



SMMePlus

Daily Closure acquisition process

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Summary

The aim of this document is to describe the acquisition process of Daily Closure registries in SMMePlus

Distribution List

Document target list

Name	Company

Document modifications

The following modifications refer to the old document versions.

Changes Description	Reference
First version	1.0

References

List of the documents

[1]

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1. Introduction

1.1. Purpose

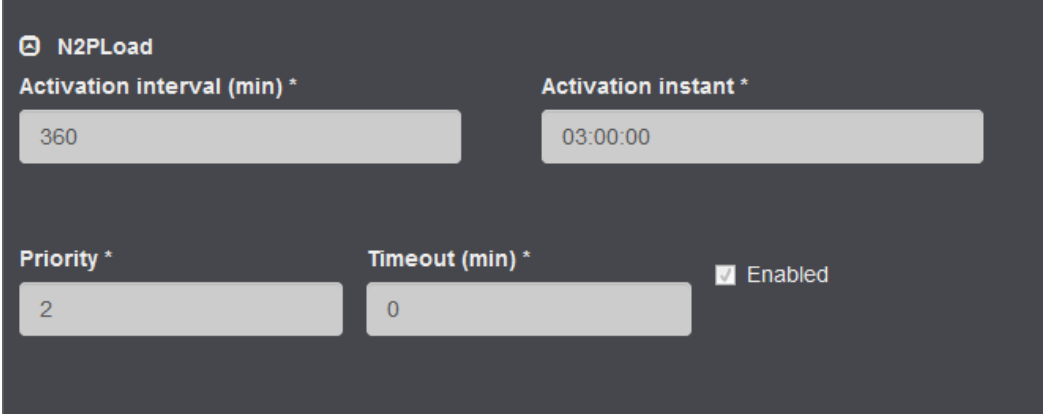
The aim of this document is to describe the acquisition process of Daily Closure registries in SMMePlus

2. Devices Configuration

2.1. Concentrator configuration

The n2pload procedure of concentrators is in charge of collecting load profiles and daily closures from commissioned meters.

The configuration of procedures inside concentrators is performed through “Concentrator initialization” and “Concentrator modification” processes of SMMePlus. The system writes inside the concentrator the parameters that have been defined in the concentrator profile.



The screenshot shows a configuration window titled "N2PLoad". It contains five input fields and one checkbox. The "Activation interval (min) *" field has the value "360". The "Activation instant *" field has the value "03:00:00". The "Priority *" field has the value "2". The "Timeout (min) *" field has the value "0". The "Enabled" checkbox is checked.

Field	Value
Activation interval (min) *	360
Activation instant *	03:00:00
Priority *	2
Timeout (min) *	0
Enabled	<input checked="" type="checkbox"/>

Activation interval is the value of the period (in minutes) over which the concentrator procedure is executed. For example, a value 10 means that every ten minutes the system executes the procedure.

Activation instant is the first instant in the day in which the concentrator procedure is activated.

Priority is a value detailing the priority level of the procedure. In the case in which a high priority procedure is activated while a low priority procedure is still running, the low priority procedure execution is stopped and the high priority one is started.

Timeout is the timeout between the activation instant and the real activation of the procedure. It is normally set to 0.

2.2. Meter configuration

Daily closure is managed in meters since firmware 11.

When a meter is commissioned, SMMePlus system executes the “Meter Tech Configuration” process. Through this process, the meter is synchronized, configured and the firmware version is read.

After the “Meter Tech Configuration” process, the “Meter Tech Configuration on Concentrator” process is executed. If the concentrator version is equals od higher than 21 and the meter firmware is equals or higher that 11, a specific flag inside concentrator is enabled for the meter.

Meters in field

concentrator	usagepoint	serialnumber	type	state	process state	row	phase	version app1	version sw fx	pload	dailyclosure
TD-4001	4745	UAAEEDN16202817600	CERM1	Commissioned		154	Phase T	3130		True	False

Meters in field

concentrator	usagepoint	serialnumber	type	state	process state	row	phase	version app1	version sw fx	pload	dailyclosure
TD-4001	4584	UAAEEDN17700583758	CERM1	Commissioned		185	Phase T	3131		True	True

3. Collection and integration

3.1. Daily Closure collection

Daily closures of meters are acquired in SMMePlus through Daily Closure scheduled activity.

