



DG-IC422A 4 Port G.SHDSL/G.bis LAN Extender User Manual

V2.0 27-09-2013

As our product undergoes continuous development the specifications are subject to change without prior notice.

COPYRIGHT

Copyright ©2013 by this company. All rights reserved. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language or computer language, in any form or by any means, electronic, mechanical, magnetic, optical, chemical, manual or otherwise, without the prior written permission of this company.

This company makes no representations or warranties, either expressed or implied, with respect to the contents hereof and specifically disclaims any warranties, merchantability or fitness for any particular purpose. Any software described in this manual is sold or licensed "as is". Should the programs prove defective following their purchase, the buyer (and not this company, its distributor, or its dealer) assumes the entire cost of all necessary servicing, repair, and any incidental or consequential damages resulting from any defect in the software. Further, this company reserves the right to revise this publication and to make changes from time to time in the contents thereof without obligation to notify any person of such revision or changes.

Trademarks:

DIGISOLTM is a trademark of Smartlink Network Systems Ltd. All other trademarks are the property of the respective manufacturers.

Safety:

This equipment is designed with the utmost care for the safety of those who install and use it. However, special attention must be paid to the dangers of electric shock and static electricity when working with electrical equipment. All guidelines listed in this manual must therefore be followed at all times to ensure the safe use of the equipment.



Index

1. INTRODUCTION	5
	-
1.1 PKEFACE	
1.2 OVERVIEW	5
2 HARDWARF INSTALLATION	6
2. HARD WARE HUSTALLATION	······································
2.1 FRONT PANEL LEDS INDICATORS	6
2.2 REAR PANEL CONNECTORS	7
2.3 INSTALLATION PROCEDURE	
3. CONFIGURATION OF THE DEVICE THROUGH CONSOLE	9
3.1 CONSOLE SETUP	9
	10
3.2 LOGIN ADMIN	
3.2.1 Command List for "Login admin"	10 11
5.2.2 Configure Enternet	
3.3 LOGIN ROOT	
3.3.1 Command List for "Login root"	
3.3.2 Configuration	
3.3.2.1 Configure ATM	
3.3.2.1.1 Configure ATM interface	
3.3.2.2 Configure BVI (Bridge Virtual Interface)	
3.3.2.3 Configure DSL Interface	
3.3.2.4 Configure Ethernet Interface	
3.3.2.5 Configure Firewall	
3.3.2.6 Configure IPv4 Routing	
3.3.2.7 RIP	
3.3.2.8 SNMP	
3.3.2.9 System	
3.3.2.10 TR069	
3.3.2.11 VLAN	
4. CONFIGURING WITH WEB	
4.1 LOGIN	
4.2 WEB MENUS	
4.2.1 Status	
4.2.1.1 DSL	
4.2.1.2 ATM	
4.2.1.3 LAN	
4.2.1.4 Routing Table	
4.2.2 Quick Setup	
4.2.3 Basic Configuration	

3

DG-IC422A User Manual

4.2.3.1 LAN Configuration	
4.2.3.2 VLAN Configuration	
4.2.3.3 DHCP Server	
4.2.3.4 WAN Configuration	
4.2.3.5 DSL Configuration	
4.2.4 Bridge Virtual Interface Configuration	
4.2.5 Advance Configuration	
4.2.5.1Routing	
4.2.5.1.1 Static Route configuration	
4.2.5.1.2 Dynamic Route Configuration >> RIP Configuration	
4.2.5.2 DHCP Relay Configuration	
4.2.6 Firewall	
4.2.6.1 Port Forwarding	
4.2.6.2 VPN Passthrough	
4.2.6.3 Attack Prevention	
4.2.7 System	
4.2.7.1 System settings	
4.2.7.2 DNS Configuration >> System DNS	
4.2.7.3 Management	
4.2.7.3.1 TR069	
4.2.7.3.2 SNMP & TRAP	
4.2.8 Admin	
4.2.8.1 Factory Default	
4.2.8.2 Save Configuration	
4.2.8.3 Reboot	
4.2.8.4 Firmware Upgrade	
4.2.9 Tools	
4.2.9.1 Ping	
5. TYPICAL APPLICATION	71
5.1 BRIDGE MODE	
5.2 ROUTING MODE	74
6. APPENDIX	77
61 TEI NET	<i></i>
6.2 TROUBLESHOOTING	
6.3 GLOSSARY	

1. Introduction

1.1 PREFACE

The primary objective of this manual is to help user to operate DG-IC422A product. Strongly committed to user friendliness, this manual will guide the users step by step to turn the product up and running in the simplest way ever.

