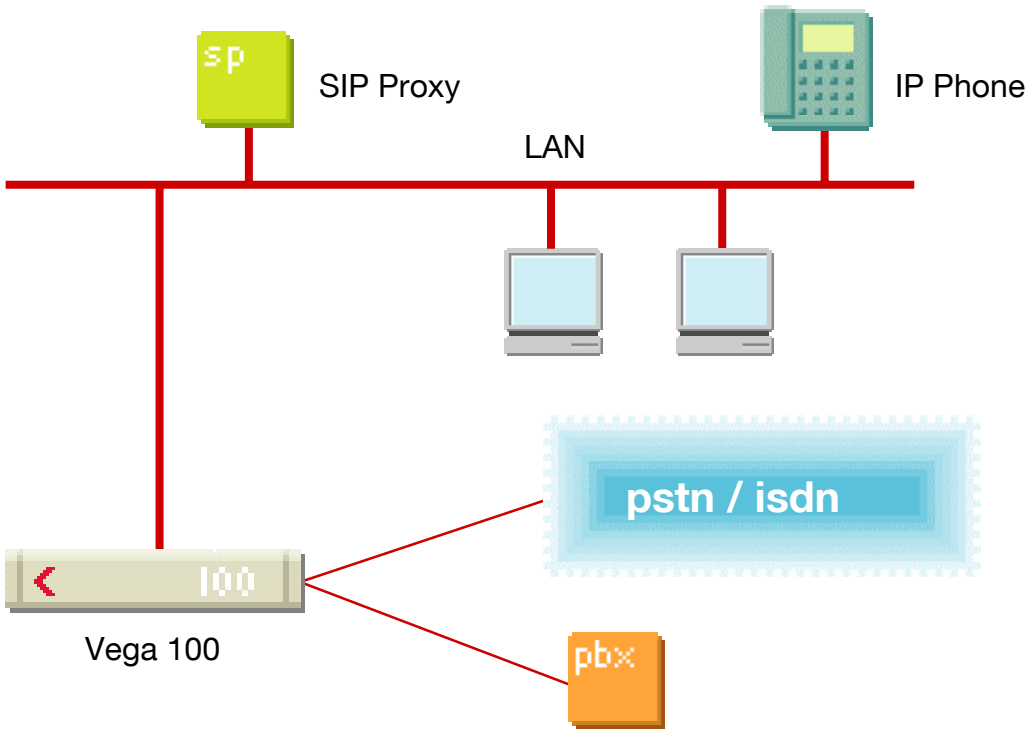
Initial configuration
Vega 100 E1 (SIP) – R5.1

This document describes how to configure the Vega 100 E1 SIP unit using the web browser interface. The configuration described will allow the Vega to be rapidly installed and tested.

The instructions below will configure the Vega 100 to be a transparent gateway for a SIP Proxy.

- Calls made from the PBX or PSTN to the Vega will be forwarded to the SIP Proxy. The telephone number passed to the Vega will be forwarded unchanged to the SIP Proxy.
- Calls made from the SIP Proxy to the Vega will be forwarded to the PSTN or to the PBX based on the leading two digits of the telephone number passed by the proxy. A leading 01 will cause the call to be routed to the PSTN, and a leading 02 will cause the call to be routed to the PBX. The digits following the 01 or 02 will be passed as the dialed digits.

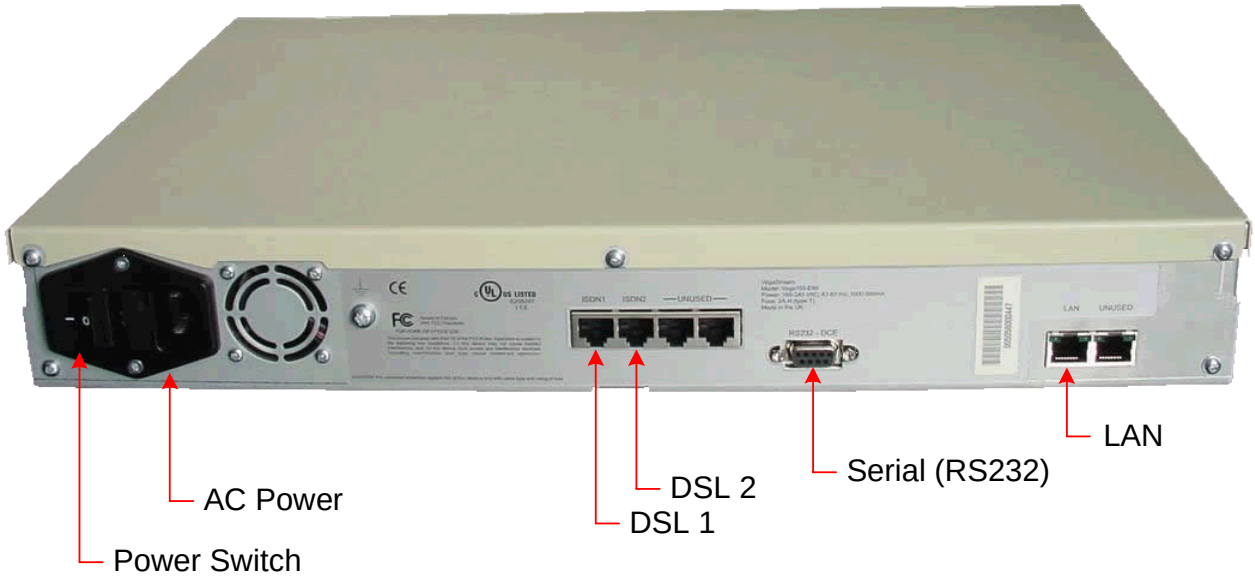


The configuration process is broken down into 11 stages as follows:

1 Connect your Vega to LAN, Telephone and Power
2 Configure the basic LAN parameters
3 Configure password and login timeout
4 Check and configure LAN settings and Host name
5 Configure the Dial Plan
6 Registration
7 Configure SIP and audio parameters
8 Configure DSLs
9 Configure pointer to CD ROM documentation
10 Save Changes
11 Archive Vega Configuration

Please also see:
12 Technical Support
13 Advanced configuration

1. Connect your Vega to LAN, Telephone and Power



Before installing your Vega, ensure that you read the VegaStream VoIP Gateways Safety and Compliance Information document.

LAN:
Using the yellow booted cable connect the LAN port on the Vega [5] to a standard or fast Ethernet hub or switch (10 baseT or 100 baseTx). The connector nearest the ferrite core should be plugged into the Vega.

Telephony:

Connection to a PBX - If you are connecting the Vega 100 to a PBX, the Vega 100 acts as the NeTwork equipment and a red-booted cable must be used.

For each trunk that is to be connected to the PBX, insert one end of a red booted cable into one of the Vega 100 DSL sockets [DSL 1 or DSL 2] and the other end to the PBX.

Connection to the PSTN - If you are connecting the Vega 100 directly to the public telephone network it acts as the Terminal Equipment and the blue-booted cable must be used.

For each trunk that is to be connected to the PSTN, insert one end of a blue booted cable to one of the Vega 100 DSL sockets [DSL1 or DSL2] and the other end to the PSTN terminating box.

Power:
Insert the power cable into the AC power inlet on the Vega and switch on. The power LED on the front panel will illuminate.

The LAN LEDs will also illuminate indicating 10 (baseT) or 100 (baseTx) connection, and the FDX LED will illuminate if Full Duplex mode has been negotiated.

2. Configure the basic LAN parameters

If a DHCP server is available, by default, the Vega will automatically pick up an IP address. If you know the IP address served to the Vega, skip this section and start at section 3.

If DHCP is not to be used to provide the Vega with an IP address, or you need to check the IP address provided to the Vega, connect the serial interface of the Vega to a PC serial interface using a 9 way male to female straight through cable.

Configure a terminal emulator program (such as Microsoft's HyperTerminal) for:

- Speed = `115200 baud`
- Data bits = `8`
- Parity = `none`
- Stop bits = `1`
- Flow Control = `none`

Press <Enter> to get the Username: prompt

At the prompts enter the default user name and password

Username: `admin`

Password: `admin`

To display the current IP address, type:

- `show lan.ip`

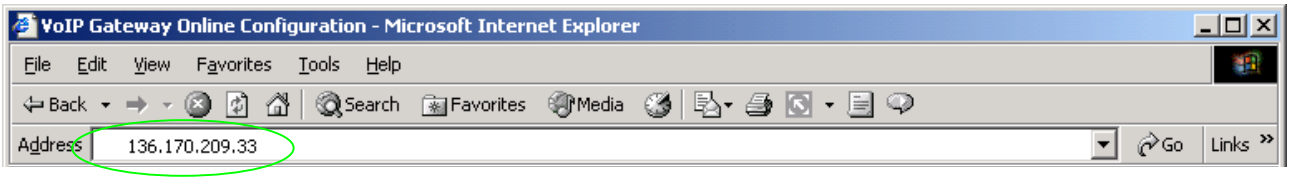
If this is not the IP address required, it can be overridden, together with other LAN parameters by typing:

- `set lan.use_dhcp=0`
- `set lan.ip=aaa.bbb.ccc.ddd`
- `set lan.subnet=eee.fff.ggg.hhh`
- `set lan.gateway=iii.jjj.kkk.lll`
- `save`
- `reboot system`

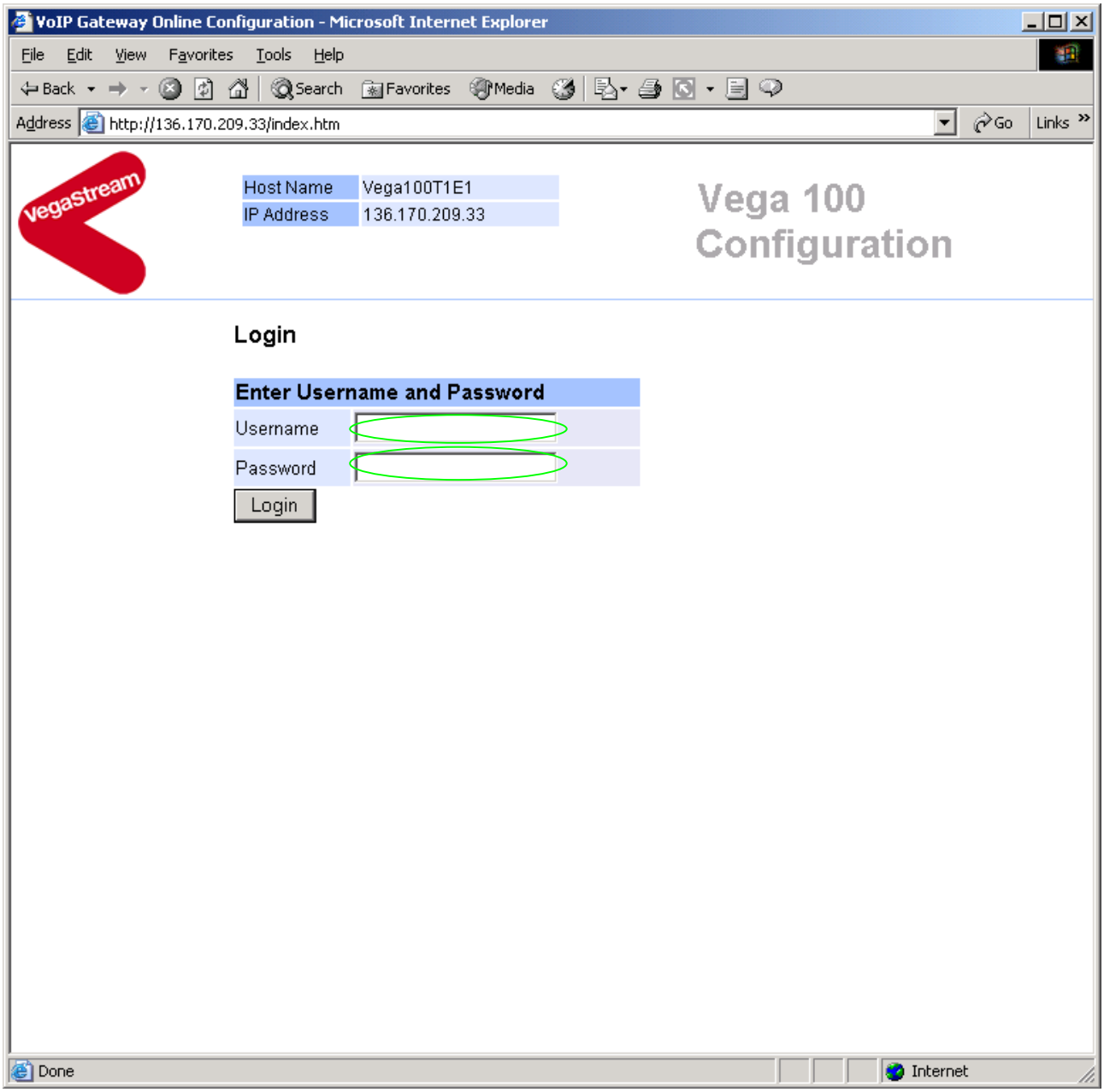
3. Configure password and login timeout

Now configuration will be carried out using a web browser.

