plugins/processors/date

- **processors.rename** permet de renommer une mesure, un label ou un champ
  - Plus d'infos ici : https://github.com/influxdata/telegraf/tree/master/plugins/processors/rename

- **processors.template** permet de formatter et/ou combiner des mesures, des labels ou des champs pour créer de nouveaux labels
  - Plus d'infos ici : https://github.com/influxdata/telegraf/tree/master/plugins/processors/template

```
 [[processors.rename]]
  order = 1
# FIELDS
  [[processors.rename.replace]]
    field = "object_analogInput_4"
    dest  = "analog_input_4"
  [[processors.rename.replace]]
    field = "object_analogInput_8"
    dest  = "analog_input_8"
  [[processors.rename.replace]]
    field = "object_barometer_6"
    dest  = "pressure"
  [[processors.rename.replace]]
    field = "object_humiditySensor_7"
    dest  = "humidity"
  [[processors.rename.replace]]
    field = "object_temperatureSensor_2"
    dest  = "temperature"
  [[processors.rename.replace]]
    field = "rxInfo_0_location_altitude"
    dest  = "altitude"
  [[processors.rename.replace]]
    field = "rxInfo_0_location_latitude"
    dest  = "latitude"
  [[processors.rename.replace]]
    field = "rxInfo_0_location_longitude"
    dest  = "longitude"
  [[processors.rename.replace]]
    field = "rxInfo_0_loRaSNR"
```

```
    dest  = "loRaSNR"
  [[processors.rename.replace]]
    field = "rxInfo_0_rssi"
    dest  = "rssi"
  [[processors.rename.replace]]
    field = "txInfo_dr"
    dest  = "dr"
  [[processors.rename.replace]]
    field = "txInfo_frequency"
    dest  = "frequency"
# TAGS
  [[processors.rename.replace]]
    tag   = "applicationID"
    dest  = "application_id"
  [[processors.rename.replace]]
    tag   = "applicationName"
    dest  = "application_name"
  [[processors.rename.replace]]
    tag   = "deviceName"
    dest  = "device_id"
  [[processors.rename.replace]]
    tag   = "devEUI"
    dest  = "device_eui"
  [[processors.rename.replace]]
    tag   = "rxInfo_0_gatewayID"
    dest  = "gateway_id"
  [[processors.rename.replace]]
    tag   = "rxInfo_0_name"
    dest  = "device_name"
  [[processors.rename.replace]]
    tag   = "rxInfo_0_uplinkID"
    dest  = "uplink_id"

[[processors.template]]
  order = 2
  tag = "device"
  template = 'device_{{ .Tag "device_id" }}'

[[processors.converter]]
  order = 3
  [processors.converter.tags]
    boolean     = ["adr"]
    measurement = ["device"]
    string      = [
      "application_id",
      "application_name",
      "device_eui",
      "device_id",
      "device_name",
      "gateway_id",
      "uplink_id"
    ]

 [[processors.date]]
  order       = 5
  field_key   = "gateway_utc_timestamp"
  date_format = "2006-01-02T15:04:05.000000000Z"
  date_offset = "0s"
  timezone    = "UTC"
```

Pour tous les processeurs, il est également possible *(mais aussi très fortement conseillé)* d'ordonner nos traitements à l'aide du mot-clé **order**. S'il n'est pas précisé, les processeurs s'exécuteront de manière aléatoire. *(voir ici : https://github.com/influxdata/telegraf/blob/master/docs/CONFIGURATION.md, section Processor plugins)*

Note : En annexe 2, vous trouverez les fichiers de configuration complets des 3 capteurs.

5. Cas spécial : Ecrire une série de données dans deux bases différentes

Pour le cas d'usage présenté en préambule de cette documentation, j'avais besoin d'écrire les données issues des capteurs avec l'horodatage de la passerelle Lorawan. Or, il arrive que la passerelle n'émette plus son horodatage. Et comme je le parse pour identifier la donnée, pas de temps équivaut à ne pas stocker la donnée.

Pour pallier ce problème, j'écris en parallèle les données dans une base de sauvegarde en prenant l'horodatage d'insertion de la donnée dans InfluxDB : avantage, la donnée est toujours insérée, inconvénient, en absence de réseau, toutes les données remontent par lot avec un horodatage quasi-similaire. Le choix appartient alors au destinataire de la mesure de savoir s'il utilise ou non ces données.

Comme précisé succinctement dans le préambule, la solution pour exécuter deux configurations sur la même chaîne de données consiste à faire tourner deux instances de Telegraf. Comment j'ai procédé ?

1. J'ai créé un second dossier de configuration que j'ai nommé **telegraf-2.d/**
2. J'y ai mis les scripts de configuration pour la base de données de sauvegarde
3. J'ai créé un second fichier de service pour Telegraf dans **systemd** nommé **telegraf-2.service** *(voir annexe 3)*

Concernant les scripts de configuration, diffèrent :

- Les informations de bases de données dans **outputs.influxdb**

```
[[outputs.influxdb]]
  urls                   = ["https://mon.serveur.fr:8086"]
  database               = "database_backup"
  skip_database_creation = true
  username               = "backup_user"
  password               = "backup_password"
  namepass               = ["device_*"]
  namedrop               = ["device_"]
  tls_cert               = "/etc/ssl/mon_serveur_fr/mon_serveur_fr_bundle.crt"
  tls_key                = "/etc/ssl/mon_serveur_fr/mon_serveur_fr.key"
```

