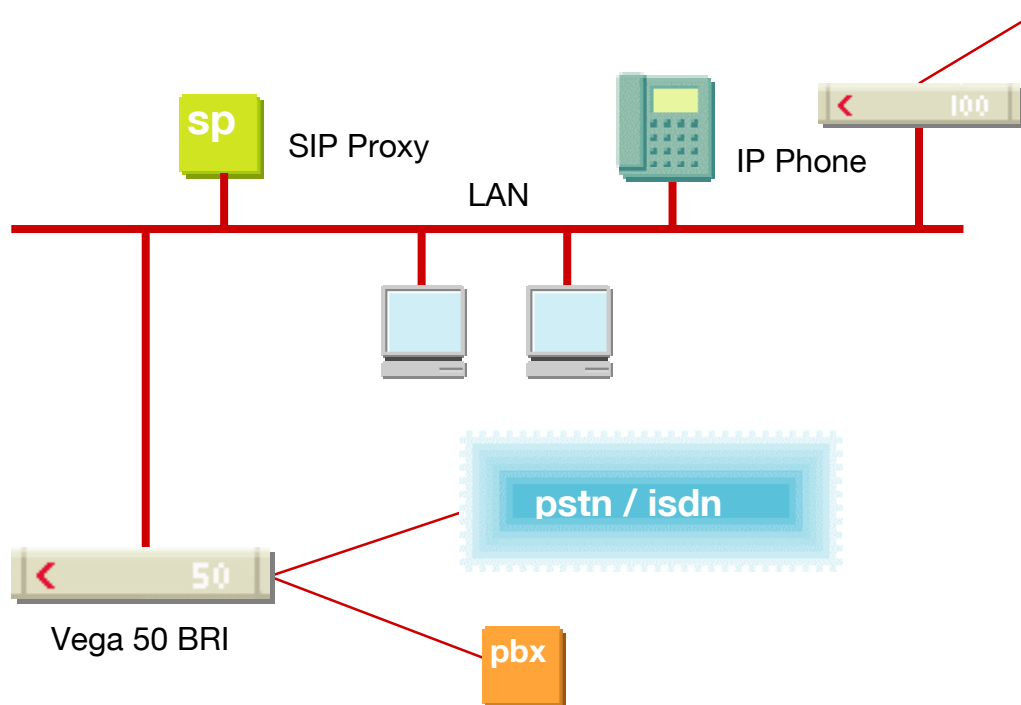# Initial configuration
Vega 50 BRI (SIP) – R6

This document describes how to configure the Vega 50 BRI 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 50 BRI to be a transparent gateway for the 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. A leading 01 or 03 will cause the call to be routed to the PSTN, and a leading 02 or 04 will cause the call to be routed to the PBX. The digits following the first two digits (01 / 02 / 03 / 04) will be passed as the dialled digits.

Version 0.2

For use with Vega 50 BRI – SIP version 06.02.06 T019 or greater.

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The configuration process is broken down into 12 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   Configure SIP and audio parameters
7   Configure Authentication
8   Configure Registration
9   Configure DSLs
10   Configure pointer to CD ROM documentation
11   Save Changes
12   Archive Vega Configuration