1.2 OVERVIEW

With the symmetrical data transmission up to 5.7 Mbps over the ordinary telephone line, SHDSL satisfies the needs of multiple users of small office/home office (SOHO), who need both bandwidth and permanent data connection. Although SHDSL transmits data over the telephone line, it does not interrupt the voice because it uses different frequency for data transmission.

DG-IC422A is designed to provide users all features needed in the SOHO environment. DG-IC422A is a high-speed G.SHDSL device which meets the needs of both bandwidth and ease of installation. It is designed to provide high performance, via a single G.SHDSL line. It can be easily configured through a user friendly CLI or GUI-based interface.

The DG-IC422A is an ideal product for SOHO users starving for high bandwidth and fast, reliable Internet connection with a minimum of operating expense. Service providers can also use it to offer DSL service with features beyond the normal need of the consumer.

2. Hardware Installation

2.1 FRONT PANEL LEDS INDICATORS



Front-Panel view Table: Front Panel LED description

LED Name	LED Colour	Light Status	Description
PWR	Orange	Steady	The device is receiving input power.
SVS	Orange	Steady	The device has encountered a System error.
515		Off	The device is functioning properly.
	Orange	Steady	The device is connected to the other end device.
DSL		Blinking	The link is synchronizing – this may take few minutes.
	Orange	Steady	The device is ready for sending or receiving data.
ACT	Orange	Off	The device is not ready for data sending or receiving.
LN1	Orange	Steady / Blinking	Link-1 – The LAN link is successfully established / sending or receiving data.
LN2	Orange	Steady / Blinking	Link-2 – The LAN link is successfully established / sending or receiving data.
LN3	Orange	Steady / Blinking	Link-3 – The LAN link is successfully established / sending or receiving data.
LN4	Orange	Steady / Blinking	Link-4 – The LAN link is successfully established / sending or receiving data.

2.2 REAR PANEL CONNECTORS

The rear panel connectors connecting the device to the LAN and xDSL network are illustrated as follows.



Back-Panel view Table: Back Panel Description

Interfaces/ Pushbutton	Description
RESET button	Press the RESET button for more than 5 seconds, the device will reset to factory default and Restart automatically.
DSL interface	The DG-IC422A has one DSL port which terminates in a standard RJ-11 connector.
CID interface	The CID interface is used for device configuration and monitoring.
LAN interface [LN1, LN2, LN3, LN4]	This interface is a 4-port switch and is used to connect user network equipment.
ON/OFF switch	This switch is used to Power ON/OFF the device.
Power	Connect the adapter output (12V DC, 1.0A) connector to this interface to power ON the unit.

2.3 INSTALLATION PROCEDURE

Step 1. - Use RJ-11 cable to connect the device to xDSL line.

Step 2. - Use RS-232 DB-09 console cable to connect the console port of the device to serial port of the PC with terminal emulator software installed.

Step 3. - Use RJ-45 cable to connect the device and the PC which has the Network Interface card (NIC) installed. If you want to connect to an external hub, you have to use the RJ-45 crossover cable.

Step 4. - Plug in the Power adaptor to the DC Power socket of the device, then connect the power adaptor to the AC outlet.

Step 5. - Power the unit ON by putting ON/OFF switch to ON position.

3. Configuration of the Device through Console

3.1 CONSOLE SETUP

Step 1: Connect computer to the device through the console/CID port using console cable provided.

Step 2: Open the terminal emulator software (like Hyper-Terminal on Microsoft Windows machine, or "Minicom" on Linux machine), then select the proper COM port for the connection. Set the terminal and port to the following parameters:

- Terminal Mode: VT-100
- Parity: None
- Baud rate: 115200 bps
- Stop bits: 1
- Data bits: 8
- Flow Control: None

Step 3: Turn on the DG-IC422A, then after few seconds of machine initialization, the system management terminal will display the login screen as shown below.



Step 4: User can login to LAN Extender either as 'login root' or 'login admin'.

Command	Description / Comments	Format
list	Print command list available for menu.	list
login	Login to configure the device.	login admin
login		login root



3.2 LOGIN ADMIN

1. To login as "login admin"

<u>Command List</u> GSHDSL> login admin Password: admin GSHDSL%

Welcome to G.SHDSL product Model: G.SHDSL Lan Extender Version: v.2.6-505-1.3-0459 GSHDSL> login admin Password: GSHDSL%

- Enter "login admin" for the accessing limited console menus for device.
- Enter the correct Password. [Default Password "admin"].
- ✤ LAN Extender will prompt user with GSHDSL% prompt.

