



KNX@Home
Building Control Server

Tutorial for the first start

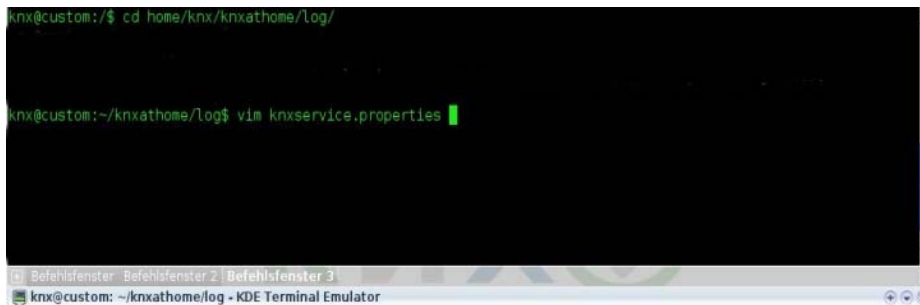
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Supervisor: Prof. Dr.-Ing. Andreas Grzempa

www.hto.fh-deggendorf.de/komm

This tutorial is for the first project with your Live-CD and helps you to understand the principle discharge to build your virtual home in the “KNX@Home-Program”.

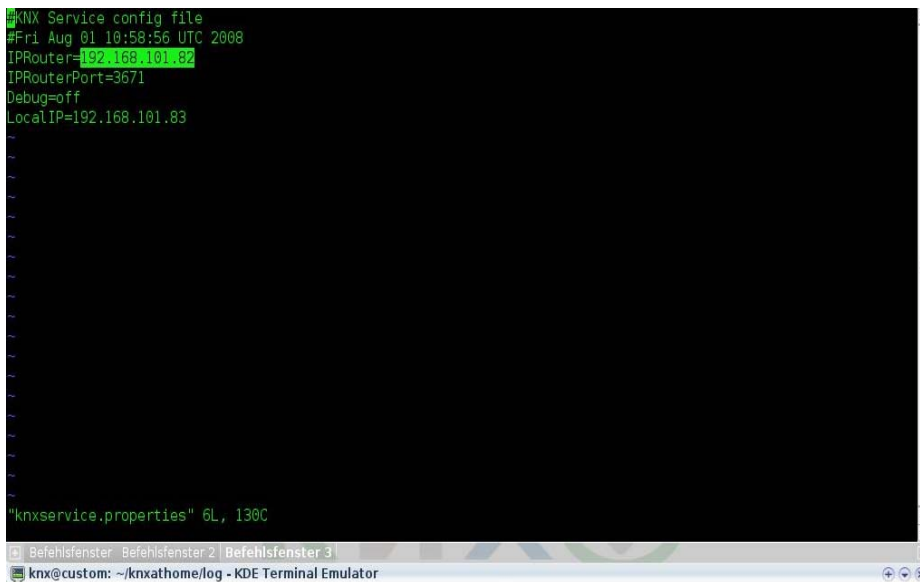
It can be possible that you have to appoint the address from the IP-Router. In the following it is illustrated. If you don't need it, you can jump over this step.

1. Start the terminal and write following instructions
cd home/knx/knxathome/log/ and validate with “Return”.
2. Now write *vim knxservice.properties* in the line.



```
knx@custom:/$ cd home/knx/knxathome/log/
knx@custom:~/knxathome/log$ vim knxservice.properties
```

3. On your monitor you can see the following picture. Now change the IP-Router-address and leave the file.



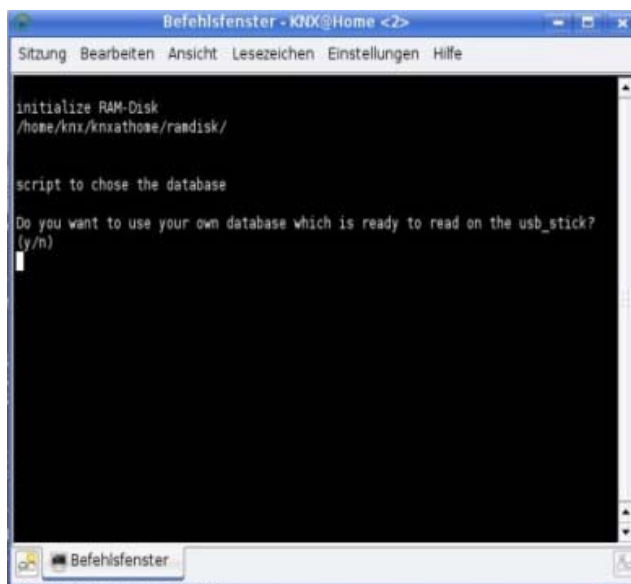
```
KNX Service config file
#Fri Aug 01 10:58:56 UTC 2008
IPRouter=192.168.101.82
IPRouterPort=3671
Debug=off
LocalIP=192.168.101.83

"knxservice.properties" 6L, 130C
```

