How to make a ZigBee Network

Step 1

This demo shows the How to Configure the ZigBee Network using the ProBee devices

Step 2

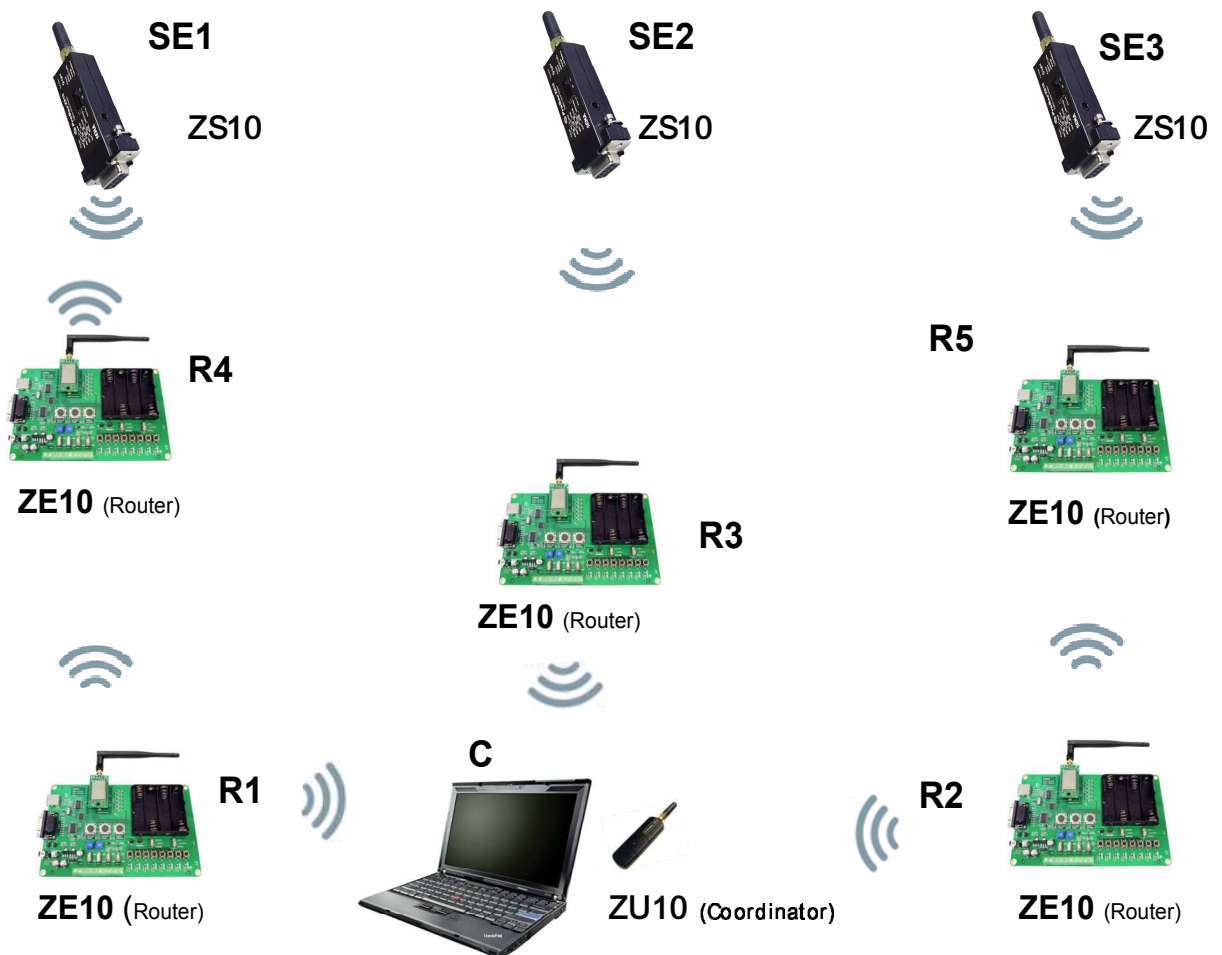Here is the SENA Products we use in this demo:
ProBee ZE10 Starter Kit
ProBee ZS10
ProBee ZU10

Step 3

Here is the ZigBee Network.

