



Case Studies

Fixed IP Address with Cellular Gateway.

The following case study was carried out to determine the suitability of using a Cellular Gateway and a GSM Sim card with a fixed IP address for sending data from a weather station over a mobile phone network.

The work was carried out by a PH.D candidate from Trinity College Dublin in conjunction with the Marine Institute Galway.

The proposed set-up is shown in the diagram below

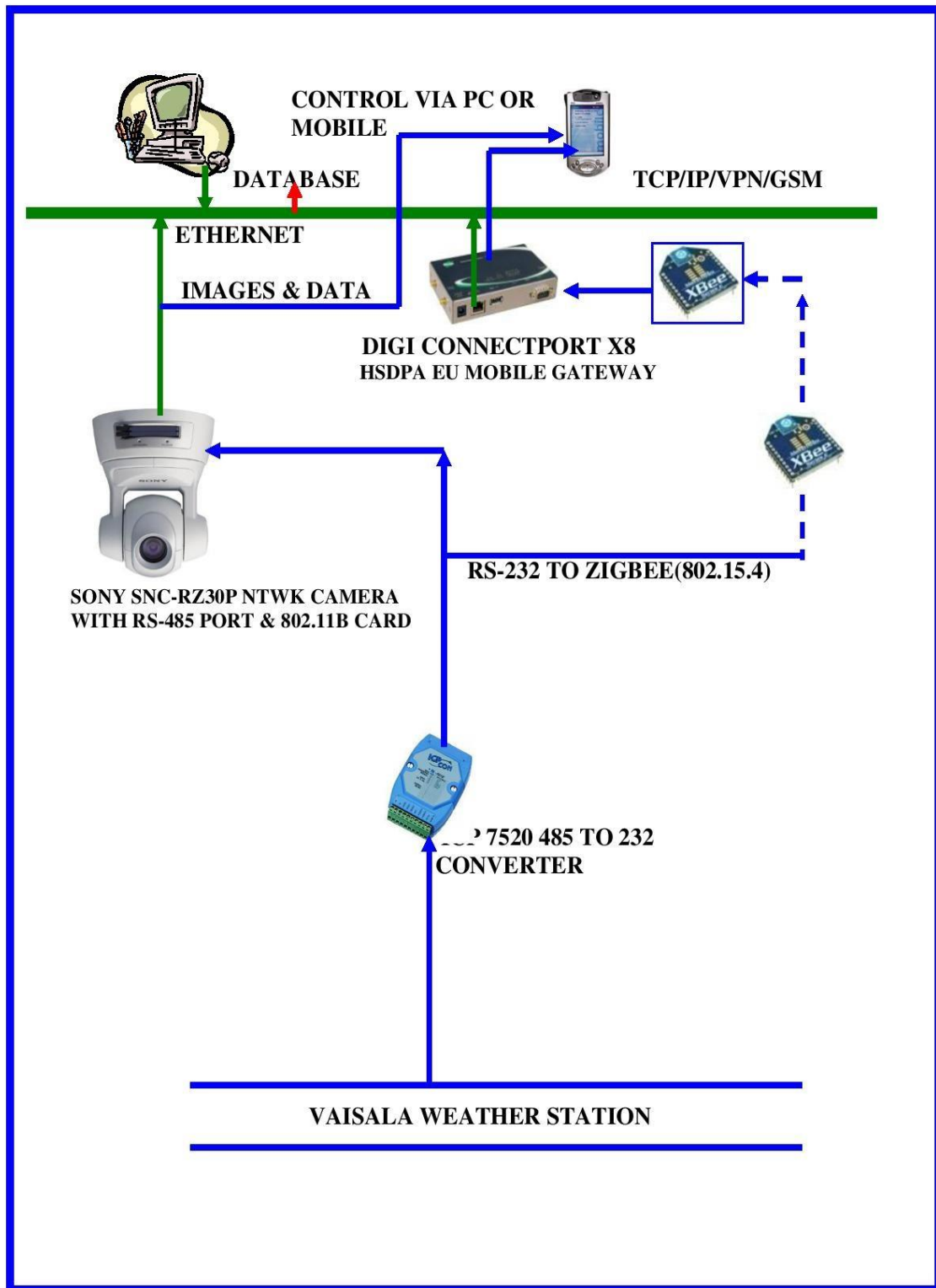


Figure 1 Proposed Set-up

The project aimed to interface serial devices to the Internet via the use of gateways and wireless transceivers from the company Digi International (<http://www.digi.com>). The Digi Kit provided was comprised of: 1 x XBee and 2 x XBeePro 802.15.4 Wireless Modules (Series 1) on top of Xbib boards (2

x RS-232 and 1 x USB). A Digi ConnectPort X8 802.15.4 (8775 EU Worldwide) with 16 Mb of RAM Memory and HSDPA capabilities were also provided as the gateway where an http server ran to offer html content with the data obtained from serial devices connected to the Xbib-Xbee modules.

Even though the project had been designed to easily get generic data from any serial device plugged into the RS-232 Xbib boards, a serial data stream device was provided for the purposes of proving the functioning of the system. The device streaming serial data was a Vaisala Weather Transmitter WXT520 (<http://www.vaisala.com>)

Other than retrieving and displaying serial data via the use of a web page, the project system provided capabilities to configure alerts based on thresholds. When alerts are triggered, the option of sending an e-mail was also implemented as well as the possibility of connecting to a URL employing cgi commands to change the preset position of a Sony PTZ IP camera with a serial port.

For the purposes of developing a system which could be easily customized according to the different serial devices from different clients, a solution called "iDigi Dia" provided by Digi had been utilized. The latest version of the "iDigi Dia", 1.2.19 was used. The architecture came with a set of bundled python libraries which could be compiled and installed in the Digi ConnectPort X8 802.15.4. The solution contained a set of primitives to interact with the Digi devices and it was organized in such a way that the developer could create/customize his own drivers and make use of the add-on functionalities provided to enhance the capabilities of the hardware. A fixed GSM IP address enabled the data to be sent over a mobile phone network and accessed on a PC OR Smart Phone using a web browser.

Conclusion

The system worked as required, the ease of software development using the Digi Connect Port being an advantage. Problems with integration were minimal. A public fixed IP address was used in his instance, a private fixed IP address would be more suitable for this application.