Michelangelo Gateway

User Manual

Release 1.0 04/2001

INTRODUCTION

- [Overview](#)
- [Features](#)

Overview

Michelangelo Gateway will allow multiple users on the LAN to gain shared Internet access. Users can share the ISDN connection and the Internet user account.
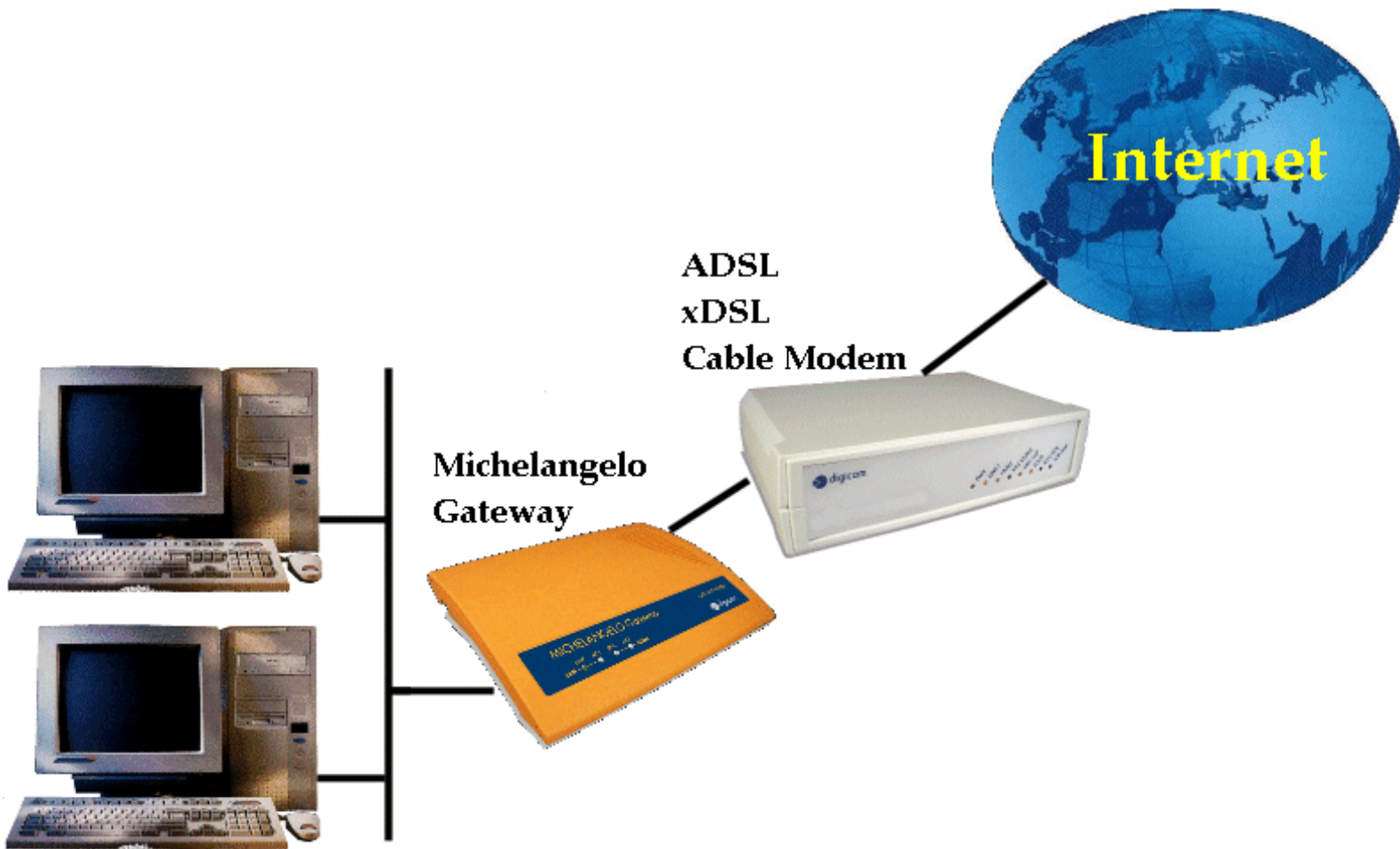

Figure 1: Office to Internet

Michelangelo Gateway provides a low-cost method of giving users of your network access to the vast resources available on the Internet. Once Michelangelo Gateway is installed and configured, the Internet is just a click away.

Michelangelo Gateway is able to use your existing xDSL/ADSL/Cable modem link to connect to your ISP (Internet Service Provider) using your Single User Account

Features

Michelangelo Gateway incorporates many advanced features, carefully designed to provide sophisticated functions while being easy to use.

LAN Features

Michelangelo Gateway

- **10/100 BaseT Support**
  The LAN connection will auto-detect 10BaseT and 100BaseT connections.
- **DHCP Server Support.**
  A DHCP (**D**ynamic **H**ost **C**onfiguration **P**rotocol) Server provides a dynamic IP address to PCs and other LAN devices upon request. Michelangelo Gateway can act as a **DHCP Server**.
- **Multi Segment LAN Support.**
  If you have a Router, PCs on other LAN segments can use Michelangelo Gateway to access the Internet. A static routing table is provided to support multiple routers if needed.

WAN Features

- **10BaseT Wan port**
  This port is for connecting the external xDSL or Cable modem (must provide Ethernet connection).
- **PPPoE Support.**
  Connect to your ISP using PPPoE (PPP over Ethernet), if your ISP uses this method.
- *Direct Connection to ISP*
  Connect to your ISP by using Direct connection method if required.

Internet Access Features

- *Shared Internet Account.*
  All users on the LAN (max 253) can share the same Single USer Internet Account.

Advanced Internet Features

- *Virtual Servers.* This feature allows Internet users to access Internet servers on your LAN. The required setup is quick and easy.
- *User-Defined Virtual Servers.* Internet users can access non-standard Internet Servers on your LAN by using this feature.
- *Special Internet Applications.* Internet applications such as Internet Videoconferencing*, Telephony, Games Servers, and other special-purpose Servers are supported.
- *Exposed Computer.* One (1) PC on your local LAN can be exposed to the Internet. This allows unrestricted 2-way communication between this PC and servers or users on the Internet.

*Netmeeting may not be supported. For more details see infos on Online Help at www.digicom.it.

Configuration & Management

- *Easy Setup.*
  Connect to Michelangelo Gateway with your WEB browser from anywhere on the LAN for configuration.
- *Remote Management.*
  Michelangelo Gateway can be managed from a workstation anywhere on the LAN, using a WEB browser.

Security Features

- *Configuration Data.*
  Optional password protection is provided to prevent unauthorized users from modifying the configuration.
- **Access List**
  The LAN Administrator can limit Internet and E-Mail access by individual workstations.
- *Firewall Protection.*
  All incoming data packets are monitored and all incoming server requests are filtered, thus protecting your network from malicious attacks from external sources.

> **LAN Data Protection**
>
> All users on the LAN share a single external IP address. From the external viewpoint, there is no network, only a single device.
>
> For external requests, any attempt to connect to local resources are blocked. The router will not "reverse translate" from a global IP address to a local IP address.

Device Details

- [Package Contents](#)
- [Physical Details](#)
- [Specifications](#)
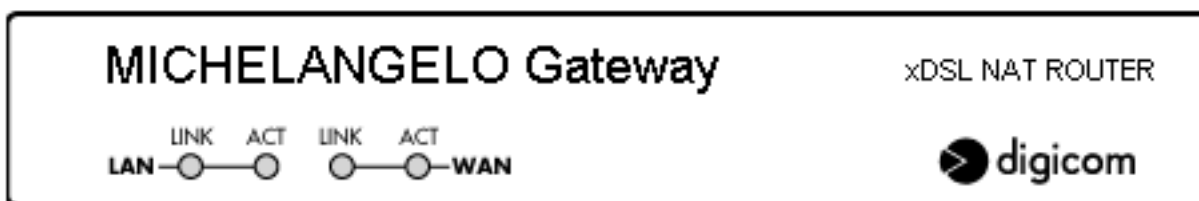

Package Contents

The following items should be included:
- Michelangelo Gateway
- Power Adapter
- 2 Cables
- CD-ROM containing this Manual

If any of the above items are damaged or missing, please contact your dealer as soon as possible.


Physical Details

LED Table

WAN Link	Green ON when the ISDN line is connected and ready (D channel)
WAN Act	Green ON when the ISDN line (B1 or B2 channel) is used to connect to the ISP or remote router. Flashing during data tranfer over ISDN.
LAN Link	Green ON when the router is connected to the LAN.

LAN Act	OFF when the device is not powered ON Green when the device in powered and ready Flashing Green when data is transferred over the LAN Flashing Green/Orange means a hardware device failure. Contact support.
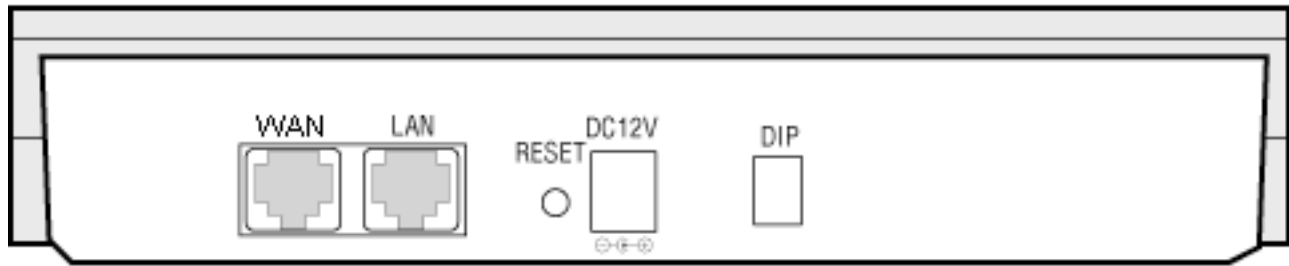
Connectors and Components

Item	Description
WAN	WAN port. Use a cable with RJ45 connectors to connect this port to the xDSL or Cable modem's Ethernet port. In some cases a cross-wired cable could be required.
LAN	10/100BaseT Ethernet port. Use a LAN cable fitted with RJ45 connectors to connect this port to your 10/100BaseT hub. (Use Cat 5 cable if LAN is running 100Mbit/s)
Reset button	Use this to reset (reboot) Michelangelo Gateway.
DC12V	Connect the supplied power DC 12V supply unit here. Do NOT use other power supplies.
DIP	See the following DIP switch table for details.