Activities execution is based on “Concentrator Activities Settings”:

- **interval seconds** are seconds between the execution of activities.
- **priority** is used by the system for choosing which activity has to be executed first (in case of start at the same time)

Concentrator Activities Settings

concentrator activity	interval seconds	priority	max retry count	max execution hours
N2Pload	21600	2	-	-
DailyClosure	21600	2	-	-
Autodiscovery	86400	4	-	-

In “Completed Scheduled Works” report you can see all executions of scheduled activities.

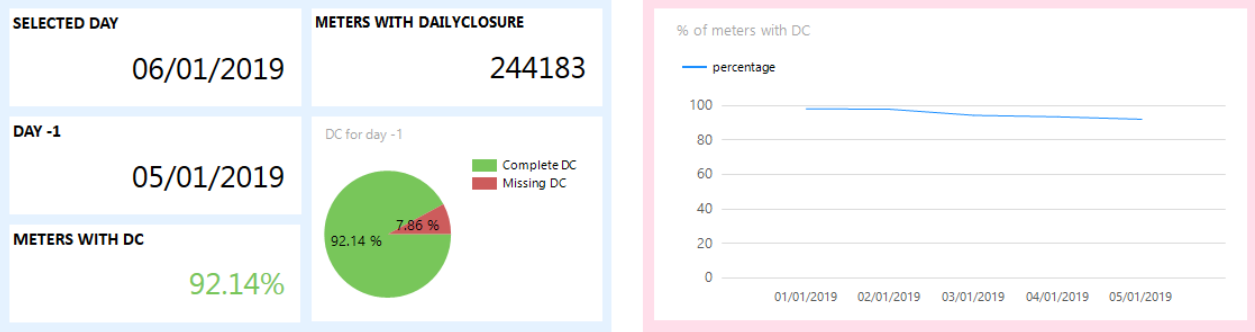
The screenshot displays the SMM ePlus - SMART METERS MANAGER web application. The interface includes a top navigation bar with links for Home, About, and Contacts, along with a language selector set to English and a user profile for MainAdmin. The main menu on the left lists various system components: Admin, System, Technical Area, Commercial Area, and Report. The central panel shows the 'Completed Scheduled Works' report for the 'DailyClosure' activity type, filtered by the date 1/6/2019. The report table lists 10 work orders, all of which were successfully executed (result: green checkmark). The table columns are: idwork, concentrator, activity type, startdate utc, enddate utc, workorder, and result.

idwork	concentrator	activity type	startdate utc	enddate utc	workorder	result
517193	TD-354	DailyClosure	1/6/2019 12:36:42 PM	1/6/2019 12:36:55 PM	-	✓
517179	TD-12045	DailyClosure	1/6/2019 12:36:02 PM	1/6/2019 12:36:52 PM	-	✓
517174	TD-11373	DailyClosure	1/6/2019 12:35:47 PM	1/6/2019 12:36:36 PM	-	✓
517165	TD-51639	DailyClosure	1/6/2019 12:35:27 PM	1/6/2019 12:35:44 PM	-	✓
517156	TD-80795	DailyClosure	1/6/2019 12:34:45 PM	1/6/2019 12:35:32 PM	-	✓
517145	TD-51821	DailyClosure	1/6/2019 12:34:16 PM	1/6/2019 12:35:13 PM	-	✓
517139	TD-10098	DailyClosure	1/6/2019 12:33:59 PM	1/6/2019 12:37:19 PM	-	✓
517119	TD-7333	DailyClosure	1/6/2019 12:33:10 PM	1/6/2019 12:34:00 PM	-	✓
517118	TD-11392	DailyClosure	1/6/2019 12:33:05 PM	1/6/2019 12:34:38 PM	-	✓