➢Enter the IP address of the Vega into the “Address” field of your web browser.

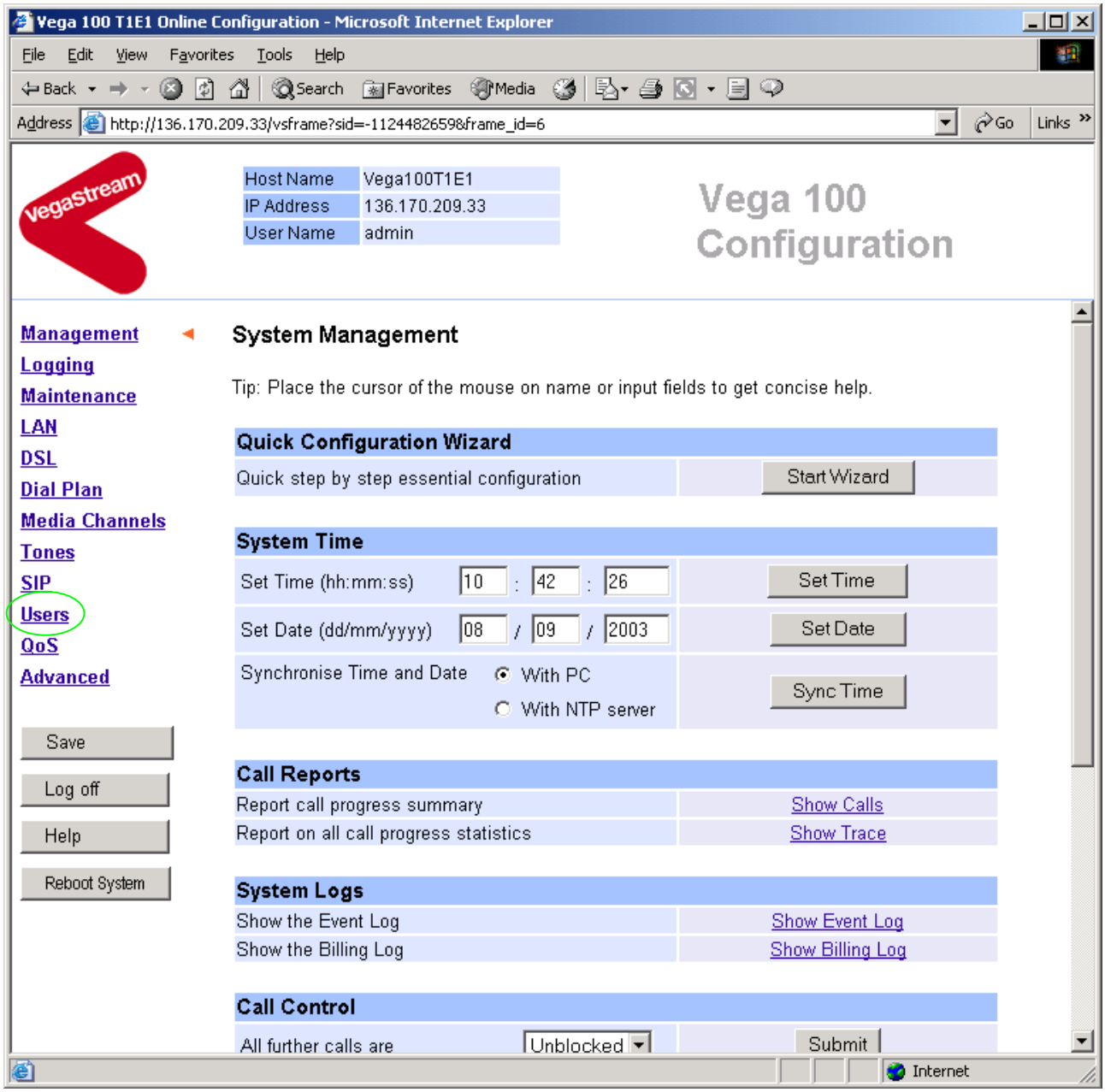


You will then be presented with the login page:

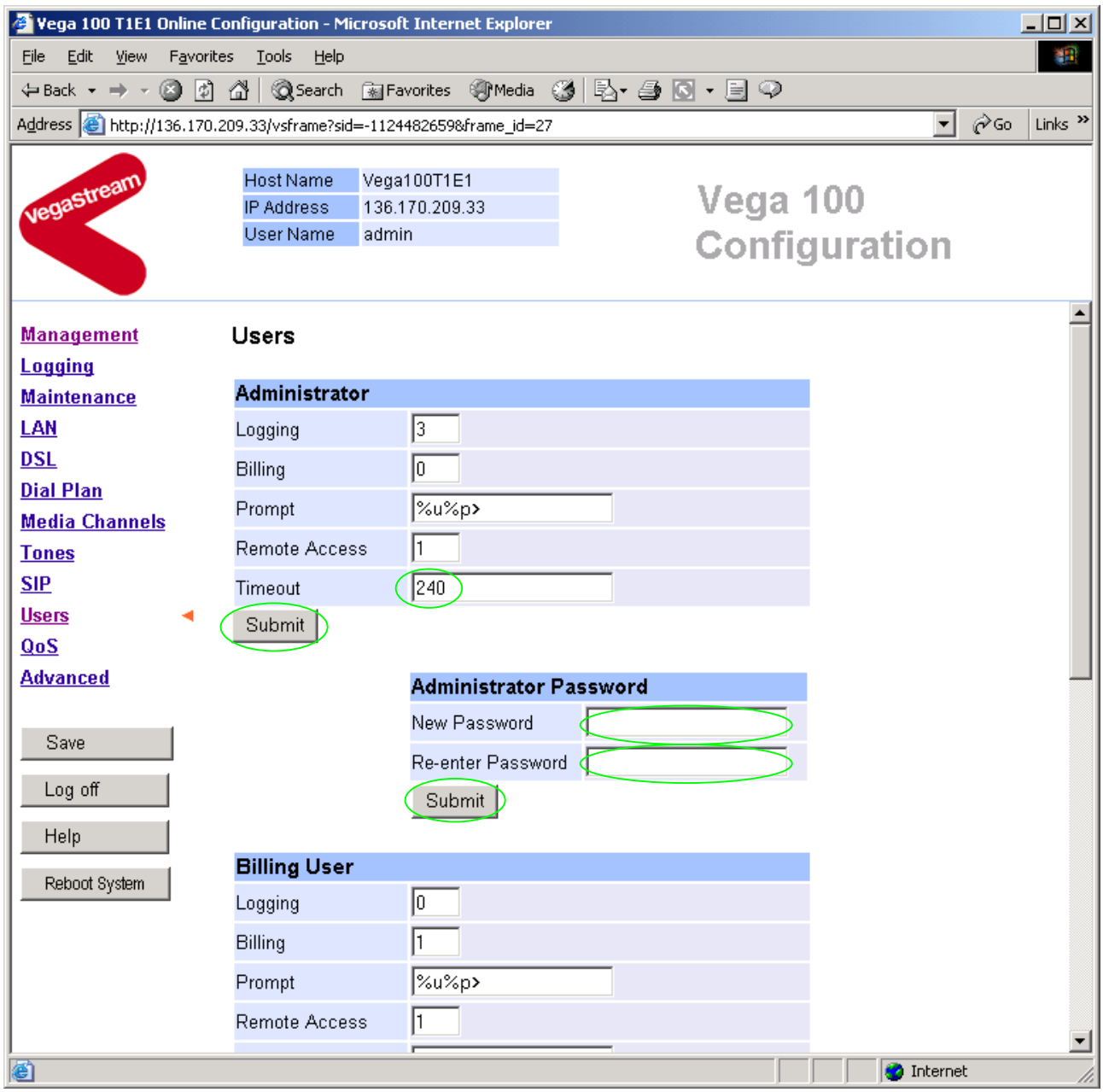


Enter the default Username and Password

- Username: `admin`
- Password: `admin`
- Select Login



- On the left hand side menu select Users



Recommended: Change the password

- enter New Password and Re-enter Password then
- select Submit and then click "here" to return