DIP Switch Table

SW1	SW2	Description
OFF	OFF	Normal operation (default) DHCP Server enabled.
OFF	ON	Normal operation. DHCP Server disabled.
ON	OFF	Restore device IP and password (see below)
ON	ON	Normal Operation

Restore Device IP Address and Password

If the IP address or password is lost, use the following procedure to:
- Restore the device IP address to the factory default of 192.168.0.1
- Set the Network Mask to 255.255.255.0
- Set the password to NULL (no password)

Procedure

1. Power off the device.
2. Set DIP switch 1 ON, and switch 2 OFF.
3. Power on the device.

Operate DIP switch 1 in the following sequence (you have 15 seconds to complete the sequence):

- OFF
- ON
- OFF

If everything is OK, the *Status LED* should flash once after about 5 seconds.
Michelangelo Gateway is now ready for use with the default IP Address and password.

Specifications

| Dimensions	120mm(W) * 93mm(D) * 30mm(H)
Operating Temperature	0° C to 40° C
Storage Temperature	-10° C to 70° C
Network Protocol:	TCP/IP
LAN Fast/ Ethernet Interface:	1 * 10/100BaseT (RJ45)
WAN Ethernet Interface:	1 * 10BaseT (RJ45)
LEDs	2 * Connection status 2 * Data Transfer
External Power Adapter	12 V DC

![digicom European Technologies logo]

LAN Installation

- [Requirements](#)
- [Procedure](#)

Requirements

- 10BaseT or 100BaseTX based network, UTP cabling.
- Network card's software drivers installed on all computers.
- TCP/IP protocol installed on the computers.
- xDSL or Cable modem providing a 10BaseT Ethernet port.
- Single User Internet account with an ISP.

Procedure
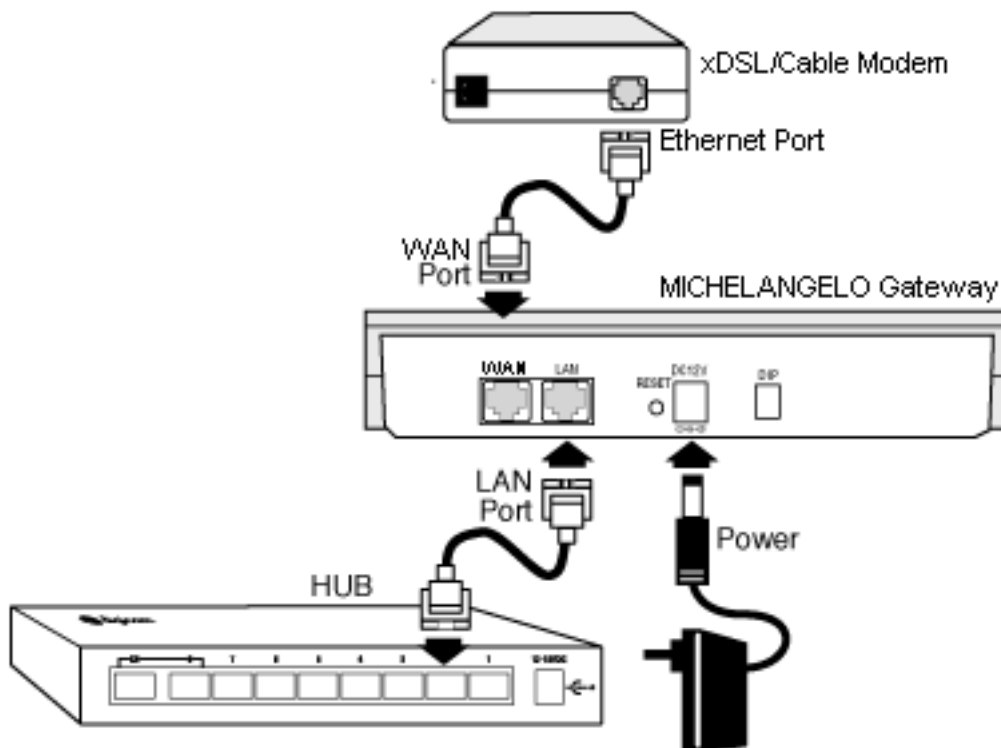
1. Choose an Installation Site

Select a suitable location which is close to:

- xDSL or Cable modem.
- Power outlets.
- 10BaseT or 100BaseTX hub.

2. Connect the Router to LAN

- Use standard UTP network cable, with RJ45 connectors, to connect Michelangelo Gateway to a 10BaseT or 100BaseTX hub.
  Michelangelo Gateway will auto-detect the network speed and full/half duplex mode.
- If your LAN has an existing DHCP Server, set DIP switch 2 ON to disable the DHCP Server in Michelangelo Gateway.

3. Connect to xDSL or Cable modem

Using a cable fitted with RJ45 plugs, connect the WAN port on Michelangelo Gateway to the Ethernet port on the xDSL or Cable modem.

4. Power Up

Connect the supplied power adapter to Michelangelo Gateway.
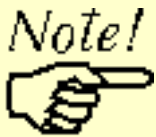
Note! **Only use the provided power adapter. Using a different one may cause hardware damage and warranty void.**

5. Check the LEDs

When Michelangelo Gateway is powered On, both the LEDs on the top face should light briefly.
If the Data/Status starts flashing (Yellow, Green, Yellow, Green ....), there is a hardware problem.

For more information on the LEDs, refer to the LED table in Device Details.

SETUP

- [Overview](#)
- [Other Setup](#)

Overview

Other setup is required only for the following situations:

- Your LAN has a Router or an existing DHCP Server.
- The default IP Address range is not suitable for your situation.
- You wish to use a password to protect the configuration data.
- You wish to take advantage of the advanced features of Michelangelo Gateway.

Other Setup

Except in the following circumstances, no other configuration is required.

If using an existing DHCP Server:

- Configure it to provide Michelangelo Gateway's IP Address as the *Default Gateway*.
- The DHCP Server in Michelangelo Gateway should be disabled. This setting is on the LAN Tab .

Device's DHCP Server Settings unsuitable

If your LAN already has some devices using fixed IP Addresses, you need to set the IP Address range used by the DHCP Server to be compatible. The DHCP Server settings are on the LAN Tab

Your LAN has a Router

The Routing feature can be completely ignored if you do not have a router in your LAN.

If you DO have a router, it is necessary to configure BOTH the Router and the Routing table in Michelangelo Gateway correctly. See Routing for details.

PC SETUP

- [Overview](#)
- [TCP/IP Settings](#)
- [Internet Settings](#)

Overview

- Each PC's TCP/IP settings must be correct.
- PCs must also be configured for Internet access via the LAN, rather than by a dial-up connection.

TCP/IP Settings

If you use the DHCP Server function:

Configure each PC to be a DHCP client, as follows:

DHCP Client Setup

Windows® 95/98/Me

1. Select the Network Neighborhood icon on the desktop, then Properties. You will see a screen like the one below:
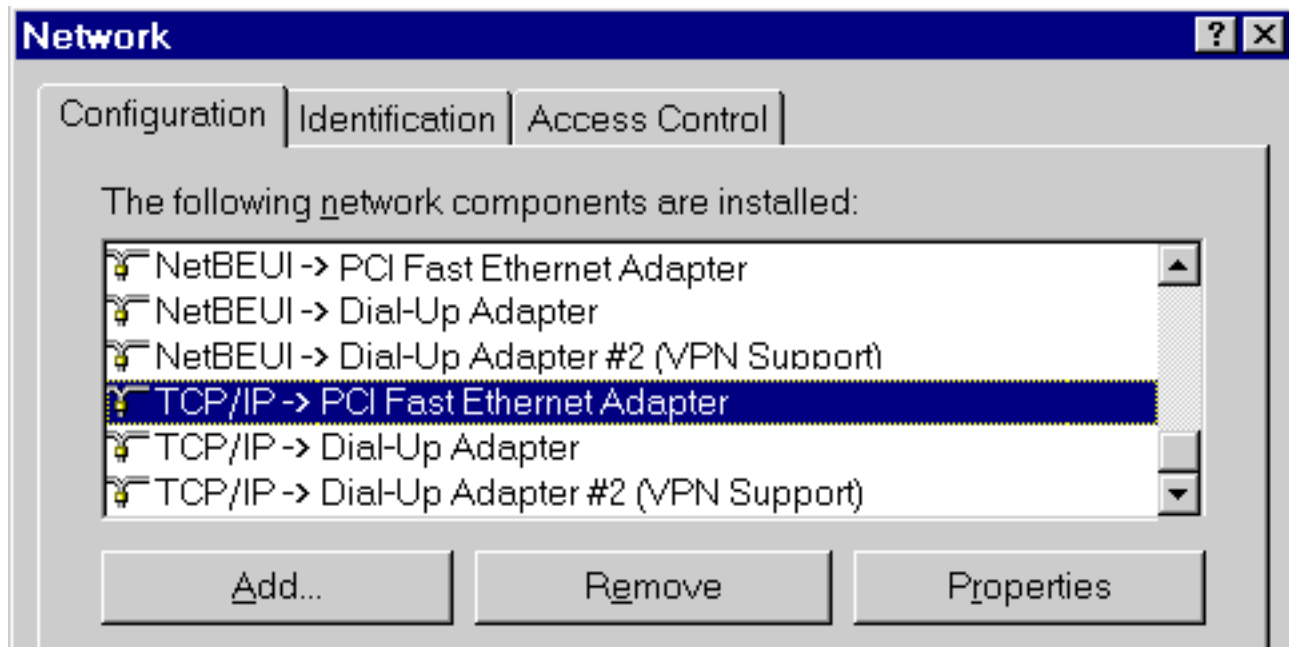
Figure 1: Network Configuration tab

2. If a line like the one highlighted ("TCP/IP -> Network Card") is not listed, select *Add-Protocol-Microsoft-TCP/IP-OK* to add it.