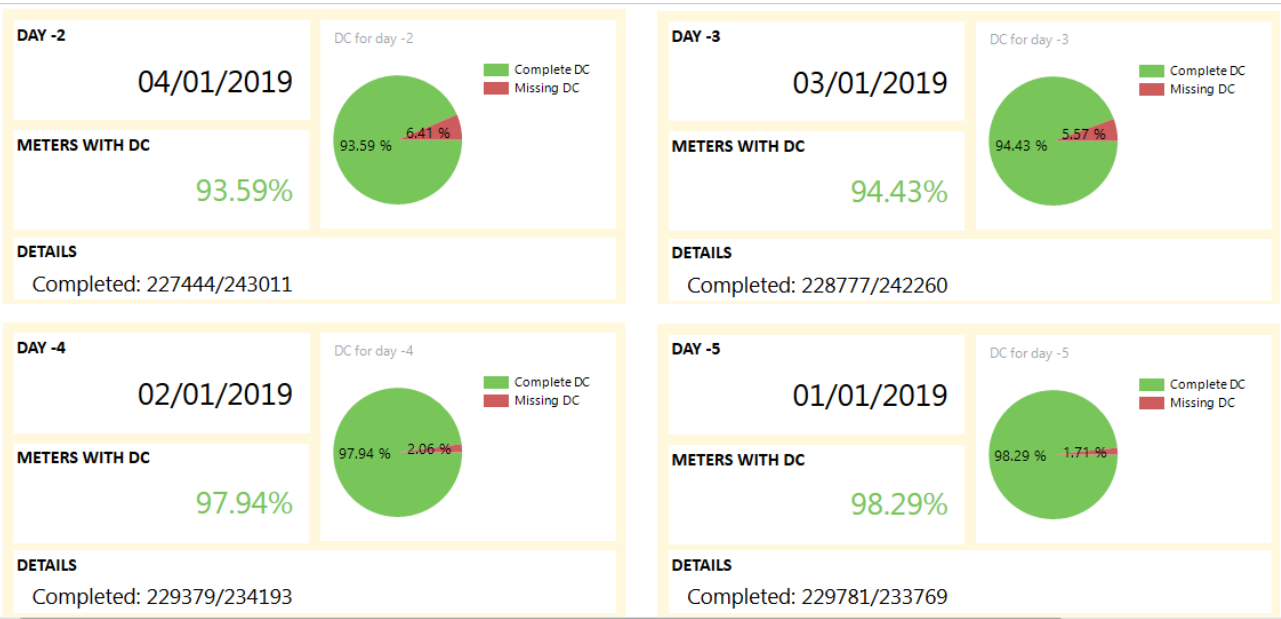
In “Aggregated Daily Closure Statistics” report you can see aggregated information of daily closure collection.

Aggregated Daily Closure Statistics

Execution time UTC: 1/6/2019 12:23:04 PM



These data are not in real time. The calculation time is visible in the right-top corner of the report.