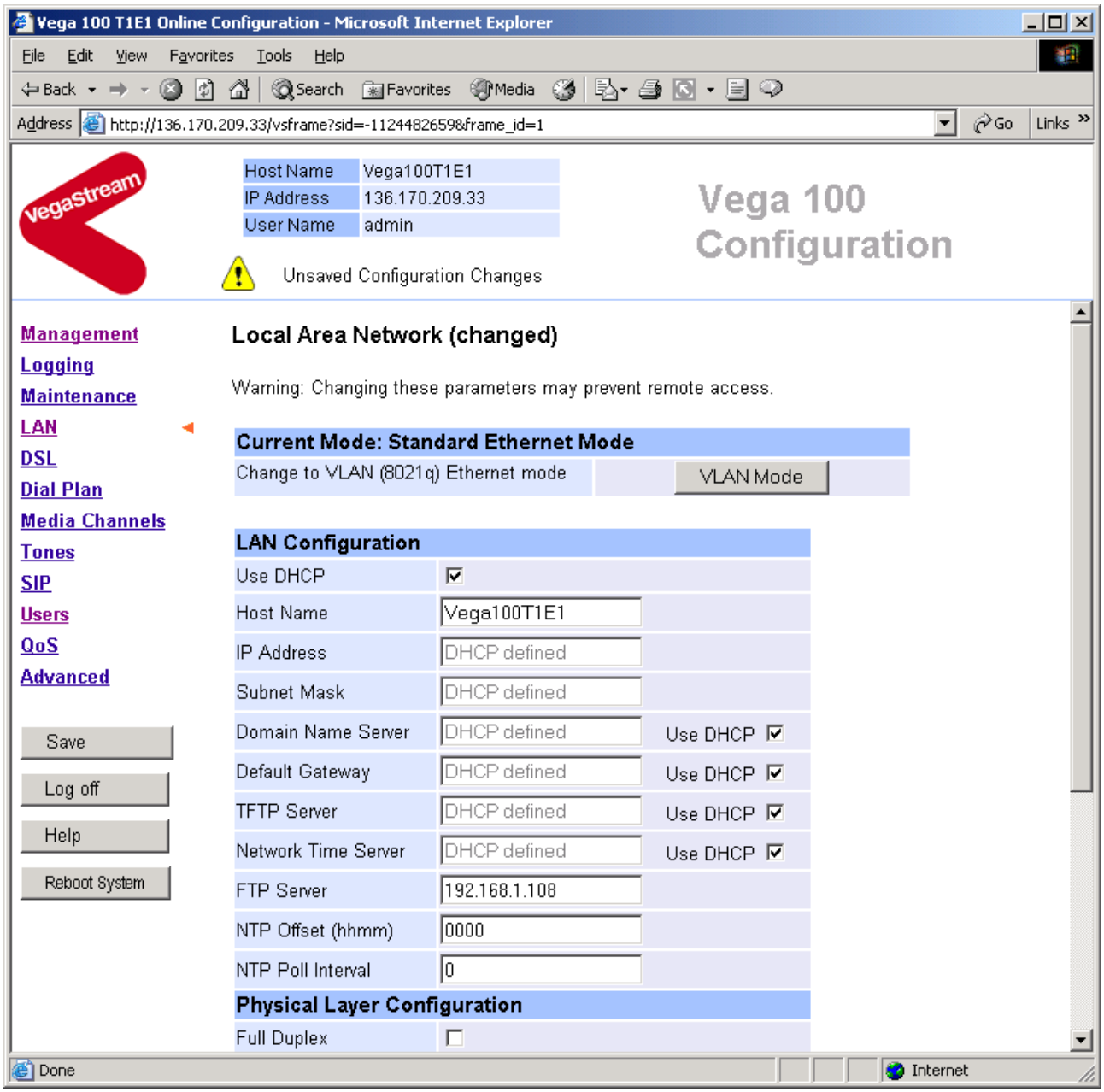
Optional: Change the timeout[1] – default is 240 seconds; can extend to 7200 seconds (2hrs)

- select Submit and then click "here" to return

[1] If the web browser interface is not used for this length of time the Vega will automatically log off the session. This change is only activated by logging out and back into the web browser session.

4. Check and configure LAN settings and Host name

➢On the left hand side menu select LAN

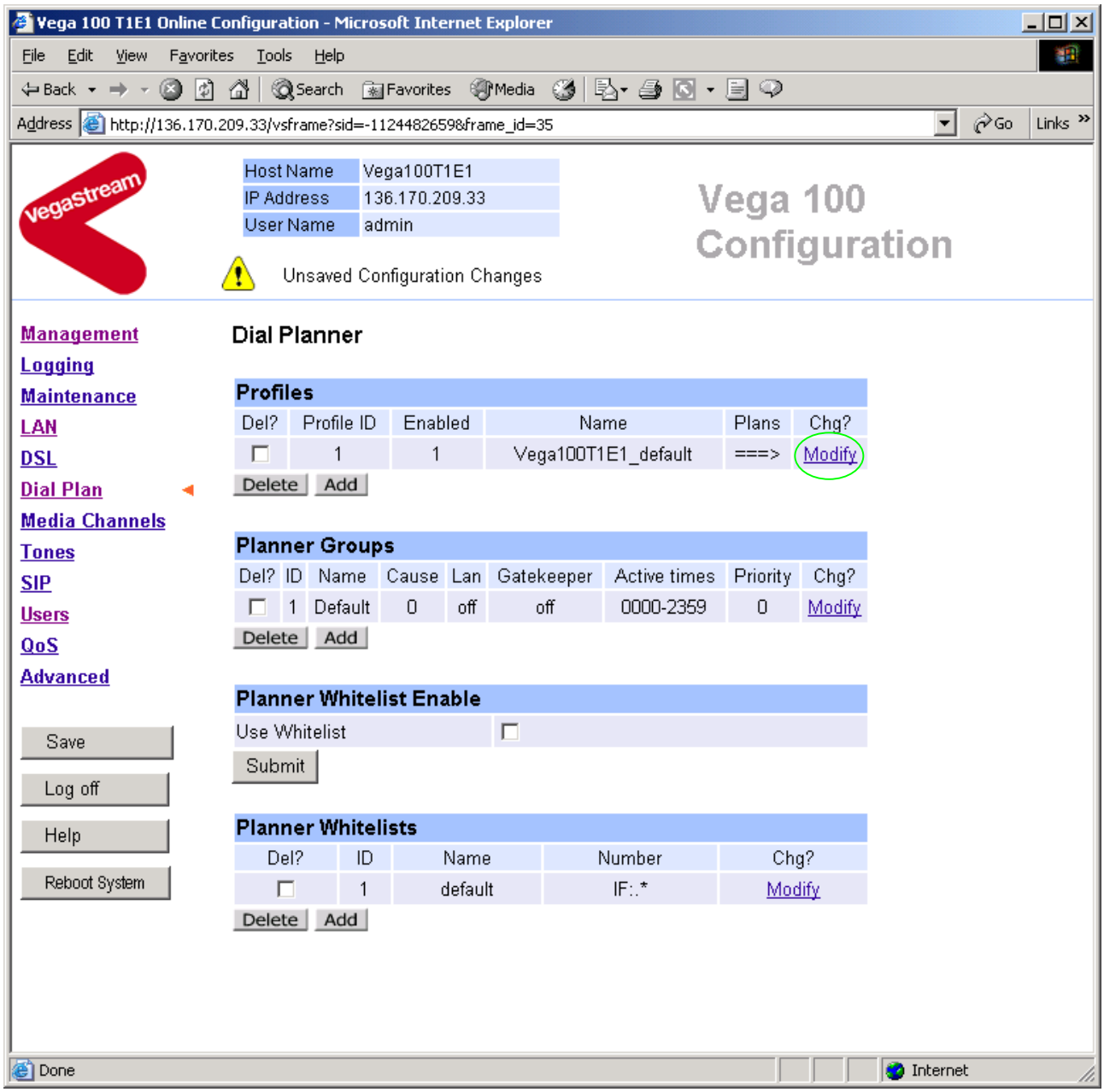


Optional: If there are any LAN values that need to be set up manually set them up now (e.g. tftp and ftp addresses), then

➢Select Submit and then click "here" to return

5. Configure the Dial Plan

➢On the left hand side menu select Dial Plan

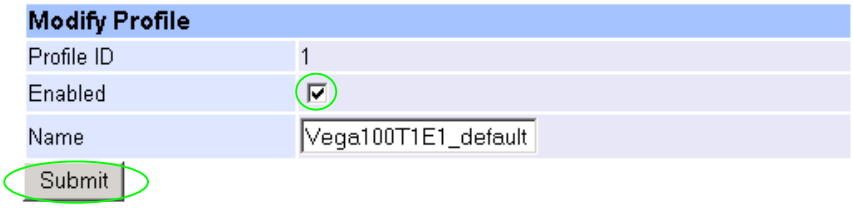


Firstly, turn off the default profile:

In the **Profiles** section, Profile ID 1

➢ Select Modify

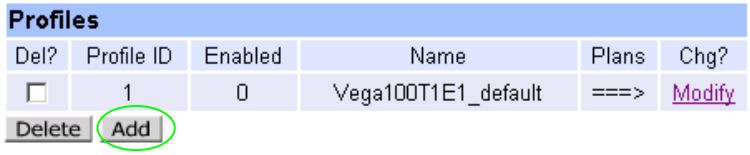
Dial Planner > Profile 1



- disable (un-tick) Enabled, then
- select Submit and then click "here" to return

Now create a new profile and in it create a dial plan entry to handle calls being sent from ISDN to the LAN:

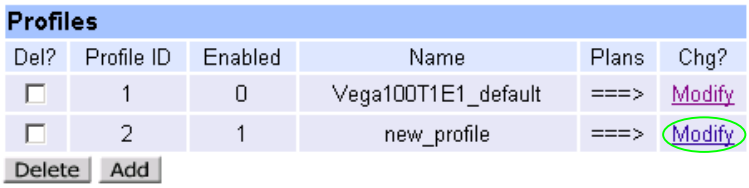
Dial Planner



In the **Profiles** section

- Select Add

Dial Planner



In the **Profiles** section, on Profile 2 (the new profile):

- Select Modify

Dial Planner > Profile 2

- Set Name = `ISDN_To_LAN`
- select Submit and then click "here" to return

Dial Planner

Profiles

Del?	Profile ID	Enabled	Name	Plans	Chg?
☐	1	0	Vega100T1E1_default	===>	Modify
☐	2	1	ISDN_To_LAN	===>	Modify

Delete Add

In the **Profiles** section, on Profile 2 (the ISDN_To_LAN profile):

- Select Modify

Dial Planner > **Profile 2**

Modify Profile

Profile ID	2
Enabled	☑
Name	ISDN_To_LAN

Submit

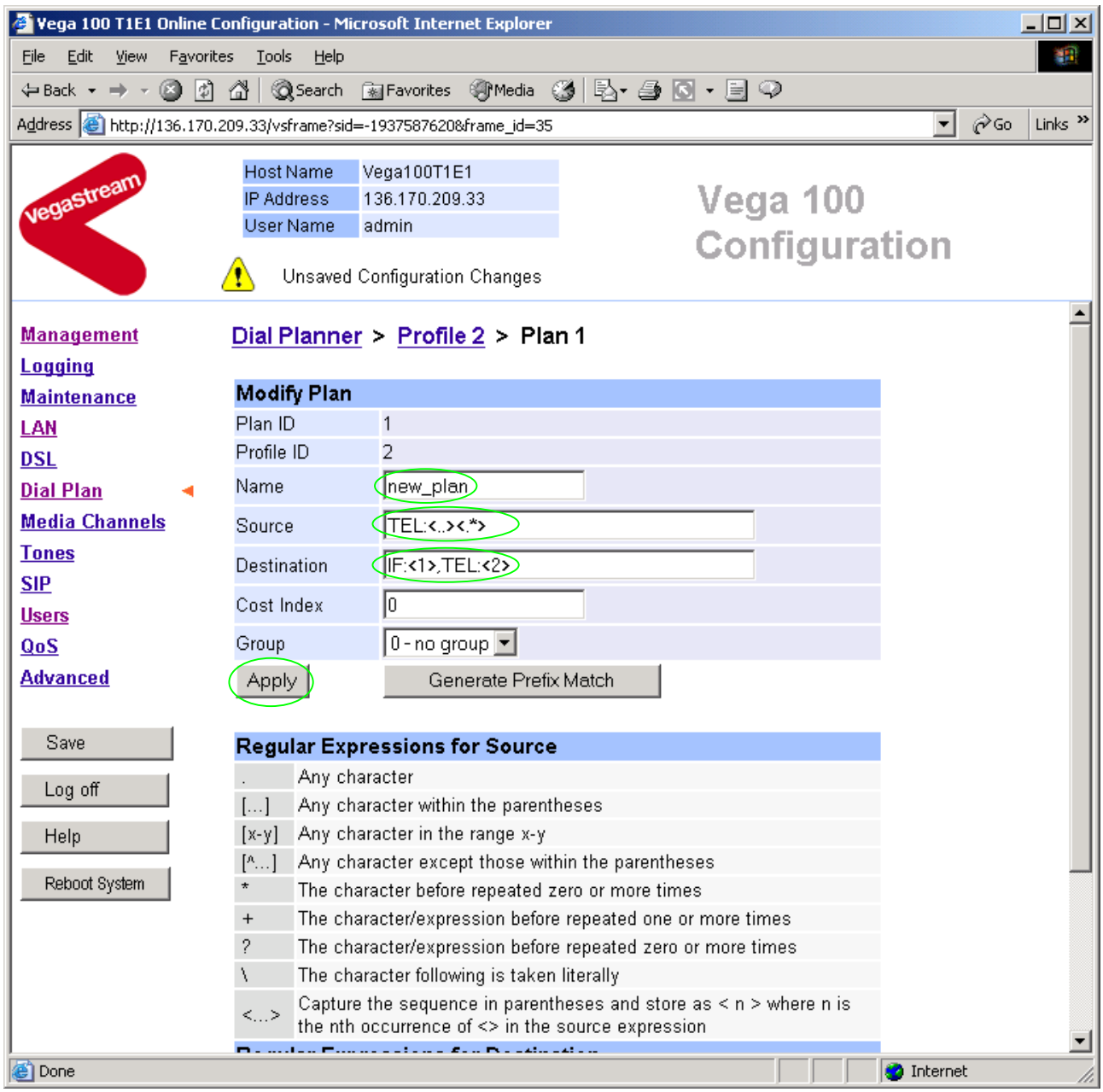
Plans in this Profile

Del?	Plan ID	Name	Srce	Dest	Cost	Group	Chg?
☐	1	new_plan	TEL:<..><.*>	IF:<1>,TEL:<2>	0	0	Modify