Please also see:
13   Technical Support
14   Advanced configuration

1. Connect your Vega to LAN, Telephone and Power

AC Power

Power Switch

DSL 4

DSL 3

DSL 2

DSL 1

LAN

Serial (RS232)
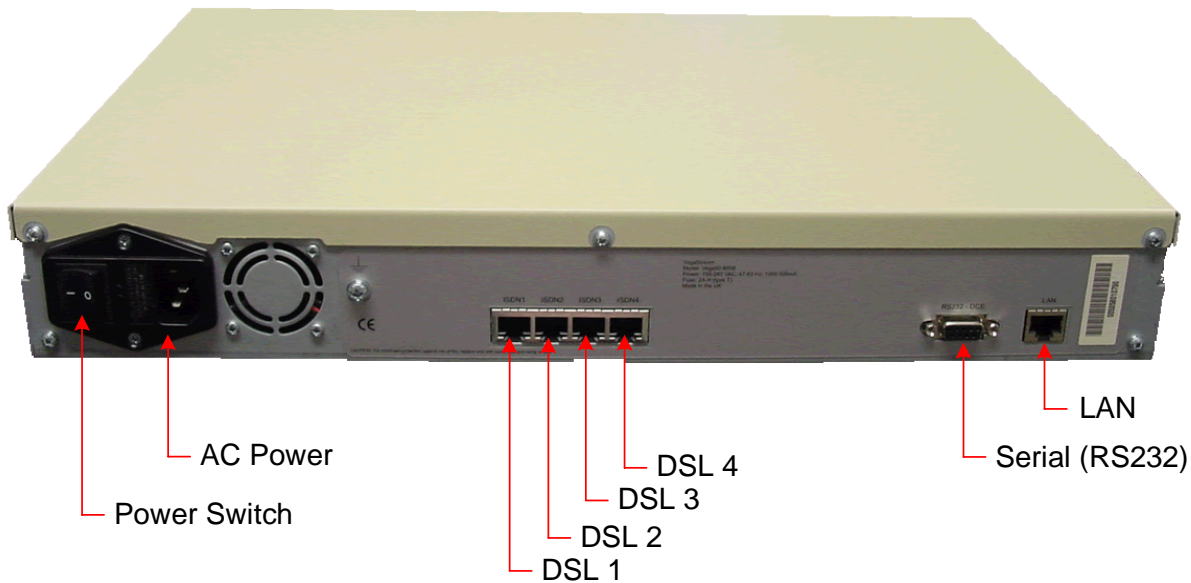
Before installing your Vega, ensure that you read the VegaStream VoIP Gateways Safety and Compliance Information document.

LAN:
Using the yellow booted cable connect the LAN port on the Vega 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 50 BRI to a PBX, the Vega acts as the NeTwork equipment and a red-booted cable must be used.

For each ISDN interface that is to be connected to the PBX, insert one end of a red booted cable into one of the Vega ISDN (DSL) sockets and the other end to the PBX.

Connection to the PSTN - If you are connecting the Vega 50 BRI directly to the public telephone network it acts as the Terminal Equipment and the blue-booted cable must be used.

For each ISDN interface that is to be connected to the PSTN, insert one end of a blue booted cable to one of the Vega ISDN (DSL) sockets 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 <u>not</u> 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 via a web browser.