1. Start “KNX@Home” from Live-CD

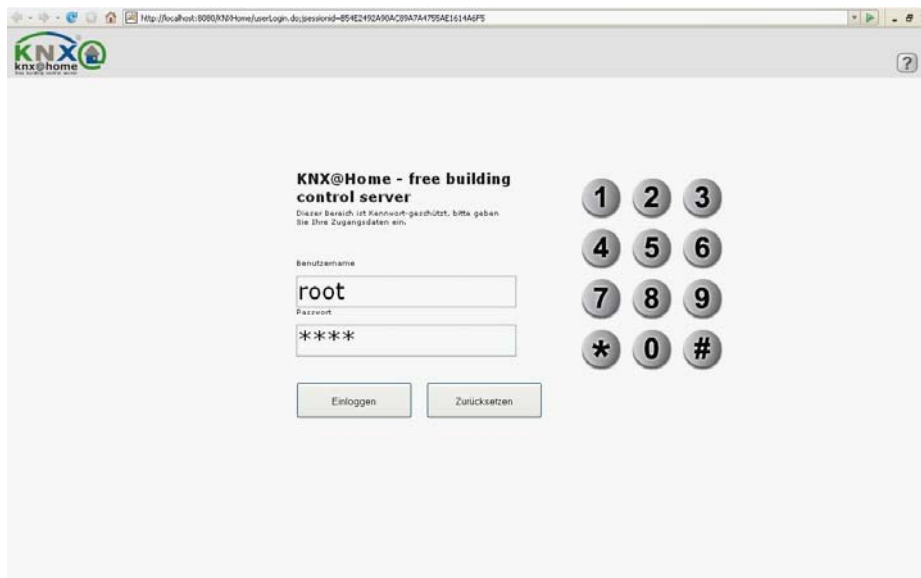


2. Answer the question in the dialogue window with “n” + return.

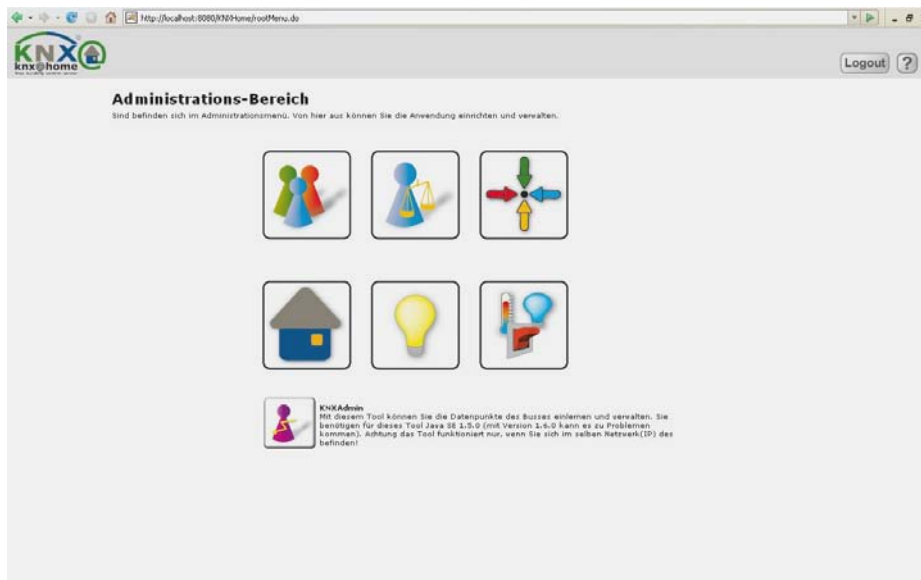


3. Now the log on screen is open and you can sign on with

username: root
password: root



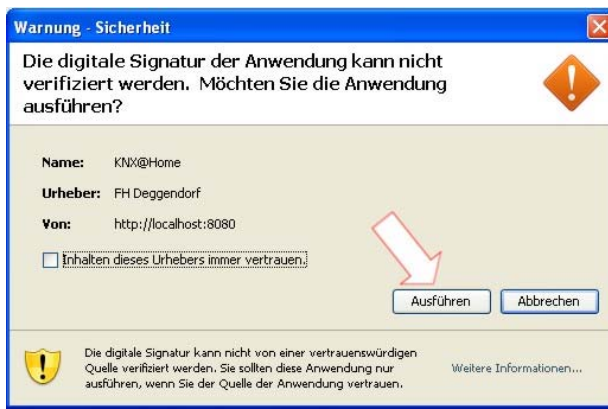
4. This is your workplace with diverse menus. Start now KNX-Admin.



5. After starting KNX-Admin a new Java-Webstart session is started.

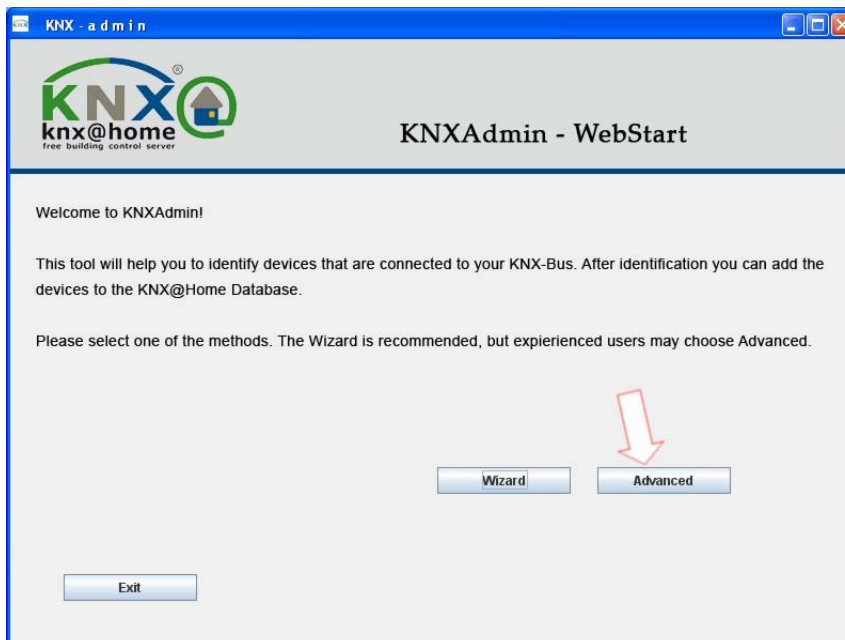


If KNX-Admin-webstart is ready you have to allow the script to start up.

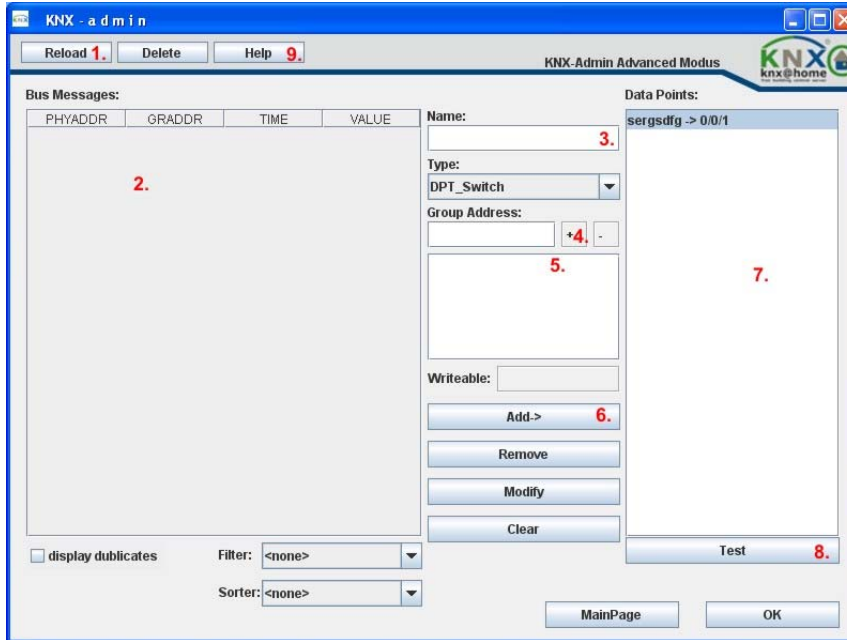


6. KNX- Admin is now open and you can choose between “Advanced” and “Wizard”.

First start “Advanced”-modus. If you want to start with the “Wizard” go to page 6.



7. In this window you can name the different switches (data-points), which you can use to build your virtual home in the browser application. The following steps explain you in short form, how you can name a data-point.