3. Select *Properties* for the "TCP/IP -> Network card" entry. You will then see a screen like the following example:
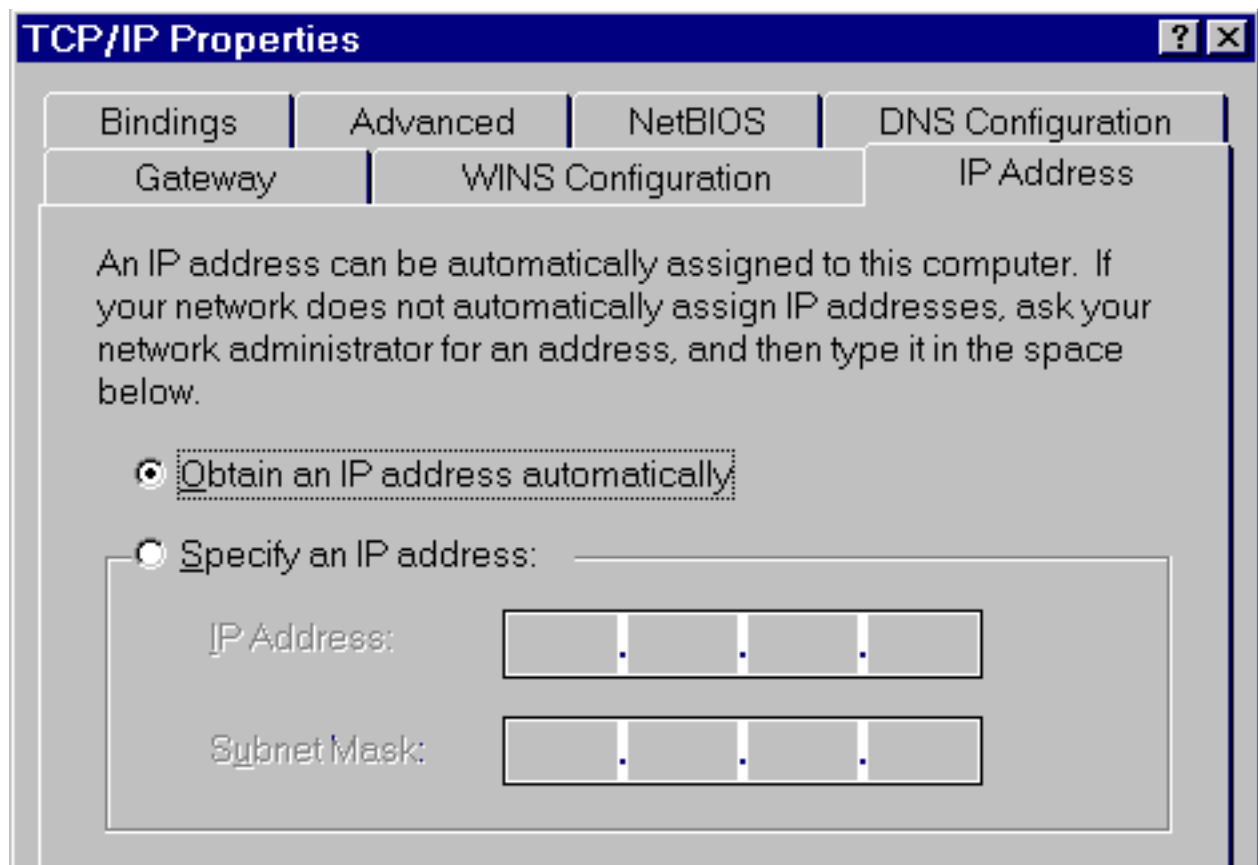

Figure 2: TCP/IP Properties - DHCP

4. On the *IP Address* tab, click the radio button for "Obtain an IP address automatically", as above, then reboot.

Your PC will obtain an IP Address from Michelangelo Gateway

Windows 2000®

- From Windows's desktop select and right click the Network Neighborhood icon, select Properties.
- Double click the LAN Settings and click on Properties.
- Select TCP/IP and click on Properties.
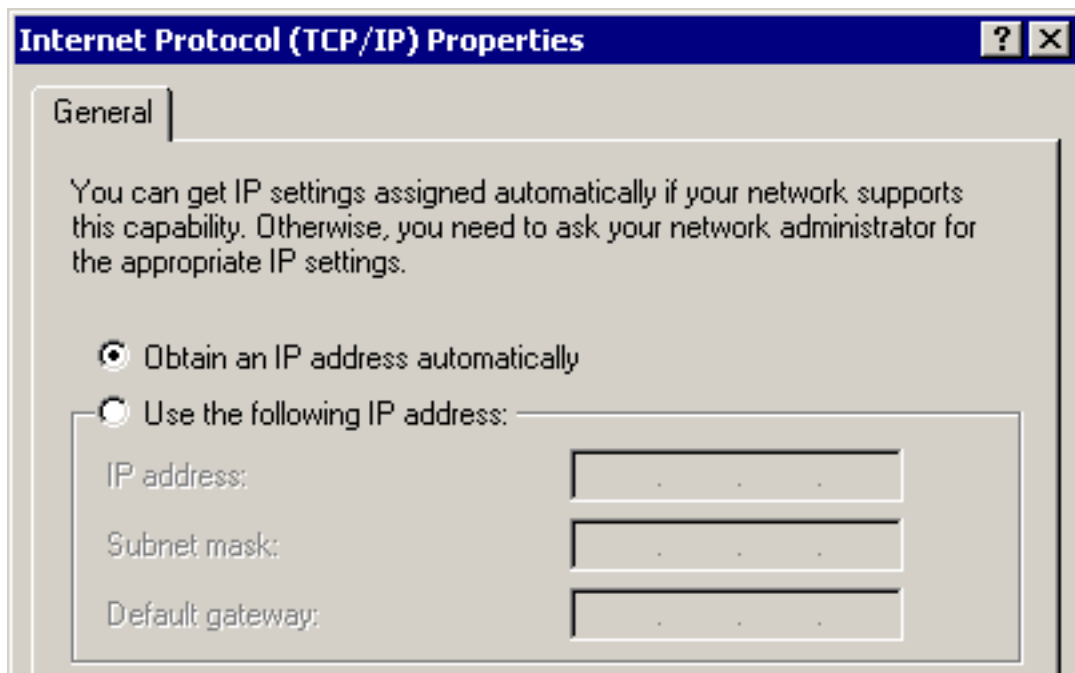
- Select Obtain IP address automatically. Click OK until closing all the opened tabs.

Macintosh®

- From the **Apple menu** select **Control Panels** and **TCP/IP**.
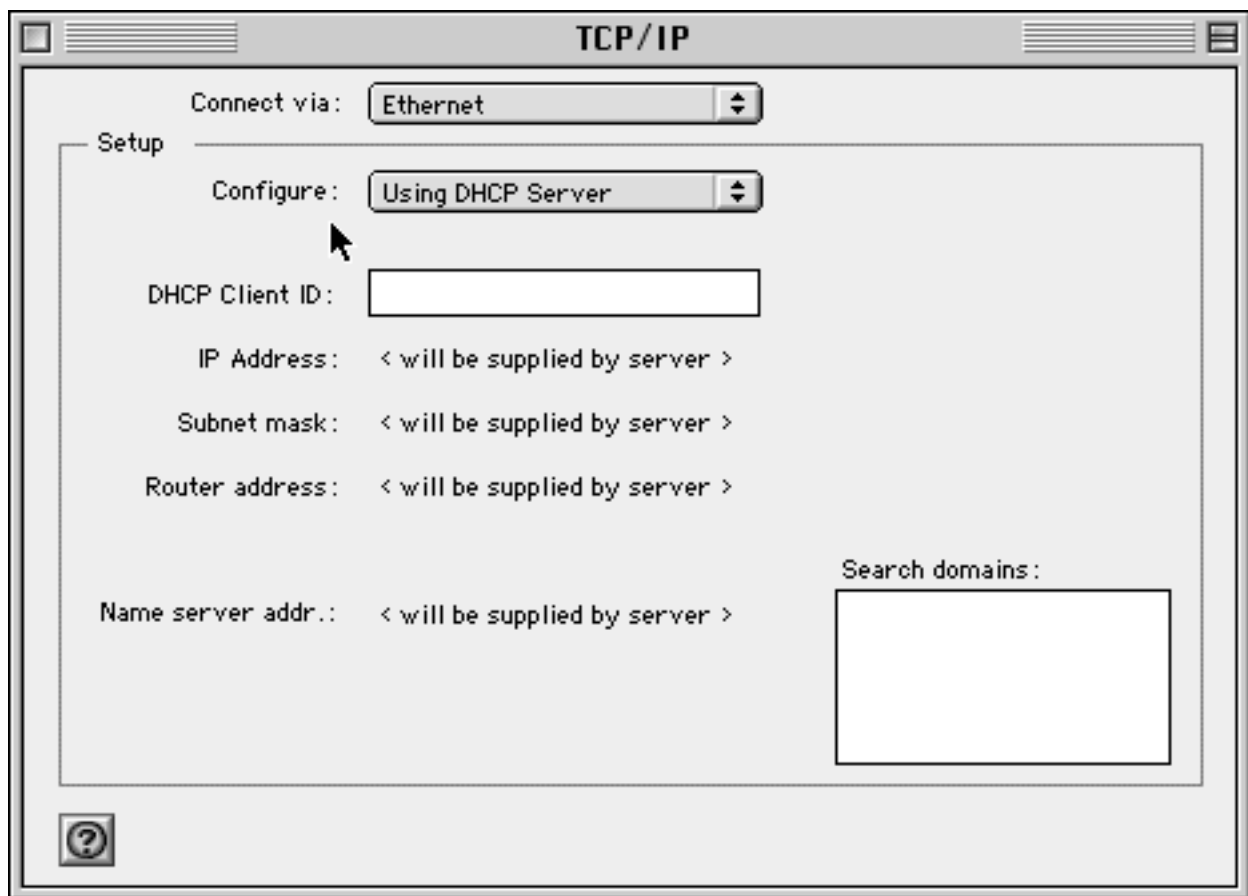
- You mau use the File:Configurations:Export menu to save your current settings.
- Select **Ethernet** for **Connect via** and **Use DCHP Server** for **Configure**.
- Close the TCP/IP control and save.
- Restart your Mac in order to make the changes active and get an IP address from Michelangelo Gateway.
- Once you have restarted your Mac you can check the assigned IP address through the Control: TCP/IP:File:Get Info menu.
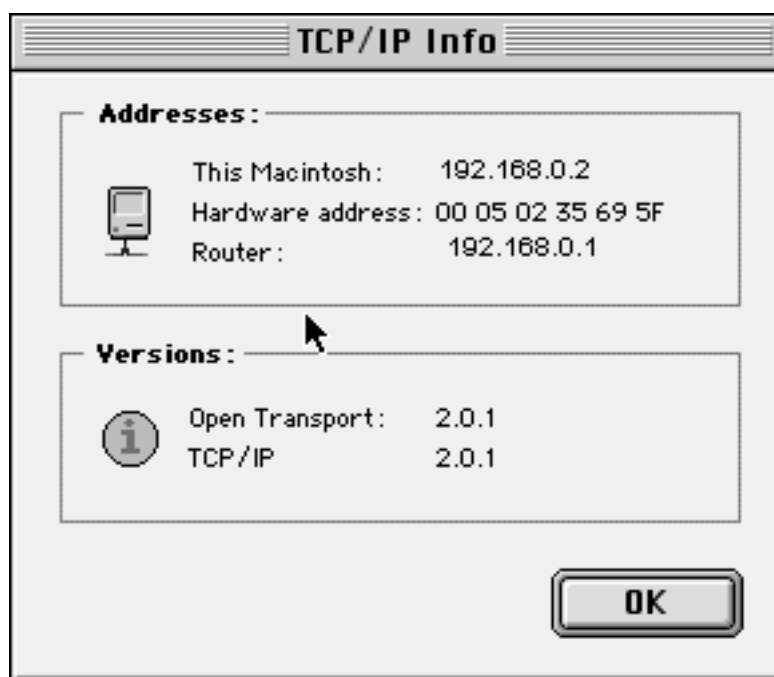
Windows® and Macintosh®

