



A **B&B ELECTRONICS** Company

User Module Cumulocity Agent

APPLICATION NOTE



Used symbols



Danger – important notice, which may have an influence on the user's safety or the function of the device.



Attention – notice on possible problems, which can arise in specific cases.



Information, notice – information, which contains useful advice or special interest.



Conel s.r.o., Sokolska 71, 562 04 Usti nad Orlici, Czech Republic
Manual issued in CZ, November 4, 2014

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1. User Module Description

 User module *Cumulocity Agent* is not a part of the standard router's firmware. Uploading of this user module is described in the Configuration manual (see [1, 2]).



The user module is v2 and v3 router platforms compatible.

Cumulocity is a cloud-based subscription service designed for creating Internet of Things (IoT) solutions. It gives you very fast visibility and control over your remote devices. Cumulocity works with any network architecture, but it is specifically designed to work out of the box with mobile networks, therefore it is an ideal solution for Conel routers.

Cumulocity stores all information about your devices (routers) on one place and displays it in a visual form through the web interface. The *Cumulocity Agent* user module allows you to monitor and store information about Conel routers.

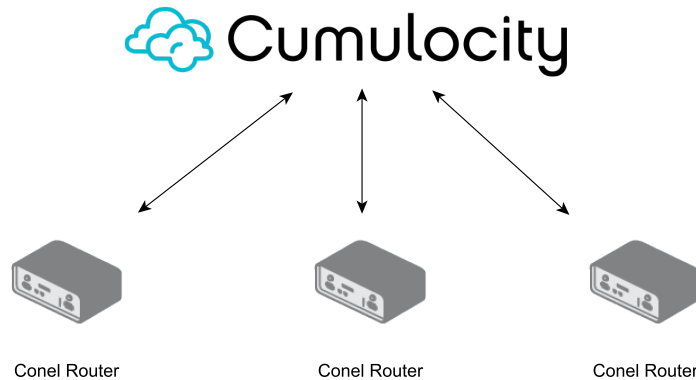


Figure 1: Conel routers connected to Cumulocity cloud service via Cumulocity Agent

Cumulocity Agent in the router communicates with the Cumulocity cloud server using the widely supported Internet standard *REST* (Representational state transfer). It is an abstraction layer which has architecture suitable exactly for this purpose, is secured and is based on HTTP(S) and TCP.

Immediately after connecting the router to Cumulocity, basic information about the router is available. At the same time Cumulocity starts to create statistics about the signal strength and other parameters.

Cumulocity Agent makes these router information accessible through Cumulocity:

- Basic information about the router (name, type, model, serial number, IMEI, cell ID etc.)
- Graphs of measurements and statistics – signal strength, router's memory usage and data traffic

For more information about Cumulocity, see Cumulocity online guides [3].

2. Configuration

Configuration of the *Cumulocity Agent* user module is accessible through the web interface of the router in section *User Modules*. When user module added, click on the *Cumulocity Agent* and you will see the configuration as seen on the fig. 2.

The menu of the user module has three items – *Configuration* to configure the *Cumulocity Agent*, *System Log* to see the output information from router if needed (for control or problem solving, same as *System Log* in the *Status* section of router's configuration) and the *Return* item to go back to router's web interface.

Cumulocity Agent

| Customization | Cumulocity Agent Configuration |
|---|--|
| Configuration System Log Return | <input checked="" type="checkbox"/> Enable Cumulocity Agent <hr/> Device ID 005263849865 <hr/> Username * <input type="text"/> Password * <input type="password"/> Interval <input type="text" value="1"/> minutes <small>* can be blank</small> <hr/> <input type="button" value="Apply"/> |

Figure 2: User module *Cumulocity Agent* configuration, *Device ID* highlighted

The configuration of the module itself is very easy – just check the *Enable Cumulocity Agent* item and click *Apply* button to apply the change. The rest items can be blank or unchanged.

| Item | Description |
|----------|--|
| Username | Can be blank – do not fill in, you can add router from Cumulocity via Device ID |
| Password | Can be blank – do not fill in, you can add router from Cumulocity via Device ID |
| Interval | Interval of sending data to Cumulocity cloud server. The <i>Cumulocity Agent</i> in the router stores data every 10 seconds but sends them to Cumulocity according to this settings. |

Table 1: Items of the *Cumulocity Agent* configuration



Adding of the router to Cumulocity can be done from Cumulocity web interface and is described in the next chapter. To add the router, you need the *Device ID* – it's highlighted in the figure 2. Copy it and login to Cumulocity.

3. Adding the Router to Cumulocity

Login to your Cumulocity account (go to yourURL.cumulocity.com). If you don't have account, create one at cumulocity.com, upper right corner, *Try Cumulocity for free*. When logged in the Cumulocity, go to *Registration* section in the menu to register the router, see figure 3. Fill in the router's Device ID in the form (1) and click the *Register Device* button (2). The router will appear in the list of devices (3) with *waiting for connection* status.



Figure 3: Registration of router to Cumulocity

Router has to be connected to the Internet for successful finish of the registration. In a while the router's status will change to *pending for acceptance* and the button *accept* will be available (figure 4). Click the button and registration is done.