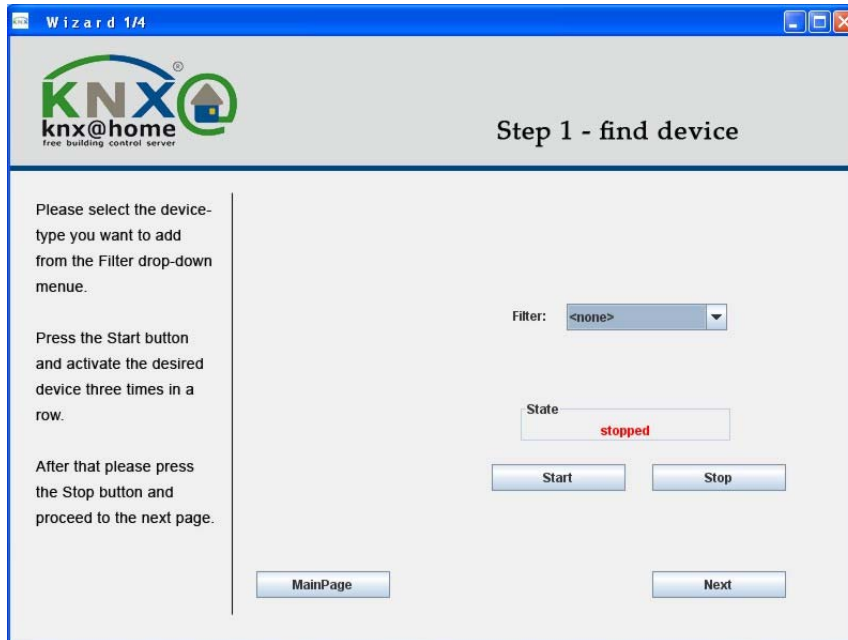


1. Push the switch you want to name three times and then click the “Reload”
2. Now you see the bus messages from your system in this chart. You can mark one of the three lines.
3. In the field “Name” you can appoint your switch, for example “living room”.
4. Push the button “+” and the group address appears in the label with number five.
5. Now you have to mark this group address.
6. The last step is now to add the switch in the “Data-Points”-list with button “Add->”.
7. In this list you can find now the data point with group address and associated name, for example “living-room”.
8. You can test your switch by marking it in the “Data -Points”-list and afterward clicking “Test”.
9. In “Help” you can get information about the other functions in the advanced modus.

8. Now go back to KNX-Admin and start the “Wizard”

The “Wizard” is subdivided in four steps and brings to you the same result like “Advanced”, but the “Wizard” is an accompanying document which helps you to find the right group address. The following picture and the statements in the left column may help you to name a data-point.

STEP 1/4



Wizard 1/4

Step 1 - find device

Please select the device-type you want to add from the Filter drop-down menu.

Press the Start button and activate the desired device three times in a row.

After that please press the Stop button and proceed to the next page.

Filter:

State:

STEP 2/4



Wizard 2/4

Step 2 - select device

Choose the desired bus-message from the list and add it to the group-address list below, using the + button.

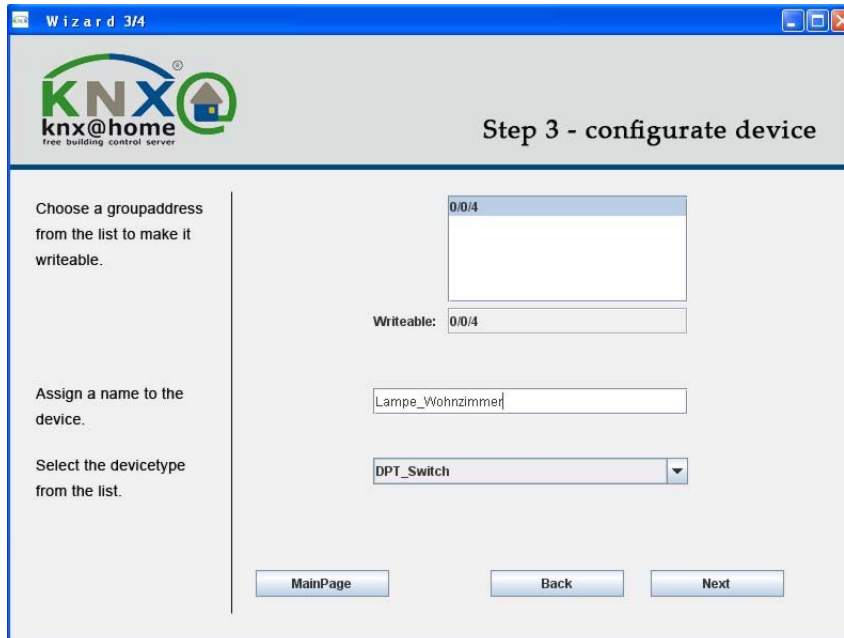
To remove an item from the groupmessage list press the - button.

0/0/4

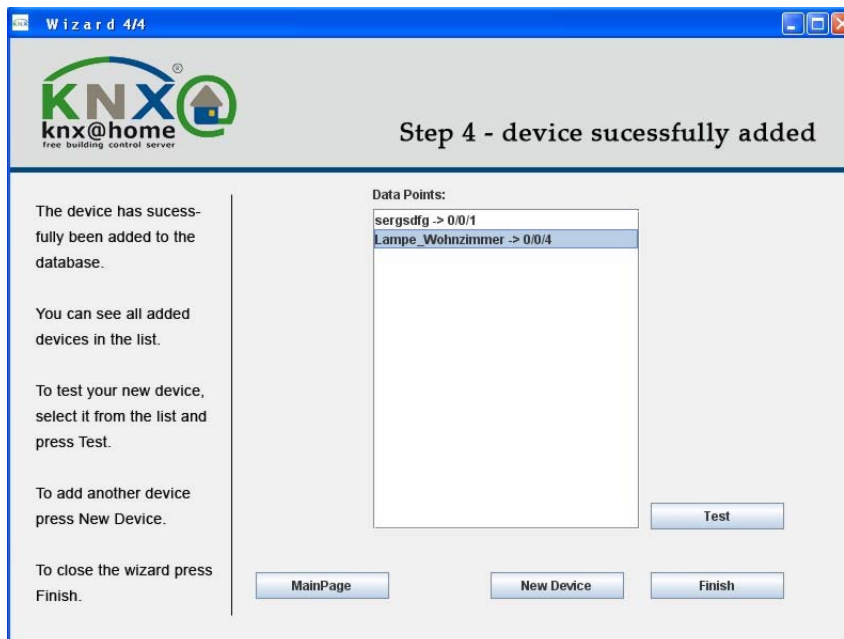
Bus Messages:

PHYADDR	GRADDR	TIME	VALUE
3.12.20	0/0/4	28.04 4:41:59	On
3.12.20	0/0/4	28.04 4:41:58	On
3.12.20	0/0/4	28.04 4:41:58	On
1.11.50	0/0/5	28.04 4:41:59	On
1.11.50	0/0/5	28.04 4:41:58	On
1.11.50	0/0/5	28.04 4:41:58	On