If your LAN already has a DHCP server:

● On the LAN Tab, disable the DHCP server in Michelangelo Gateway.

● Configure your existing DHCP server to provide Michelangelo Gateway's *IP Address* as the "Default Gateway".

Static (fixed) IP Addresses

Windows® 95/98/Me

● Select the *Network Neighborhood* icon on the desktop, then *Properties*. You will see a screen like the one below:
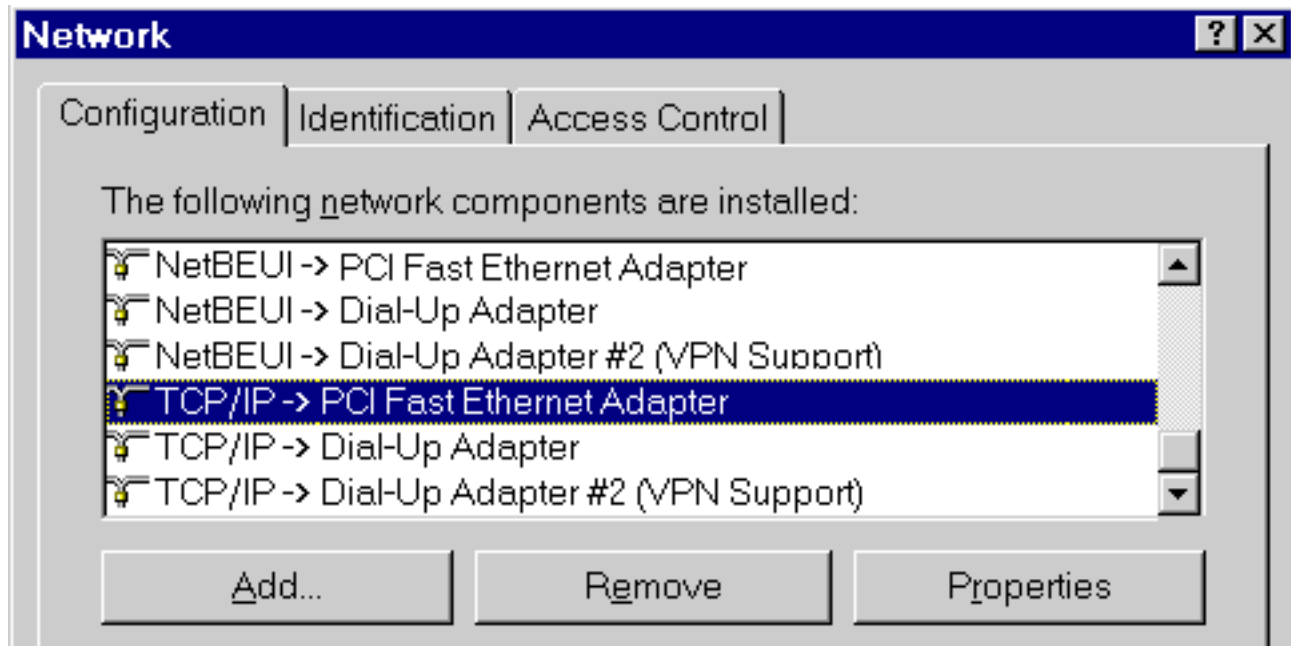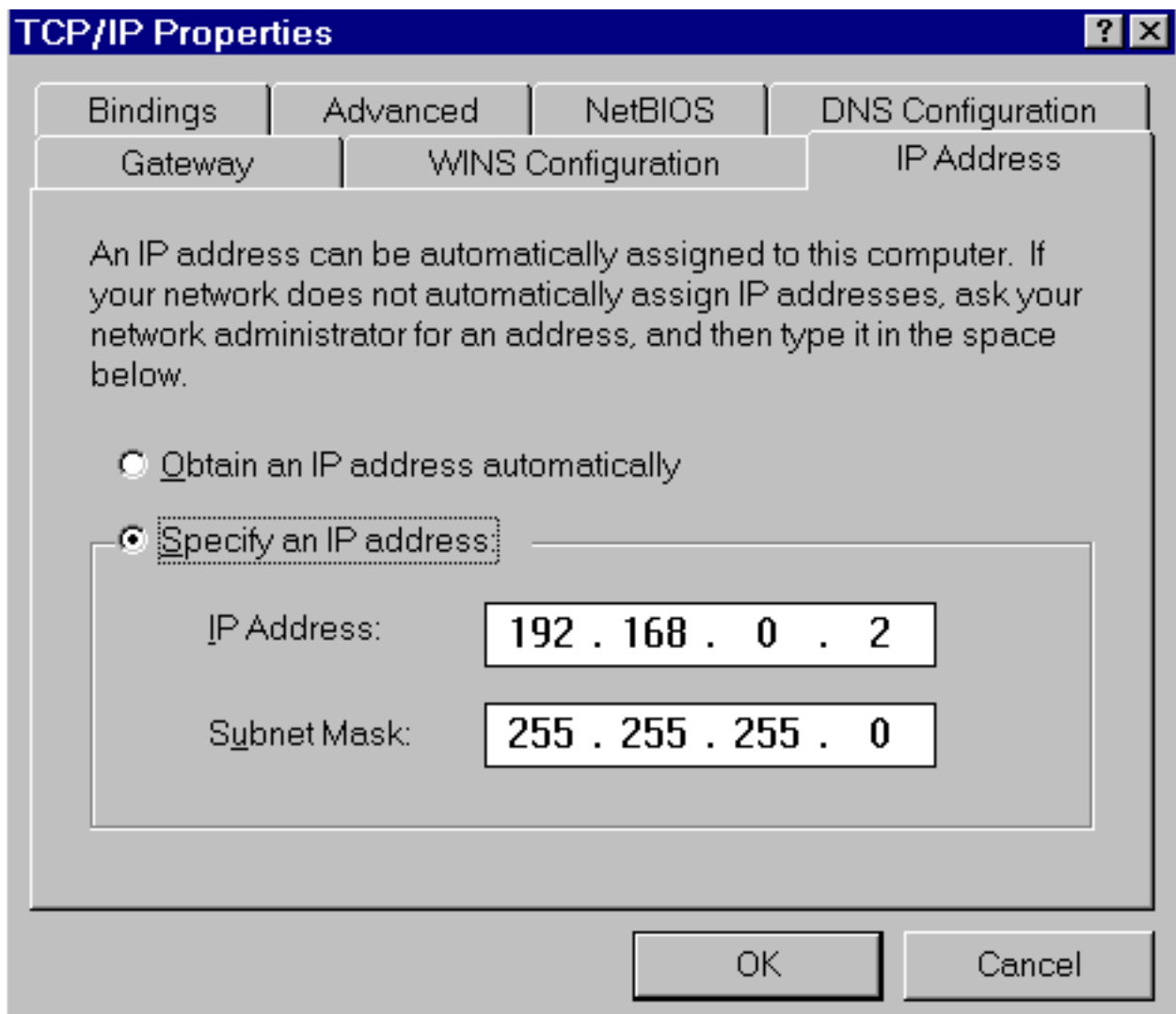

Figure 1: Network Configuration tab

● If a line like the one highlighted ("TCP/IP -> Network Card") is not listed, select *Add-Protocol-Microsoft-TCP/IP-OK* to add it.

● Select *Properties* for the "TCP/IP -> Network card" entry. You will then see a screen like the following example:

TCP/IP Properties ? X

| Bindings | Advanced | NetBIOS | DNS Configuration |
| Gateway | WINS Configuration | IP Address |

An IP address can be automatically assigned to this computer. If your network does not automatically assign IP addresses, ask your network administrator for an address, and then type it in the space below.

○ Obtain an IP address automatically

◉ Specify an IP address

    IP Address: 192 . 168 . 0 . 2

    Subnet Mask: 255 . 255 . 255 . 0

OK   Cancel

- Set IP address and Network Mask as shown in the fugure.
- Set the *Gateway* tab, set the *Default Gateway Address* to Michelangelo Gateway's IP *IP Address*.
- On the **DNS** tab, enter the values as provided from the ISP.
- Click on OK and reboot the computer.