Step 4

- Here is the ZigBee Network. In this ZigBee Network, only one Coordinator, 5 routers and 3 Sleepy End devices.
- Every ZigBee network must have One Coordinator. Coordinator is the root of the network and Security trust center.
- They are 3 Sleepy End devices in this network.
- They are 9 devices in this network. So I am going to show how to configure the Coordinator, Routers & Sleep End devices configuration
- How Coordinator, Routers and Sleepy End devices can make a ZigBee Network.

Step 5

Coordinator Configuration

Open the Tera Term.

```
AT+NODETYPE=1<CR> #Set node type (coordinator)
OK
AT+PANID=0001        #Set 16-bit PAN ID
OK
AT+GROUPID=1000    #Set 16-bit GROUP ID
OK
ATS11=1
OK
ATZ
OK
```

Step 6

R1 Configuration

```
AT+NODETYPE=2<CR> #Set node type (Router)
OK
AT+PANID=0001        #Set 16-bit PAN ID
OK
AT+GROUPID=2000    #Set 16-bit GROUP ID
OK
ATS11=1
OK
ATZ
OK
```

Step 7

R2 Configuration

```
AT+NODETYPE=2<CR> #Set node type (Router)
OK
AT+PANID=0001        #Set 16-bit PAN ID
OK
AT+GROUPID=2000    #Set 16-bit GROUP ID
OK
ATS11=1
OK
ATZ
OK
```

Step 8

R3 Configuration

```
AT+NODETYPE=2<CR> #Set node type (Router)
OK
AT+PANID=0001        #Set 16-bit PAN ID
OK
AT+GROUPID=2000    #Set 16-bit GROUP ID
OK
ATS11=1
OK
ATZ
OK
```

Step 9

R1, R2 and R3 Connected to the Coordinator

```
AT+PJ=30 or AT+PERMIT=30        #Set the Permit joining to 30
OK
ATZ
OK
```

We set the Coordinator permit joining to the 30 sec.

R1, R2 and R3 join the ZigBee network which is created by the Coordinator. R1, R2, R3 and Coordinator have the same PID. Now R1, R2, R3 are the child of the coordinator.

Step 10

R4 Configuration

```
AT+NODETYPE=2<CR> #Set node type (Router)
OK
AT+PANID=0001        #Set 16-bit PAN ID
OK
AT+GROUPID=2000    #Set 16-bit GROUP ID
OK
ATS11=1
OK
ATZ
OK
```

Step 11

R4 connected to the R1

Open the Tera term of R1

```
AT+PJ=30 or AT+PERMIT=30        #Set the Permit joining to 30
OK
ATZ
OK
```

We set the R1 permit joining to the 30 sec.

R4 joins the ZigBee Network which is created by the Coordinator. R4 and Coordinator have the same PAN ID. R4 is the child of the R1

Step12

R5 Configuration

```
AT+NODETYPE=2<CR> #Set node type (Router)
OK
AT+PANID=0001        #Set 16-bit PAN ID
OK
AT+GROUPID=2000    #Set 16-bit GROUP ID
OK
ATS11=1
OK
ATZ
OK
```

Step 13

R5 Connected to the Router R2

Open the Tera term of R2

```
AT+PJ=30 or AT+PERMIT=30          #Set the Permit joining to 30
OK
ATZ
OK
```

We set the R2 permit joining to the 30 sec.

R5 joins the ZigBee Network which is created by the Coordinator. R5 and Coordinator have the same PAN ID. R5 is the child of the R2

Step 14

SE1 configuration

```
AT+NODETYPE=4<CR> #Set node type (Sleep End Device)
OK
AT+PANID=0001        #Set 16-bit PAN ID
OK
AT+GROUPID=1000    #Set 16-bit GROUP ID
OK
ATS11=1
OK
ATZ
OK
```

Step15

SE1 connected to the R4

Open the Tera term of R4

```
AT+PJ=30 or AT+PERMIT=30          #Set the Permit joining to 30
OK
ATZ
OK
```

We set the R4 permit joining to the 30 sec.