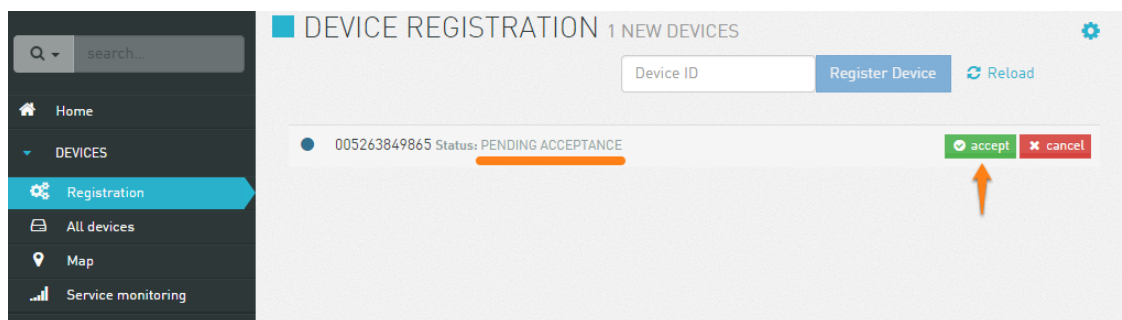


Figure 4: Router connected, pending for acceptance

Now you can access the router in the *All devices* section (figure 5). It can take a few seconds the router will appear in the list after clicking the *accept* button. Click the router in the list of all devices to access the information about the router, measured data and statistics.

3. ADDING THE ROUTER TO CUMULOCITY

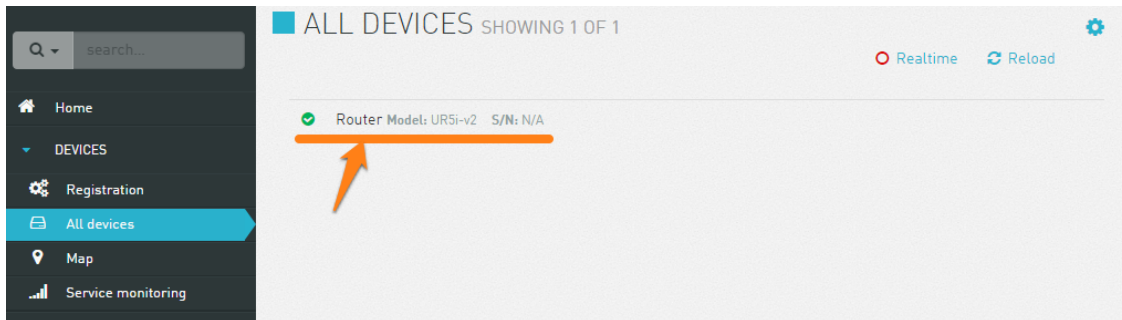


Figure 5: Added router in the list of all devices

3.1 Viewing the Router Information in the Cumulocity

Clicking the router in the all devices list, the basic information about router appears (section Info, see figure 6). Information about connection, name, type, model, serial number, IMEI, Cell ID etc. are available. These information is also editable. You can add the position of the router on the map – click the settings icon in the right upper corner and choose *Add Location*.