- Le nom du champ issu du plugin processors.date

```
[[processors.date]]
  order       = 4
  field_key   = "insert_utc_timestamp"
  date_format = "2006-01-02T15:04:05.000000000Z"
  date_offset = "0s"
  timezone    = "UTC"
```

- Suppression du parsage de l'horodatage dans le plugin inputs.mqtt_consumer

```
[[inputs.mqtt_consumer]]
  …
  …
  json_time_format     = "2006-01-02T15:04:05.999999999Z"
  json_time_key        = "rxInfo_0_time"
  json_timezone        = "UTC"
```

Annexe 1 : trames des capteurs

Capteur ERS


```
{
    "applicationID":"1",
    "applicationName":"chirp-app",
    "deviceName":"ElsysErs",
    "devEUI":"aaaaaaaaaaaaaaaa",
    "rxInfo":[
        {
            "gatewayID":"60c5a8fffe76154b",
            "uplinkID":"501fb8a4-7231-46ff-a243-03ba9d5cf8d7",
            "name":"rak7249",
            "time":"2021-07-19T06:48:46.134212Z",
            "rssi":-83,
            "loRaSNR":11,
            "location":{
                "latitude":43.50438,
                "longitude":1.53005,
                "altitude":216
            }
        }
    ],
    "txInfo":{
        "frequency":867300000,
        "dr":0
    },
    "adr":true,
    "fCnt":16308,
    "fPort":5,
    "data":"AQDOAlQEAKcFAAcONw==",
    "object":{
        "humidity":84,
        "light":167,
        "motion":0,
        "temperature":20.6,
        "vdd":3639
    }
}
```

Capteur MCF88


```
{
   "applicationID":"1",
   "applicationName":"chirp-app",
   "deviceName":"mcf88",
   "devEUI":"bbbbbbbbbbbbbbbb",
   "rxInfo":[
      {
         "gatewayID":"dca632fffe0ca891",
         "uplinkID":"93aff9f7-d355-4690-ab55-ff7ddf88b0f7",
         "name":"RAK7244",
         "time":"2021-07-07T12:38:09.485792Z",
         "rssi":-51,
         "loRaSNR":9,
         "location":{
            "latitude":43.52876,
            "longitude":1.49987,
            "altitude":137
         }
      }
   ],
   "txInfo":{
      "frequency":867300000,
      "dr":0
   },
   "adr":true,
   "fCnt":4864,
   "fPort":2,
   "data":"Dodx5yobCXrJhgEMAD4AxwFOdecqMAl714YBDABKAMsBXQ==",
   "object":{
      "battery_percentage":93,
      "bytes":"Dodx5yobCXrJhgEMAD4AxwFOdecqMAl714YBDABKAMsBXQ==",
      "co2_1":455,
      "co2_2":459,
      "dateUTC_1":"2021-07-06T12:12:07.000000Z",
      "dateUTC_2":"2021-07-06T12:42:14.000000Z",
      "humidity_1":61,
      "humidity_2":61.5,
      "illumination_1":12,
      "illumination_2":12,
      "payload_type":"measurement",
      "pressure_1":100041,
      "pressure_2":100055,
      "temperature_1":23.31,
      "temperature_2":23.52,
      "voc_1":62,
      "voc_2":74
   }
}
```

Capteur RAK


```
{
    "applicationID":"1",
    "applicationName":"chirp-app",
    "deviceName":"0200000001",
    "devEUI":"cccccccccccccccc",
    "rxInfo":[
        {
            "gatewayID":"60c5a8fffe76154b",
            "uplinkID":"70254019-7f5b-42cd-8cdf-c6f1eaf421c8",
            "name":"rak7249",
            "time":"2020-10-23T14:29:14.260435Z",
            "rssi":-76,
            "loRaSNR":9,
            "location":{
                "latitude":43.50438,
                "longitude":1.52947,
                "altitude":293
            }
        }
    ],
    "txInfo":{
        "frequency":868100000,
        "dr":0
    },
    "adr":true,
    "fCnt":1290,
    "fPort":8,
    "data":"CAIBZwdosAZzJyYCZwCtBAIBtA==",
    "object":{
        "analogInput":{
            "4":4.36,
            "8":3.59
        },
        "barometer":{
            "6":1002.2
        },
        "humiditySensor":{
            "7":88
        },
        "temperatureSensor":{
            "2":17.3
        }
    }
}
```

