

TinyOS Bridge Platforms for the distributed WSN service

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Internet connectivity of WSN bridge platform is important to deliver physical information to the cyber world. Most new emerging Internet services are based on physical information such as satellite photo, street view, traffic condition, and so forth. Wide spectrum of wireless sensors will get into this Internet service trend. This Demo shows four kinds of TinyOS bridge platforms, Kmote-Wifi, Kmote-HSDPA, USG-100, Kmote-Ethernet. Four platforms are designed on considering dominant Internet interfaces Ethernet, Wi-Fi, CDMA, GSM, and 3G. All the bridge platforms use Kmote as a WSN interface. The bridges can support Internet connectivity for the different distributed WSN at any place.

Kmote-Wifi supports IEEE 802.11b/g, 1 WAN port, 4 LAN port, 1 WSN and socket tunnel from WSN UART to server. It is based on Linux 2.6.x, it supports IPv6. It looks like Wi-Fi router in common home or office.

Kmote-HSDPA has 3G HSDPA Internet access and socket tunnel to server. This platform supports any-place tunneling from WSN to server. It is also based on Linux 2.6.x, OpenWRT software, ARM11 hardware platform, thus more suitable for IPv6 routing.

USG-100 is special for industry serial bus, embedding RS-485 hardware. It is on industry use for IBS(Intelligent Building System) bridge platform of wireless temperature, humidity monitoring and controls over 150 mote network.

Despite of a few kinds of bridge platforms, shaping huge WSN market needs lower cost bridge platform. Low-cost bridge will be able to provide easy integration WSN and Internet service to both of WSN and Internet engineers. Kmote-Ethernet is hardware-based socket tunnel. It does not manage wireless mote network, only pass data between sensors and server. Locating management function on the service server, will get the bridge cheaper. In another view, it is the effort to reduce computing resource in local area and move it to Internet.