Windows 2000®

- From Windows's desktop select and right click the Network Neighborhood icon, select Properties.
- Double click the LAN Connection icon and click on Properties.
- Select TCP/IP and click on Properties.
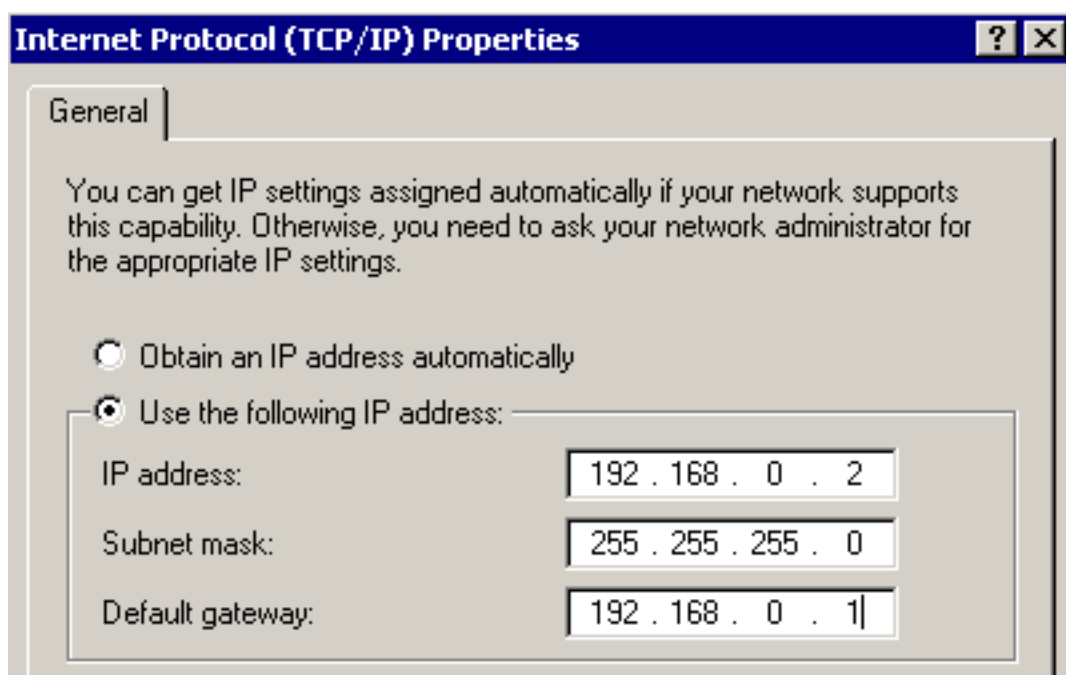
- Type the IP addresses as shown in the figure
- Add the DNS values as provided from the ISP. Click OK until closing all the opened tabs.

Macintosh®

- From the **Apple menu** select **Control Panels** and **TCP/IP**.
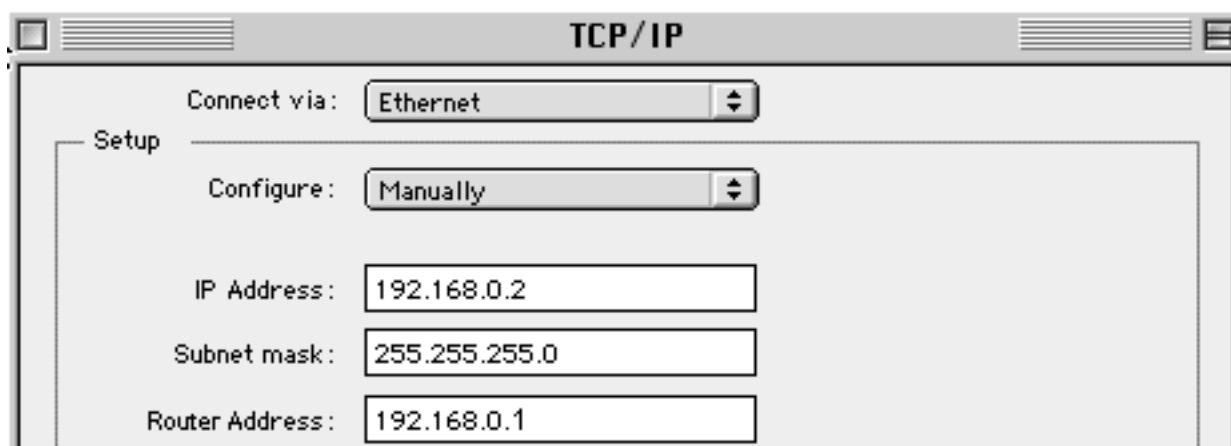
You may use the File:Configurations:Export menu to save your current settings.

- Select **Ethernet** for **Connect via** and **Manually** for **Configure**.
- Configure the addresses as shown.
- Add Michelangelo Gateway's IP address in the Router address tab
- Add the DNS values as provided by the ISP.
- Close the TCP/IP control and save.
- Restart your Mac in order to make the changes active

If your LAN has a Router or more Routers

- Do NOT change any TCP/IP settings on any PC.
- Configure the router. See Routing for details.

Internet Settings

For Internet access, each PC must be configured:

For Internet access via the LAN, rather than by dial-up connection. In Windows 95/98/Me/2000:

- Select *Start Menu - Settings - Control Panel - Internet Settings.*
- Select the *Connection* tab, and then click the *Setup* button to start the *Connection Wizard.*
- Set the Internet access to "via local area network (LAN)".
  Do NOT enable any of the options associated with this choice.
- Check the "No" option when prompted "Do you want to set up an Internet mail account now?".
- Click "Finish" to close the Internet Connection Wizard. You can now access the Internet using your Web Browser, E-Mail client, FTP client, etc. Note that your E-Mail client needs to be configured with details of your E-Mail account

Routing

-
-
-

Overview

While Michelangelo Gateway includes a standard routing table, this feature can be completely ignored if you do not have a router in your LAN.
If you DO have a router, it is necessary to configure BOTH the Router and the Routing table in Michelangelo Gateway correctly, as described in the following sections.

Router Configuration

It is essential that all IP packets for devices not on the local LAN be passed to Michelangelo Gateway, so that they can be forwarded to the Internet. To achieve this, the Routers must be configured to use Michelangelo Gateway as the *Default Route* or *Default Gateway*.

Local Router

The local router is the Router installed on the same LAN segment as Michelangelo Gateway. This router requires that the *Default Route* is Michelangelo Gateway itself. Typically, routers have a special entry for the *Default Route*. It should be configured as follows.

Destination IP Address	Normally 0.0.0.0, but check your router documentation.
Network Mask	Normally 0.0.0.0, but check your router documentation.
Gateway IP Address	The IP Address of Michelangelo Gateway.
Metric	1

Other Routers

Other routers must use Michelangelo Gateway's *Local Router* as the *Default Route*. The entries will be the same as Michelangelo Gateway's local router, with the exception of the *Gateway IP Address*.

- For a router with a direct connection to Michelangelo Gateway's local Router, the *Gateway IP Address* is the address of Michelangelo Gateway's local router.
- For routers which must forward packets to another router before reaching Michelangelo Gateway's local router, the *Gateway IP Address* is the address of the intermediate router.
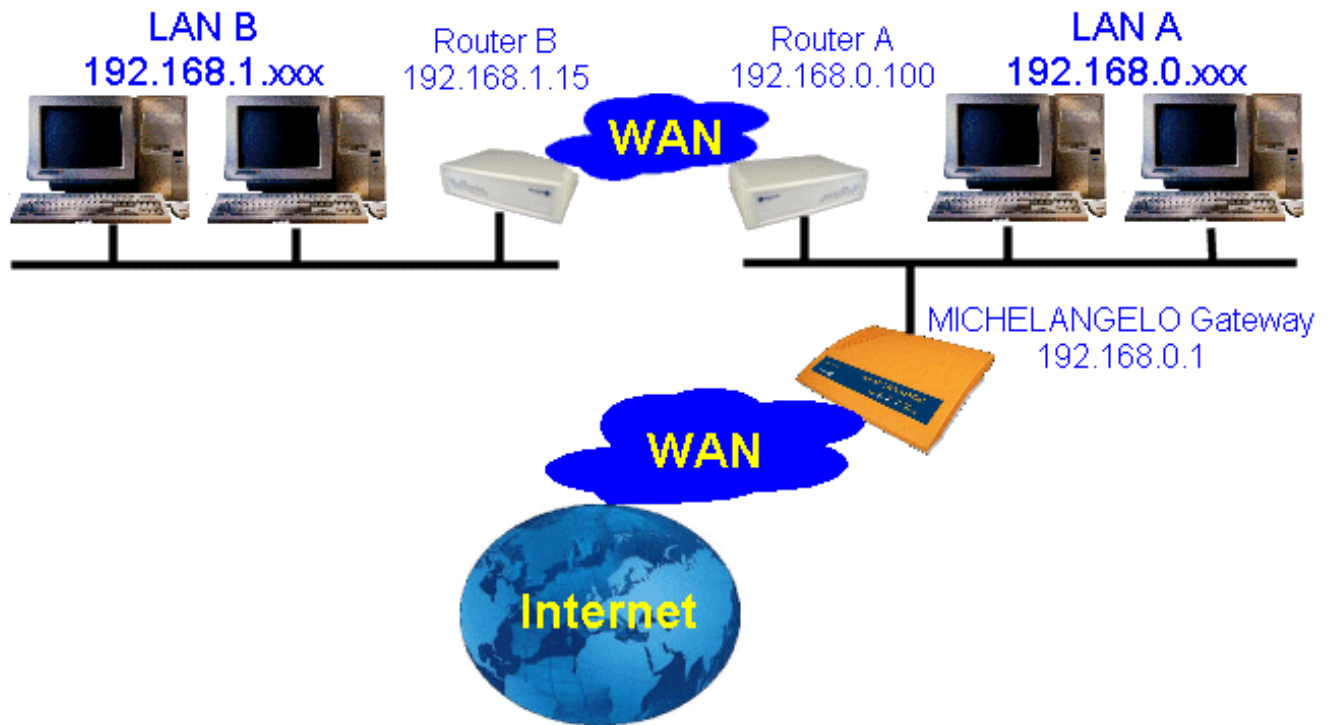

Routing Example

Figure 1: Routing Example

For the LAN shown above, with 2 routers and 2 LAN segments, the required entries would be as follows.