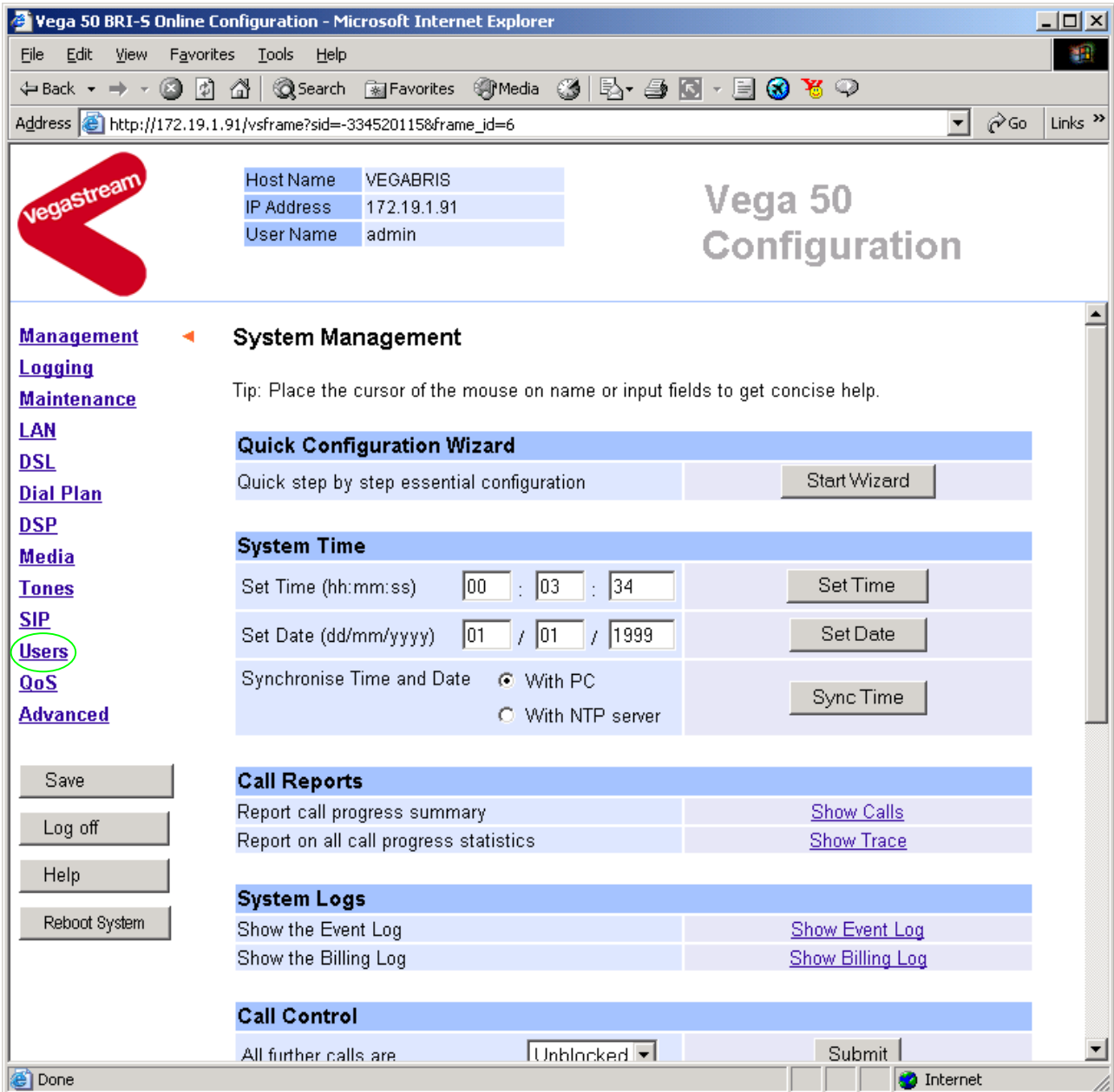➢ Enter this value in the "Address" field of your web browser.
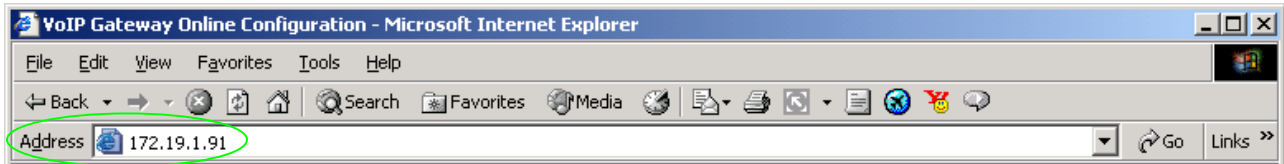
You will then be presented with the login page:
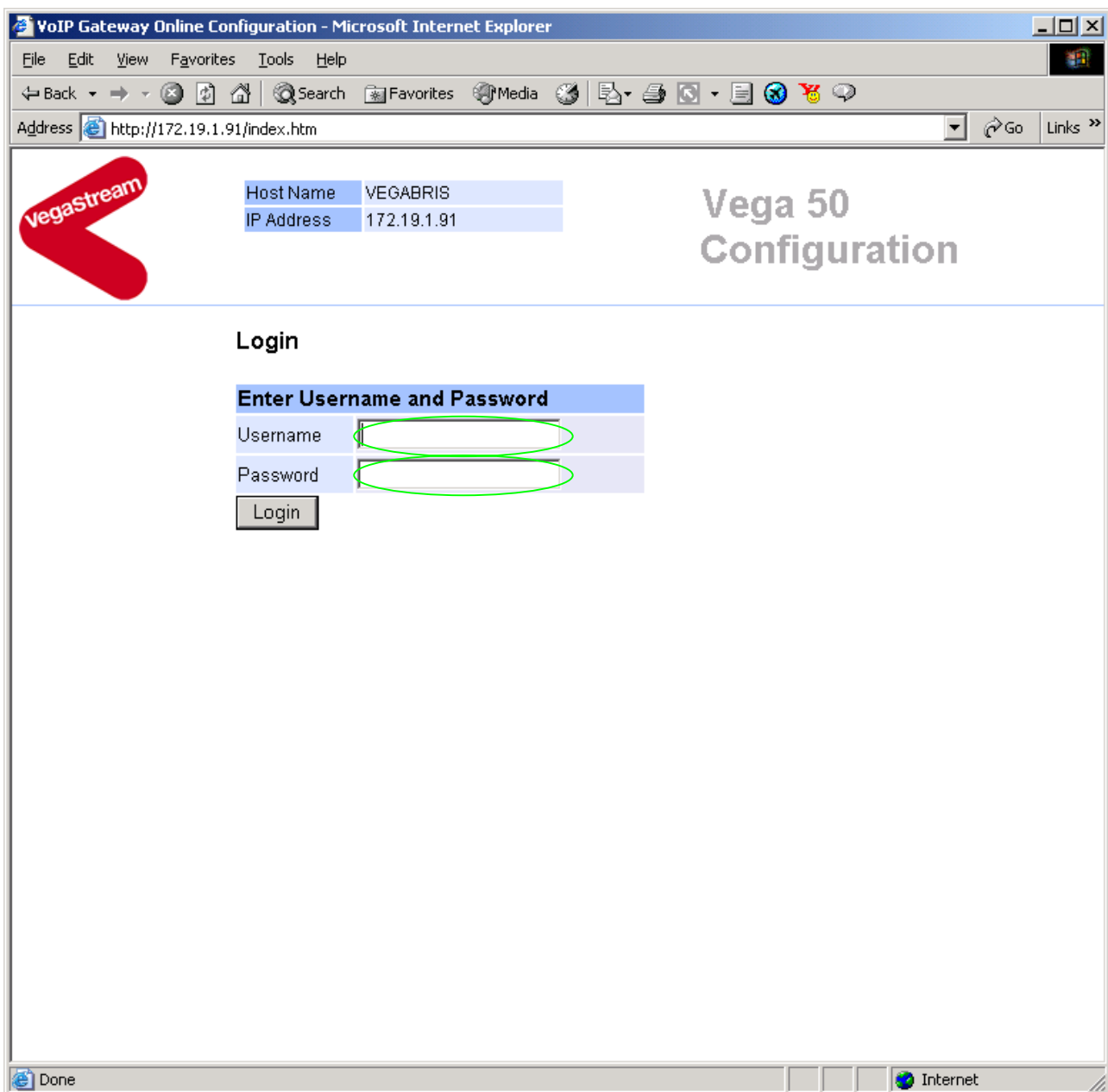
Enter the default Username and Password