Annexe 2 : fichiers de configurations

/etc/telegraf/telegraf.d/ers.conf

```
###############################################################################
#                            OUTPUT PLUGINS                                   #
###############################################################################

[[outputs.influxdb]]
  urls                   = ["https://mon.serveur.fr:8086"]
  database               = "database"
  skip_database_creation = true
  username               = "influxdb_user"
  password               = "influxdb_password"
  namepass               = ["device_*"]
  namedrop               = ["device_"]
  tls_cert               = "/etc/ssl/mon_serveur_fr/mon_serveur_fr_bundle.crt"
  tls_key                = "/etc/ssl/mon_serveur_fr/mon_serveur_fr.key"


###############################################################################
#                            PROCESSOR PLUGINS                                #
###############################################################################

[[processors.rename]]
  order = 1
# FIELDS
  [[processors.rename.replace]]
    field = "object_humidity"
    dest  = "humidity"
  [[processors.rename.replace]]
    field = "object_light"
    dest  = "light"
  [[processors.rename.replace]]
    field = "object_motion"
    dest  = "motion"
  [[processors.rename.replace]]
    field = "object_temperature"
    dest  = "temperature"
  [[processors.rename.replace]]
    field = "object_vdd"
    dest  = "vdd"
  [[processors.rename.replace]]
    field = "rxInfo_0_location_altitude"
    dest  = "altitude"
  [[processors.rename.replace]]
    field = "rxInfo_0_location_latitude"
    dest  = "latitude"
  [[processors.rename.replace]]
    field = "rxInfo_0_location_longitude"
    dest  = "longitude"
  [[processors.rename.replace]]
    field = "rxInfo_0_loRaSNR"
    dest  = "loRaSNR"
  [[processors.rename.replace]]
    field = "rxInfo_0_rssi"
    dest  = "rssi"
  [[processors.rename.replace]]
    field = "txInfo_dr"
    dest  = "dr"
  [[processors.rename.replace]]
    field = "txInfo_frequency"
    dest  = "frequency"
# TAGS
  [[processors.rename.replace]]
    tag   = "applicationID"
```

```
    dest  = "application_id"
  [[processors.rename.replace]]
    tag   = "applicationName"
    dest  = "application_name"
  [[processors.rename.replace]]
    tag   = "deviceName"
    dest  = "device_id"
  [[processors.rename.replace]]
    tag   = "devEUI"
    dest  = "device_eui"
  [[processors.rename.replace]]
    tag   = "rxInfo_0_gatewayID"
    dest  = "gateway_id"
  [[processors.rename.replace]]
    tag   = "rxInfo_0_name"
    dest  = "device_name"
  [[processors.rename.replace]]
    tag   = "rxInfo_0_uplinkID"
    dest  = "uplink_id"

[[processors.template]]
  order = 2
  tag = "device"
  template = 'device_{{ .Tag "device_id" }}'

[[processors.converter]]
  order = 3
  [processors.converter.tags]
    boolean     = ["adr"]
    measurement = ["device"]
    string      = [
      "adr",
      "application_id",
      "application_name",
      "device_eui",
      "device_id",
      "device_name",
      "gateway_id",
      "uplink_id"
    ]

 [[processors.date]]
  order       = 4
  field_key   = "gateway_utc_timestamp"
  date_format = "2006-01-02T15:04:05.000000000Z"
  date_offset = "0s"
  timezone    = "UTC"


###############################################################################
#                            SERVICE INPUT PLUGINS                            #
###############################################################################

[[inputs.mqtt_consumer]]
  servers            = ["ssl://mon.serveur.fr:8883"]
  topics             = ["application/1/device/aaaaaaaaaaaaaaaa/event/up"]
  qos                = 2
  persistent_session = true
  client_id          = "Ers"
  username           = "mqtt_user"
  password           = "mqtt_password"
  data_format        = "json"
  tls_ca             = "/etc/ssl/mon_serveur_fr/mon_serveur_fr_ca.crt"
  tls_cert           = "/etc/ssl/mon_serveur_fr/mon_serveur_fr_cert.crt"
  tls_key            = "/etc/ssl/mon_serveur_fr/mon_serveur_fr.key"
  tag_keys           = [
    "adr",
    "applicationID",
```

```
  "applicationName",
  "deviceName",
  "devEUI",
  "rxInfo_0_gatewayID",
  "rxInfo_0_name",
  "rxInfo_0_time",
  "rxInfo_0_uplinkID"
]
fieldpass           = [
  "fCnt",
  "fPort",
  "object_humidity",
  "object_light",
  "object_motion",
  "object_temperature",
  "object_vdd",
  "rxInfo_0_location_altitude",
  "rxInfo_0_location_latitude",
  "rxInfo_0_location_longitude",
  "rxInfo_0_loRaSNR",
  "rxInfo_0_rssi",
  "txInfo_dr",
  "txInfo_frequency"
]
# parse time
json_time_format    = "2006-01-02T15:04:05.999999999Z"
json_time_key       = "rxInfo_0_time"
json_timezone       = "UTC"
```