Michelangelo Gateway		Note
Destination IP Address	192.168.1.0	LAN B
Network Mask	255.255.255.0	
Gateway IP Address	192.168.0.100	Router A
Metric	1	

ROUTER A		Note
Destination IP Address	192.168.1.0	LAN B
Network Mask	255.255.255.0	
Gateway IP Address	192.168.0.15	Router B
Default Route		
Destination IP Address	0.0.0.0	*
Network Mask	0.0.0.0	*
Gateway IP Address	192.168.0.1	Michelangelo Gateway

ROUTER B		Note
Destination IP Address	192.168.0.0	LAN A
Network Mask	255.255.255.0	
Gateway IP Address	192.168.0.100	Router A
Default Route**		
Destination IP Address	0.0.0.0	*
Network Mask	0.0.0.0	*
Gateway IP Address	192.168.0.100	Router A

*This is the syntax normally used for a default route. Check if it is valid for your routers as well
**In the above example, this could be the unique entry for Router B's routing table.

Routing Table Entries

Routing

Existing Entries in Routing Table

1)192.168.1.0/255.255.255.0/192.168.0.100/LAN/1 ▼   Get Data

Clear Form

Routing Table

Destination IP Address [192] . [168] . [1] . [0]

Network Mask [255] . [255] . [255] . [0]

Gateway IP Address [192] . [168] . [0] . [100]

Interface [LAN ▼]

Metric [1]

[Add] [Delete] [Update] [List All] [Cancel]

Figura 2: LAN

In order to delete an existing entry:

- Select the entry from **Existing Entries in Routing Table**.
- Click on **Get Data**.
- Click on **Delete**.

Create a new entry:

- Type in Destination IP Adress, Network Mask, Gateway, Interface and Metric.
- Click on **Add** .

In order to refresh the displayed informations click on **Update**

In order to display all the existing routes (Routing Table) click on **List All**

Routing Table data

Destination IP Address	The network address of the remote LAN segment. For standard class "C" LANs, the net-work address is the first 3 fields of this Destination IP Address. The 4th (last) field can be left at 0.
Network Mask	The Network Mask used on the remote LAN segment. For class "C" networks, the standard Network Mask is 255.255.255.0
Gateway IP Address	Select the appropriate interface - LAN (Internal LAN) or WAN (External LAN or WAN) from the drop-down list.
Metric	The number of routers which must be traversed to reach the remote LAN segment. The default value is 1.

Advanced Features

- [Overview](#)
- [Available Options](#)

Overview

Generally, the following Settings and Features are optional. These settings are to be used if the LAN settings have to be modified, if there are one or more routers connected to the same LAN or the Administrator wants to use the advanced features provided by Michelangelo Gateway.

Available Options

The available options are listed below. Follow the relevant link to locate detailed information.

Password	Set or change the password for Michelangelo Gateway. The password is used to protect the configuration data.
LAN	Use this to:

Use this to:
- Enable/Disable the DHCP Server, or change the IP Addresses allocated by the DHCP server, or increase the number of DHCP clients supported. (Default is 50, maximum is 253.)
- Add or Delete entries in the Routing Table
- Enter additional DNS (Domain Name Server) IP Addresses

Access Control	Impose restrictions on the Internet Access used by particular workstations.
Internet Applications	Use Virtual Servers, Special Internet Applications, or the *Exposed Computer* feature.

Password

- <u>Overview</u>
- <u>Password Screen</u>

Overview

- The password protects Michelangelo Gateway's configuration data. If a password is not set, anyone can connect to Michelangelo Gateway and change its configuration.
- If the password is lost, a DIP switch setting is provided to clear the password. See <u>Restore IP Address and Password</u> for details.

Password Screen

Selecting the *Password* tab will reveal a screen like the example below.

Password	New password [ ] Verify password [ ]
NAT	NAT (Network Address Translation) allows LAN users to share the "WAN" (external) IP address, and also provides "Firewall" protection. ⦿ Enable NAT ○ Disable NAT
	Save Cancel

Password Screen

Enter the password on this screen:
- Passwords are case sensitive and can be up to 8 alphanumeric characters (no spaces or punctuation).
- To create or change the password, enter the required password in both the *New Password* and *Verify Password* input fields.

LAN

- Overview
- DHCP Server
- DNS (Domain Name Server) IP Address

Overview

The tab is made of two parts:.
- DHCP Server
- DNS (Domain Name Server) IP Addresses

Figure 1: LAN Tab

Device IP Address

The LAN IP Address for Michelangelo Gateway. Use the default value of 192.168.0.1 unless the address is already in use or your LAN is using a different IP address range. In the latter case, use an IP Address from within the range used by your LAN.

Network Address

The default value 255.255.255.0 is standard for small (class "C") networks. For other networks, use the Network Mask for the LAN segment to which the device is attached. i.e. the same value as the PCs on that LAN segment.

DHCP Server

Overview

- A DHCP (Dynamic Host Configuration Protocol) server provides a valid IP address, Gateway address and DNS addresses to a DHCP client (PC or device) upon request.
- Michelangelo Gateway can act as a **DHCP Server**. The default value is ON (Enabled), and use of this feature is strongly recommended.
- To use this feature, ensure that *Enable* is checked.

Also, the PCs must be configured to act a DHCP clients. See [DHCP Client Setup](#) for details of this procedure.

IP Address allocated by the DHCP Server

- Normally, the default values for the DHCP Server do not need to be changed. However, if your LAN already has some devices using fixed IP Addresses, you must ensure that each of those devices uses an IP Address which is compatible with the IP Addresses allocated by the DHCP Server.
  "Compatible" means:
  - The IP Address is from the same address range as the DHCP Server.
    By default, Michelangelo Gateway uses the IP Address range 192.168.0.1 to 192.168.0.254.
  - The IP Address must NOT be within the group allocated by the DHCP Server.
    By default, Michelangelo Gateway allocates addresses between 192.168.0.2 to 192.168.0.51. Therefore, addresses between 192.168.0.52 and 192.168.0.254 are available for other devices.
  - All devices must use the same *Network Mask* (Subnet Mask).
- If you have non-PC devices on your LAN, it may be more convenient to change the IP Addresses allocated by the DHCP Server function in Michelangelo Gateway, rather than change the IP Addresses used by the existing devices.
  To do this:
  - For the *Start IP Address*, enter the first IP Address of the range of IP Addresses to be allocated by the DHCP Server.
  - In the *End IP Address*, enter the last IP Address of the range of IP Addresses to be allocated by the DHCP Server function.
  - Ensure that the range is large enough for all of the PCs and devices which will be acting as DHCP clients and requesting an IP Address. The default number of clients is 50; the maximum is 253.

DNS (Domain Name Server) IP Address

Space is provided for 3 entries.

Enter addtional values if you wish. If multiple entries are provided, the first available DNS will be used.

Internet Applications

- Overview
- Special Applications
- Virtual Servers
- User defined Virtual Servers
- VPN Servers - PPTP
- Exposed Computer

Overview

The **Internet Application** screen provides access to some advanced features of Michelangelo Gateway. Selecting the **Internet Application** tab will display a screen like the example below.

Using the **Operational Status** settings you can enable/disable the several options. Click on **Save** in order to activate the changes

Advanced Internet Features

Features - Operational Status

Special Internet Applications	○ Enable	◉ Disable
Virtual Servers	◉ Enable	○ Disable
Exposed Computer	○ Enable	◉ Disable

Save   Cancel

Special Internet Applications	Configure for non-standard Internet applications.
Virtual Servers	Define servers on your LAN, so that Internet users can access them.
User-Defined Virtual Servers	Define non-standard Virtual Servers using port numbers.
Exposed Computer	Allows unrestricted 2-way Internet connection by 1 computer. Warning! This is a security risk.

Figure 1: Internet Tab

Special Applications

This feature is only required if you wish to use Internet applications which require 2-way communication, multiple connections, or combined TCP/UDP connections.

- Examples of such applications are Internet Videoconferencing*, Telephony, Games Servers, and other special-purpose Servers. A number of the more common applications have been pre-defined, and will appear in the list.
- Generally, you will become aware of the need for this feature when an Internet application is unable to function correctly.

- At any time, only one (1) PC can use each Special Application.

* Netmeeting may not be supported. Please refer to the Online Help page at http://www.digicom.it

To Enable a defined Application

- Select it from the drop-down list
- Click "**Get Data**"
- Check the **Enable** checkbox
- Click "**Update**"

To Disable a defined Application

- As above, but **uncheck** the Enable checkbox.

To Delete a defined Application

- Select it from the drop-down list,
- Click "**Delete**"

To Modify (Edit) a defined Application

- Select it from the drop-down list,
- Click "**Get Data**"
- Make any desired changes
- Click "**Update**"

To Create a new Application

- Click "**Clear Form**"
- Enter the required data, as described below
- Click "**Add**"

To List all Applications

- Click "**List All**"

Special Applications

Existing Special Applications

Name [cuseeme ▼] [Get Data] [Clear Form]
Click "Get Data" to see correct data for selected application.

Data for this Application

Name   [cuseeme]

Enable   ☐

Outgoing Control

Protocol: [UDP ▼]

Port Range: Start [7648] Finish [7648]

Incoming Data

Protocol: [UDP ▼]

Port Range: Start [7648] Finish [7649]

[Add] [Delete] [Update] [List All] [Cancel]

Data - Special Applications

Enable	Use this to Enable or Disable support for this application, as required.
Name	Enter a descriptive name to identify this application entry.
Outgoing Data	

Protocol	The protocol (TCP or UDP) used when you connect to the special application service.
Port Range: Start	The beginning of the range of port numbers used by the application server, for data you send to it. If the application uses a single port number, enter it in both the "Start" and "Finish" fields.
Port Range: Finish	The end of the range of port numbers used by the application server, for data you send.
Incoming Data	
Protocol	The protocol (TCP or UDP) used when the application or service sends data to you.
Port Range: Start	The beginning of the range of port numbers used by the application server when data is sent to you. If the application uses a single port number, enter it in both the "Start" and "Finish" fields.
Port Range: Finish	The end of the range of port numbers used by the application server, when data is sent to you.

Virtual Servers

Overview - Virtual Servers

This feature is available only if you are using Michelangelo Gateway for shared Internet access, rather than for LAN-to-LAN connection.
The *Virtual Servers* feature allows Internet users to access Servers on your LAN, via Michelangelo Gateway.