➢ 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 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 browser session.

4. Check and configure LAN settings and Host name

➢ On the left hand side menu select LAN

Recommended: In the **Physical Layer Configuration** section statically select the Ethernet Type as either 100baseTx or 10 baseT (not 10baseT & 100baseTx) – whichever is appropriate
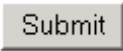
➢ select [Submit] and then click "here" to return

Recommended: In LAN **Configuration** section set up
➢ Network Time Server = IP address
➢ NTP Offset = time offset from UTC (GMT)
➢ NTP Poll Interval = 2400

➢ select [Submit] and then click "here" to return

Optional: If there are any other LAN values that need to be set up manually set them up now, 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

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<u>Dial Planner</u> > Profile 1

Modify Profile	
Profile ID	1
Enabled	☑
Name	Vega50ISDN_default

Submit

> ➤ disable (un-tick) Enabled, then
> ➤ select Submit and then click "<u>here</u>" 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

Profiles					
Del?	Profile ID	Enabled	Name	Plans	Chg?
☐	1	0	Vega50ISDN_default	===>	Modify

Delete   Add

In the **Profiles** section
> ➤ Select Add

Dial Planner

Profiles					
Del?	Profile ID	Enabled	Name	Plans	Chg?
☐	1	0	Vega50ISDN_default	===>	Modify
☐	2	1	new_profile	===>	Modify

Delete   Add

In the **Profiles** section, on Profile 2 (the new profile):
> ➤ Select Modify

<u>Dial Planner</u> > Profile 2

Modify Profile	
Profile ID	2
Enabled	☑
Name	new_profile

Submit

> ➤ Set Name = ISDN_To_LAN
> ➤ select Submit and then click "<u>here</u>" to return

Dial Planner

Profiles

Del?	Profile ID	Enabled	Name	Plans	Chg?
☐	1	0	Vega50ISDN_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 any of the 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 to 04 – 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`, `02ttt…t`, `03ttt…t`, or `04ttt…t`, where `ttt…t` is the telephone number to dial and `01` to `04` is the interface from which to make the call.

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. Configure SIP and audio parameters

➤On the left hand side menu select SIP

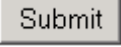

In the **General** section:

➤ set Default Proxy Host Name/IP = `IP_address_of_SIP_proxy`, or
`DNS_hostname_of_the_SIP_Proxy`