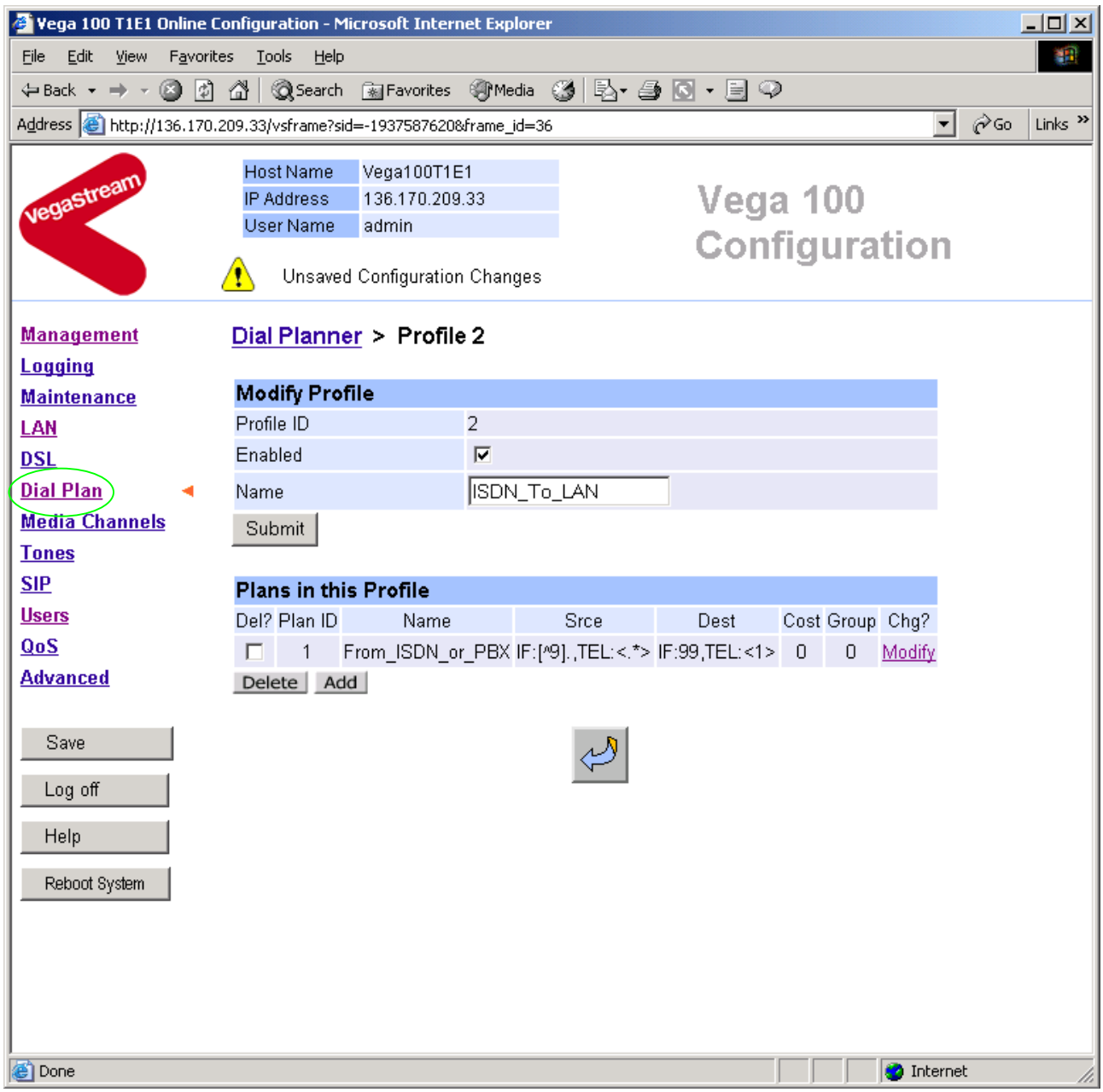
Delete Add

In the **Plans in this Profile** section:

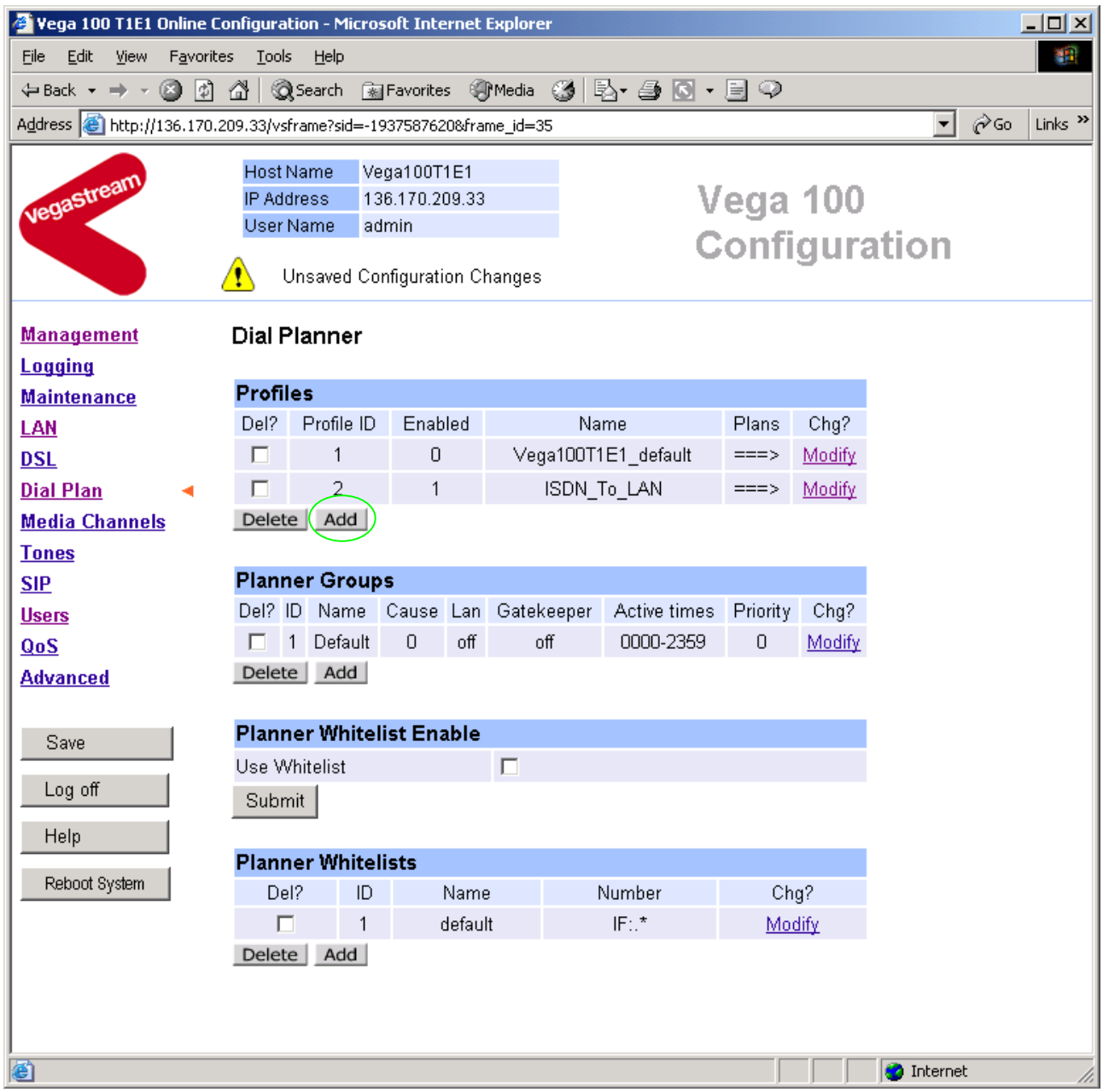
- Select Modify



- Set Name = `From_ISDN_or_PBX`
- Set Source = `IF:[^9].,TEL:<.*>` *(This takes a call from either of the two ISDN interfaces and stores the telephone number presented in store <1>)*
- Set Destination = `IF:99,TEL:<1>` *(This routes the call to IF:99 (the LAN) and passes the received telephone number on as the destination telephone number)*
- select Apply and then click "here" to return



➢On the left hand side menu select Dial Plan



Now create a new profile and in it create a dial plan entry to handle calls being received inbound from the LAN:

In a similar manner to adding profile 2 add another profile, profile 3,

- set Name = `LAN_to_ISDN_or_PBX`

Modify the first plan for Profile 3:

- set Name = `From_LAN`
- set Source = `IF:99,TEL:<..><.*>` *(For calls from IF:99 (LAN), take the first two digits presented and store them in store <1>; take any further digits and store them in store <2>)*
- set Destination = `IF:<1>,TEL:<2>` *(The first two digits presented define the interface – 01 or 02 – and the remainder of the digits are passed on as the telephone number)*

- select Apply and then click "here" to return

Note: The SIP Proxy must choose the appropriate interface on the Vega to dial out from; when the Proxy presents a call to the Vega, the INVITE message starts something like:

```
INVITE sip:021344784900@172.20.11.2 SIP/2.0
```

The digits preceding the @ (the telephone number field) must contain either `01ttt…t` or `02ttt…t`, where `ttt…t` is the telephone number to dial and 01 or 02 is the interface through which the call is to be made.

For more details on the operation of the dial planner, including the various tokens that may be used, see the section "The Dial Planner" in the Vega Primer.

6. Registration

The Vega 100 does not support registration with a SIP Proxy. Registration is designed to register end users with a proxy, and the Vega 100 does not support end users, but is a gateway to a wider network of users.

