ETHERNET

1 Ethernet Menu

The fields of the *ETHERNET* menu are described below. Your XGeneration gateway is equipped with an Ethernet interfaces with integrated 4-port-switch (XEY-100BT, Fast Ethernet).

```
X2302w Setup Tool                           Bintec Access Networks GmbH
[LAN]: Configure LAN Interface                                MyGateway


    IP-Configuration           Manual
       local IP-Number         192.168.0.254
       local Netmask           255.255.255.0
       Second Local IP-Number
       Second Local Netmask
       Encapsulation           Ethernet II
       Mode                    100 MBit Full Duplex
    MAC Address


    Bridging                   disabled
    Advanced Settings >
    Virtual Interfaces >

         SAVE                            CANCEL


```

This chapter contains the settings for the Ethernet interface of your gateway. The Ethernet interface is a physical interface for the connection to the local network or to external networks. You give your gateway the IP address at which it is reached in the LAN resp. WAN in the *ETHERNET* menu. As long as these parameters are not entered in your gateway, it cannot be addressed by other hosts in the network.

If your gateway is connected to an IP network that consists of two subnets, you should enter a *SECOND LOCAL IP NUMBER* and a *SECOND LOCAL NETMASK* for the second subnet.

Note

The Ethernet interface is preconfigured with *LOCAL IP-NUMBER* 192.168.0.254 and *LOCAL NETMASK* 255.255.255.0.

The *ETHERNET* menu consists of the following fields:

Field	Description
IP-Configuration	Possible values: ■ *Manual*: Default value. IP address and netmask must be entered (default value). ■ *VLAN*: Allows the assignment of the Ethernet interface to a ➤➤ **VLAN**. ■ *DHCP*: Your gateway obtains, among other values, IP address and netmask from a DHCP server.
local IP-Number	IP address of your gateway in the network at the interface.
local Netmask	Netmask of the network in which your gateway with *LOCAL IP NUMBER* is located.
Second Local IP Number	Only for *IP CONFIGURATION Manual* or *VLAN* and after entering a *LOCAL IP-NUMBER*. Second IP address of your gateway in the network.
Second Local Netmask	Only for *IP CONFIGURATION Manual* or *VLAN*. Netmask of the network in which your gateway with *SECOND LOCAL IP NUMBER* is located.
DHCP MAC Address	Only for *IP CONFIGURATION DHCP*. MAC address of the corresponding Ethernet interface, e.g. *00e1f906bf03*. Some providers use hardware-independent MAC addresses to assign their clients IP addresses dynamically. If your provider has assigned you a MAC address, enter this here.
DHCP Hostname	Only for *IP CONFIGURATION DHCP*. In this field you can enter the host name required by the ISP. The maximum length of the entry is 45 characters.

Field	Description
Encapsulation	Defines the kind of header added to the IP packets that run over this interface. Possible values: ■ *Ethernet II* (conforms to IEEE 802.3, default value) ■ *Ethernet SNAP* You can generally retain the default value *Ethernet II*. The interface is called e.g. en0-1 for *Ethernet II* and en0-1-snap for *Ethernet SNAP*.
Mode	Defines the mode in which the interface is operated. Possible values: ■ *100 Mbps Full Duplex* (default value): for **X2301**, **X2302**, **X2301w** and **X2302w** only this value can be configured. ■ *Auto* ■ *10 Mbps Half Duplex* ■ *10 Mbps Full Duplex* ■ *100 Mbps Half Duplex*
MAC Address	Only for **IP CONFIGURATION** *Manual* or *VLAN*. Here you can assign the interface another MAC address. This is only required for configurations that are more complex than the basic configuration, e.g. *00a0f906bf03*.
VLAN ID	Only for **IP CONFIGURATION** *VLAN*. Here you can assign the Ethernet interface to a VLAN by entering the relevant VLAN ID.

Field	Description
Bridging	Here you can activate **BRIDGING** for this interface.
	This function is only necessary for special configurations. Possible values: *disabled* (default value), *enabled*.