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

7. Configure Authentication

In some systems – to ensure that only authorised devices are allowed to set up and clear calls – SIP authentication is used. If authentication is used, it is typically required on the SIP REGISTRATION, INVITE, ACK and BYE messages.
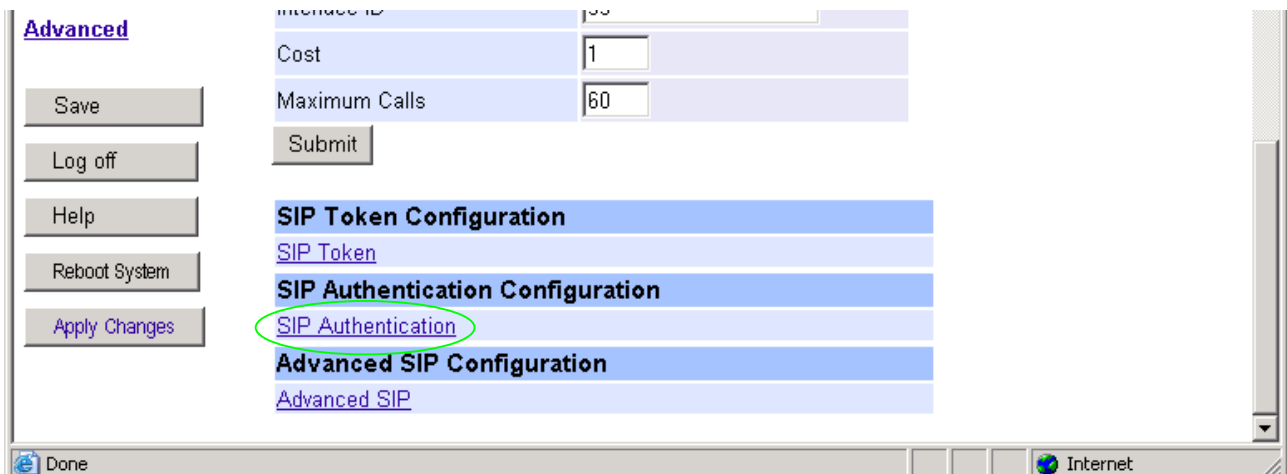
For authentication, a user-name, and a password can be configured. The user-name is constructed from three parts

```
Username Prefix, Username and Username Suffix
```

For example, to set up authentication for all calls, with
- a username of: VegaGateway123 and
- a password of: LetMeIn

  ➢ On the left hand side menu select <u>SIP</u>
  ➢ Scroll down to the bottom to the **SIP Authentication Configuration** section

  ➢ Select <u>SIP_Authentication</u>

> Select Modify

SIP > Authentication > User

SIP Tokens

Token	Value
1	vega1
2	01

Modify SIP Authentication User

SIP Authentication User 1

Enable	☐
Username Prefix	none ▼
Username Suffix	vega1 ▼
Username	authuser1
Password	pass1
Source	IF:00

Submit

- ➢ Set `Username Suffix = none`
- ➢ Set `Username = VegaGateway123`
- ➢ Set `Password = LetMeIn`
- ➢ Set `Source = IF:.*`

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

- ➢ On the left hand side menu select SIP
- ➢ Scroll down to the bottom to the **Advanced SIP Configuration** section
- ➢ Select Advanced_SIP

> ➢ Tick Use Authentication Users

8. Configure Registration

Typically trunking gateways (like the Vega 50 BRI) do not need to register with a SIP proxy. SIP registration was designed for <u>end users</u> to register themselves with the SIP proxy. Trunking gateways potentially support millions of end users and so typically the presence and capabilities of the gateways are manually configured into the SIP proxy.

For telephony to SIP calls, the SIP proxy is usually manually configured to accept calls from the Vega 100

- the dialled number of the call is placed in the request URI by the Vega

For SIP to telephony calls the Proxy must send the call to the Vega 50 BRI 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, 02, 03 or 04), and
- where `ttt…t` is the telephone number for the Vega to dial

In some circumstances the SIP proxy does demand that the Vega registers with it. If registration is required, see 14.1 "Configure Vega 50 BRI registration"

9. Configure DSLs

➢ On the left hand side menu select DSL

The default values for **DSL Configuration** – as shown above are the correct values for the BRI unit and should not be changed.

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

For typical configurations in **PORT Configuration** the Line type should be configured for pp (point to point) and the TEI value should be changed to 0. Use of pmp (point to multipoint) and TEI=64 are useful when connecting the Vega 50 BRI to multiple BRI telephones.