/etc/telegraf/telegraf.d/mcf88.conf

```
###############################################################################
#                            OUTPUT PLUGINS                                   #
###############################################################################

[[outputs.influxdb]]
  urls                   = ["https://mon.serveur.fr:8086"]
  database               = "database"
  skip_database_creation = true
  username               = "influxdb_user"
  password               = "influxdb_password"
  namepass               = ["device_*"]
  namedrop               = ["device_"]
  tls_cert               = "/etc/ssl/mon_serveur_fr/mon_serveur_fr_bundle.crt"
  tls_key                = "/etc/ssl/mon_serveur_fr/mon_serveur_fr.key"


###############################################################################
#                            PROCESSOR PLUGINS                                #
###############################################################################

[[processors.rename]]
  order = 1
# FIELDS
  [[processors.rename.replace]]
    field = "object_battery_percentage"
    dest  = "battery"
  [[processors.rename.replace]]
    field = "object_co2_1"
    dest  = "CO2_1"
  [[processors.rename.replace]]
    field = "object_co2_2"
    dest  = "CO2_2"
  [[processors.rename.replace]]
    field = "object_dateUTC_1"
    dest  = "dateUTC_1"
  [[processors.rename.replace]]
    field = "object_dateUTC_2"
    dest  = "dateUTC_2"
  [[processors.rename.replace]]
    field = "object_humidity_1"
    dest  = "humidity_1"
  [[processors.rename.replace]]
    field = "object_humidity_2"
    dest  = "humidity_2"
  [[processors.rename.replace]]
    field = "object_illumination_1"
    dest  = "illumination_1"
  [[processors.rename.replace]]
    field = "object_illumination_2"
    dest  = "illumination_2"
  [[processors.rename.replace]]
    field = "object_pressure_1"
    dest  = "pressure_1"
  [[processors.rename.replace]]
    field = "object_pressure_2"
    dest  = "pressure_2"
  [[processors.rename.replace]]
    field = "object_temperature_1"
    dest  = "temperature_1"
  [[processors.rename.replace]]
    field = "object_temperature_2"
    dest  = "temperature_2"
  [[processors.rename.replace]]
    field = "object_voc_1"
    dest  = "voc_1"
  [[processors.rename.replace]]
```

```
    field = "object_voc_2"
    dest  = "voc_2"
  [[processors.rename.replace]]
    field = "rxInfo_0_location_altitude"
    dest  = "altitude"
  [[processors.rename.replace]]
    field = "rxInfo_0_location_latitude"
    dest  = "latitude"
  [[processors.rename.replace]]
    field = "rxInfo_0_location_longitude"
    dest  = "longitude"
  [[processors.rename.replace]]
    field = "rxInfo_0_loRaSNR"
    dest  = "loRaSNR"
  [[processors.rename.replace]]
    field = "rxInfo_0_rssi"
    dest  = "rssi"
  [[processors.rename.replace]]
    field = "txInfo_dr"
    dest  = "dr"
  [[processors.rename.replace]]
    field = "txInfo_frequency"
    dest  = "frequency"
# TAGS
  [[processors.rename.replace]]
    tag   = "applicationID"
    dest  = "application_id"
  [[processors.rename.replace]]
    tag   = "applicationName"
    dest  = "application_name"
  [[processors.rename.replace]]
    tag   = "deviceName"
    dest  = "device_id"
  [[processors.rename.replace]]
    tag   = "devEUI"
    dest  = "device_eui"
  [[processors.rename.replace]]
    tag   = "rxInfo_0_gatewayID"
    dest  = "gateway_id"
  [[processors.rename.replace]]
    tag   = "rxInfo_0_name"
    dest  = "device_name"
  [[processors.rename.replace]]
    tag   = "rxInfo_0_uplinkID"
    dest  = "uplink_id"

[[processors.template]]
  order = 2
  tag = "device"
  template = 'device_{{ .Tag "device_id" }}'

[[processors.converter]]
  order = 3
  [processors.converter.tags]
    boolean     = ["adr"]
    measurement = ["device"]
    string      = [
      "adr",
      "application_id",
      "application_name",
      "device_eui",
      "device_id",
      "device_name",
      "gateway_id",
      "uplink_id"
    ]

 [[processors.date]]
```

```
  order       = 5
  field_key   = "gateway_utc_timestamp"
  date_format = "2006-01-02T15:04:05.000000000Z"
  date_offset = "0s"
  timezone    = "UTC"


###############################################################################
#                            SERVICE INPUT PLUGINS                            #
###############################################################################

[[inputs.mqtt_consumer]]
  servers            = ["ssl://mon.serveur.fr:8883"]
  topics             = ["application/1/device/bbbbbbbbbbbbbbbb/event/up"]
  qos                = 2
  persistent_session = true
  client_id          = "Mcf88"
  username           = "mqtt_user"
  password           = "mqtt_password"
  data_format        = "json"
  tls_ca             = "/etc/ssl/mon_serveur_fr/mon_serveur_fr_ca.crt"
  tls_cert           = "/etc/ssl/mon_serveur_fr/mon_serveur_fr_cert.crt"
  tls_key            = "/etc/ssl/mon_serveur_fr/mon_serveur_fr.key"
  tag_keys           = [
    "adr",
    "applicationID",
    "applicationName",
    "deviceName",
    "devEUI",
    "rxInfo_0_gatewayID",
    "rxInfo_0_name",
    "rxInfo_0_time",
    "rxInfo_0_uplinkID"
  ]
  fieldpass           = [
    "fCnt",
    "fPort",
    "object_battery_percentage",
    "object_co2_1",
    "object_co2_2",
    "object_dateUTC_1",
    "object_dateUTC_2",
    "object_humidity_1",
    "object_humidity_2",
    "object_illumination_1",
    "object_illumination_2",
    "object_pressure_1",
    "object_pressure_2",
    "object_temperature_1",
    "object_temperature_2",
    "object_voc_1",
    "object_voc_2",
    "rxInfo_0_location_altitude",
    "rxInfo_0_location_latitude",
    "rxInfo_0_location_longitude",
    "rxInfo_0_loRaSNR",
    "rxInfo_0_rssi",
    "txInfo_dr",
    "txInfo_frequency"
  ]
  # parse time
  json_time_format    = "2006-01-02T15:04:05.999999999Z"
  json_time_key       = "rxInfo_0_time"
  json_timezone       = "UTC"
```