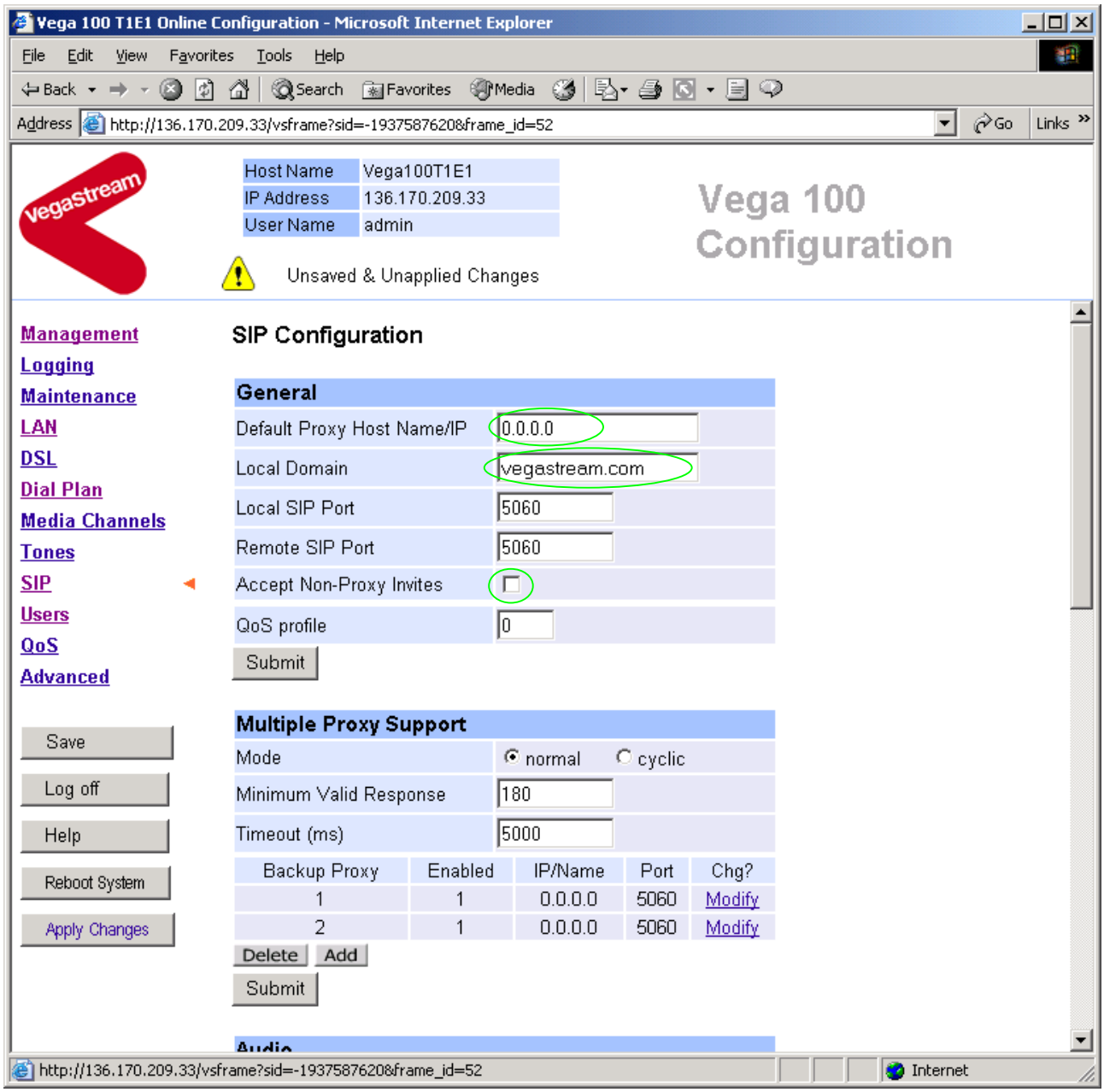
The SIP proxy must be manually configured to accept calls from the Vega 100 (the telephone number for the call to be routed to will be in the request URI).

For outgoing calls the Proxy must send the call to the Vega 100 with a request URI of the format `iittt…t@contact_address`

where `ii` is the interface number through which to make the call (Vega interface 01 or 02) and where `ttt…t` is the telephone number for the Vega to dial

7. Configure SIP and audio parameters

➢On the left hand side menu select SIP



In the **General** section:

- ➢ set Default Proxy Host Name/IP = `IP_address_of_SIP_proxy, or DNS_hostname_of_the_SIP_Proxy`
- ➢ set Local Domain = `Public_name_of_proxy_used_by_other_devices_to_send_their_INVITEs_to`

(this value is the "outside world's" name or IP address for the proxy)

Optional: To allow devices other than the proxy to make calls directly through the Vega

➢tick `Accept Non-Proxy Invites`

If only the proxy is allowed to route the calls to the Vega ensure that this tick box is clear.

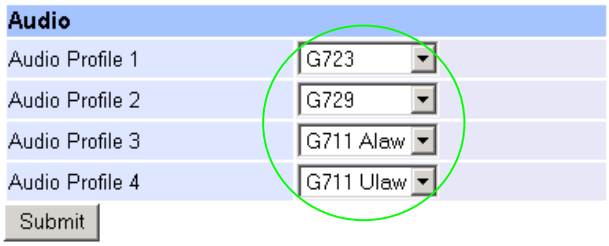
- select Submit and then click “here” to return

- Scroll down to the Audio section

In the **Audio** section

- Select the audio codecs desired using the drop down menus

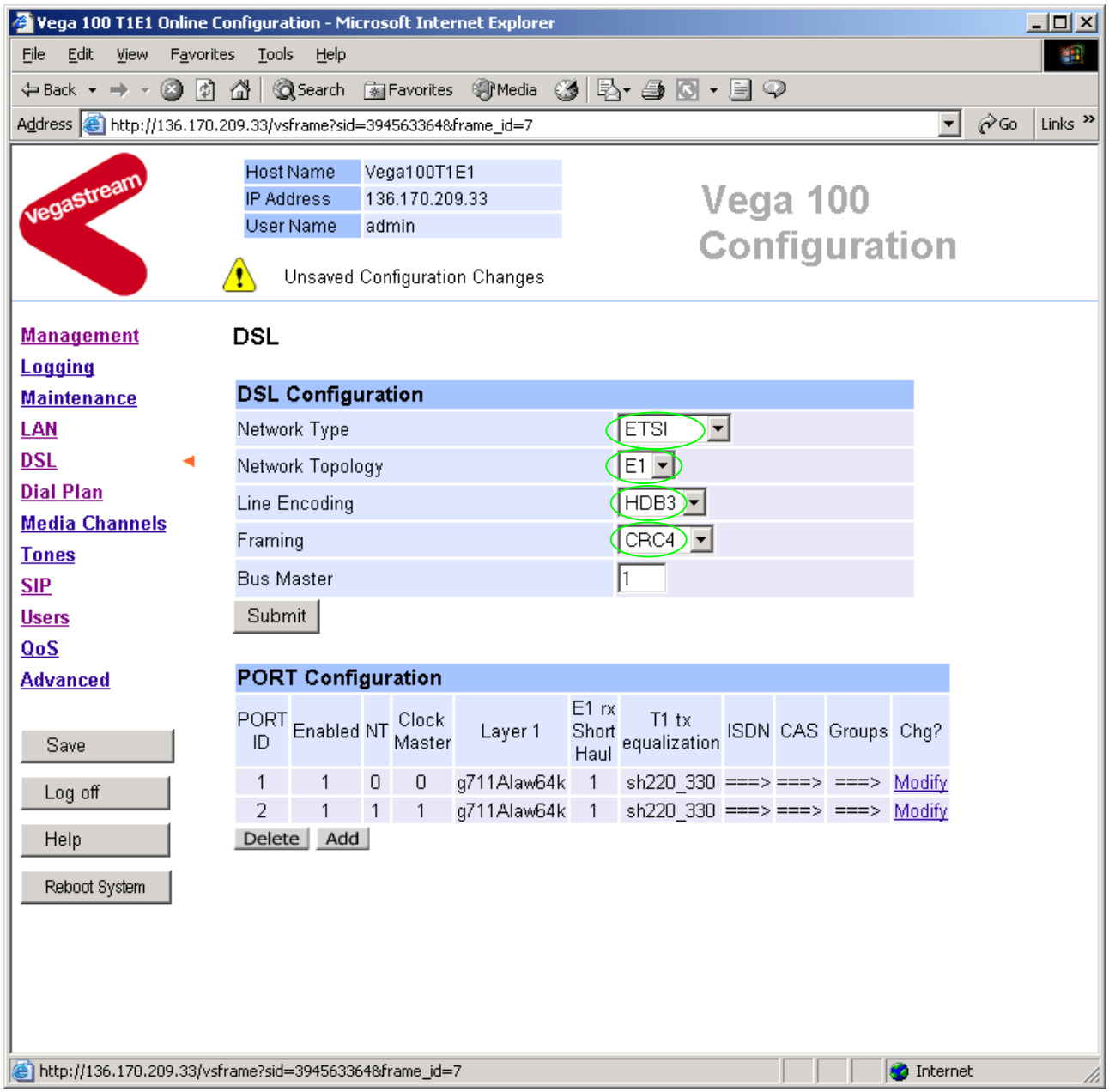
Unless there is a specific reason not to allow a specific codec to be used, it is recommended that all codecs should be enabled as follows:



- select Submit and then click “here” to return

8. Configure DSLs

➢On the left hand side menu select DSL



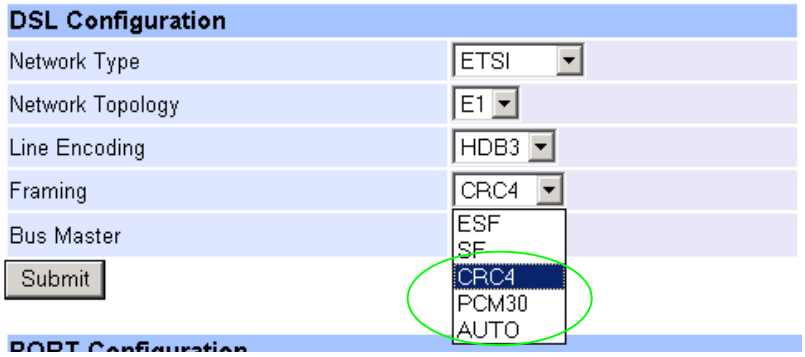
➢In the **DSL Configuration** section check that the Network Type = ETSI.
If required QSIG is also an acceptable Network Type for E1 Vega 100s.