In **Port Configuration**

➢ Select [Modify] for PORT ID 1

➢ Change line type to pp
➢ Set TEI = 0 (this value should match far end TEI value)
➢ Select [Submit] and then click "here" to return

Return to this page:
➢ Set DTMF Dial Timeout = 5

➢ Select [Submit] and then click "here" to return

PORT Configuration

PORT ID	Enabled	NT	Clock Master	Layer 1	Test Loop	Line Type	Tei	ISDN	Groups	Chg?
1	1	0	0	g711Alaw64k	0	pp	0	===>	===>	Modify
2	1	1	1	g711Alaw64k	0	pmp	64	===>	===>	Modify
3	1	0	0	g711Alaw64k	0	pmp	64	===>	===>	Modify
4	1	1	1	g711Alaw64k	0	pmp	64	===>	===>	Modify

Delete   Add

For the configuration indicated in the initial diagram DSL1 and DSL3 are connected to the PSTN and DSL 2 and DSL 4 are connected to a PBX. So the Vega needs DSL 1 and 3 configured as TE (and a blue booted cable used), and DSL 2 and 4 configured as NT (and a red booted cable used).

These are the default settings of the Vega and so no changes are required to the Network Terminator(NT) setting. If the values for NT are changed on any of the DSLs, then 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.

➢ Repeat setting line type = pp, TEI = 0 and DTMF Dial Timeout = 5 for DSLs 2 to 4

PORT Configuration

PORT ID	Enabled	NT	Clock Master	Layer 1	Test Loop	Line Type	Tei	ISDN	Groups	Chg?
1	1	0	0	g711Alaw64k	0	pp	0	===>	===>	Modify
2	1	1	1	g711Alaw64k	0	pp	0	===>	===>	Modify
3	1	0	0	g711Alaw64k	0	pp	0	===>	===>	Modify
4	1	1	1	g711Alaw64k	0	pp	0	===>	===>	Modify

Delete   Add

NOTE

Do not be surprised if, even after configuration, the Trunk LED flashes indicating no layer 2 connection. Many BRI connections do not bring up layer 2 until a call is made.

Table 1 is a summary of parameters for Vega 50 BRI ISDN installations.

Table 1.   Network type, Line Encoding, and Topology

Product	Physical Connection	Network Topology	Network type	DSLs	Line Encoding	Calls
Vega 50-BRI-S	S/T 144 Kbps	S0	Euro ISDN	4	4B3T	8

10. Configure pointer to CD ROM documentation

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

➢ Select Advanced LAN
➢ Scroll to the bottom of the screen
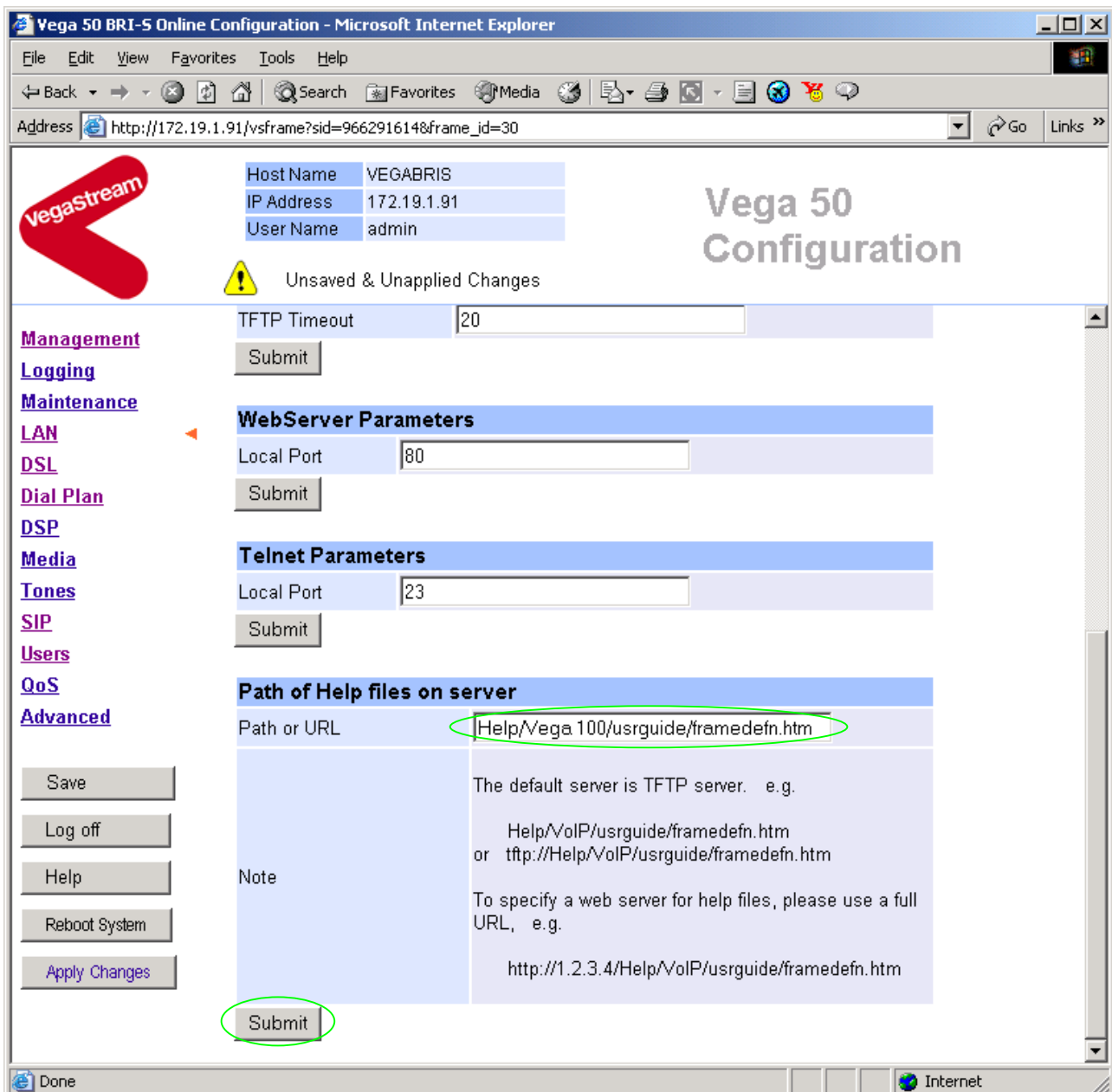
To configure for operation using the CD in the local PC CD-ROM drive,