Table 1-1: **ETHERNET** menu fields

The menu **ETHERNET** leads to further submenus:

■ **ADVANCED SETTINGS**

■ **VIRTUAL INTERFACES**.

2 Submenu Advanced Settings

The fields of the *ADVANCED SETTINGS* submenu are described below.

```
X2302w Setup Tool                           Bintec Access Networks GmbH
[LAN][ADVANCED]: Advanced Settings                            MyGateway


    RIP Send                    none
    RIP Receive                 none

    IP Accounting               off
    Proxy ARP                   off
    Back Route Verify           off




         SAVE                              CANCEL


```

The *ETHERNET* ➜ *ADVANCED SETTINGS* menu contains settings for the Routing In-
formation Protocol (RIP), IP Accounting, Proxy ARP and "Back Route Verify".
The menu is only displayed if a *LOCAL IP-NUMBER* has been configured.

Brief description of routing

The ➤➤ **gateway** receives ➤➤ **data packets**, each of which contains the des-
tination host IP address. On the basis of the entries in the routing table *IP ➜
ROUTING*, the gateway decides which route to use to forward the data packet to
ensure that it arrives at its destination as quickly and cheaply as possible (with
the fewest possible intermediate stations). The entries in the routing table can
be defined statically or the routing table can be updated constantly by a dynamic
exchange of routing information between several gateways. This exchange is
controlled by a so-called Routing Protocol, e.g. RIP (Routing Information Proto-
col).

**RIP (Routing
Information Protocol)**

Gateways use ➤➤ **RIP** to exchange information stored in routing tables by
communicating with each other at regular intervals to mutually supplement and
replace their routing entries. The **XGeneration** gateway supports both version
1 and version 2 of RIP, either individually or together.

Gateways can be defined as active or passive gateways: active gateways store
routing entries sent by other gateways and offer their routing entries to the oth-
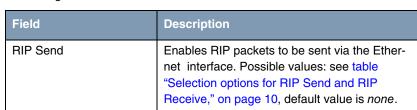
ers via ➤➤ **broadcasts**. Passive gateways accept the information from the active gateways and store it, but do not pass on their own routing entries. The **XGeneration** gateway provides both variants.

IP accounting   This option is for activating or deactivating IP accounting messages for this interface. If IP accounting is activated, accounting messages are generated (and entered in the **biboAdmSyslogTable**), which contain detailed information about the IP-connections of this interface.

Back Route Verification   This term conceals a simple but very powerful function of the **XGeneration** gateway. If Backroute Verification is activated for an interface, incoming data packets are only accepted over it if outgoing answering packets would be routed over the same interface. You can therefore prevent packets with fake IP addresses being accepted – even without filters.

Proxy ARP   The ➤➤ **Proxy ARP** function enables the gateway to answer ➤➤ **ARP** requests from its own LAN acting for a defined WAN partner. If a host in the LAN wants to set up a connection to another host in the LAN or to a WAN partner but doesn't know its hardware address (MAC address), it sends a so-called ARP request into the network as a ➤➤ **broadcast**. If Proxy ARP is activated on the gateway and the desired target host can be reached e.g. over a host route, the gateway answers the ARP request with its own hardware address. This is sufficient for establishing the connection: The ➤➤ **data packets** are sent to the gateway, which then forwards them to the desired host.

Note   Ensure that Proxy ARP is also activated at the defined WAN partner.

The configuration is set in the *ETHERNET UNIT* ➜ *ADVANCED SETTINGS* menus:

Field	Description
RIP Send	Enables RIP packets to be sent via the Ethernet interface. Possible values: see table "Selection options for RIP Send and RIP Receive," on page 10, default value is *none*.

Field	Description
RIP Receive	For receiving RIP packets via the Ethernet interface. Possible values: see table "Selection options for RIP Send and RIP Receive," on page 10, default value is *none*.
IP Accounting	For generating accounting messages for e.g. ►► **TCP-**, ►► **UDP** and ICMP sessions. Possible values: *on*, *off* (default value).
Proxy ARP	Enables the **XGeneration** gateway to answer ARP requests from its own LAN acting for a defined WAN partner. Possible values: *on*, *off* (default value).
Back Route Verify	Activates Backroute Verification for the Ethernet interface. Possible values: *on, off* (default value)*.