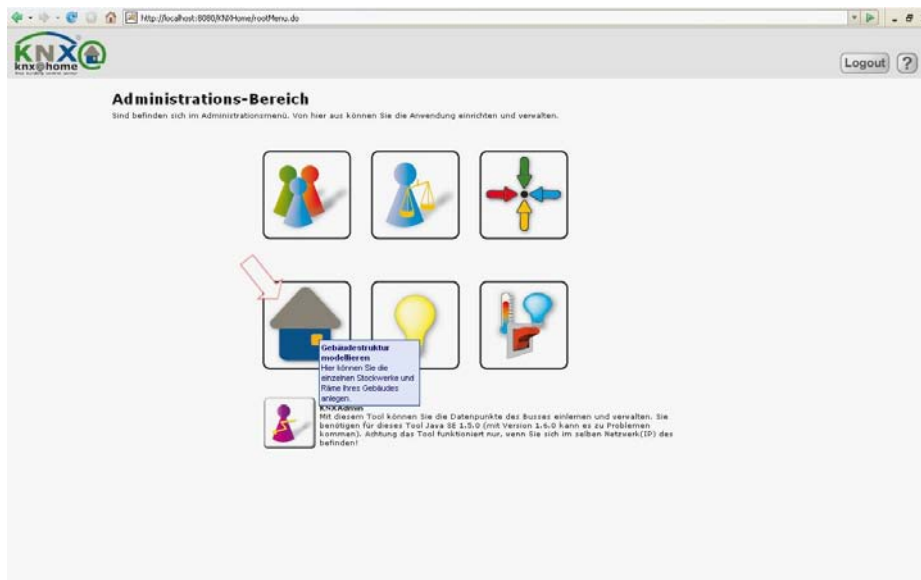
STEP 3/4



STEP 4/4



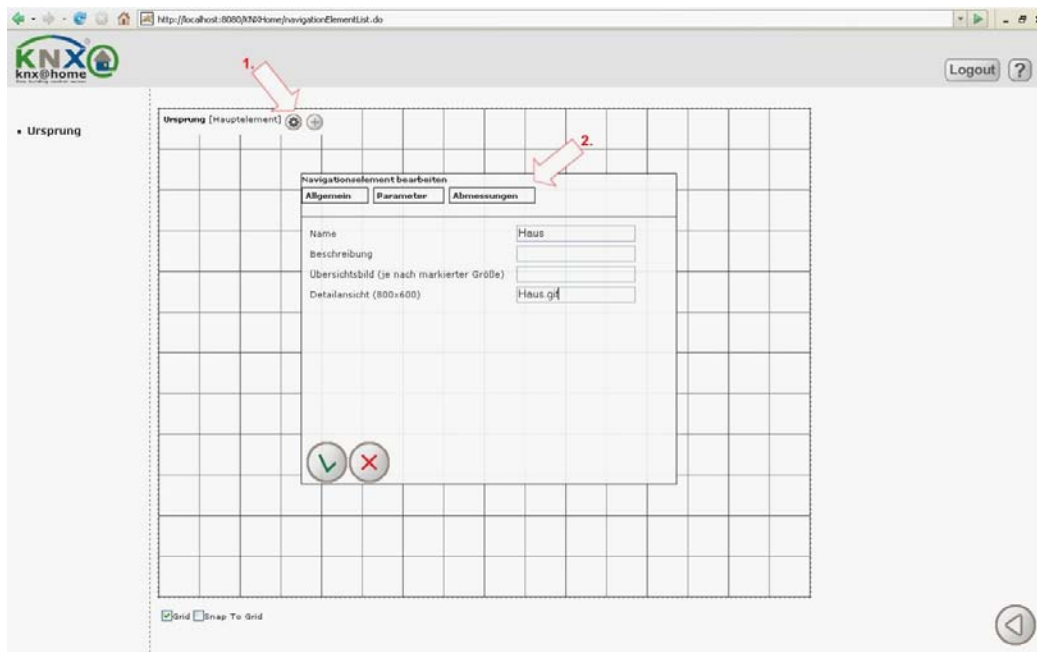
9. In step 7 or step 8 you name a data-point, now you can model your house. Now close “KNX-Admin” and start the “Gebäudestruktur modellieren”-browser.



IMPORTANT

You must save images of your building in the existing Tomcat directory
 ... \Tomcat\webapps\KNXHome\userfiles

In this menu you see this:



1. Click “Diesen Knoten bearbeiten”
2. This window is opening now.
 In submenu “Allgemein” you have to make following inputs:
Name: the name of the object

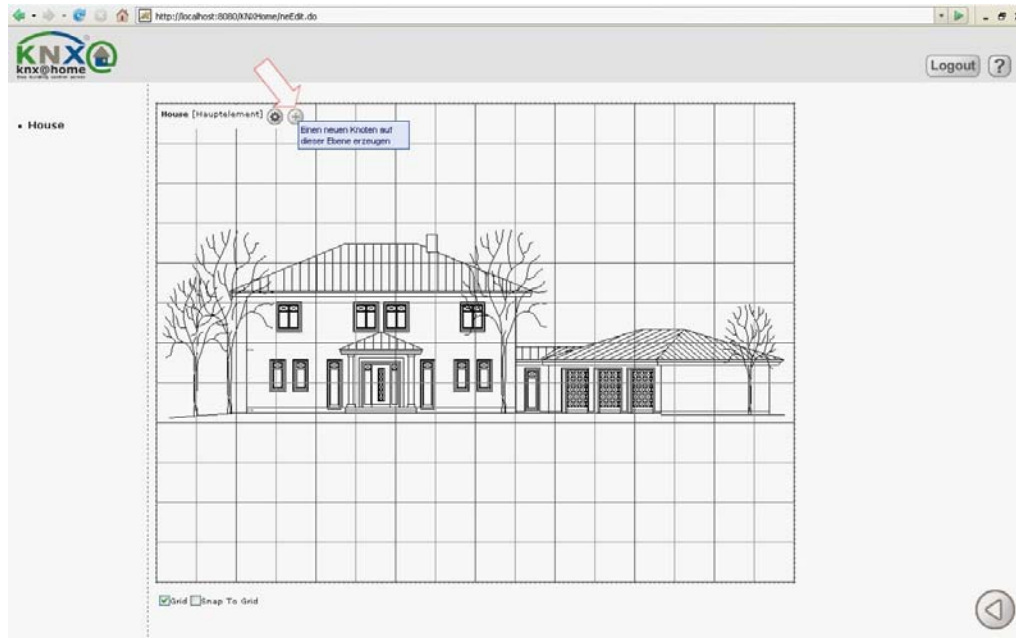
Beschreibung: you can make a description of the object

Übersichtsbild: here you can set an active area

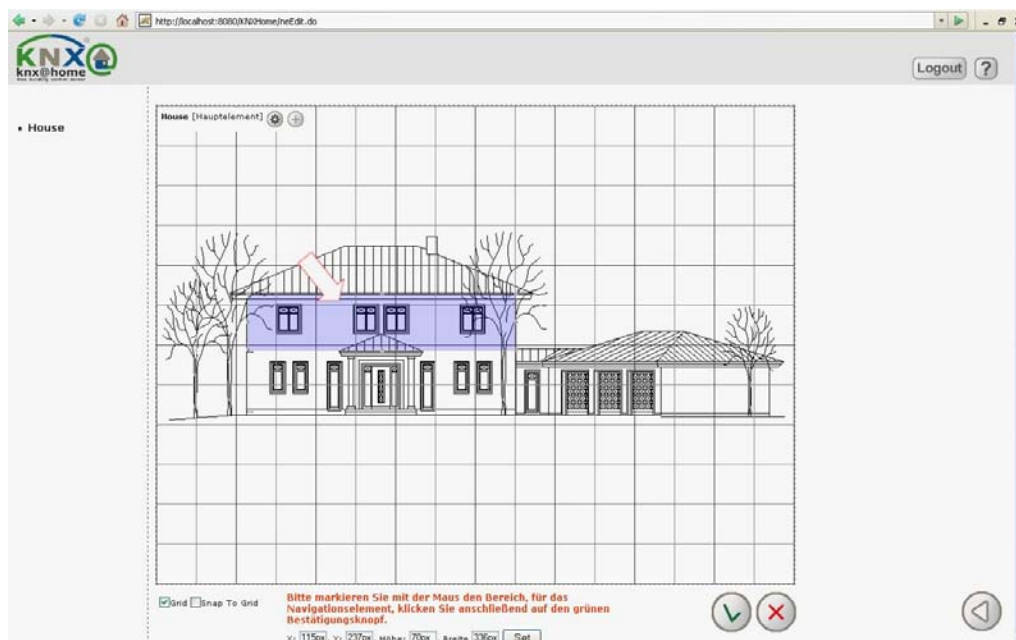
Detailansicht: here you have to input the name of the picture of your building/room
(attention to the upper and lower case, for example Haus.gif)