3.2.1 Command List for "Login admin"

Command List GSHDSL% list

GSHDSL> login Password: GSHDSL% list exit list logout ping WORD reboot set ether show runnin traceroute GSHDSL% _	admin ÖORD		

Command	Comments	Format
exit	Exit current mode/menu.	exit
list	Print command list available for menu.	list
logout	Logout to login menu of device.	logout
ping	Send echo messages to destination address.	ping A.B.C.D (<i><u>IPv4address</u>)</i> e.g. ping 192.168.0.1
reboot	Reboot the device.	reboot



set ether	Select the Ethernet interface for configuration.	set ether
show	Show present configuration of device.	show running
traceroute	Trace route to destination.	traceroute A.B.C.D (<i>IPv4address</i>) e.g. traceroute 192.168.0.1

3.2.2 Configure Ethernet

Commands in this menu allow LAN related configurations such as: IPv4 address, Subnet Mask, MTU, Mode, DHCP server etc can be configured by user.

<u>Command List</u> GSHDSL% set ether GSHDSL(config-ether)# list

> GSHDSL% set ether GSHDSL(config-ether)# list clear dhop-server enabled dhop-server range (A.B.C.D) (A.B.C.D) dns (A.B.C.D) (A.B.C.D) lease <1-864000> end exit ipv4 A.B.C.D/M list mode (auto;100M-full;100M-half;10M-full;10M-half) mtu <1280-2000> no dhop-server enabled show running GSHDSL(config-ether)# _

Command	Comments	Format
clear	Clear terminal screen.	clear
commit	Confirm pending configuration.	commit
		dhcp-server enabled
dhcp-server	Dynamic Host Configuration Protocol.	dhcp-server range (A.B.C.D) (A.B.C.D) dns (A.B.C.D) (A.B.C.D) lease <1- 864000>
end	End mode and down to top mode.	end
exit	Exit current mode/menu.	exit
ipv4	Configuring IPv4 address for device.	ipv4 A.B.C.D/M e.g. ipv4 192.168.0.1/24
list	Print command list available for menu.	list
mode	Configuring LAN connectivity mode.	mode (auto 100M-full 100M-half 10M-full 10M-half) e.g. mode auto
mtu	Configuring MTU of interface.	mtu <1280-2000> e.g. mtu 1500
no dhcp- server enabled	Negate the configuration of element & disable DHCP-Server.	no dhcp-server enabled
show	Show configuration of interface.	show running



3.3 LOGIN ROOT

1. To login as "login root"

<u>Command List</u> GSHDSL> login root Password: admin GSHDSL#

Welcome to G.SHDSL product Model: G.SHDSL Lan Extender Version: v.2.6-505-1.3-QAS9 GSHDSL> login root Password: GSHDSL#

- Enter "login root" for the accessing all console menus for device.
- Enter the correct Password. [Default Password "admin"].
- ◆ LAN Extender will prompt user with **GSHDSL**# prompt.

3.3.1 Command List for "Login root"

Command List GSHDSL# list

GSHDSL> login root Password: GSHDSL# list clear configure exit hostname WORD list load default logout main-shell ping WORD reboot save show logging dsl show logging dsl show logging ppp show logging ppp show logging ppp lines <1-100> show routing	
<pre>show routing ipv4 show running atm show running atm show running bvi show running dsl show running firewall show running routing ipv4 show running somp show running system show running tr069 show status (dsl!ethernet) show status atm vc (1-32) show status atm vc (1-32) show status bvi show status bvi show status bvi show status bvi show system dhcp-relay show tr069 show tr069 system tr06</pre>	

Command	Comments	Format
clear	Clear terminal screen.	clear
configure	Enter configuration mode.	configure
exit	Exit current mode/menu.	exit
hostname	Set hostname of device Text without space, maximum 32 chars is allowed.	hostname WORD e.g. hostname LANEXTENDER
list	Print command list available for menu.	list
load default	Load default configuration.	load default
logout	Logout from menu.	logout
main-shell	Maintenance shell command.	main-shell
ping	Send echo messages to destination address.	ping A.B.C.D (IPv4address) e.g. ping 192.168.0.1
reboot	Reboot the device.	reboot
save	Save present configuration of device.	save
		show logging dsl
		show logging dsl lines <1-100>
		show logging ppp
		show logging ppp lines <1-100>
		show routing
		show routing ipv4
		show running
		show running atm
		show running byi
		show running dsl
		show running ether
		show running firewall
		show running routing ipv4
show	Show configuration for specified parameter.	show running routing rip
		show running snmp
		show running system
		show running tr069
		show snmp
		show status dsl
		show status ethernet
		show status atm
		show status atm vc <1-32>
		show status bvi
		show status bvi <1-12>
		show system dhcp-relay
		show system info
		show tr069
sync	Show NTP (Network time protocol) status & time.	sync time
traceroute	Trace route to destination.	traceroute A.B.C.D (<i>IPv4address</i>) e.g. traceroute 192.168.0.1