Normally, Internet users would not be able to access a server on your LAN because:

- Your Server does not have a valid external IP Address.
- Attempts to connect to devices on your LAN are blocked by the NAT protocol in this device which hides all the conneted computers on its LAN.

The "Virtual Server" feature solves these problems and allows Internet users to connect to your servers. However, your LAN must have an existing connection to the Internet. Internet users cannot open a connection.
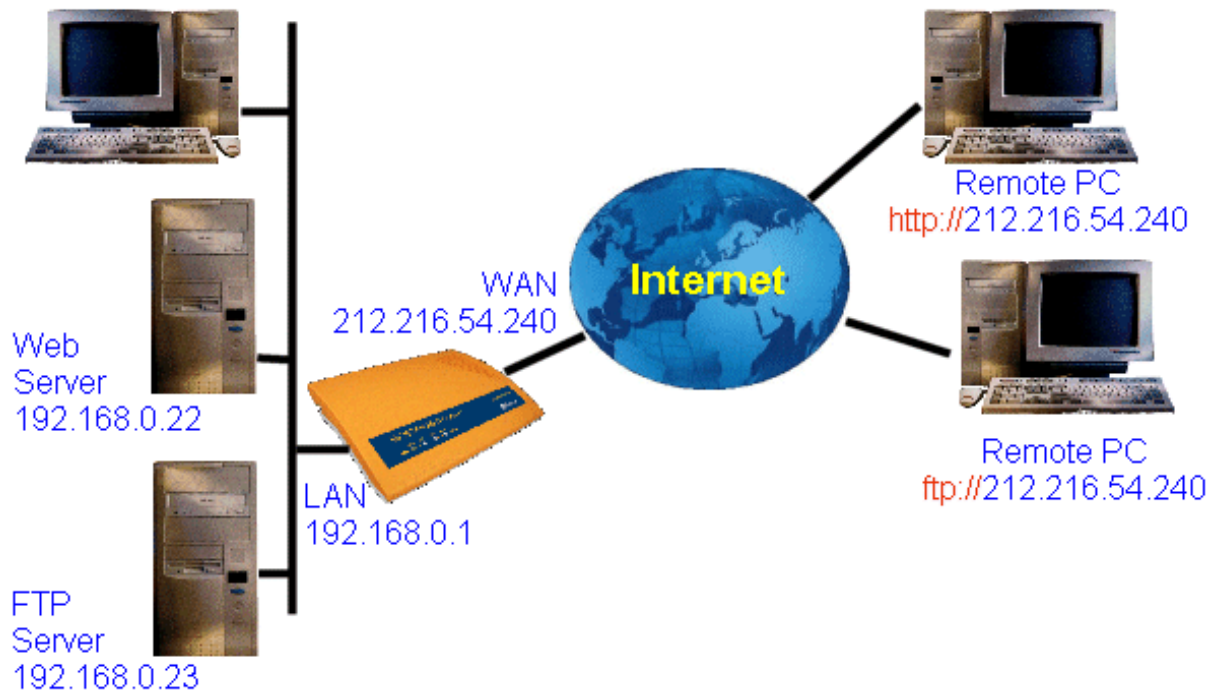
Virtual Server operation is illustrated below.

Figure 3: Virtual Server Operation

IP Address seen by Internet Users

Note that, in this illustration, both Internet users are connecting to the same IP Address, but using different protocols.

To Internet users, all virtual Servers on your LAN will have the same IP Address.

This WAN IP Address is the *IP Address from ISP* on the *Wan Status* screen. This address should be static (fixed), rather than dynamic, to make it easier for Internet users to connect to your Servers.

Using Virtual Servers

1. Enable the Server type or types you wish to use.
   This can be done by clicking within the "Enable" column, to toggle the value On or Off.
   If creating or editing an entry, an *Enable* checkbox is available.

2. Enter the IP Address of each server on your LAN.

3. Click **Save** when finished.

4. Advise Internet users of the IP Address to use. (The IP Address allocated by the ISP, not the address on your LAN.) Note that because all Servers have the same IP Address, the appropriate client software (e.g. Browser, FTP client, Mail Client) must be used so that Internet users will be connected to the correct server.

5. Ensure that the connection to the Internet is established. Internet users cannot open a connection.

Virtual Servers

On	Type	IP Address
☐	DNS	0 . 0 . 0 . 0
☐	Finger	0 . 0 . 0 . 0
☐	FTP	0 . 0 . 0 . 0
☐	Gopher	0 . 0 . 0 . 0
☐	Mail (SMTP)	0 . 0 . 0 . 0
☐	Mail (POP3)	0 . 0 . 0 . 0
☐	News	0 . 0 . 0 . 0
☐	Telnet	0 . 0 . 0 . 0
☐	WEB Server	0 . 0 . 0 . 0
☐	Whois	0 . 0 . 0 . 0

[Save]   [Cancel]

Defining Virtual Servers

If the type of Server you wish to use is not listed, you can define it by yourself.

User Defined Virtual Servers

Existing Servers

Name ☐ ▾ | Get Data | Clear Form

Click "Get Data" to see correct data for selected server.

Data for this Server

Name [   ]

Enable ☐

IP Address [0] . [0] . [0] . [0]

Protocol [UDP ▾]

Internal Port No. [0]

External Port No. [0]

(Leave blank if the same as the Internal Port)

[Add] [Delete] [Update] [List All] [Cancel]

To Create a new Server

- Click "**Clear Form**"
- Enter the required data
- Click "**Add**"

To Modify (Edit) a defined Server

- Select it from the drop-down list,
- Click "**Get Data**"
- Make any desired changes. Note that you can "Enable" and "Disable" a Server using this process.
- Click "**Update**"

To Delete a defined Server

- Select it from the drop-down list,
- Click "**Delete**"

To List all Servers

- Click "**List All**"

Enter data on this screen as follows.

Enable	Use this to Enable or Disable support for this Server, as required.
Protocol	Select the protocol (TCP or UDP) used by the Server.
Name	Names can not contain spaces or punctuation, and are case insensitive (case is ignored).
IP Address	The IP Address of the PC on your LAN which is running the Server software.
Internal Port Number	Enter the port number used by the Server to connect to clients.
External Port Number	The port number used by clients when connecting to the Server. This is normally the same as the *Internal Port Number*. If it is different, this device will perform a "mapping" or "translation" function, allowing you to configure the server to use one port address, while clients use a different port address

VPN (Virtual Private Networking) Servers

Michelangelo Gateway supports VPN, using PPTP (Peer-to-peer Tunneling Protocol).

- If accessing remote VPN Servers, no configuration is required. Just use your VPN Client software normally.
- To allow remote users to access a VPN Server on your LAN, you must create a *Virtual Server* entry for the VPN Server, using the procedure described above.

❍ Select the *TCP* protocol.

❍ Enter a suitable name.

❍ Enter the IP Address of your VPN Server.

❍ Enter the port numbers used by your VPN software - normally 1723 for both the internal and external port.

Once this is done, Michelangelo Gateway is transparent. Simply configure and use your VPN software as described in the VPN software documentation.

Exposed Computer

This feature, if enabled, allows one (1) computer on your LAN to be exposed to all users on the Internet, allowing unrestricted 2-way communication between the "Exposed Computer" and other Internet users or Servers.

This allows connection to special-purpose servers which require proprietary client software, or 2-way user connections such as Video-conferencing, which requires both users to run special software.

- Internet users will see the PC as having the *IP Address allocated by ISP* shown on the *Quick Setup* screen of this device. (This is the same IP Address used by the Virtual Servers.)
- Any Internet user who knows this address can connect to the *Exposed Computer*. (What happens after connection depends on what software both computers are using).
- **To allow unrestricted access, the Firewall in this device is disabled, creating a security risk.**
- **You should use this feature only if the "Special Applications" feature is insufficient to allow an application to function correctly.**
- **This feature should be enabled only when required.**

Operation

Exposed Computer

This feature allows one (1) computer to have unrestricted 2-way communication with Internet servers or users.

Because of the security risk, this feature should be activated only when required.

Exposed Computer

LAN IP Address [0] . [0] . [0] . [0]

[Save] [Cancel]

- Enter the IP Address of the PC on your LAN which you wish to be the *Exposed Computer*.
- Enable this feature as and when required by clicking **Save**.

Access Control

- [Overview](#)
- [Security Groups](#)
- [Workstations](#)
- [Administrator Defined Filters](#)

Overview

The Access Control feature allows administrators to restrict Internet Access by individual workstations. The process uses "Packet Filtering" to block or discard data packets. You can apply the pre-defined filters, and optionally define your own filters.

By default, filtering is disabled; no packets are blocked or discarded.

To use the Access Control feature:

1. Set the desired restrictions on the "Everyone" group, by selecting this group and clicking "Setup". By default, all PCs are in the "Everyone" group unless explicitly moved to another group.
2. Set the desired restrictions on the other groups ("Group 1", "Group 2", etc) as needed.
3. For each Workstation you wish to move from the "Everyone" group, enter their data and assign them to the desired group.
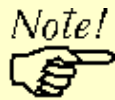
> *Note!* **You can limit Internet access for ALL PCs without entering ANY workstation data. Simply apply the desired restrictions to the "Everyone" group.**

Security Groups

To Set or Change restrictions for a Security Group:

1. Select the group from the drop-down list. Note that the Security groups are pre-named "Everyone", "Group 1", "Group 2", "Group 3", and "Group 4". These names cannot be changed.
2. Click the **Get Data** button to view the selected group's data. Use **Clear Form** for deleting alla data.

To Assign Workstations to a Security Group

All Workstations are automatically in the "Everyone" group. Use the Workstations screen to move them to an-other group if required.

Type in the desired data as described in the table below and click **Save** when done.

Data for each Group

No restrictions	No packets are blocked. Use this to create an "Unlimited Access" group, or to temporarily remove restrictions from a group.
Block all Access	Groups members cannot access the Internet at all. Use this to create the most restrictive group.
Use List Below	Enable or disable individual items as required. If set to *Block*, the item will be blocked, and the group will NOT have access. This table is ignored unless the *Use List Below* radio button is selected.

Workstations

This list shows all workstations (PCs) which have been defined.