➢In the **DSL Configuration** section check that the Network Topology = E1

➢In the **DSL Configuration** section check that the Line Encoding = HDB3
(Note, the other available options: AMI, and B8ZS are not supported on the E1 interface)

➢In the **DSL Configuration** section select the Framing Method as required:

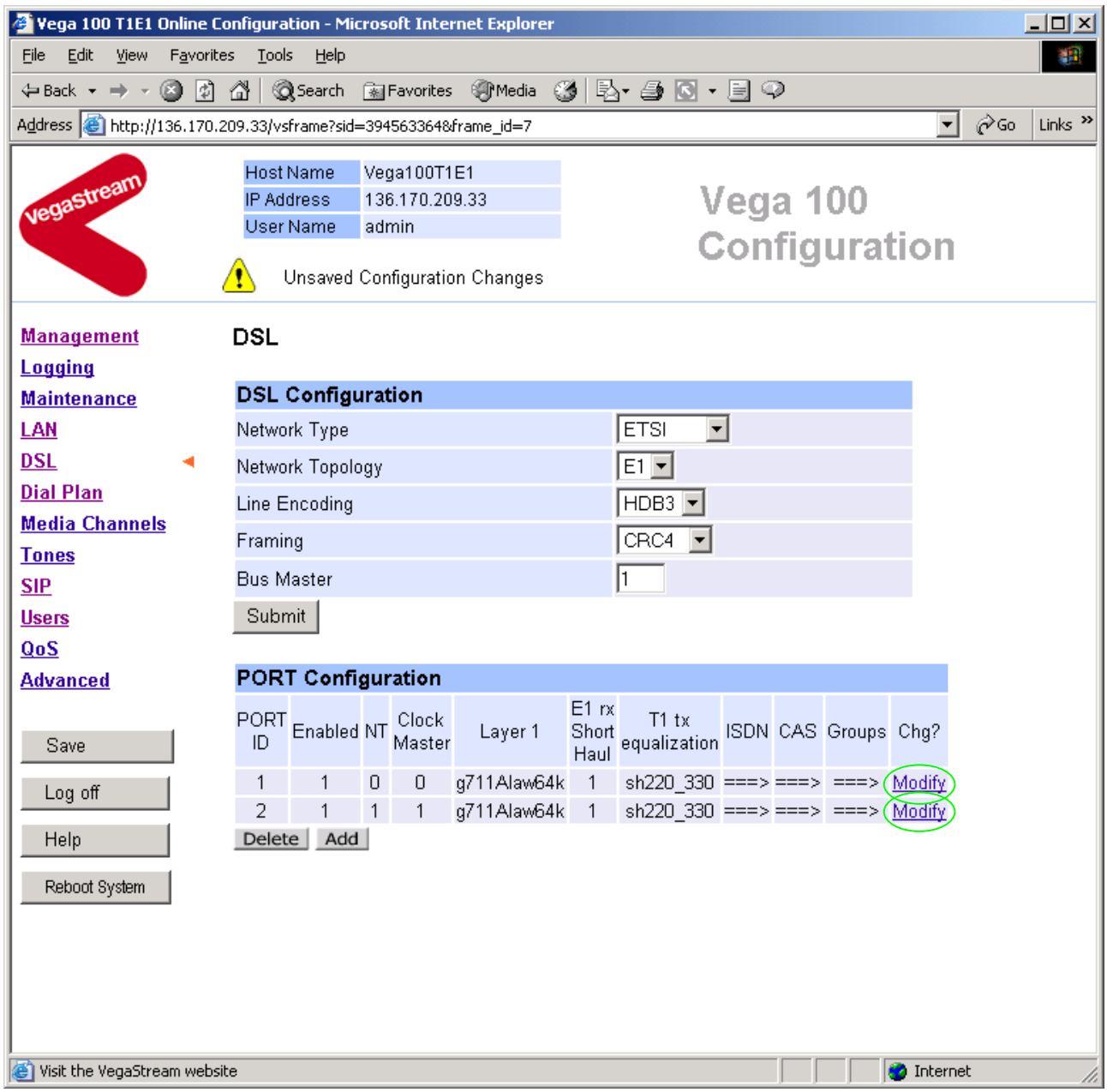
DSL



- CRC4 = CRC4 supported (usual ISDN configuration)
- PCM30 = no CRC4
- AUTO=CRC4

Note, ESF and SF are not supported on the E1 interface

➢ select Submit and then click "here" to return



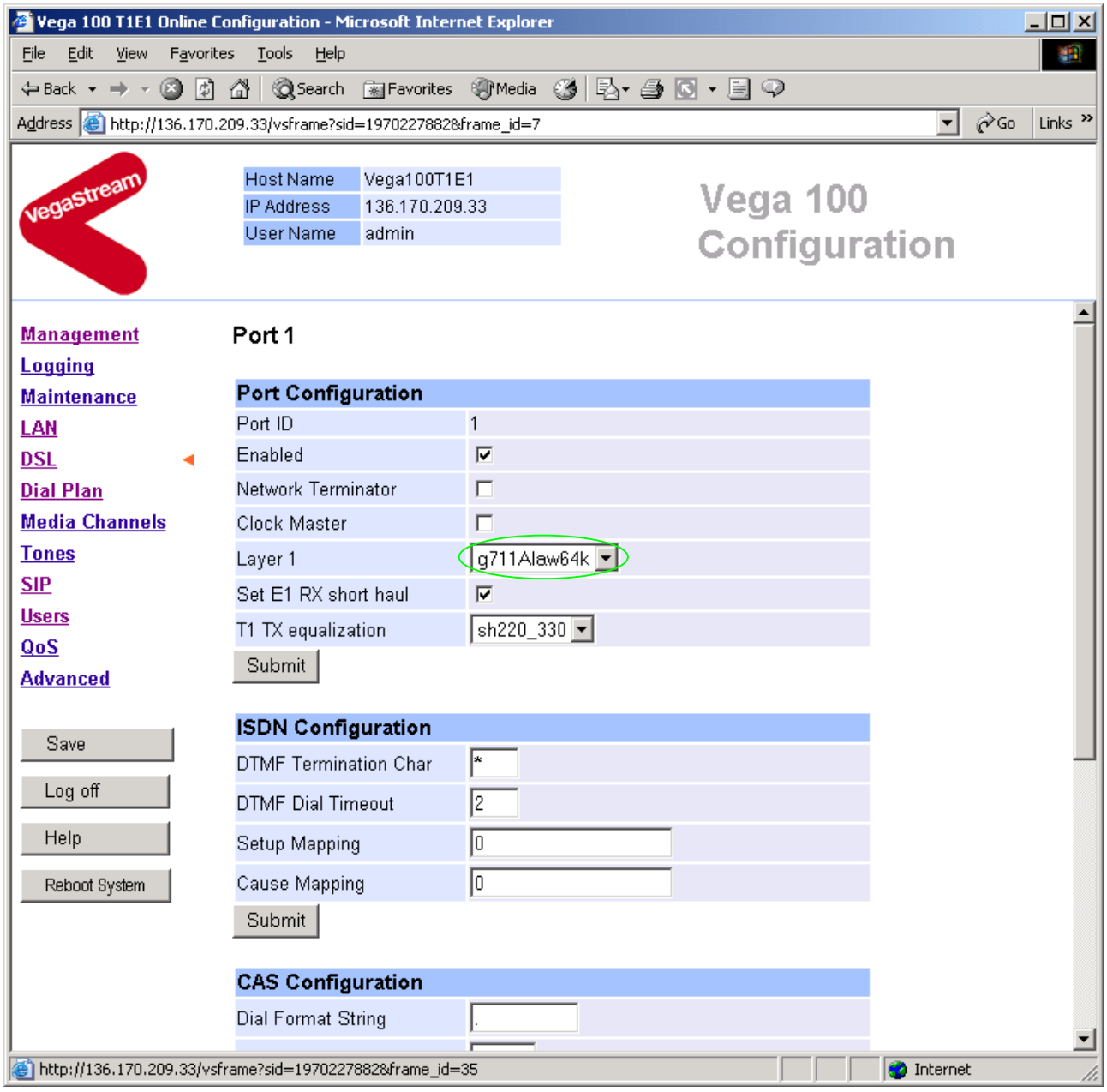
For the configuration indicated in the initial diagram DSL1 = connection to the PSTN and DSL 2 is a connection to a PBX. Therefore the Vega needs DSL 1 configured as TE (and a blue booted cable used on DSL 1), and DSL 2 configured as NT (and a red booted cable used on DSL 2).

Bus Master needs to be configured to point to a TE trunk – to identify where the Vega will synchronise its internal clock from – in this configuration this should be 1 (DSL 1).

These are the default settings of the Vega and so no changes are required to the Network Terminator, Clock_Master, or Bus_Master settings.

In the **Port Configuration** section, for PORT ID 1:

➢Select Modify



➢Ensure Layer 1 = `g711Alaw64k`

➢ If not, change it and select Submit and then click "here" to return

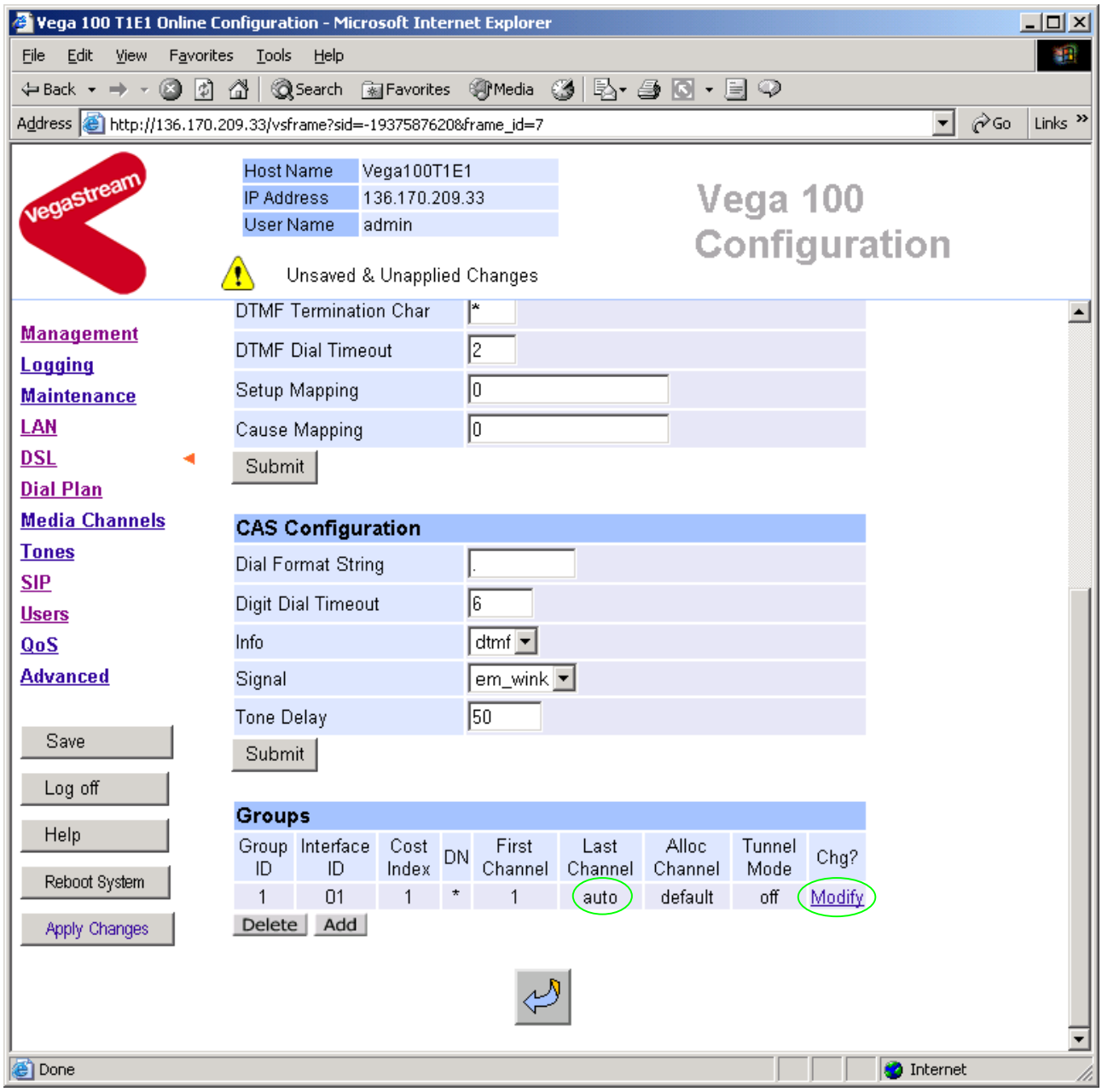
Note: 1. *If a configuration is to be used that requires the Network Terminator value to be changed, this can be altered as well. Typically if NT is ticked then Clock Master should also be ticked. If NT is un-ticked (TE mode) then typically Clock Master should also be un-ticked.*

2. *if either trunk is TE then the Bus Master value (in the ISDN Configuration section) should be set to point to the (one of the) TE trunk(s); 1 for DSL 1 and 2 for DSL 2.*

➢On the left hand side menu select DSL

In the **Port Configuration** section, for PORT ID 1:

➢Again select Modify
➢Scroll down to the Groups section



In the **Groups** section, check that Last Channel = `auto` or `30`, if not change it to `auto` or `30`.