3.3.2 Configuration

Commands in this menu allow user to change passwords & access main configuration items such as ATM, Bridge virtual interface, DSL, Ethernet/LAN etc.

<u>Command List</u> GSHDSL# config GSHDSL(config)# list

```
GSHDSL# config
GSHDSL(config)# list
end
exit
list
no set atm vc (1-32)
no set bvi (1-12)
no set vouting ipv4 (1-50)
no set vouting ipv4 (1-50)
password admin old-password WORD new-password WORD
set set vout old-password WORD new-password WORD
set atm vc (1-32)
set bvi (1-12)
set dsl
set ether
set firewall
set routing ipv4 (1-50)
set routing ripd
set snmp
set system
set tr069
set vlan (1-32)
GSHDSL(config)#_
```

Command	Comments	Format	
and	Close current menu and go down to top menu	and	
enu	item.	ena	
exit	Exit current mode/menu.	exit	
list	Print command list available for menu.	list	
		no set atm vc <1-32>	
		e.g. no set atm vc 1	
no	Negate the configuration of element.	no set bvi <1-12>	
		no set routing ipv4 <1-50>	
		no set vlan <1-32>	
		password admin old-password WORD	
	Change password for login admin.	new-password WORD	
		e.g. password admin old-password	
password		admin new-password admin123	
		password root old-password WORD	
	Change password for login root.	new-password <u>WORD</u>	
		set atm vc <1-32>	
		e.g. set atm vc 1	
		set bvi <1-12>	
		set dsl	
	Select the element to configure.	set ether	
aat		set firewall	
set		set routing ipv4 <1-50>	
		set routing ripd	
		set snmp	
		set system	
		set tr069	
		set vlan $<1-32>$	



3.3.2.1 Configure ATM

Commands in this menu allow user to configure Virtual channels, WAN interface & PPP options. LAN Extender supports both Bridge and Router function at the same time if required.

<u>Command List</u> GSHDSL(config)# set atm vc 1 GSHDSL(config-atm)# list

> GSHDSL# config GSHDSL(config)# set atm vc 1 GSHDSL(config-atm)# list clear commit description WORD encapsulation (pppoe/pppoa) encapsulation (rfc2684-brirfc2684-rt!ipoa) end exit interface list mbs <0-1000> mux (licivemux) per <1-5424> gos (ubr/cbr!vbr!vbr-rt) ser <0-9000> show running upi <0-8> vci <32-1024> GSHDSL(config-atm)#

Command	Comments	Format
clear	Clear terminal screen.	clear
commit	Confirm pending configuration.	commit
description	Description of this ATM channel Text without space, maximum 32 chars is allowed.	description WORD
encapsulation	Encapsulation method on this ATM channel.	encapsulation (pppoe pppoa) e.g. encapsulation pppoe encapsulation (rfc2684-br rfc2684-rt ipoa) e.g. encapsulation rfc2684-br
end	Close current menu and go down to top menu item.	end
exit	Exit current mode/menu.	exit
interface	Configuring ATM network interface.	interface
list	Print command list available for menu.	list
mbs	Maximum burst size of this ATM channel.	mbs <0-1000>
mux	ATM multiplexer for this ATM channel.	mux (llc vcmux) e.g. mux llc
pcr	Peak cell rate of this ATM channel.	pcr <1-5424>
qos	Quality if Service on this ATM channel.	qos (ubr cbr vbr vbr-rt)
scr	Sustained cell rate of this ATM channel.	scr <0-9000>
show	Show configuration for this ATM channel.	show running
vpi	Virtual path identifier for this ATM channel.	vpi <0-8> vci <32-1024> e.g. vpi 0 vci 32

3.3.2.1.1 Configure ATM interface

Commands in this menu allow user to configure IP Addresses & NAT for WAN Interface.