/etc/telegraf/telegraf.d/rak.conf

```
###############################################################################
#                            OUTPUT PLUGINS                                   #
###############################################################################

[[outputs.influxdb]]
  urls                   = ["https://mon.serveur.fr:8086"]
  database               = "database"
  skip_database_creation = true
  username               = "influxdb_user"
  password               = "influxdb_password"
  namepass               = ["device_*"]
  namedrop               = ["device_"]
  tls_cert               = "/etc/ssl/mon_serveur_fr/mon_serveur_fr_bundle.crt"
  tls_key                = "/etc/ssl/mon_serveur_fr/mon_serveur_fr.key"


###############################################################################
#                            PROCESSOR PLUGINS                                #
###############################################################################

[[processors.rename]]
  order = 1
# FIELDS
  [[processors.rename.replace]]
    field = "object_analogInput_4"
    dest  = "analog_input_4"
  [[processors.rename.replace]]
    field = "object_analogInput_8"
    dest  = "analog_input_8"
  [[processors.rename.replace]]
    field = "object_barometer_6"
    dest  = "pressure"
  [[processors.rename.replace]]
    field = "object_humiditySensor_7"
    dest  = "humidity"
  [[processors.rename.replace]]
    field = "object_temperatureSensor_2"
    dest  = "temperature"
  [[processors.rename.replace]]
    field = "rxInfo_0_location_altitude"
    dest  = "altitude"
  [[processors.rename.replace]]
    field = "rxInfo_0_location_latitude"
    dest  = "latitude"
  [[processors.rename.replace]]
    field = "rxInfo_0_location_longitude"
    dest  = "longitude"
  [[processors.rename.replace]]
    field = "rxInfo_0_loRaSNR"
    dest  = "loRaSNR"
  [[processors.rename.replace]]
    field = "rxInfo_0_rssi"
    dest  = "rssi"
  [[processors.rename.replace]]
    field = "txInfo_dr"
    dest  = "dr"
  [[processors.rename.replace]]
    field = "txInfo_frequency"
    dest  = "frequency"
# TAGS
  [[processors.rename.replace]]
    tag   = "applicationID"
    dest  = "application_id"
  [[processors.rename.replace]]
    tag   = "applicationName"
    dest  = "application_name"
```

```
  [[processors.rename.replace]]
    tag   = "deviceName"
    dest  = "device_id"
  [[processors.rename.replace]]
    tag   = "devEUI"
    dest  = "device_eui"
  [[processors.rename.replace]]
    tag   = "rxInfo_0_gatewayID"
    dest  = "gateway_id"
  [[processors.rename.replace]]
    tag   = "rxInfo_0_name"
    dest  = "device_name"
  [[processors.rename.replace]]
    tag   = "rxInfo_0_uplinkID"
    dest  = "uplink_id"

[[processors.template]]
  order = 2
  tag = "device"
  template = 'device_{{ .Tag "device_id" }}'

[[processors.converter]]
  order = 3
  [processors.converter.tags]
    boolean     = ["adr"]
    measurement = ["device"]
    string      = [
      "application_id",
      "application_name",
      "device_eui",
      "device_id",
      "device_name",
      "gateway_id",
      "uplink_id"
    ]

[[processors.date]]
  order       = 4
  field_key   = "insert_utc_timestamp"
  date_format = "2006-01-02T15:04:05.000000000Z"
  date_offset = "0s"
  timezone    = "UTC"

[[processors.date]]
  order       = 5
  field_key   = "gateway_utc_timestamp"
  date_format = "2006-01-02T15:04:05.000000000Z"
  date_offset = "0s"
  timezone    = "UTC"


###############################################################################
#                            SERVICE INPUT PLUGINS                            #
###############################################################################

[[inputs.mqtt_consumer]]
  servers            = ["ssl://mon.serveur.fr:8883"]
  topics             = ["application/1/device/cccccccccccccccc/event/up"]
  qos                = 2
  persistent_session = true
  client_id          = "Rak"
  username           = "mqtt_user"
  password           = "mqtt_password"
  data_format        = "json"
  tls_ca             = "/etc/ssl/mon_serveur_fr/mon_serveur_fr_ca.crt"
  tls_cert           = "/etc/ssl/mon_serveur_fr/mon_serveur_fr_cert.crt"
  tls_key            = "/etc/ssl/mon_serveur_fr/mon_serveur_fr.key"
  tag_keys           = [
```

```
  "adr",
  "applicationID",
  "applicationName",
  "deviceName",
  "devEUI",
  "rxInfo_0_gatewayID",
  "rxInfo_0_name",
  "rxInfo_0_time",
  "rxInfo_0_uplinkID"
]
fieldpass           = [
  "fCnt",
  "fPort",
  "object_analogInput_4",
  "object_analogInput_8",
  "object_barometer_6",
  "object_humiditySensor_7",
  "object_temperatureSensor_2",
  "rxInfo_0_location_altitude",
  "rxInfo_0_location_latitude",
  "rxInfo_0_location_longitude",
  "rxInfo_0_loRaSNR",
  "rxInfo_0_rssi",
  "txInfo_dr",
  "txInfo_frequency"
]
# parse time
json_time_format    = "2006-01-02T15:04:05.999999999Z"
json_time_key       = "rxInfo_0_time"
json_timezone       = "UTC"
```

