

XUartPs functions: XUartPs_IsReceiveData, XUartPs_ReadReg, xemac_add and xemacif_input

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XUartPs_IsReceiveData

Syntax

```
u32 XUartPs_IsReceiveData(u32 BaseAddress);
```

Purpose

Checks if UART RX FIFO has data.

Operates On

- Reads UART status register
- Hardware register access

xemacif_input

Syntax

```
int xemacif_input(struct netif *netif);
```

Purpose

Processes received packets.

Operates On

1. Checks RX descriptors
2. Wraps DMA buffers into pbufs
3. Passes pbuf to lwIP stack
4. Triggers UDP/TCP callbacks

Critical function in polling systems.

XUartPs_ReadReg

Syntax

```
u32 XUartPs_ReadReg(u32 BaseAddress, u32 RegOffset);
```

Purpose

Reads UART register value.

Operates On

- Direct memory-mapped register access
- AXI bus read

xemac_add

Syntax

```
struct netif *xemac_add(struct netif *netif,  
                        ip_addr_t *ipaddr,  
                        ip_addr_t *netmask,  
                        ip_addr_t *gw,  
                        unsigned char *mac,  
                        unsigned baseaddr);
```

Purpose

Adds Ethernet interface to lwIP.

Operates On

- Initializes GEM hardware
- Sets MAC address
- Links driver to lwIP
- Configures RX/TX descriptor rings