This project is used the TI TNETD7200 as the microcontroller. To support bridging and routing functionality, a 211.968-MHz MIPS32 CPU with MMU and 16-KB I-cache/8-KB D-cache is integrated into the device. For peripheral support, the TNETD7200 integrates a SDRAM interface capable of accessing from 2MB up to 256MB of external SDRAM, a 10/100 Ethernet MAC and PHY with Auto-MDIX, a second Ethernet MAC with available MII interface, USB 2.0 Device interfaces, a VLYNQ interface are provide, a EJTAG interface for software debug use, Utopia Master port and up to 27 GPIOs.

This project that its main functions are:

Implement an external Ethernet PHY of Marvell (88E6060) to provide 4 ports switch with the MII interface.

The TNETD7200 includes a new VLYNQ peripheral bus extension that allows VLYNQ-enabled devices to be gutlessly interfaced to TNETD7200 for advanced applications, such as ADSL-to-wireless LAN (WLAN) (IEEE Std 802.11) bridging and interfaces. In this project, the TI wireless 802.11b/g on board solution is implemented that it is chip set are consist of TNETW1350A (Baseband processor), TNETW3422 (Direct-Conversion Radio), TNETW3427 (PA + LNA + Baluns)

As to The TNETD7200 that it is an asymmetric digital subscriber line (ADSL) bridge/router solution integrating a broadband communications processor and peripherals, ADSL physical layer device (PHY), ADSL line driver/receiver, USB PHY, Ethernet PHY, and power management (PM) for use in customer premises equipment (CPE) remote terminal (RT) modems for residential and small-office applications. The TNETD7300A can be used in modems ranging from simple Ethernet bridges to integrated access devices (IADs) and residential gateways (RGs).

The TNETD7200 includes features to enhance ADSL throughput when connected to a compatible central office (CO) ADSL modem. ADSL2+ provides downstream transmission rates capable of 24 Mbps.(1) Reach extended ADSL (READSL2) and all digital loop ADSL allow 384-/128-kbps service to be provided on loops as long as 21 kft. These features allow the TNETD7300A to greatly surpass the downstream throughput limit of 8 Mbps and the 17.5-kft reach limit seen in previous ADSL modems, thus, granting ADSL service providers access to a larger subscriber pool, without requiring replacement of the local loop infrastructure.

This device derives its power from a 12V DC power adapter which needs to be converted to 3.3V, 1.5V and 12V DC.

The main function requirement is defined as following-

**Hardware Specification**

| | |
|---|---|
| 1. CPU | TI TENTD7200 (SOC) |
| 2. SDRAM | 16/32 Mbytes |
| 3. FLASH | 2M/4 Mbytes |
| 4. WAN Port | 1 x RJ 11 |
| 5. Ethernet chip | Marvell (88E6060) |
| 6. LAN Port | 4 LAN Ports with 10/100 auto-negotiation |
| 7. 11g Access Point | TI TNETW1350A WLAN module |
| 8. Power Adapter | DC 12V/1A |
| 9. LEDs | Refer to Table 1 |
| 10. Reset button | Reset to factory default by pressing 5 seconds |
| 11. UART Support | Can Connect to UART interface for S/W Development |
| 12. Operating temp. | 0~40℃ |
| 13. Storage temp | -20℃~70℃ |
| 14. EMC | Class–B |
| 15. PCB Size | Based on B3 Platinum case |
| 16. PCB Layout | 4 layers |

**Back Panel (left to right):**

- Power jack: 12V DC, 1A
- LAN port :   RJ45
- WAN port : ADSL, RJ-11
- Reset button: Push button
- Antenna : 2dBi dipole antenna (detachable or fixed)