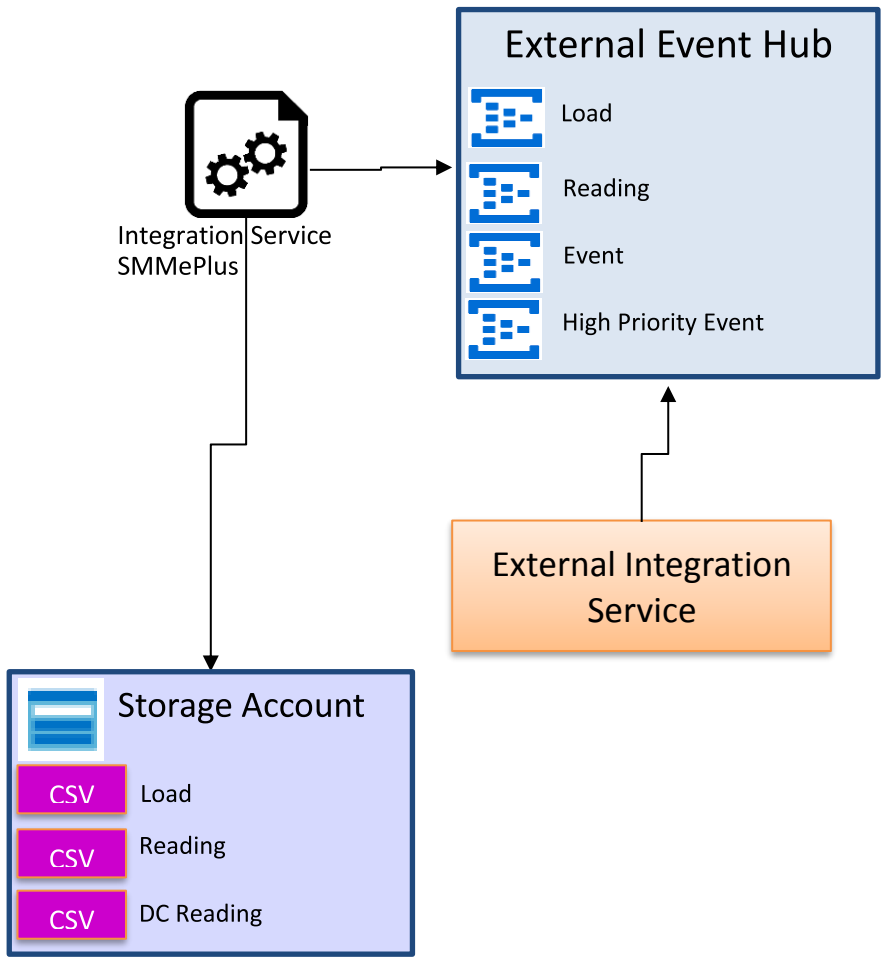


You can see the amount of daily closures collected for the previous days.

Since the n2pload procedure inside the concentrators recovers missing information (when the meter or the concentrator returns reachable), the percentages are higher in previous days.

3.2. SMMePlus Integration Service

SMMePlus Integration Service is the component in charge of making collected registries available for business processes.














Latest version of SMMPlus Integration Service pushes collected data (DC, samples, events) on an Azure Event Hub stream that can be accessed using a private key.

The Integration service of the client “listens” to this stream in order to download new information as soon as they’re available.

The payload of DC pushed on Event Hub follows CIM standard and has this format

```
{
  "ci": "00000000-0000-0000-0000-000000000000", ← Correlation ID of request (if exists)
  "c": "00000000-0000-0000-0000-000000000000", ← Identifier of company
  "m": "UAAEEDN15200000XXX", ← Meter serialnumber
  "p": "POD8", ← POD name
  "data": [
    {
      "cc": "0.0.16.1.1.1.12.0.0.0.0.0.0.0.0.72.0", ← CIM Code
      "d": "2018-09-20T00:00:00", ← Timestamp of first DC
      "values": [
        {
          "v": 82, "cq": "1.0.0"
        }, ← DC of timestamp
        {
          "v": 84, "cq": "1.0.0"
        }, ← DC of timestamp + 1 day
      ]
    },
    {
      "cc": "0.0.16.9.1.1.12.0.0.0.0.6.0.0.0.73.0", ← CIM Code
      "d": "2018-09-20T00:00:00", ← Timestamp of first DC
      "values": [
        {
          "v": 0, "cq": "1.0.0"
        }, ← DC of timestamp
        {
          "v": 0, "cq": "1.0.0"
        }, ← DC of timestamp + 1 day
      ]
    }
  ]
}
```

In addition to this real time process, every day a csv file containing DC registries is produced and saved on an Azure File Storage.

NAME	TYPE	SIZE
 DC_2019-01-01_0.csv	File	9.28 MiB
 DC_2019-01-01_1.csv	File	2.43 MiB
 DC_2019-01-01_3.csv	File	10.76 MiB
 DC_2019-01-01_4.csv	File	65.54 MiB
 DC_2019-01-02_0.csv	File	13.92 KiB
 DC_2019-01-02_1.csv	File	40.36 MiB
 DC_2019-01-02_2.csv	File	35.96 MiB
 DC_2019-01-02_3.csv	File	8.55 MiB
 DC_2019-01-02_4.csv	File	3.62 MiB
 DC_2019-01-03_0.csv	File	2.69 KiB
 DC_2019-01-03_2.csv	File	26.97 MiB

The file contains all registries collected the day before. If the DC process recovers data of previous days you will find them in the csv file of the day the process runs.

The format of the file is the following

```
serialnumber;t1;t2;t3;t4;t5;t6;tot;energytype;energytype_description;time
UAAEEDN15200000XXX;7743059;0;0;0;0;0;7743059;8;Active Energy Import Previous;2019-01-01 00:00:00.000
```