> Set Path or URL = D:/Content/help/v50bris_R6.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
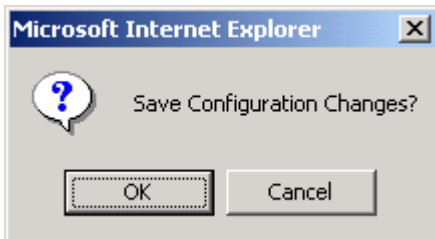
11. Save Changes

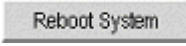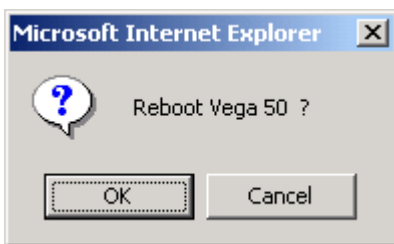*The changes to the configuration must be saved and activated. This is carried out as follows:*

➢ On the left hand side menu select <u>Save</u>

➢ Select [OK] and after the configuration has been saved click "<u>here</u>" to return

➢ On the left hand side menu select [Reboot System]

➢ Select [OK]

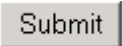The Vega will reboot and once back on-line, it will be ready to take its first call.

12. 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:

CLI Command

[   ] Submit

> 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>`

13. 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.
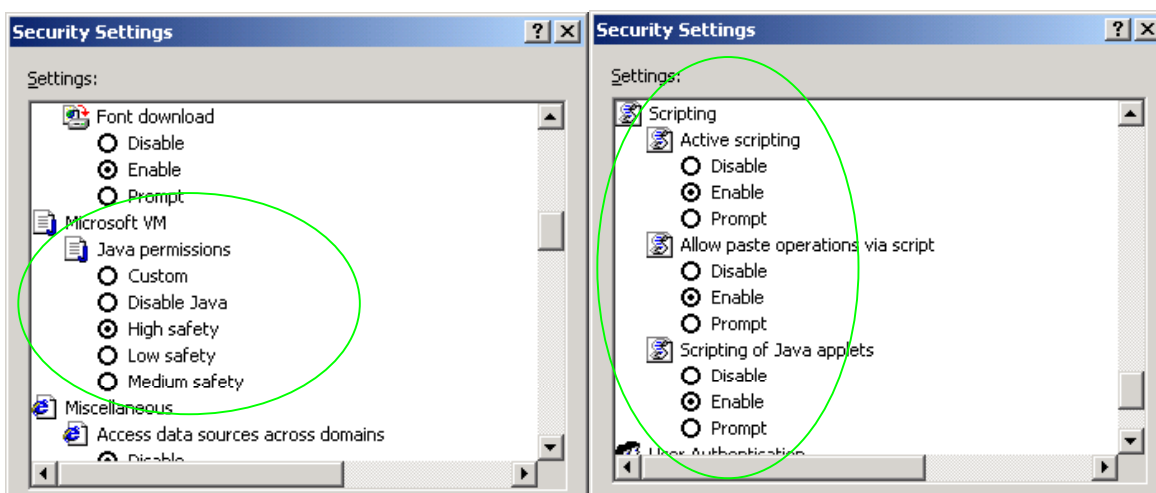
2. Where there are multiple sections – each with a [Submit] button – entries must be made to one section at a time, and those entries confirmed by the [Submit] button before the next section is altered. Each [Submit] button only confirms entries for its own section. Any changes in other sections will be discarded when the [Submit] is pressed.