If changes are made

- select Submit and then click "here" to return
- select 

- Repeat for the other Port (PORT ID 2).

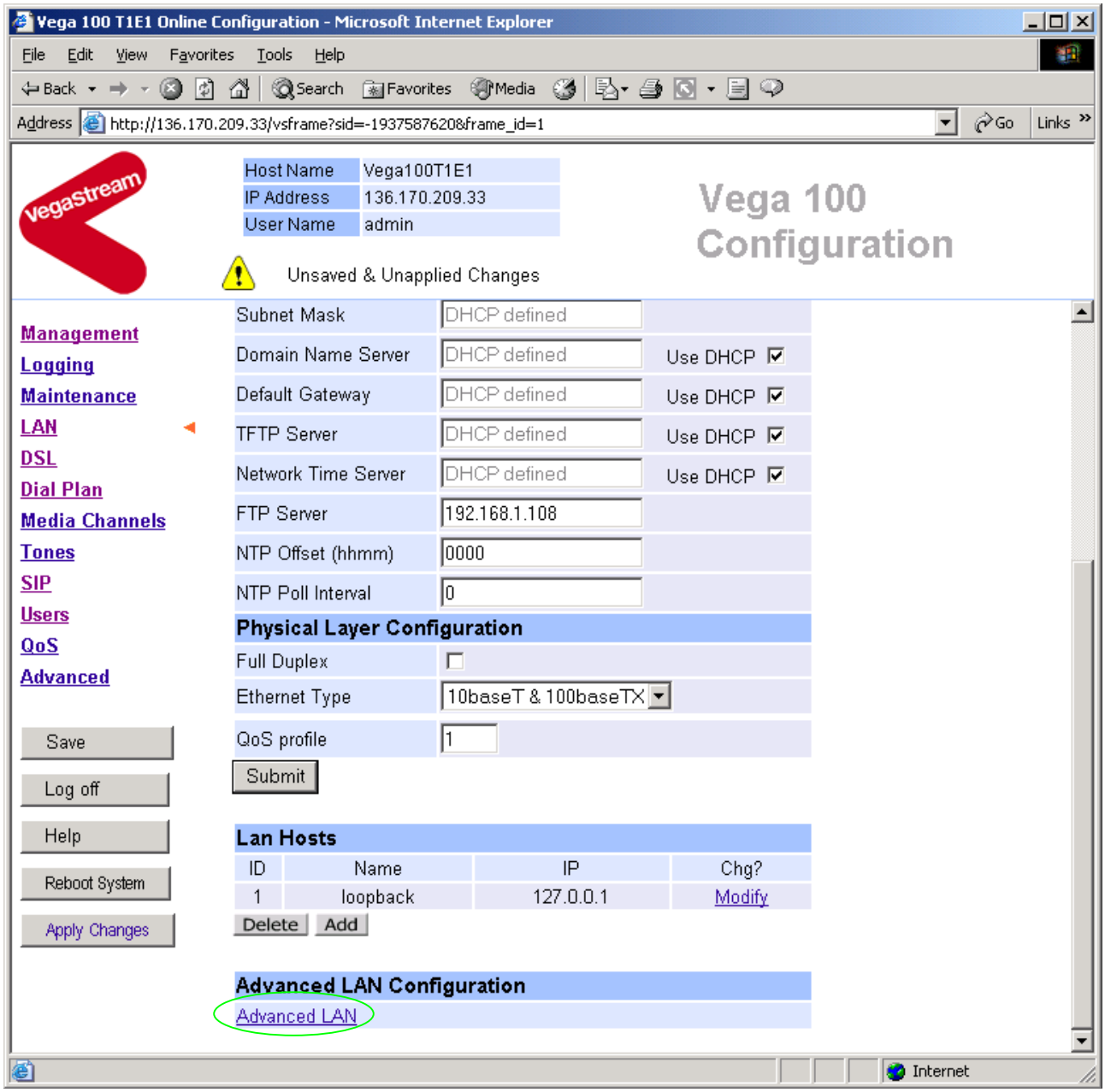
Table 1 can be used as a guide when setting up parameters for Vega 100 E1 ISDN installations.

Table 1. Network type, Line Encoding, and Topology

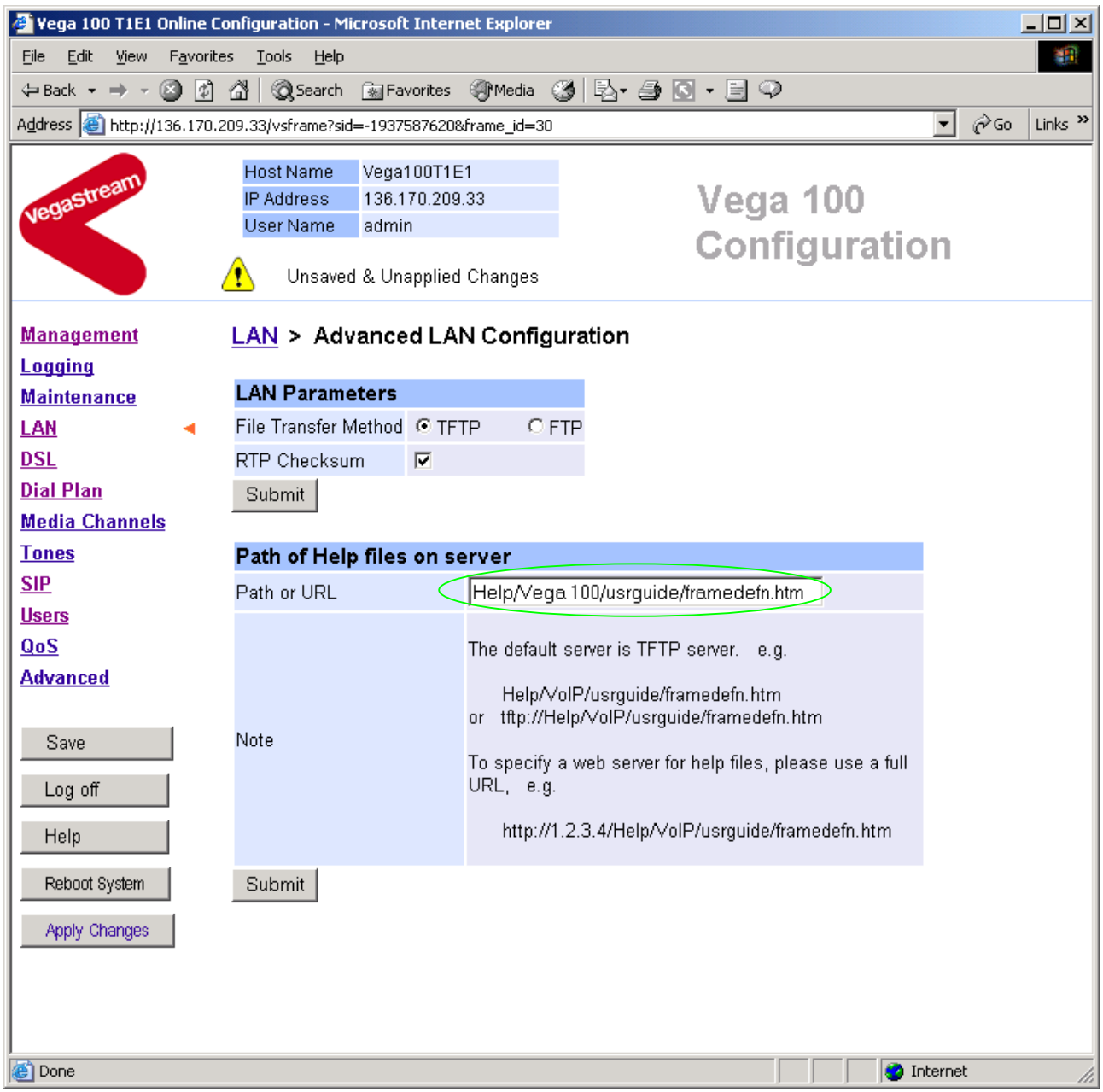
Product	Physical Connection	Network Topology	Network type	DSLs	Framing	Line Encoding	Calls
Vega 100-PRI-E1	E1-2.044 Mbps	E1	Euro ISDN	2	PCM30 / CRC4	HDB3	30 / 60
Vega 100-PRI-E1	E1-2.044 Mbps	E1	QSIG	2	PCM30 / CRC4	HDB3	30 / 60

9. Configure pointer to CD ROM documentation

➢On the left hand side menu select LAN
➢Scroll to the bottom of the screen



➢ Select Advanced LAN



To configure for operation using the CD in the local PC CD-ROM drive,

- Set Path or URL = D:/Content/help/v100e1s_R5.htm

… N.B. use forward slashes "/" not back slashes "\".

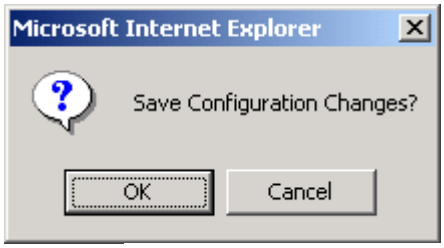
(Substitute the appropriate drive letter if D: is not the CD-ROM)

- select Submit and then click "here" to return

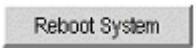
10. Save Changes

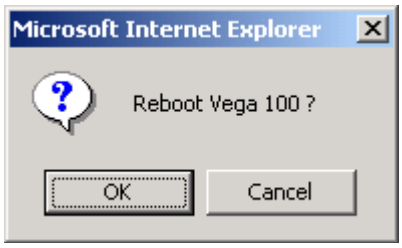
The changes to the configuration must be saved and activated. This is carried out as follows:

➢On the left hand side menu select Save



➢Select  and after the configuration has been saved click "here" to return

➢On the left hand side menu select 



➢ Select 

The Vega will reboot and once back on-line, it will be ready to take its first call.

11. Archive Vega Configuration

Once configured it is recommended that the configuration is archived to an external server.

To do this check that the tftp address is configured to point to a tftp server (in the LAN page), then on the left hand side menu select Advanced, and scroll to the CLI Command section:

- in the text entry box type "`PUT tftp:initial_cfg.txt`". Select Submit.

This will send all the configuration parameters to the tftp server and save them as the file "`initial_cfg.txt`". (Note: you may want to choose a unique name rather than "`initial_cfg.txt`", especially if you are configuring more than 1 unit).