<u>Command List</u> GSHDSL(config-atm)# interface GSHDSL(config-atm-if)# list

> GSHDSL(config-atm)# interface GSHDSL(config-atm-if)# list end exit ipu4 A.B.C.D/M list nat enabled no nat enabled peer-ip A.B.C.D GSHDSL(config-atm-if)# _

Command	Comments	Format
end	Close current menu and go down to top menu	end
	item.	
exit	Exit current mode/menu.	exit
ipv4	Local IPv4 address for WAN Interface.	ipv4 A.B.C.D/M
		e.g. ipv4 1.1.1.1/24
list	Print command list available for menu.	list
nat enabled	Enable Network Address Translation of this	nat enabled
	ATM interface.	
no nat	Negate the configuration of element & disable	no nat enabled
enabled	NAT.	
peer-ip	Peer IPv4 address / IPv4 address of paired	peer-ip A.B.C.D
	LAN Extender / IPv4 address of DSLAM for	e.g. peer-ip 1.1.1.2
	WAN interface.	

3.3.2.2 Configure BVI (Bridge Virtual Interface)

If LAN Extender is to be used as BRIDGE, set Encapsulation - rfc2684-br (Bridged) in ATM configuration, you need to create BVI interface and add both LAN and ATM VC into that BVI, it means you create a Bridge for LAN and ATM channel.

User needs to configure LAN & ATM channel before configuring BVI. After this, add LAN interface & required ATM channel to BVI using 'add' command.

<u>Command List</u> GSHDSL(config)# set bvi 1 GSHDSL(config-bvi)# list

> GSHDSL(config)# set bvi 1 GSHDSL(config-bvi)# list add member atm vc <1-32> add member lan clear commit description WORD end exit ipv4 A.B.C.D/M list no add member lan no atd member lan no atp enabled show running stp enabled stp priority <0-65535> GSHDSL(config-bvi)# _

Command	Comments	Format
		add member atm vc <1-32>
add	Adding interface to BVI.	e.g. add member atm vc 1
		add member lan
clear	Clear terminal screen.	clear
commit	Confirm pending configuration.	commit
	Description of this BVI	
description	Text without space, maximum 32 chars is	description WORD
_	allowed.	
and	Close current menu and go down to top	and
ena	menu item	ena
exit	Exit current mode/menu.	exit
inv	Local IPv4 address.	ipv4 A.B.C.D/M
IDV4		e.g. ipv4 192.168.0.1/24
list	Print command list available for menu	list
		no add mambar atm ya <1.32
	Negate the configuration of element	The add member atm $v < 1-32 >$
no		e.g. no add member atm vc 1
		no add member lan
		no stp enabled
show	Show configuration for BVI	show running
		stp enabled
stp	Spanning Tree Protocol	stp priority <0-65535>
-		e.g. stp priority 65535

3.3.2.3 Configure DSL Interface

Commands in this menu item allow user to configure DSL Interface of LAN Extender. <u>Command List</u> GSHDSL(config)# set dsl GSHDSL(config-dsl)# list

> GSHDSL(config)# set dsl GSHDSL(config-dsl)# list clear commit data-mode (adaptive;fixed) data-rate min <1-89> max <1-89> end exit list list service (cot-2wires;rt-2wires) show running standard (annex-A;annex-B) GSHDSL(config-dsl)# _

Command	Comments	Format
clear	Clear terminal screen	clear
commit	Confirm pending configuration	commit
data-mode	DSL data mode	data-mode (adaptive fixed)
	DSL data mode must be same for both	
	paired LAN Extenders.	
data-rate	DSL data rate	data-rate min <1-89> max <1-89>
	For data-mode Fixed, data-rate min &	e.g. data-rate min 1 max 89
	max must be same.	
end	Close current menu and go down to top	end
	menu item	
exit	Exit current mode/menu	exit
list	Print command list available for menu	list
	DSL physical mode	mode (atm-mode efm-mode ptm-
mode	DSL mode must be same for both paired	mode auto-mode)
	LAN Extenders.	
service	DSL operation service	service (cot-2wires rt-2wires)
show	Show configuration DSL interface	show running
standard	DSL standard	standard (annex-A annex-B)
	DSL Standard must be same for both	
	paired LAN Extenders.	



3.3.2.4 Configure Ethernet Interface

Commands in this menu allow LAN related configurations such as: IPv4 address, Subnet Mask, MTU, Mode, DHCP server etc can be configured by user.