It is only necessary to define workstations in the following situations:

- To assign the workstation to a particular security group.
- To reserve an IP Address for this PC (or device), so that the DHCP Server function in Michelangelo Gateway will always allocate the same IP Address to this device, and never assign the reserved IP Address to any other device.

To Add a New Workstation:

- Ignore the drop-down box, click the **Clear Form** button, and enter the Workstation details in the fields provided.
- Click **Add** when finished.

To Delete an Existing Workstation:

- Select the Workstation from the drop-down box
- Then click the **Delete** button.

To Change an Existing Workstation's Details:

- Select the Workstation from the drop-down box
- Click **Get Data** to view their information, then change any fields you wish.

- Click **Update** when finished.

To Generate a List of all Workstations:

Just click on the **List All** button.

Workstation Data

Name	Enter an identifier for this workstation. The name cannot contains spaces or punctuation.
Group	Select the security group for this workstation. If you only wish to reserve an IP Address, and are not using the Access Control features, simply leave this at "Everyone".
Hardware (MAC) Address	Hardware or phpsical address. On a PC, this is often called the *Network Adapter Address*. You can use the Windows "Winipcfg" program or your LAN management program to find this address. (By default, there is no Start Menu item for *Winipcfg* so you must use hte "Run" command or create your own shortcut.)
Reserve IP Addres in DHCP Table	Check this if you wish to reserve an IP address for this workstation. This is useful if you have to provide the IP Address for other programs or users. If this is left unchecked, the following entry can be ignored.
Reserved IP Address	This relates to the entry above. Enter the reserved address here. This MUST be within the range used by the DHCP server (set on the *LAN* screen).

Administrator Defined Filters

This screen allows you to define packet filters. When you define security groups, on the "Security Groups" screen, you can select from any filters defined here, as well as the pre-defined filters.

Administrator Defined Filters

Create filters by defining packets to be **Filtered Out**.

TCP Packets			UDP Packets	
Name	Port No.		Name	Port No.
Chat	6667			0
Finger	79			0
Raudio	7070			0
	0			0
	0			0
	0			0
	0			0
	0			0
	0			0
	0			0

Save   Cancel

Administrator defined Filters

TCP Packets	**Name** Enter a descriptive name for this entry. **Port No**. Enter an integer representing the TCP Port Number for this type of packet.
UDP Packets	**Name** Enter a descriptive name for this entry. **Port No**. Enter an integer representing the UDP Port Number for this type of packet.

Operation

- Internet Access
- WAN Status PPPoE
- WAN Status Direct Connection
- LAN Status

Internet Access

Once Configuration is completed, operation is completely automatic.

You can use your Web Browser, FTP client, E-Mail client and other applications as if you had a permanent connection to the Internet.
If no connection currently exists, there will be a short delay while the connection to the ISP is established.

WAN Status PPPoE

The Status screens allow the user to try and verify the connection status.

depending on the type of connection the PPPoE rather than the Direct Connection screen will be available

In both cases the LAN and DHCP settings are available from the Device/LAN status link.

In order to try a connection first verify that all harware connections are correctly made.

WAN Status - PPPoE

Status			
		Physical Address	00-c0-02-65-38-03
		I.P. Address	0.0.0.0
		Network Mask	0.0.0.0
		PPPoE Link Status	OFF

Log:
```
005:Reset physical connection
004:stop PPP
003:try to hang up
002:timeout
001:wait 100 msec "WAN start...  "
000:stop PPP
```

[Connect] [Disconnect] [Clear log] [Refresh]

[Device/LAN Status]

WAN Status PPPoE data

Status	
Physical Address	The WAN hardware address of this device.
IP Address	The IP Address of this device, as seen by devices on the WAN.(This is not the LAN address)
Network Mask	The Network Mask (Subnet Mask) for the IP Address above.
PPPoE Link Status	This indicates whether or not the connection is currently established.

Connection Log

Messaggio	Descrizione
Connect on Demand	Connection attempt has been trig-gered by the "Connect on Demand" setting.
Manual connection	Connection attempt started by the "Connect" button.
Reset physical connection	Preparing line for connection attempt.
Connecting to remote server	Attempting to connect to the the ISP's server.
Remote Server located	ISP's Server has responded to connection attempt.
Start PPP	Attempting to login to ISP's Server and establish a PPP connection.
PPP up successfully	Able to login to ISP's Server and establish a PPP connection.
Idle time-out reached	The connection has been idle for the time period specified in the "Idle Time-out" field. The connection will now be terminated.
Disconnecting	The current connection is being terminated, due to either the "Idle Time-out" above, or "Disconnect" button being clicked.
Error: Remote Server not found	ISP's Server did not respond. This could be a Server problem, or a problem with the link to the Server.
Error: PPP Connection failed	Unable to establish a PPP connection with the ISP's Server. This could be a login problem (name or password) or a Server problem.
Error: Connection to Server lost	The existing connection has been lost. This could be caused by a power failure, link failure, or Server failure.
Error: Invalid or unknown packet type	The data received from the ISP's Server could not be processed. This could be caused by data corruption (from a bad link), or the Server using a protocol which is not supported by this device.

Direct Connection Staus

WAN Status - Direct Connection

Physical Address	00-c0-02-65-38-03
I.P. Address	0.0.0.0
Network Mask	0.0.0.0
Default Gateway	0.0.0.0
DHCP Client	Enable

[Reconnect] [Refresh]

[Device/LAN Status]

WAN Status Direct Connection data

Status	
Physical Address	The "Hardware" address of this device, as seen by other devices on the external LAN or WAN
IP Address	The IP Address of this device, as seen by devices on the WAN.(This is not the LAN address)
Network Mask	The Network Mask (Subnet Mask) for the IP Address above.
Default Gateway	IP address of the Router/Gateway on the External LAN or WAN.
DHCP Client	Displays "Enabled" or "Disabled", indicating whether this device is acting as a DHCP client on the external LAN or WAN.
Reconnect	Use this button if the connection seems to have been lost, and no data is being transferred. (This button has no effect unless acting as a DHCP Client.)
Refresh	Update the data on screen.

LAN Status

Device/LAN Status

Device		
Device	Firmware Version	Version 6.5 Release 24
	Hardware ID	4f00c5000001
	Network Address Translation	Enable
LAN Port	Physical Address	00-c0-02-65-38-02
	I.P. Address	192.168.0.1
	Network Mask	255.255.255.0
	DHCP Server	Enable

DHCP Table	I.P. Address	Physical Address	Status
DHCP Table	192.168.0.2	00-60-b0-45-71-41	leased
	192.168.0.3	00-05-02-56-a9-2d	leased
	192.168.0.4	00-a0-a2-00-5c-d0	leased
	192.168.0.1	00-00-00-00-00-00	reserved

Refresh

Device	
Firmware Version	Version of the running firmware.
Hardware ID	The hardware ID of this device.
Network Address Translation	This will display if NAT is "Enabled" or "Disabled".

LAN Port	
Physical Address	The "Hardware" (MAC) address of this device, as seen by other devices on the Internal LAN.
IP Address	The IP Address of this device, as seen by other devices on the Internal LAN.
Network Mask	The Network Mask (Subnet Mask) for the IP Address above.
DHCP Server	This shows the status of the DHCP Server function. The value will be "Enabled" or "Disabled".

DHCP Table This table will be empty unless the DHCP Server function is being used. If it is being used, this table lists the devices on the local LAN which have been allocated IP Addresses by the DHCP server function. Only IP Addresses in use will be listed.	
Physical Address	The IP Address which has been allocated by the DHCP server to the other device.
IP Address	The Physical Address (Hardware MAC Address) of the device which has been allocated a IP Address.
Status	Possible Status values are "Leased" (the IP Address is allocated to the device shown) or "Reserved" (the IP Address is not available).

digicom European Technologies

Troubleshooting

- [Overview](#)
- [Problems](#)

Overview

- This document covers some common problems that may be encountered while using Michelangelo Gateway and some possible solutions to them.
- If you follow the suggested steps and Michelangelo Gateway still does not function properly, contact your supplier for further advice.

Problems

Internet Access

Problem 1:	Cannot access Michelangelo Gateway's configuration.
Solution 1:	Check the following: • Michelangelo Gateway is properly installed, LAN connections are OK, and it is powered ON. • Ensure that your PC has the TCP/IP network protcol installed. In Windows, this is done by using *Control Panel-Network.* to check that you have a TCP/IP entry for your network card. If you don't, click the *Add* button, then choose *Protocol - Microsoft - TCP/IP - OK* to add this entry. You then need to restart your PC. • Ensure that your PC and Michelangelo Gateway are on the same network segment. (If you don't have a router, this must be the case.)
Problem 2:	When I enter a URL or IP address I get a time out error.

Solution 2:	A number of things could be causing this. Try the following troubleshooting steps.
	1. If this is first time you have used your browser, ensure that your workstations IP settings are correct, including IP address, default gateway and DNS.
	2. Ping Michelangelo Gateway. Use the "Run" command to enter the following command: **Ping xxx.xxx.xxx.xxx** Where xxx.xxx.xxx.xxx is the IP address assigned to Michelangelo Gateway.
	3. If the ping command fails, check that Michelangelo Gateway is connected and ON. If it is connected and on, there is a problem with your LAN.
	4. On the *Quick Setup* screen, check that *Enable Internet Access* is checked.
	5. Check the *Status* screen, and examine the Log. For details of the Log messages refer to [Connection Log.](#)
	6. Check your "Proxy Server" settings on your PCs. ❍ Michelangelo Gateway is NOT a Proxy Server; PCs do not require "Proxy Server" settings to use it. ❍ If you have Proxy Server on your local LAN, you should turn it Off, and disable the "Proxy Server" settings in your PC applications. ❍ If your ISP has a Proxy Server, follow the instructions provided by the ISP.
Problem 3:	Some applications do not run properly when using Michelangelo Gateway
Solution 3:	The processes the data passing through it, so it is not transparent. The *Internet Application* screen has 2 features designed to assist with running non-standard applications: ● Special Applications ● Exposed Computer You should use the *Special Applications* feature if possible. If necessary, additional applications can be defined, using data provided by the service provider. Remember that at any time, only one (1) user can use a particular Special Application. If this cannot be made to work, use the *Exposed Computer* feature. **Warning: This is a security risk, so should only be used if essential.**