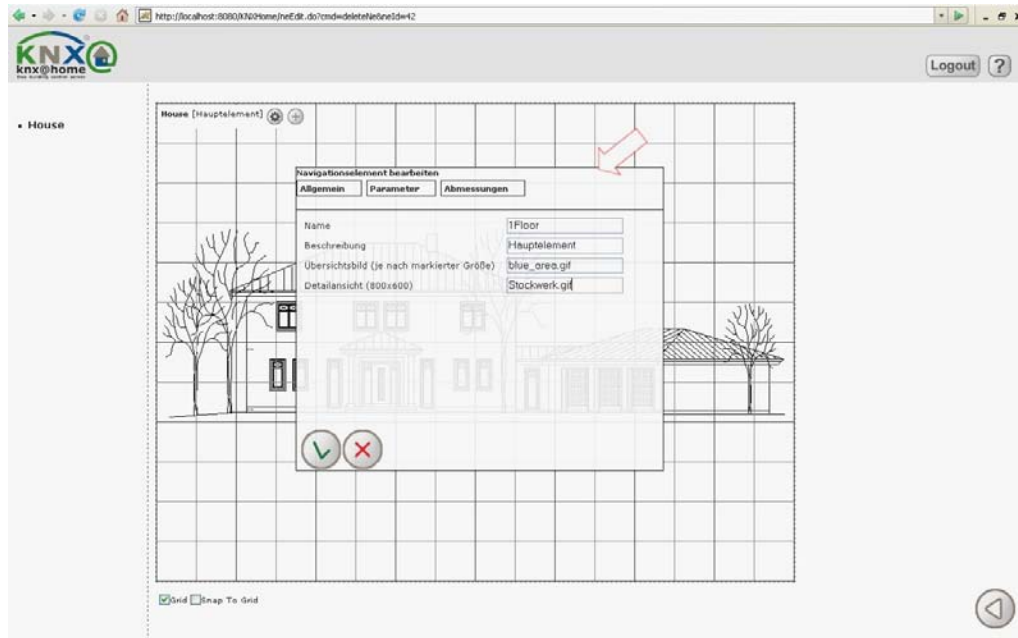
In the next step you can define the floor. Click “Einen neuen Knoten auf dieser Ebene erzeugen”



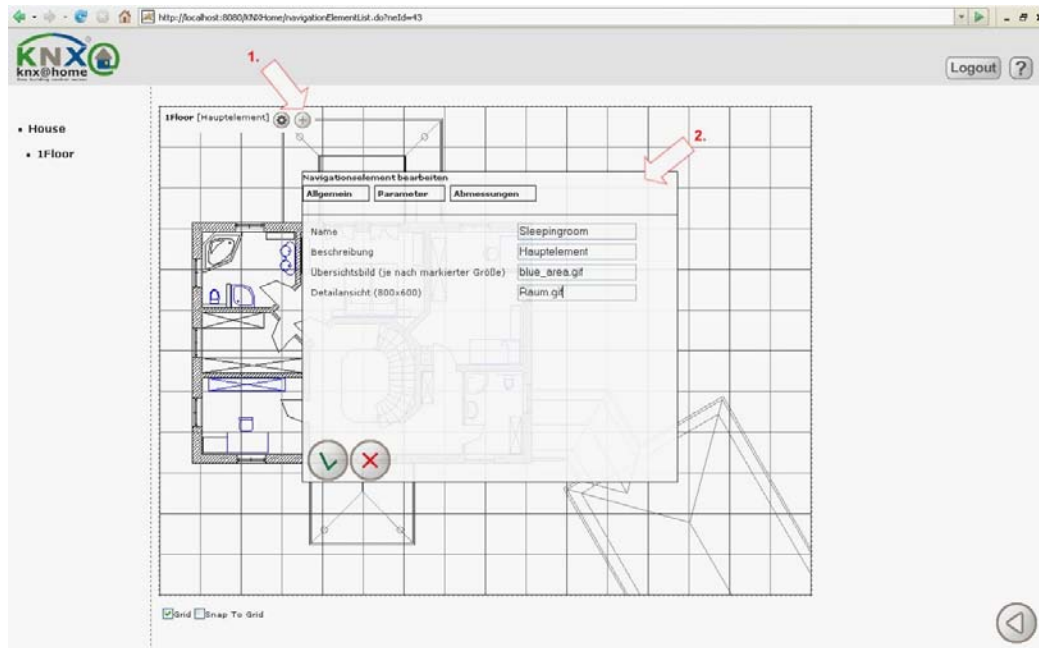
Mark with your mouse pointer the first floor, for example and click



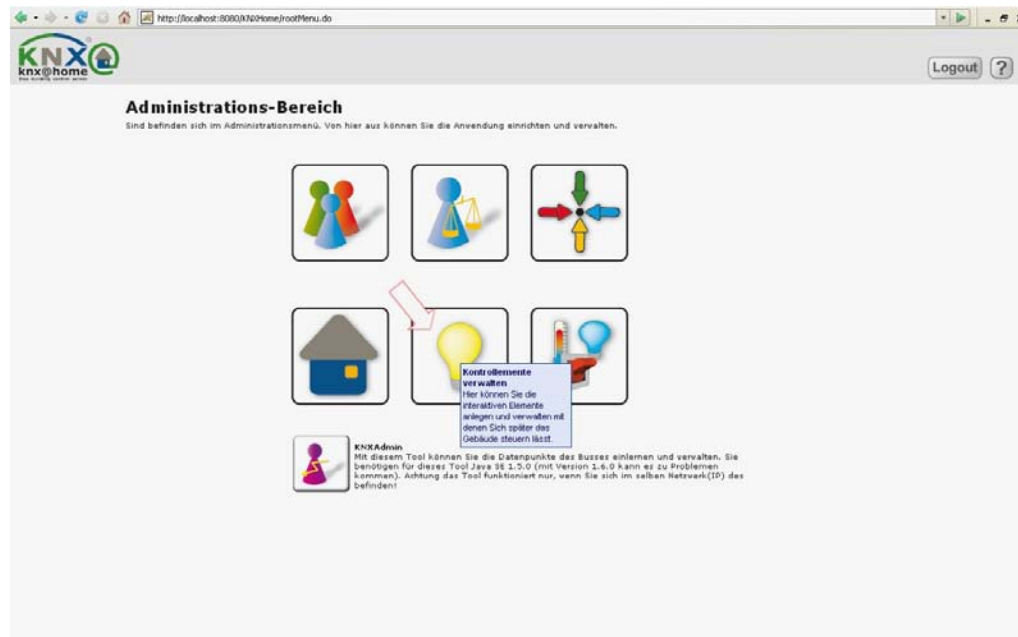
Now create your first floor (see the tutorial page 9).