SE1 joins the ZigBee Network which is created by the Coordinator. SE1 and Coordinator have the same PAN ID. SE1 is the child of the R4

Step 16

SE2 configuration

```
AT+NODETYPE=4<CR> #Set node type (Sleep End Device)
OK
AT+PANID=0001        #Set 16-bit PAN ID
OK
AT+GROUPID=1000    #Set 16-bit GROUP ID
OK
ATS11=1
OK
ATZ
OK
```

Step17

SE2 connected to the R3

Open the Tera term of R3

```
AT+PJ=30 or AT+PERMIT=30        #Set the Permit joining to 30
OK
ATZ
OK
```

We set the R3 permit joining to the 30 sec.

SE2 joins the ZigBee Network which is created by the Coordinator. SE2 and Coordinator have the same PAN ID. SE2 is the child of the R3

Step 18

SE3 configuration

```
AT+NODETYPE=4<CR> #Set node type (Sleep End Device)
OK
AT+PANID=0001        #Set 16-bit PAN ID
OK
AT+GROUPID=1000    #Set 16-bit GROUP ID
OK
ATS11=1
OK
ATZ
OK
```

Step19

SE3 connected to the R5

Open the Tera term of R5

```
AT+PJ=30 or AT+PERMIT=30        #Set the Permit joining to 30
OK
ATZ
OK
```

We set the R3 permit joining to the 30 sec.

SE3 joins the ZigBee Network which is created by the Coordinator. SE3 and Coordinator have the same PAN ID. SE3 is the child of the R5

Step20

Send data to SE1 from the Coordinator in the command mode

- We use the Unicast mode to send data from the Coordinator to SE1.

- Open the Tera term of Coordinator

```
AT+UNICAST= Node short address of SE1, Hello SE1
OK
```

Step21

Send data to SE3 from the Coordinator in the command mode

- We use the Unicast mode to send data from the Coordinator to SE1.

- Open the Tera term of Coordinator

```
AT+UNICAST= Node short address of SE3, Hello SE3
OK
```

Step22

Send data to Coordinator from the SE2 in the command mode

- We use the Unicast mode to send data from the SE2 to Coordinator.

- Open the Tera term of SE2

```
AT+UNICAST= 0000, Hello Coordinator
OK
```

Step23

Send data to Coordinator from the R5 in the command mode

- We use the Unicast mode to send data from the R5 to Coordinator.

- Open the Tera term of R5

```
AT+UNICAST= 0000, Hello Coordinator
OK
```

Step24

Send data to SE1, SE2 and SE3 from the Coordinator at same time in the command mode

- Multicast transmissions are sent from a source device to destination devices with the specific group ID. The group ID is assigned to the devices using the AT+GROUPID command.

- We use the Multicast mode to send data from the Coordinator to the SE1, SE2 and SE3 at same time. Coordinator, SE1, SE2 and SE3 has the same GROUP ID.

- Open the Tera term of Coordinator

```
AT+MULTICAST= 1000, Hello SE1, SE2 and SE3
OK
```

Coordinator, SE1, SE2 and SE3 has the same Group ID.

Step25

Send data to R1, R2, R3, R4 and R5 from the Coordinator at same time in the command mode

- Multicast transmissions are sent from a source device to destination devices with the specific group ID. The group ID is assigned to the devices using the AT+GROUPID command.

- We use the Multicast mode to send data from the Coordinator to the SE1, SE2 and SE3 at same time. Coordinator, SE1, SE2 and SE3 has the same GROUP ID.

- Open the Tera term of Coordinator

AT+MULTICAST= 2000, Hello R1, R2, R3, R4 and R5
OK

R1, R2, R3, R4 and R5 have the same GROUP ID.

Step26

Send data to all ProBee devices in this ZigBee Network in the command mode

- Broadcast transmissions are sent from a source device to all devices in the ZigBee network

- Open the Tera term of Coordinator

AT+BROADCAST= Hello to all ProBee devices in this ZigBee network
OK

. History

Revision	Date	Author	Comments
1.0	July 20 2011	Sai Kesineni	Initial version