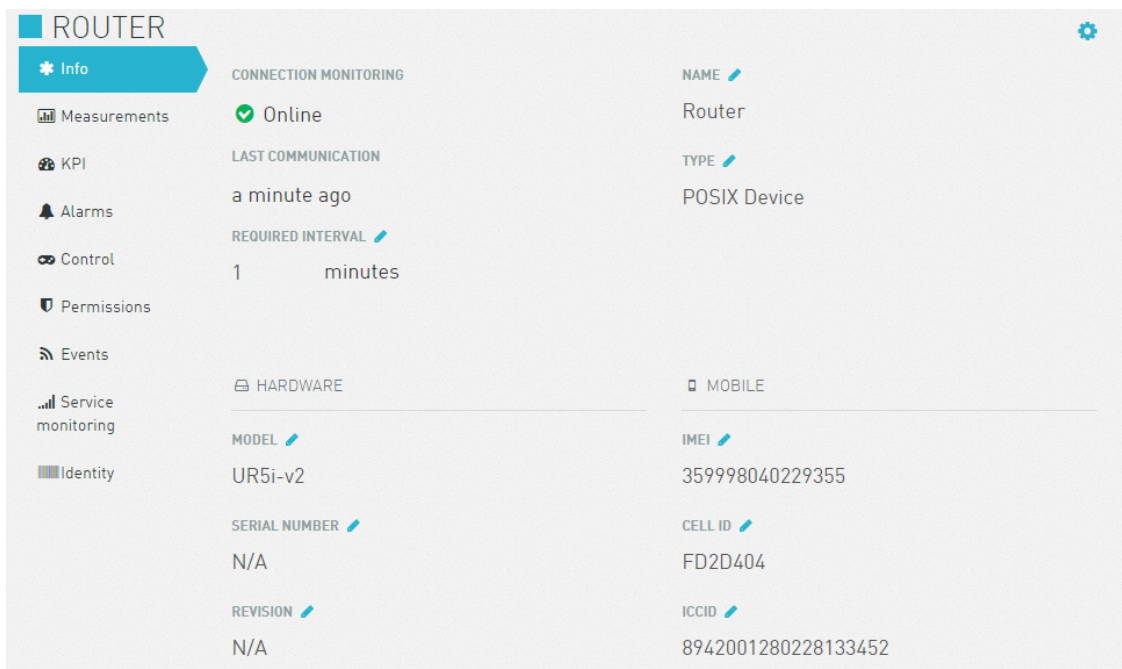


Figure 6: Info section – basic information about the router

3. ADDING THE ROUTER TO CUMULOCITY

In the section measurement there is the graphic overview of the memory (RAM), signal strength in the router and network traffic statistics – see figure 7. These measurements are not available immediately after the router registration. Wait for few minutes to access the measurements section (if it doesn't appear, try to logout and login back again).

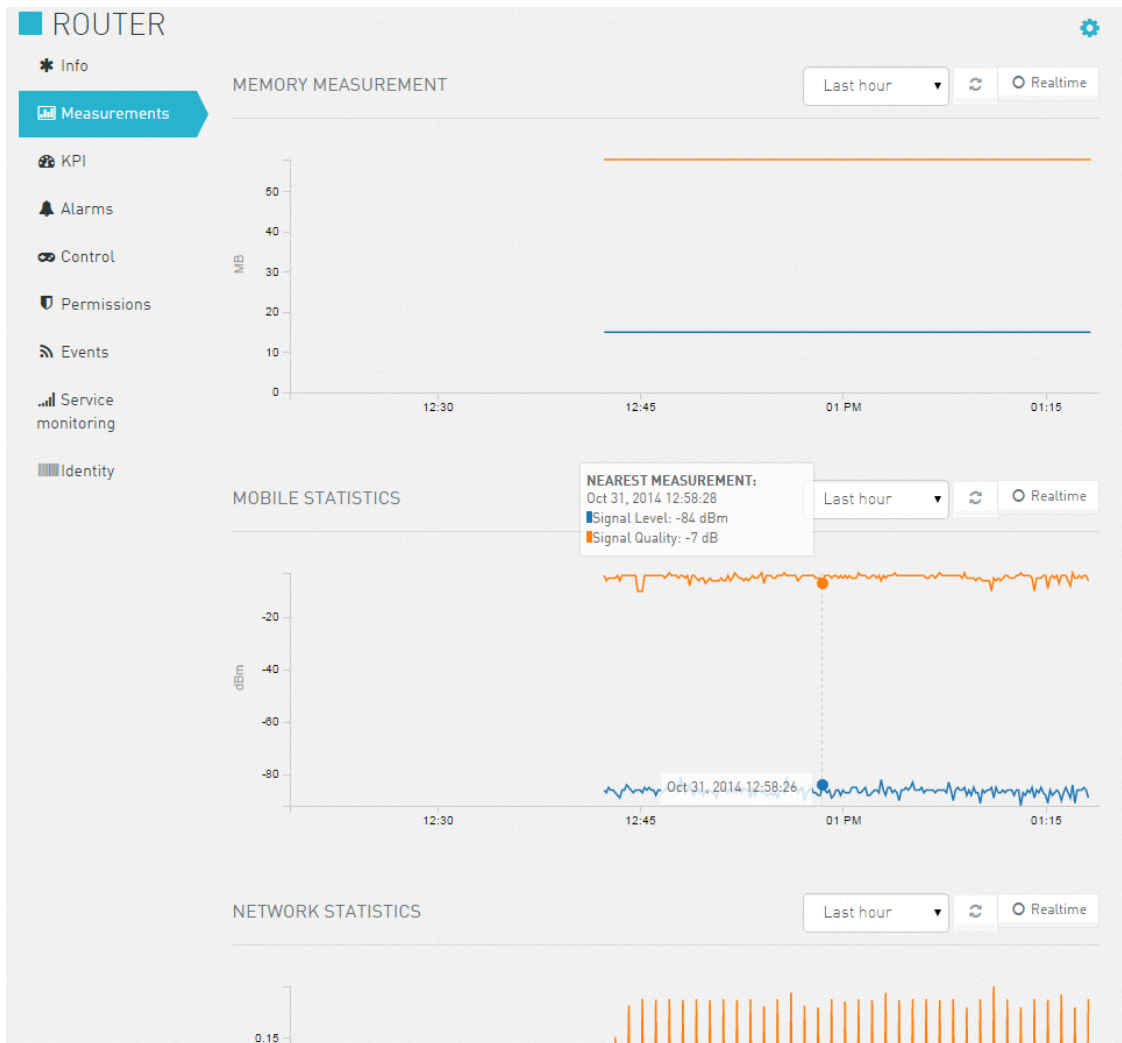


Figure 7: Measurement section – memory usage, signal strength and data traffic.

4. Recommended Literature

- [1] Conel: **Configuration manual for v2 routers**
- [2] Conel: **Configuration manual for v3 routers**
- [3] Cumulocity: **Cumulocity Guides**, available at: <http://cumulocity.com/guides/>