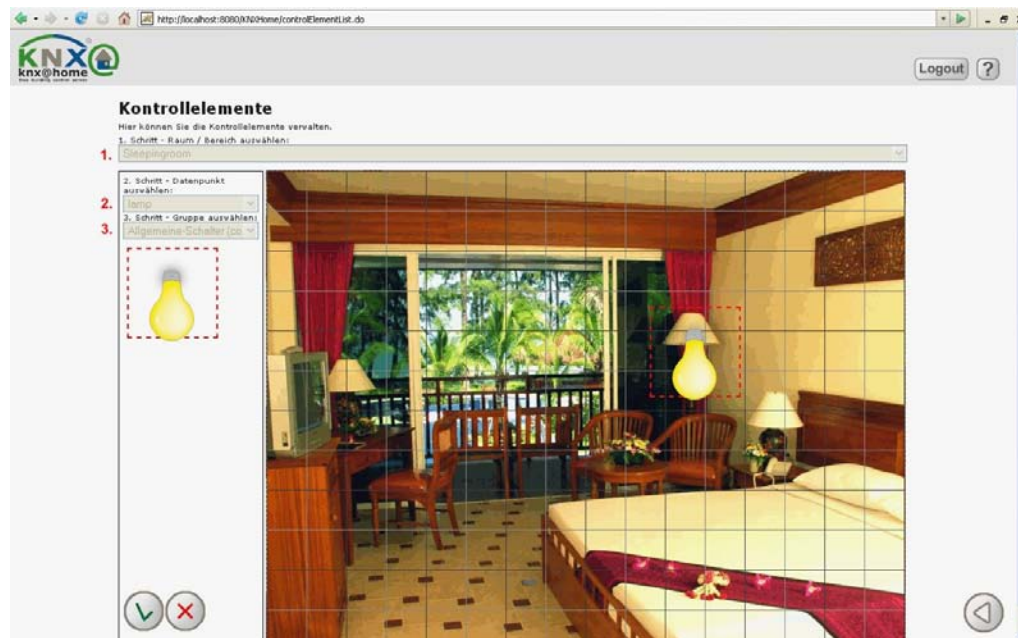
And now define a room, for example “Sleepingroom”. Look at the procedure for the first floor and repeat this for your example.




10. Go back to main menu and start submenu “Kontrollemente verwalten”

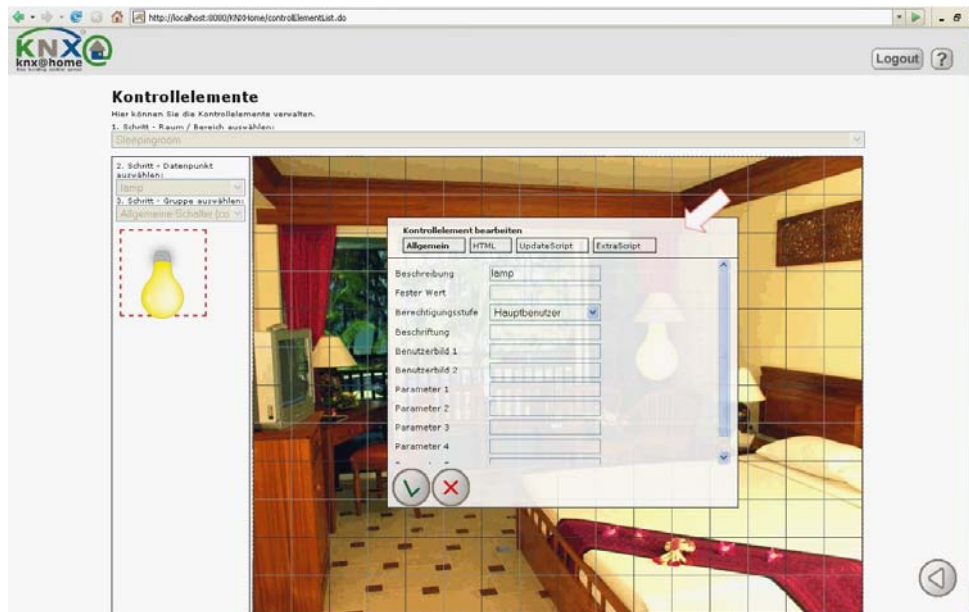


Here you can place different data-points (those you define with KNX-Admin) in the rooms.



1. Choose your room, in this case “Sleepingroom”.
2. Select a data-point.
3. Choose the device, in this case “Allgemeine Schalter (common switches)”. Click at the symbol of the lamp. Then move it to the right position. Confirm with 

A new submenu is appears.



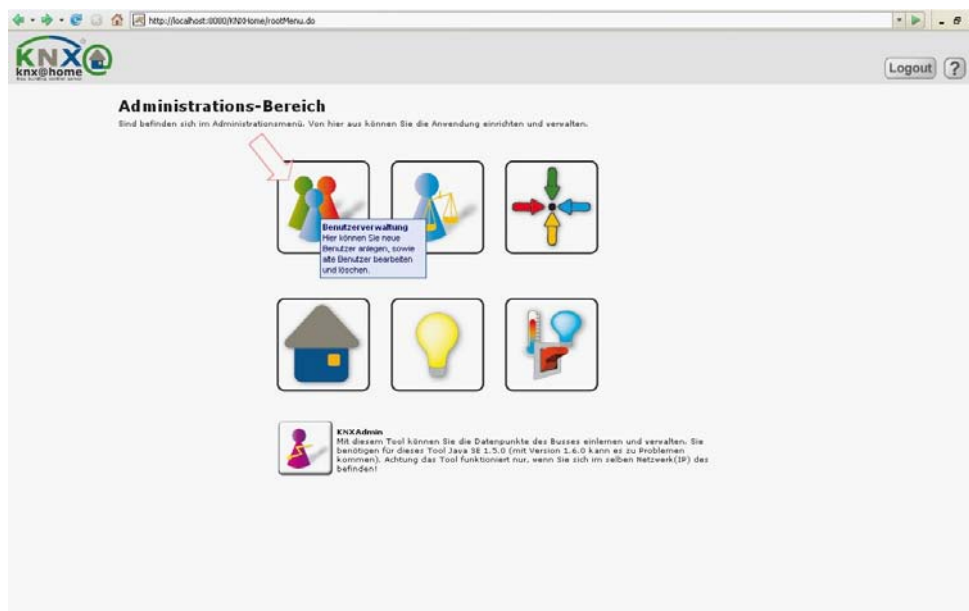
Name your switch and confirm with .