<u>Command List</u> GSHDSL(config)# set ether GSHDSL(config-ether)# list

> GSHDSL(config)# set ether GSHDSL(config=ether)# list clear commit dhop-server enabled dhop-server range (A.B.C.D) (A.B.C.D) dns (A.B.C.D) (A.B.C.D) lease <1-864000> end exit ipv4 A.B.C.D/M list mode (auto:100M-full:100M-half:10M-full:10M-half) mtu <1280-2000> no dhop-server enabled show running GSHDSL(config=ether)#

Command	Comments	Format
clear	Clear terminal screen	clear
commit	Confirm pending configuration	commit
dhcp-server	Enable Dynamic Host Configuration	dhcp-server enabled
11		
dhcp-server	Dynamic Host Configuration Protocol IP	dhcp-server range (A.B.C.D) (A.B.C.D)
range	address range	dns (A.B.C.D) (A.B.C.D) lease <1-
		864000>
		e.g. dhcp-server range 192.168.0.10
		192.168.0.100 dns 4.4.2.2 192.168.2.2
		lease 864000
and	Close current menu and go down to top	end
ena	menu item	
exit	Exit current mode/menu	exit
ipv4	Configuring IPv4 address	ipv4 A.B.C.D/M
		e.g. ipv4 192.168.0.1/24
list	Print command list available for menu	list
mode	Configuring LAN connectivity mode	mode (auto 100M-full 100M-half
		10M-full 10M-half)
		e.g. mode auto
mtu	Configuring MTU of interface	mtu <1280-2000>
no	Negate the configuration of element	no dhcp-server enabled
show	Show configuration for Ethernet Interface	show running



3.3.2.5 Configure Firewall

Commands in this menu allow user to configure Port Forwarding, VPN Passthrough & Prevent attack features.

<u>Command List</u> GSHDSL(config)# set firewall GSHDSL(config-firewall)# list

```
GSHDSL(config)# set firewall
GSHDSL(config-firewall)# list
clear
commit
end
exit
list
no pass-through (ipsec:pptp:l2tp)
no port-forward <1-32>
no prevent (synoflood)pingofdeath:dos:spoof)
pass-through (ipsec:pptp:l2tp) in-interface vc <1-32>
port-forward <1-32>
port-forward <1-32>
prevent (synoflood)pingofdeath:dos:spoof)
show running
GSHDSL(config-firewall)# _
```

Command	Comments	Format
clear	Clear terminal screen	clear
commit	Confirm pending configuration	commit
end	Close current menu and go down to top menu item	end
exit	Exit current mode/menu	exit
list	Print command list available for menu	list
no	Negate the configuration of element	no pass-through (ipsec pptp 12tp)
		no port-forward <1-32>
		no prevent (syncflood pingofdeath dos spoof)
pass- through	Set VPN passthrough	pass-through (ipsec pptp 12tp) in- interface vc <1-32>
port- forward	Configure Port forwarding Select index	port-forward <1-32>
prevent	Prevent DOS attacks	prevent (syncflood pingofdeath dos spoof)
show	Show configuration for Firewall	Show running

3.3.2.6 Configure IPv4 Routing

Commands in this menu allow user to configure static routes for LAN Extender.

<u>Command List</u> GSHDSL(config)# set routing ipv4 1 GSHDSL(config-route)# list

> GSHDSL(config)# set routing ipv4 1 GSHDSL(config-route)# list clear commit end exit list network A.B.C.D/M via A.B.C.D show running) GSHDSL(config-route)# _

Command	Comments	Format
clear	Clear terminal screen	clear
commit	Confirm pending configuration	commit
end	Close current menu and go down to top	end
	menu item	
exit	Exit current mode/menu	exit
list	Print command list available for menu	list
network	Network segment	network A.B.C.D/M via A.B.C.D
		e.g. network 192.168.2.0/24 via 1.1.1.2
show	Show configuration for IPv4 routing	show running

3.3.2.7 RIP

Commands in this menu allow user to configure dynamic routing for LAN Extender.

<u>Command List</u> GSHDSL(config)# set routing ripd GSHDSL(config-rip)# list

GSHDSL(config)#.s	et routing ripd		
commit	J# LIST		
end			
exit			
no rip enabled			
rip enabled			
show running			
GSHDSL(config-rip)#		

Command	Comments	Format
commit	Confirm pending configuration	commit
end	Close current menu and go down to top menu item	end
exit	Exit current mode/menu	exit
list	Print command list available for menu	list
no rip	Disable RIP protocol	no rip enabled
enabled		
rip enabled	Enable RIP protocol	rip enabled
show	Show configuration for RIP	show running
version	Select RIP version	version <1-2>

3.3.2.8 SNMP

Commands in this menu allow user to configure SNMP (Simple Network Management Protocol) features which is a standard for managing of devices on IP Networks.