3. Loss of audio mid call – consider reducing the selection of available codecs (see section 6). 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 6).

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".

14. Advanced configuration

ISDN units have further configurable parameters that may be desirable to configure in order to fully integrate into the attached ISDN infrastructure. Some are configurable through the web browser; others must be configured through the Command Line Interface.

14.1 Configure Vega 50 BRI registration

For trunking gateways, registration is typically used to tell the Proxy that the Vega exists and is available to take calls. The number of users that need to be registered by the gateway on the SIP Proxy will depend on the Proxy's requirements, typically however, only a single registration is required.

For example, to register with a username "VegaGateway123"

> ➢ On the left hand side menu select <u>SIP</u>
> ➢ Scroll down to the **Registration** section

- ➢ Select/tick `Register on Start-up`
- ➢ Set Registrar Host Name/IP =

        `IP_or_DNS_name_of_SIP_registrar_or_machine`
        `proxying_for_the_registrar`

- ➢ select [Submit] and then click "here" to return

In the **SIP Registration Users Configuration** section
- ➢ Select SIP Registration Users

SIP > **Registration**

Del?	User	Enable	Dn	Username Prefix	Username Suffix	Username	Built Username	Authentication User Index	Chg?
☐	1	0	100	no prefix	vega1	reguser1	reguser1vega1	1 - VegaGateway123	Modify

Add   Delete

➢ Select   Modify

In Modify SIP Registration User, SIP Registration User 1
➢ Tick `Enable`
➢ Set `Username Suffix = none`
➢ Set `Username = VegaGateway123`

If Authentication will be needed for REGISTRATION
> Set Authentication User Index = required Authentication User

Modify SIP Registration User

SIP Registration User 1	
Enable	☑
Dn	100
Username Prefix	none ▾
Username Suffix	none ▾
Username	Vega100Gateway123
Authentication User Index	1 - VegaGateway123 ▾

Submit

> Select Submit and then click "here" to return

> Save and reboot to activate

14.2 Layer 2 control

Many Basic Rate ISDN trunks take layer 2 down when the line is not in use, bringing layer 2 up only when a call is to be made.

By default the Vega automatically tries to reinstate layer 2 immediately it sees layer 2 going down. This results in later 2 being removed, re-instated, and removed again on a regular basis. This can be observed by seeing regular link-down and link-up messages on the event log.

To allow layer 2 to be taken down between calls and only brought up for the duration of the calls, on the command line interface type:

> Set _advanced.isdn.restart_l2_after_disc=0

On the front pannel, during calls the ISDN LED will be seen to be on solidly, and between calls the LED will flash.

14.3 ISDN 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 ID to alter, select Modify

➤ Scroll to the bottom of the page

In the **Groups** section:

> 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

14.4 User progress tones on TE interface

For ISDN to SIP calls, by default if the Vega DSL is configured as TE it will connect media through before or at alerting so that progress tones are passed through from end to end (i.e. for the ISDN caller to hear ringback and other progress tones the audio must be received over the SIP interface).

If it is required that the Vega generates these progress tones on the TE ISDN interface, then at the CLI prompt type:

> Set _advanced.isdn.user_progress=1

> Save and reboot system to activate the change

Notes: 1. If the Vega DSL is configured as NT it will always generate the call progress tones. E.g. ringback and disconnect tones.
2. Typically wait_for_connect and user_progress configuration parameters should either both set to 1 or both set to 0.

14.5 In-band audio indication for alerting

For SIP to ISDN calls, by default the Vega will act upon the in-band audio indicator in the alerting message and if present will connect the media path.

If it is required that the Vega should ignore the in-band audio indicator, and so not pass on the in-band tone, then at the CLI prompt type:

➢ `Set _advanced.isdn.alert_with_progress=0`

➢ Save and reboot system to activate the change

If it is required that the Vega should always cut through the audio whatever the value of the in-band audio indicator, then at the CLI prompt type:

➢ `Set _advanced.isdn.alert_with_progress=2`

➢ Save and reboot system to activate the change

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