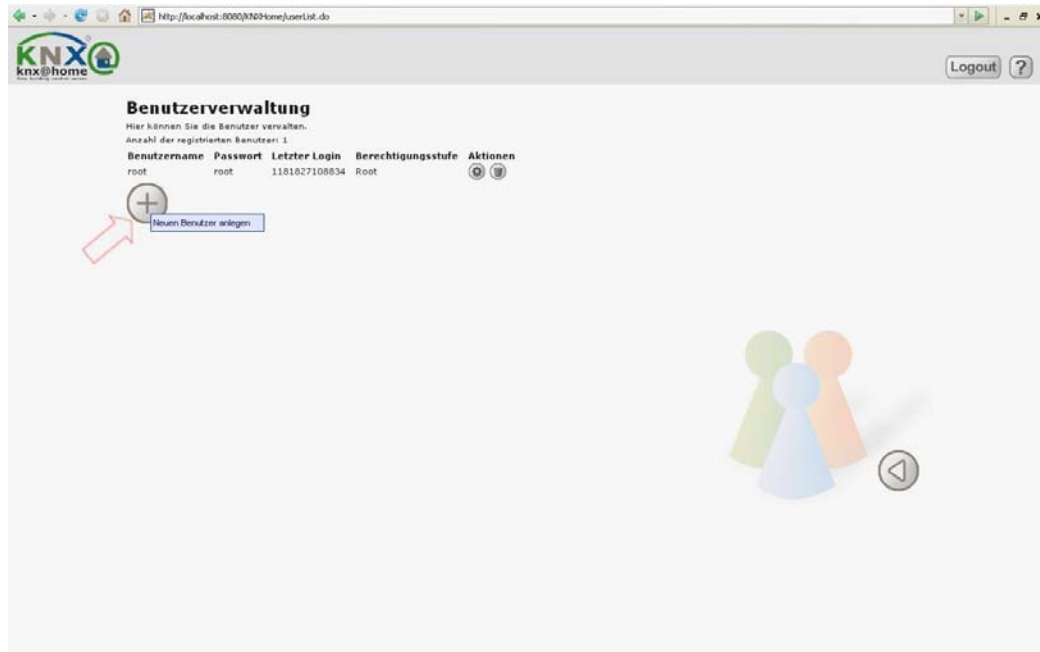
IMPORTANT

Anyway move the device a little bit otherwise it cannot be stored in the database.

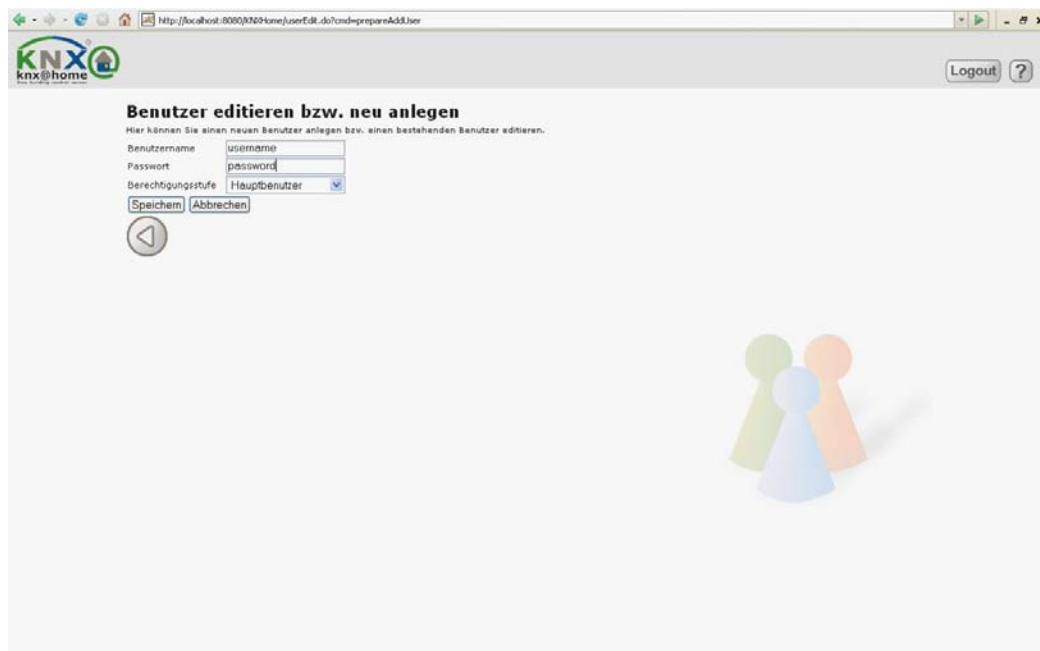
11. Go back to main menu and enter “Benutzerverwaltung”. In this submenu you can create different users.



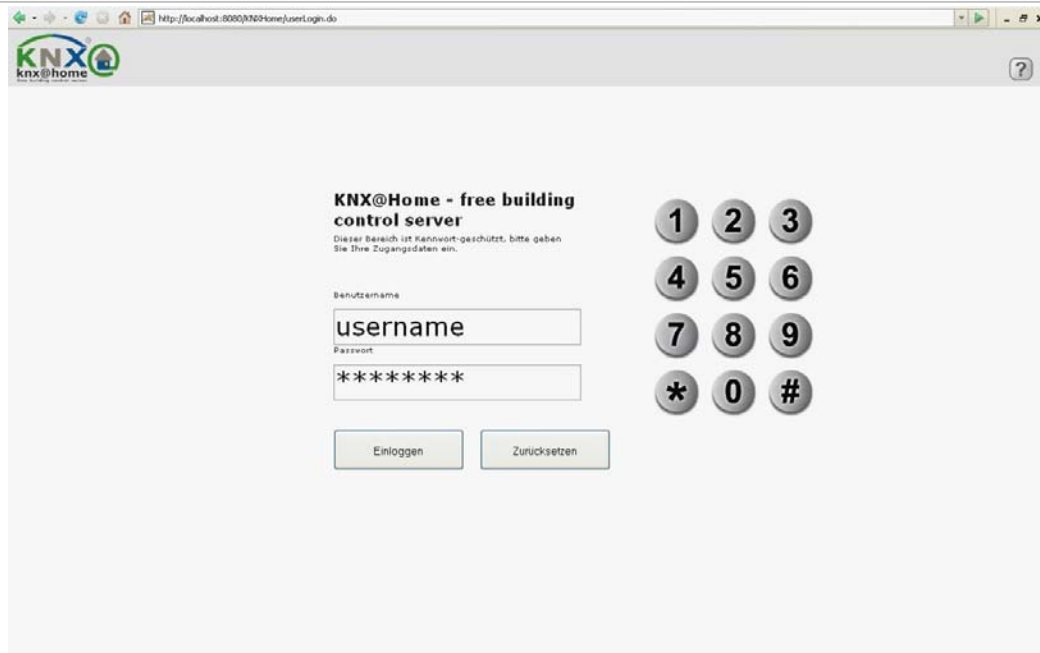
To add a new user, you have to click “Neuer Benutzer hinzufügen”.



Fill in username and password. And as “Berechtigungsstufe” choose “Hauptbenutzer”. At last click “Speichern” and then you can logoff.



The tutorial is now finished. You can login with the new username, see your rooms and test the switch.