/etc/telegraf/telegraf-2.d/ers.conf

```
###############################################################################
#                            OUTPUT PLUGINS                                   #
###############################################################################

[[outputs.influxdb]]
  urls                   = ["https://mon.serveur.fr:8086"]
  database               = "database_backup"
  skip_database_creation = true
  username               = "backup_user"
  password               = "Backup_password"
  namepass               = ["device_*"]
  namedrop               = ["device_"]
  tls_cert               = "/etc/ssl/mon_serveur_fr/mon_serveur_fr_bundle.crt"
  tls_key                = "/etc/ssl/mon_serveur_fr/mon_serveur_fr.key"


###############################################################################
#                            PROCESSOR PLUGINS                                #
###############################################################################

[[processors.rename]]
  order = 1
# FIELDS
  [[processors.rename.replace]]
    field = "object_humidity"
    dest  = "humidity"
  [[processors.rename.replace]]
    field = "object_light"
    dest  = "light"
  [[processors.rename.replace]]
    field = "object_motion"
    dest  = "motion"
  [[processors.rename.replace]]
    field = "object_temperature"
    dest  = "temperature"
  [[processors.rename.replace]]
    field = "object_vdd"
    dest  = "vdd"
  [[processors.rename.replace]]
    field = "rxInfo_0_location_altitude"
    dest  = "altitude"
  [[processors.rename.replace]]
    field = "rxInfo_0_location_latitude"
    dest  = "latitude"
  [[processors.rename.replace]]
    field = "rxInfo_0_location_longitude"
    dest  = "longitude"
  [[processors.rename.replace]]
    field = "rxInfo_0_loRaSNR"
    dest  = "loRaSNR"
  [[processors.rename.replace]]
    field = "rxInfo_0_rssi"
    dest  = "rssi"
  [[processors.rename.replace]]
    field = "rxInfo_0_time"
    dest  = "gateway_utc_timestamp"
  [[processors.rename.replace]]
    field = "txInfo_dr"
    dest  = "dr"
  [[processors.rename.replace]]
    field = "txInfo_frequency"
    dest  = "frequency"
# TAGS
  [[processors.rename.replace]]
    tag   = "applicationID"
    dest  = "application_id"
```

```
  [[processors.rename.replace]]
    tag   = "applicationName"
    dest  = "application_name"
  [[processors.rename.replace]]
    tag   = "deviceName"
    dest  = "device_id"
  [[processors.rename.replace]]
    tag   = "devEUI"
    dest  = "device_eui"
  [[processors.rename.replace]]
    tag   = "rxInfo_0_gatewayID"
    dest  = "gateway_id"
  [[processors.rename.replace]]
    tag   = "rxInfo_0_name"
    dest  = "device_name"
  [[processors.rename.replace]]
    tag   = "rxInfo_0_time"
    dest  = "gateway_utc_timestamp"
  [[processors.rename.replace]]
    tag   = "rxInfo_0_uplinkID"
    dest  = "uplink_id"

[[processors.template]]
  order = 2
  tag = "device"
  template = 'device_{{ .Tag "device_id" }}'

[[processors.converter]]
  order = 3
  [processors.converter.tags]
    boolean = ["adr"]
    measurement = ["device"]
    string  = [
      "adr",
      "application_id",
      "application_name",
      "device_eui",
      "device_id",
      "device_name",
      "gateway_id",
      "gateway_utc_timestamp",
      "uplink_id"
    ]

[[processors.date]]
  order       = 4
  field_key   = "insert_utc_timestamp"
  date_format = "2006-01-02T15:04:05.000000000Z"
  date_offset = "0s"
  timezone    = "UTC"


###############################################################################
#                            SERVICE INPUT PLUGINS                            #
###############################################################################

[[inputs.mqtt_consumer]]
  servers            = ["ssl://mon.serveur.fr:8883"]
  topics             = ["application/1/device/aaaaaaaaaaaaaaaa/event/up"]
  qos                = 2
  persistent_session = true
  client_id          = "BackupErs"
  username           = "mqtt_user"
  password           = "mqtt_password"
  data_format        = "json"
  tls_ca             = "/etc/ssl/mon_serveur_fr/mon_serveur_fr_ca.crt"
  tls_cert           = "/etc/ssl/mon_serveur_fr/mon_serveur_fr_cert.crt"
  tls_key            = "/etc/ssl/mon_serveur_fr/mon_serveur_fr.key"
```

```
tag_keys           = [
  "adr",
  "applicationID",
  "applicationName",
  "deviceName",
  "devEUI",
  "rxInfo_0_gatewayID",
  "rxInfo_0_name",
  "rxInfo_0_time",
  "rxInfo_0_uplinkID"
]
fieldpass           = [
  "fCnt",
  "fPort",
  "object_humidity",
  "object_light",
  "object_motion",
  "object_temperature",
  "object_vdd",
  "rxInfo_0_location_altitude",
  "rxInfo_0_location_latitude",
  "rxInfo_0_location_longitude",
  "rxInfo_0_loRaSNR",
  "rxInfo_0_rssi",
  "txInfo_dr",
  "txInfo_frequency"
]
```