<u>Command List</u> GSHDSL(config)# set snmp GSHDSL(config-snmp)# list

> GSHDSL(config)# set snmp GSHDSL(config=snmp)# list clear community read-only (private!public) community read-write (private!public) community trap (private!public) end end exit list no snmp enabled no trap <1-3> show running snmp enabled trap <1-3> description WORD version <1-2> A.B.C.D GSHDSL(config=snmp)#

Command	Comments	Format
clear	Clear terminal screen	clear
commit	Confirm pending configuration	commit
		community read-only (private public)
community	SNMP community	community read-write (private public)
		community trap (private public)
end	Close current menu and go down to top menu item	end
exit	Exit current mode/menu	exit
list	Print command list available for menu	list
no	Negate the configuration of element	no snmp enabled
		no trap <1-3>
show	Show configuration for SNMP	show running
snmp enabled	Enable SNMP agent	snmp enabled
trap	Configure SNMP trap	trap <1-3> description WORD version <1-2> A.B.C.D e.g. trap 1 description PRINT version 1 192.168.10.1

JIGISOL

3.3.2.9 System

Commands in this menu allow user to configure DNS & DHCP relay features.

<u>Command List</u> GSHDSL(config)# set system GSHDSL(config-sys)# list

> GSHDSL(config)# set system GSHDSL(config-sys)# list clear commit dhcp-relay (client!server) atm vc <1-32> dhcp-relay (client!server) lan dhcp-relay server ipv4 A.B.C.D dhcp-relay server ipv4 A.B.C.D dhs A.B.C.D A.B.C.D end exit list no dhcp-relay enabled show running GSHDSL(config-sys)# _

Command	Comments	Format
clear	Clear terminal screen	clear
commit	Confirm pending configuration	commit
		dhcp-relay (client server) atm vc <1- 32> e.g. dhcp-relay server atm vc 1
dhcp-relay	Configure DHCP relay	dhcp-relay (client server) lan
		dhcp-relay enabled
		dhcp-relay server ipv4 A.B.C.D
dns	Configure DNS	dns A.B.C.D A.B.C.D e.g. dns 192.168.5.30 192.168.5.42
end	Close current menu and go down to top menu item	end
exit	Exit current mode/menu	exit
list	Print command list available for menu	list
no	Negate the configuration of element	no dhcp-relay enabled
show	Show configuration System parameters	show running

3.3.2.10 TR069

TR-069 (shortform for Technical Report 069) is a DSL Forum (which was later renamed as Broadband Forum) technical specification entitled CPE WAN Management Protocol (CWMP). It defines an application layer protocol for remote management of end-user devices.

As a bidirectional SOAP/HTTP based protocol it provides the communication between customer-premises equipment (CPE) and Auto Configuration Servers (ACS). It includes both a safe auto configuration and the control of other CPE management functions within an integrated framework.

Using TR-069 the terminals can get in contact with the Auto Configuration Servers (ACS) and establish the configuration automatically. Accordingly other service functions can be provided. TR-069 is the current standard for activation of terminals in the range of DSL Products.

Functions supported by TR-069:

- ✤ Auto configuration and dynamic service activation
- · Initial CPE configuration
- · Remote CPE configuration
- Firmware management
- · Version management
- · Update management
- Status and performance control
- \cdot Logfile analysis and dynamic messages
- \cdot Diagnostics
- \cdot Connectivity and service control.

LAN Extender can access ACS automatically and send periodic information with the interval time configured by customer. ACS can get detailed information of LAN Extender such as the hardware version, the software version and so on. User may presently have access to most functions for 'get' & limited functions/parameter for 'set'.

Commands in this menu allow user to configure TR069 feature,

<u>Command List</u> GSHDSL(config)# set tr069 GSHDSL(config-tr069)# list

```
GSHDSL(config)# set tr069
GSHDSL(config=tr069)# list
    acs (username!password!url) WORD
    clear
    commit
    cpe (username!password) WORD
    end
    exit
    list
    no periodic=check enabled
    no tr069 enabled
    periodic=check enabled interval <1=86400>
    server WORD
    show running
    tr069 enabled
    GSHDSL(config=tr069)# _
```