Links to the Project KNX@Home:

KNX-Wiki:

http://knxathome.fh-deggendorf.de/knxathome/wiki/index.php/Main_Page

Sourceforge:

<http://sourceforge.net/projects/knxathome/>

University of Applied Sciences Deggendorf:

<http://www.fh-deggendorf.de/>



WARNING:

The authors of the program, the KNX-Organisation and the University of Applied Sciences Deggendorf assume no liability for disadvantages, data loss, problems with the security or similar.

The use of this program is your own risk.

Your KNX@Home-Team,

Christina Bugariu, Emanuel Simmel, Martin Fuchs, Stephan Zitzlsperger, Robert Vogel





Interworking

Steven De Bruyne – KNX System Manager

www.knx.org

Interworking - current papers

- **Interworking Model:**  Chapter 3/7/1
 - 2007.03: v1.3 AS
 - Planned:
 - Guidelines when to use Subunits in E-Mode Channels
 - FB compliance for S-Mode devices
- **Datapoint Types:**  Chapter 3/7/2
 - 2007.03: v1.3 AS: # = 194
 - 2008.11:
 - # = 301 already approved
 - # = 19 more introduced (see later)

Interworking - recent new FBs


- **Functional Blocks for legacy functionality**

- Lighting (switching, dimming) sensors and actuators
- Shutters and Blinds sensors and actuators
- FB Scheduler, FB Scene Controller
- FB Movement Detector for Lighting
- FB Indoor Brightness Sensor

FB specifications respect:


- legacy EIS (EIS 2, EIS 7 ...) specifications and implementations;
- existing KNX E-Mode Channel specifications.

Interworking - recent new DPTs (1)


-  **AN097 "Eberle Status Byte"**
 - The "Eberle Status Byte" remains a non-standard DPT, but is formally documented as "DPT_HVACStatus".
 - A new, standard **DPT_StatusRHCC** is introduced
 - Becomes mandatory after April 2010.
 - B₁₆: fault, StatusEcoH; TempFlowLimit, TempReturnLimit, StatusMorningBoostH, StatusStartOptim, StatusStopOptim, HeatingDisabled, HeatCoolMode, StatusEcoC, StatusPreCool, CoolingDisabled, DewPointStatus, FrostAlarm and OverheatAlarm (+ 1 bit reserved).

Interworking - recent new DPTs (2)

-  **AN098 "Unicode"**
 - **A variable length string:**

Format:	A[n]																
	N MSB 																
Encoding:	<p>This Datapoint Type shall be used to transmit Unicode strings, whereas the UTF-8 encoding scheme shall be used for Unicode Transformation to data contents for transmission.</p> <p>The data length for one character is variable from 1 octet to 4 octets. Each character shall be encoded according Unicode Transformation Format UTF-8:</p> <table border="1"> <thead> <tr> <th>Char. number range (hexadecimal)</th> <th>UTF-8 octet sequence (binary)</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td>U+0000 – U+007F</td> <td>0xxxxxxx</td> <td>ASCII equivalent range; octet begins with zero</td> </tr> <tr> <td>U+0080 – U+07FF</td> <td>110xxxxx 10xxxxxx</td> <td>1st octet begins with 110, the second octet begins with 10.</td> </tr> <tr> <td>U+0800 – U+FFFF</td> <td>1110xxxx 10xxxxxx 10xxxxxx</td> <td>1st octet begins with 1110, the following octets begin with 10.</td> </tr> <tr> <td>U+10000 – U+10FFFF</td> <td>11110xxx 10xxxxxx 10xxxxxx 10xxxxxx</td> <td>1st octet begins with 11110, the following octets begin with 10.</td> </tr> </tbody> </table>		Char. number range (hexadecimal)	UTF-8 octet sequence (binary)	Remark	U+0000 – U+007F	0xxxxxxx	ASCII equivalent range; octet begins with zero	U+0080 – U+07FF	110xxxxx 10xxxxxx	1 st octet begins with 110, the second octet begins with 10.	U+0800 – U+FFFF	1110xxxx 10xxxxxx 10xxxxxx	1 st octet begins with 1110, the following octets begin with 10.	U+10000 – U+10FFFF	11110xxx 10xxxxxx 10xxxxxx 10xxxxxx	1 st octet begins with 11110, the following octets begin with 10.
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Interworking - recent new DPTs (3)

-  **AN120 "WGI accepted DPT 07.01"**
 - **9.026** DPT_Rain_Amount (F₁₆)
 - **9.027** DPT_Value_Temp_F (F₁₆)
 - **9.028** DPT_Value_Wsp_kmh (F₁₆)
(Only for extra DPs next to the standard DPTs.)
 - **5.006** DPT_Tariff
 - **13.010** DPT_ActiveEnergy (V₃₂, Wh)
 - **13.011** DPT_ApparantEnergy (V₃₂, VAh)
 - **13.012** DPT_ReactiveEnergy (V₃₂, VARh)
 - **13.013** DPT_ActiveEnergy_kWh (V₃₂, kWh)
 - **13.014** DPT_ApparantEnergy_kVAh (V₃₂, kVAh)
 - **13.015** DPT_ReactiveEnergy_kVARh (V₃₂, kVARh)
 - **29.010** DPT_ActiveEnergy_V64 (V₆₄, Wh) *)
 - **29.011** DPT_ApparantEnergy_V64 (V₆₄, VAh) *)
 - **29.012** DPT_ReactiveEnergy_V64 (V₆₄, VARh) *)
 - *) The V₃₂ flavour has to be implemented as well.
 - **20.014** DPT_Beaufort_Wind_Force_Scale (N₈)

Interworking - applications

- **HVAC - Heating**
 - **HVAC E-Mode Channels (📄 AN093)**
 - CH_Room_Regulator_Type_A
 - CH_Electrical_Heating_Actuator_Type_A
 - CH_Electrical_Heating_Enable_Disable
 - **OpenTherm**
 - A client/server relationship for
 - Central Heating (CH), and
 - Domestic Hot Water (DHW)
 - Between a Controller and a Producer with
 - Standard KNX DPTs on Group Objects for runtime data
 - OpenTherm specific data for maintenance and visualisation via Data- and Function Properties.
 - **ObIS**
 - For reformulation as standard FBs.
 - Respecting the existing other FBs and implementations.

Interworking - applications

- **Audio-video**
 - First standardisation initiatives.
 - No full modelling of audio-video in terms of Functional Blocks.
 - Communication at first *to* and audio/video gateway.
 - Specification of use of (new) standard KNX DPTs.

Interworking - applications

- **Beyond the horizon ...**

- **Encryption and authentication**

- Are being specified by KNX Association. This may lead to an extended acceptance of KNX for

- anti-intrusion,
 - access control,
 - metering,
 - ...

- **Flexible E-Mode Channels (FEC)**

- = specification for to introduce flexibility (optional features) in E-Mode Channel, considering

- discovery,
 - configuration,
 - compatibility with existing devices and controllers
 - runtime Interworking

Interworking - unique, more unique

- **KNX Interworking is a unique feature**
 - It is NOT a standardisation of separate, company specific solutions that mutually do not Interwork.
 - Instead, a common solution is searched for.
 - by abstraction (black box),
 - compromises,
 - focussing on the communication, not on the internal solution.
 - This models applications, not commands!
 - Interworking is a "binary matter"



Thank you for your attention!

www.knx.org