/etc/telegraf/telegraf-2.d/mcf88.conf

```
###############################################################################
#                            OUTPUT PLUGINS                                   #
###############################################################################

[[outputs.influxdb]]
  urls                   = ["https://mon.serveur.fr:8086"]
  database               = "database_backup"
  skip_database_creation = true
  username               = "backup_user"
  password               = "Backup_password"
  namepass               = ["device_*"]
  namedrop               = ["device_"]
  tls_cert               = "/etc/ssl/mon_serveur_fr/mon_serveur_fr_bundle.crt"
  tls_key                = "/etc/ssl/mon_serveur_fr/mon_serveur_fr.key"


###############################################################################
#                            PROCESSOR PLUGINS                                #
###############################################################################

[[processors.rename]]
  order = 1
# FIELDS
  [[processors.rename.replace]]
    field = "object_battery_percentage"
    dest  = "battery"
  [[processors.rename.replace]]
    field = "object_co2_1"
    dest  = "CO2_1"
  [[processors.rename.replace]]
    field = "object_co2_2"
    dest  = "CO2_2"
  [[processors.rename.replace]]
    field = "object_dateUTC_1"
    dest  = "dateUTC_1"
  [[processors.rename.replace]]
    field = "object_dateUTC_2"
    dest  = "dateUTC_2"
  [[processors.rename.replace]]
    field = "object_humidity_1"
    dest  = "humidity_1"
  [[processors.rename.replace]]
    field = "object_humidity_2"
    dest  = "humidity_2"
  [[processors.rename.replace]]
    field = "object_illumination_1"
    dest  = "illumination_1"
  [[processors.rename.replace]]
    field = "object_illumination_2"
    dest  = "illumination_2"
  [[processors.rename.replace]]
    field = "object_pressure_1"
    dest  = "pressure_1"
  [[processors.rename.replace]]
    field = "object_pressure_2"
    dest  = "pressure_2"
  [[processors.rename.replace]]
    field = "object_temperature_1"
    dest  = "temperature_1"
  [[processors.rename.replace]]
    field = "object_temperature_2"
    dest  = "temperature_2"
  [[processors.rename.replace]]
    field = "object_voc_1"
    dest  = "voc_1"
  [[processors.rename.replace]]
```

```
    field = "object_voc_2"
    dest  = "voc_2"
  [[processors.rename.replace]]
    field = "rxInfo_0_location_altitude"
    dest  = "altitude"
  [[processors.rename.replace]]
    field = "rxInfo_0_location_latitude"
    dest  = "latitude"
  [[processors.rename.replace]]
    field = "rxInfo_0_location_longitude"
    dest  = "longitude"
  [[processors.rename.replace]]
    field = "rxInfo_0_loRaSNR"
    dest  = "loRaSNR"
  [[processors.rename.replace]]
    field = "rxInfo_0_rssi"
    dest  = "rssi"
  [[processors.rename.replace]]
    field = "txInfo_dr"
    dest  = "dr"
  [[processors.rename.replace]]
    field = "txInfo_frequency"
    dest  = "frequency"
# TAGS
  [[processors.rename.replace]]
    tag   = "applicationID"
    dest  = "application_id"
  [[processors.rename.replace]]
    tag   = "applicationName"
    dest  = "application_name"
  [[processors.rename.replace]]
    tag   = "deviceName"
    dest  = "device_id"
  [[processors.rename.replace]]
    tag   = "devEUI"
    dest  = "device_eui"
  [[processors.rename.replace]]
    tag   = "rxInfo_0_gatewayID"
    dest  = "gateway_id"
  [[processors.rename.replace]]
    tag   = "rxInfo_0_name"
    dest  = "device_name"
  [[processors.rename.replace]]
    tag   = "rxInfo_0_time"
    dest  = "gateway_utc_timestamp"
  [[processors.rename.replace]]
    tag   = "rxInfo_0_uplinkID"
    dest  = "uplink_id"

[[processors.template]]
  order = 2
  tag = "device"
  template = 'device_{{ .Tag "device_id" }}'

[[processors.converter]]
  order = 3
  [processors.converter.tags]
    boolean = ["adr"]
    measurement = ["device"]
    string  = [
      "adr",
      "application_id",
      "application_name",
      "device_eui",
      "device_id",
      "device_name",
      "gateway_id",
      "gateway_utc_timestamp",
```

```
      "uplink_id"
    ]

[[processors.date]]
  order       = 4
  field_key   = "insert_utc_timestamp"
  date_format = "2006-01-02T15:04:05.000000000Z"
  date_offset = "0s"
  timezone    = "UTC"


###############################################################################
#                            SERVICE INPUT PLUGINS                            #
###############################################################################

[[inputs.mqtt_consumer]]
  servers            = ["ssl://mon.serveur.fr:8883"]
  topics             = ["application/1/device/bbbbbbbbbbbbbbbb/event/up"]
  qos                = 2
  persistent_session = true
  client_id          = "BackupMcf88"
  username           = "mqtt_user"
  password           = "mqtt_password"
  data_format        = "json"
  tls_ca             = "/etc/ssl/mon_serveur_fr/mon_serveur_fr_ca.crt"
  tls_cert           = "/etc/ssl/mon_serveur_fr/mon_serveur_fr_cert.crt"
  tls_key            = "/etc/ssl/mon_serveur_fr/mon_serveur_fr.key"
  tag_keys           = [
    "adr",
    "applicationID",
    "applicationName",
    "deviceName",
    "devEUI",
    "rxInfo_0_gatewayID",
    "rxInfo_0_name",
    "rxInfo_0_time",
    "rxInfo_0_uplinkID"
  ]
  fieldpass           = [
    "fCnt",
    "fPort",
    "object_battery_percentage",
    "object_co2_1",
    "object_co2_2",
    "object_dateUTC_1",
    "object_dateUTC_2",
    "object_humidity_1",
    "object_humidity_2",
    "object_illumination_1",
    "object_illumination_2",
    "object_pressure_1",
    "object_pressure_2",
    "object_temperature_1",
    "object_temperature_2",
    "object_voc_1",
    "object_voc_2",
    "rxInfo_0_location_altitude",
    "rxInfo_0_location_latitude",
    "rxInfo_0_location_longitude",
    "rxInfo_0_loRaSNR",
    "rxInfo_0_rssi",
    "txInfo_dr",
    "txInfo_frequency"
  ]
```