Table 2-1:   *ADVANCED SETTINGS* menu fields

RIP SEND and *RIP RECEIVE* contain the following selection options:

Description	Meaning
none	Not activated.
RIP V2 multicast	Only for *RIP SEND* For sending RIP V2 messages over the multicast address 224.0.0.9.
RIP V1 triggered	RIP V1 messages are sent rsp. received and processed as per RFC 2091. (Triggered ►► **RIP**).
RIP V2 triggered	RIP V2 messages are sent rsp. received and processed as per RFC 2091. (Triggered ►► **RIP**).
RIP V1	For sending and receiving RIP packets of version 1.

Description	Meaning
RIP V2	For sending and receiving RIP packets of version 2.
RIP V1 + V2	For sending and receiving RIP packets of both version 1 and 2.

Table 2-2:   Selection options for *RIP SEND* and *RIP RECEIVE*

3   Submenu Virtual Interfaces

The fields of the *VIRTUAL INTERFACES* submenu are described below.

```
X2302w Setup Tool                          Bintec Access Networks GmbH
[LAN][VIRTUAL][ADD]: Configure Virtual                        MyGateway
                    LAN Interface # 1


   IP Configuration          Manual
         Local IP Number
         Local Netmask


         Encapsulation            none
  MAC Address                  00a0f9



   Advanced Settings >

             SAVE                         CANCEL

```

The virtual interfaces are shown in the *ETHERNET* ➜ *VIRTUAL INTERFACES* menu. In the *ETHERNET* ➜ *VIRTUAL INTERFACES* ➜ *ADD/EDIT* menu you configure virtual Ethernet interfaces for e.g. redundant networks.

The *VIRTUAL INTERFACES* ➜ *ADD/EDIT* menu consists of the following fields:

Field	Description
IP-Configuration	Here you select one of four different configuration modes. Possible values: see table "Selection options in IP Configuration," on page 13.
Local IP Number	Here you assign an IP address to the virtual interface.
Local Netmask	Enter the netmask for the *LOCAL IP-NUMBER*.
Second Local IP Number	Only for *IP CONFIGURATION* *Manual* or *VLAN* and after entering a *LOCAL IP-NUMBER*. Second IP address of your gateway in the network.

Field	Description
Second Local Netmask	Only for **IP CONFIGURATION** *Manual* or *VLAN*. Netmask of the network in which your gateway with **SECOND LOCAL IP NUMBER** is located.
Encapsulation	Defines the kind of header added to the IP packets that run over this interface. Possible values: ■ *Ethernet II* (conforms to IEEE 802.3, default value) ■ *Ethernet SNAP* ■ *none* You can generally retain the default value *Ethernet II*. The interface is called e.g. en0-1 for *Ethernet II* and en0-1-snap for *Ethernet SNAP*.
MAC Address	Enter the MAC address associated with the virtual interface. You can use the MAC address of the physical interface under which the virtual interface was created, but this is not necessary. You can also assign a virtual MAC address. In *VLAN* and *Manual* mode, the first six 6 characters of the MAC address (in *BRRP* and *BRRP over LAN* mode the first ten characters) are set as default, but can be changed.
VLAN ID	Is only shown if **IP CONFIGURATION** is set to *VLAN* or *BRRP over VLAN*. Here you assign the virtual interface to a VLAN by assigning the VLAN ID of the respective VLAN. Possible values are *1* (default value) to *4094*.

Table 3-1:   **VIRTUAL INTERFACES** submenu fields

IP CONFIGURATION contains the following selection options:

Description	Meaning
Manual	This mode permits simple manual IP configuration.
VLAN	The assignment to a VLAN is made via the VLAN ID, which is configured in this mode. A MAC address must be defined in this mode.

Table 3-2:   Selection options in *IP CONFIGURATION*

3.1   Submenu Advanced Settings

The submenu contains the same option as the *ETHERNET* ➜ *ADVANCED SETTINGS* menu.

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