The Vega configuration can be archived to an ftp server instead of a tftp server by configuring the ftp server address in the LAN page and then typing the CLI command "`PUT FTP:initial_cfg.txt`". (Again a unique name can be used in place of "`initial_cfg.txt`")

If the ftp server requires a login username and password configure the following:

- `set _advanced.lan.ftp.anonymous_login=0`
- `set _advanced.lan.ftp.username=<ftp username>`
- `set _advanced.lan.ftp._password-<ftp password>`

12. Technical Support

Support information can be found on the VegaStream Support web site www.VegaAssist.com

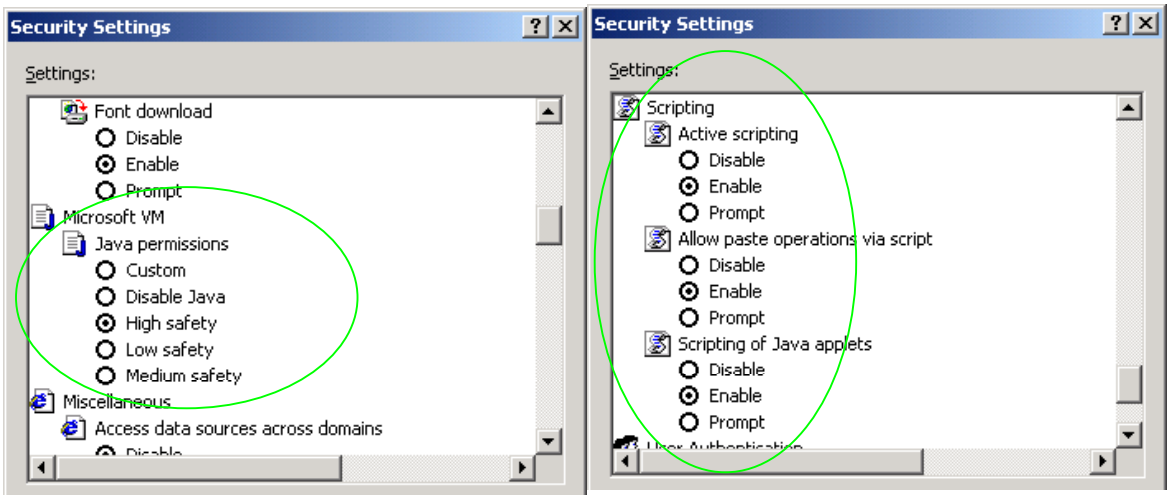
If you require help from VegaStream support personnel, please use the serial interface or telnet into the unit, log in and then type:

- `show support`
- `sip monitor on`
- `log display on`

Carry out the interaction you want explained, then copy the information provided by the Vega and e-mail it to support@VegaStream.com together with your question.

Notes:

1. If the screens do not appear as indicated, check that Java is enabled on your web browser (Tools>internet options>Security, select internet and custom level and configure Microsoft VM Java permissions and Scripting parameters as indicated below.



2. Where there are multiple sections – each with a Submit button – entries must be made to one section at a time, and those entries confirmed by the Submit button before the next section is altered. Each Submit button only confirms entries for its own section. Any changes in other sections will be discarded when the Submit is pressed.

3. Loss of audio mid call – consider reducing the selection of available codecs (see section 7). Some equipment, when presented with multiple codecs, may try and switch codec mid-call. Vegas do not support changing codec type mid-call.

4. Mismatched audio codecs. Use SIP monitor on to identify this. If the codecs of the endpoints are mismatched this will be reported as error 606 “No matching media”. To rectify, enable the appropriate audio codec (see section 7).

5. Outbound calls from the Vega send the INVITE to “Default Proxy Host Name/IP” with the request line: “INVITE sip: <dest TEL:>@Default Proxy Host Name/IP”.

13. Advanced configuration

E1 units have further configurable parameters that may be desirable to configure in order to fully integrate into the attached ISDN infrastructure.

13.1 Web browser configurable parameters

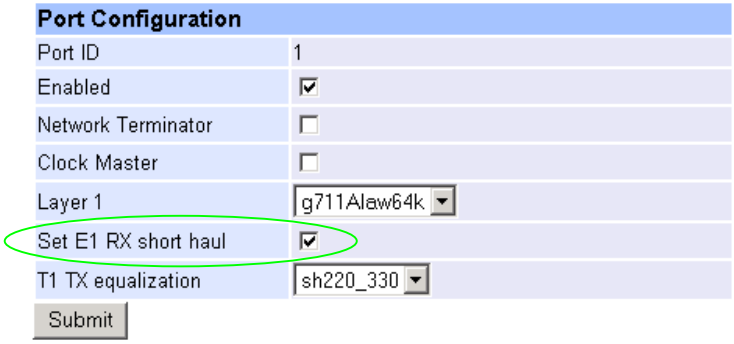
13.1.1 Line impedance matching

The Vega E1 receiver sensitivity can be configured based on the line attenuation between the Vega and the closest repeater or other ISDN endpoint.

The configuration is achieved using:

```
[_advanced.isdn]
    e1_rx_short_haul=0 or 1     ; 0= long haul and
                                  1 = short haul
```

or on the web browser interface, in the port configuration section off the DSL page:



Long haul should be selected when the cable between the Vega and the closest repeater or other ISDN endpoint introduces more that 6dB attenuation.

Short haul should be selected when the cable between the Vega and the closest repeater or other ISDN endpoint introduces less than or equal 6dB attenuation.

13.1.2 Channel Allocation Strategies

The Vega allows configuration of the channel allocation strategy to be used for each DSL on outgoing calls. Four options are available,

i) *Linear_down* – where the Vega will use the highest available free channel to make the outbound call … use this mode when the attached device is configured to make outbound calls using *Linear up.*

ii) *Linear_up* – where the Vega will use the lowest available free channel to make the outbound call … use this mode when the attached device is configured to make outbound calls using *Linear down.*

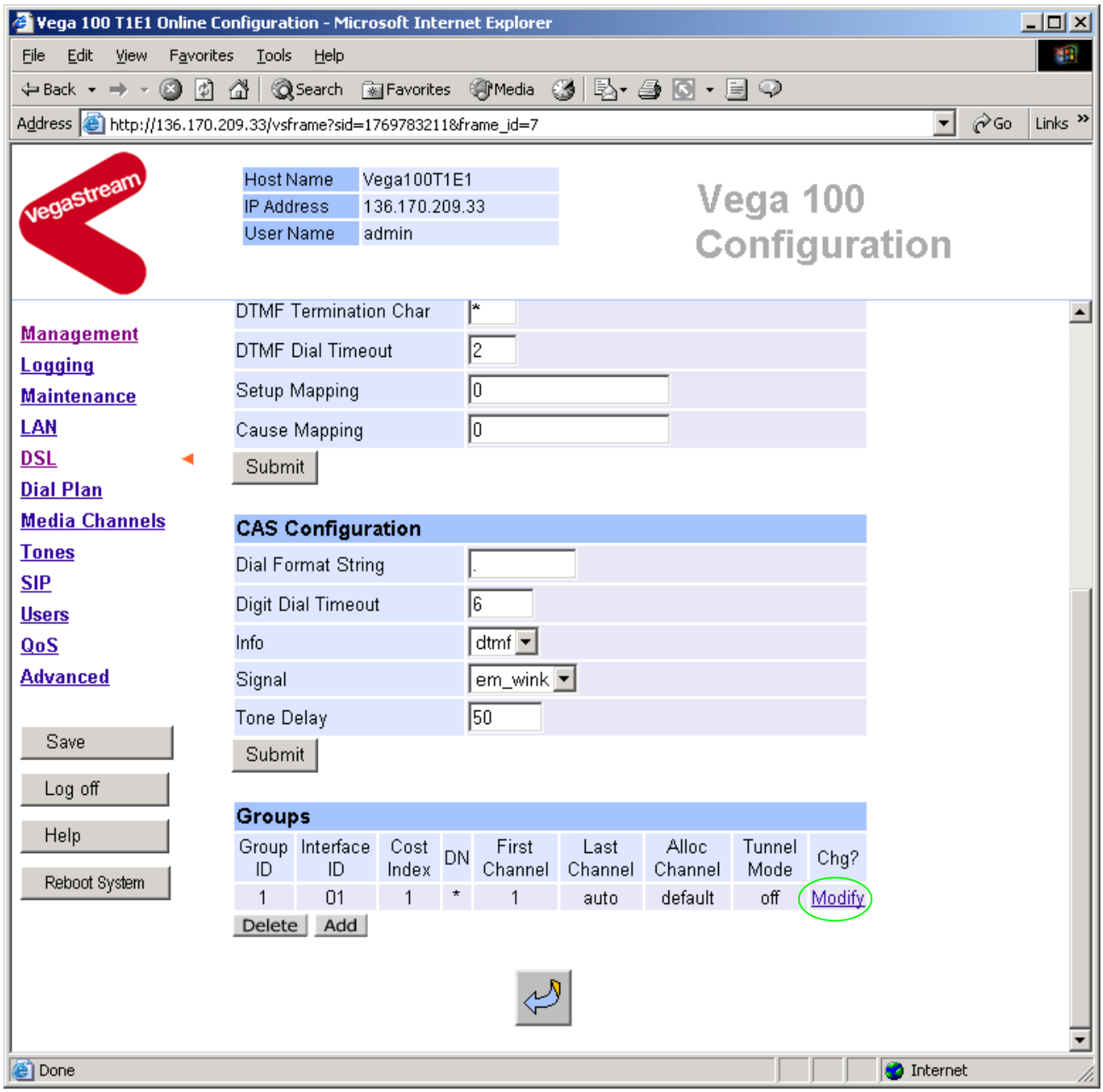
iii) *Round_robin* – in this mode the Vega remembers the last allocated channel and then tries to use the next channel up from this for the next outbound call. (After reaching the highest channel ID it restarts at the lowest channel again.) … use this mode when the attached device is configured to make outbound calls using *Round_robin* mode.

iv) *Default* – if the DSL is configured as NT then the Vega will use the *Linear_up* scheme, and if the DSL is configured as TE then the Vega will use *Linear_down*.

By default the Vega has chan_alloc set=*Default*

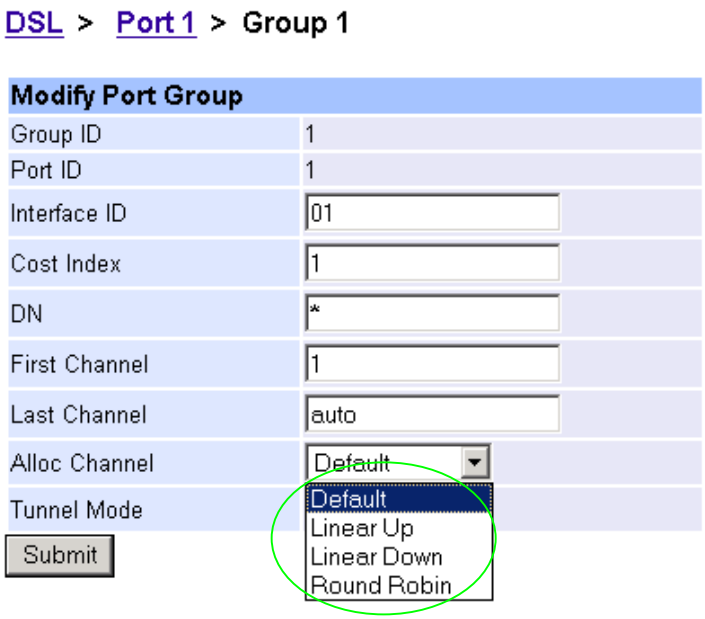
Using the web browser interface:

- On the left hand side menu select DSL
- Then select the Port to alter
- Scroll to the bottom of the page



In the Groups in this DSL:

- Select Modify



➢Select the desired channel allocation strategy from the Alloc Channel pull down.

➢select Submit and then click "here" to return

➢Save and reboot system to activate the change

Further details on this and other parameters may be found in the Vega Primer.