/etc/telegraf/telegraf-2.d/rak.conf

```
###############################################################################
#                            OUTPUT PLUGINS                                   #
###############################################################################

[[outputs.influxdb]]
  urls                   = ["https://mon.serveur.fr:8086"]
  database               = "database_backup"
  skip_database_creation = true
  username               = "backup_user"
  password               = "Backup_password"
  namepass               = ["device_*"]
  namedrop               = ["device_"]
  tls_cert               = "/etc/ssl/mon_serveur_fr/mon_serveur_fr_bundle.crt"
  tls_key                = "/etc/ssl/mon_serveur_fr/mon_serveur_fr.key"


###############################################################################
#                            PROCESSOR PLUGINS                                #
###############################################################################

[[processors.rename]]
  order = 1
# FIELDS
  [[processors.rename.replace]]
    field = "object_analogInput_4"
    dest  = "analog_input_4"
  [[processors.rename.replace]]
    field = "object_analogInput_8"
    dest  = "analog_input_8"
  [[processors.rename.replace]]
    field = "object_barometer_6"
    dest  = "pressure"
  [[processors.rename.replace]]
    field = "object_humiditySensor_7"
    dest  = "humidity"
  [[processors.rename.replace]]
    field = "object_temperatureSensor_2"
    dest  = "temperature"
  [[processors.rename.replace]]
    field = "rxInfo_0_location_altitude"
    dest  = "altitude"
  [[processors.rename.replace]]
    field = "rxInfo_0_location_latitude"
    dest  = "latitude"
  [[processors.rename.replace]]
    field = "rxInfo_0_location_longitude"
    dest  = "longitude"
  [[processors.rename.replace]]
    field = "rxInfo_0_loRaSNR"
    dest  = "loRaSNR"
  [[processors.rename.replace]]
    field = "rxInfo_0_rssi"
    dest  = "rssi"
  [[processors.rename.replace]]
    field = "txInfo_dr"
    dest  = "dr"
  [[processors.rename.replace]]
    field = "txInfo_frequency"
    dest  = "frequency"
# TAGS
  [[processors.rename.replace]]
    tag   = "applicationID"
    dest  = "application_id"
  [[processors.rename.replace]]
    tag   = "applicationName"
    dest  = "application_name"
```

```
  [[processors.rename.replace]]
    tag   = "deviceName"
    dest  = "device_id"
  [[processors.rename.replace]]
    tag   = "devEUI"
    dest  = "device_eui"
  [[processors.rename.replace]]
    tag   = "rxInfo_0_gatewayID"
    dest  = "gateway_id"
  [[processors.rename.replace]]
    tag   = "rxInfo_0_name"
    dest  = "device_name"
  [[processors.rename.replace]]
    tag   = "rxInfo_0_time"
    dest  = "gateway_utc_timestamp"
  [[processors.rename.replace]]
    tag   = "rxInfo_0_uplinkID"
    dest  = "uplink_id"

[[processors.template]]
  order = 2
  tag = "device"
  template = 'device_{{ .Tag "device_id" }}'

[[processors.converter]]
  order = 3
  [processors.converter.tags]
    boolean = ["adr"]
    measurement = ["device"]
    string  = [
      "adr",
      "application_id",
      "application_name",
      "device_eui",
      "device_id",
      "device_name",
      "gateway_id",
      "gateway_utc_timestamp",
      "uplink_id"
    ]

[[processors.date]]
  order       = 4
  field_key   = "insert_utc_timestamp"
  date_format = "2006-01-02T15:04:05.000000000Z"
  date_offset = "0s"
  timezone    = "UTC"


###############################################################################
#                            SERVICE INPUT PLUGINS                            #
###############################################################################

[[inputs.mqtt_consumer]]
  servers            = ["ssl://mon.serveur.fr:8883"]
  topics             = ["application/1/device/ccccccccccccccc/event/up"]
  qos                = 2
  persistent_session = true
  client_id          = "BackupRak"
  username           = "mqtt_user"
  password           = "mqtt_password"
  data_format        = "json"
  tls_ca             = "/etc/ssl/mon_serveur_fr/mon_serveur_fr_ca.crt"
  tls_cert           = "/etc/ssl/mon_serveur_fr/mon_serveur_fr_cert.crt"
  tls_key            = "/etc/ssl/mon_serveur_fr/mon_serveur_fr.key"
  tag_keys           = [
    "adr",
    "applicationID",
```

```
  "applicationName",
  "deviceName",
  "devEUI",
  "rxInfo_0_gatewayID",
  "rxInfo_0_name",
  "rxInfo_0_time",
  "rxInfo_0_uplinkID"
]
fieldpass           = [
  "fCnt",
  "fPort",
  "object_analogInput_4",
  "object_analogInput_8",
  "object_barometer_6",
  "object_humiditySensor_7",
  "object_temperatureSensor_2",
  "rxInfo_0_location_altitude",
  "rxInfo_0_location_latitude",
  "rxInfo_0_location_longitude",
  "rxInfo_0_loRaSNR",
  "rxInfo_0_rssi",
  "txInfo_dr",
  "txInfo_frequency"
]
```

Annexe 3 : les services systemd

/lib/systemd/system/telegraf.service

```
[Unit]
Description=The plugin-driven server agent for reporting metrics into InfluxDB
Documentation=https://github.com/influxdata/telegraf
After=network.target

[Service]
EnvironmentFile=-/etc/default/telegraf
User=telegraf
ExecStart=/usr/bin/telegraf -config /etc/telegraf/telegraf.conf -config-directory /etc/telegraf/telegraf.d
$TELEGRAF_OPTS
ExecReload=/bin/kill -HUP $MAINPID
Restart=on-failure
RestartForceExitStatus=SIGPIPE
KillMode=control-group

[Install]
WantedBy=multi-user.target
```

/lib/systemd/system/telegraf-2.service

```
[Unit]
Description=The plugin-driven server agent for reporting metrics into InfluxDB
Documentation=https://github.com/influxdata/telegraf
After=network.target

[Service]
EnvironmentFile=-/etc/default/telegraf
User=telegraf
ExecStart=/usr/bin/telegraf -config /etc/telegraf/telegraf.conf -config-directory /etc/telegraf/telegraf-2.d
$TELEGRAF_OPTS
ExecReload=/bin/kill -HUP $MAINPID
Restart=on-failure
RestartForceExitStatus=SIGPIPE
KillMode=control-group

[Install]
WantedBy=multi-user.target
```