Command	Comments	Format
		acs username WORD
0.00	Configure TD060 Access Control Server	e.g. acs username admin
acs	Configure 1 R009 Access Control Server	acs password WORD
		acs url WORD
clear	Clear terminal screen	clear
commit	Confirm pending configuration	commit
	Configure TROGO sustamon promise	cpe username WORD
cpe	equipment	e.g. cpe username admin
_		cpe password WORD
end	Close current menu and go down to top menu item	end
exit	Exit current mode/menu	exit
list	Print command list available for menu	list
no	Negate the configuration of element	no periodic-check enabled
		no tr069 enabled
periodic-	Configure periodic inform	periodic-check enabled interval <1-
check		86400>
server	Configure remote TR069 server IP	server A.B.C.D:X
	address:Port address	e.g. server 192.168.0.10:8082
show	Show configuration for TR069	show running
tr069	Enable TR069 management	tr069 enabled

3.3.2.11 VLAN

Commands in this menu allow user to configure VLAN feature available for LAN Extender.

<u>Command List</u> GSHDSL(config)# set vlan 1 GSHDSL(config-vlan)# list

list show running GSHDSL(config-vlan)#	description WORD end exit id <1-2000> ipv4 A.B.C.D/M		
	list show running GSHDSL(config-vlan)#		

Command	Comments	Format
clear	Clear terminal screen	clear
commit	Confirm pending configuration	commit
description	Description of this interface, text without	description WORD
description	space.x	e.g. description LANEXTENDER
end	Close current menu and go down to top	end
	menu item	
exit	Exit current mode/menu	exit
id	Configure VI AN ID	id <1-2000>
lu		e.g. id 10
inv/	Configuring DyA address	ipv4 A.B.C.D/M
IDV4	Configuring IF v4 address	e.g. ipv4 192.168.0.10/24
list	Print command list available for menu	list
show	Show configuration for VLAN	show running

4. Configuring with WEB

4.1 LOGIN

When connected for the first time, DG-IC422A has the following pre-configured host IP address 192.168.0.1/24 (IP Address: 192.168.0.1, Subnet mask: 255.255.255.0) To access the Web Utility for device.

Configure your PC to the same network segment as the DG-IC422A.

For example, you could set the PC to IP address: 192.168.0.10, subnet mask: 255.255.255.0

- Connect the PC to any of LAN port designated 1, 2, 3 or 4 on the Rear Panel.
- Open the any web browser on PC.
- Enter the IP address of the DG-IC422A in the address field of the browser as below, http://192.168.0.1 and then press <Enter> to connect.



* Type User name 'root' and correct Password [Default password 'admin'] and click 'OK'

Connect to 192.1	68.0.1 🛛 🛛 🔀
	G.
The server 192.168.0 username and passw Warning: This server password be sent in a without a secure con	D.1 at G.SHDSL configuration. requires a ord. is requesting that your username and an insecure manner (basic authentication nection).
User name:	🖸 root 💌
<u>P</u> assword:	•••••
	Remember my password
	OK Cancel

4.2 WEB MENUS

On each Web Menu, there are two areas to illustrate:

- ✤ Menu Item: On the left side of the Web Menu are the menu items.
- Main Menu: The remaining area of Web Menu provides fields for configuration, specific to each menu item, and displays prompt or Performance & Diagnostic data.

Image: Second	C G.SHDSL Configuration - Win	dows Internet Explorer		
Ele Edt Yew Favorks Iods Help Forortes G.SHDSL Configuration Status Other Solution Status Other Solution Status Other Solution Basic Configuration Basic Configuration Basic Configuration Vide I Name O SHDSL Lan Extender Firewall Model Name O SHDSL Lan Extender Firewall Immin DEVICE Uptime Immin DSL Uptime Immin DSL Uptime Device Uptime DSL Status Port 1 Handshaking[0x10], line rate 0 (Kbps) Main Menu	G 🗢 🖉 http://192.168.0.1	L	🖌 🐓 🔀 🔯 Live Search	(P -
Fevorite G_SHDSL Configuration Status G.Shdsl LAN Extender Hornie Model Name G SHDSL Lan Extender Basic Configuration Model Name G SHDSL Lan Extender Firewall System v.2.6-505-1.3-QA59 Device Uptime 1 min DSL System DSL Uptime * Admin Port 1 Main Item Main Menu	Eile Edit View Favorites Tools	Help		
G_SHDSL series 3182013 15:31:31 G_SHdSI LAN Exter Home * Status G_SHDSL Lan Extender * Gardin Basic Configuration * Configuration * * Advance Configuration Firewall 1 min Device Uptime 1 min * Status Device Uptime 1 min DSL Uptime Device Uptime * Advance Configuration * Not Synce Device Uptime Device Uptime * Advance Configuration * Not Synce Device Uptime Device Uptime Device Uptime * Advance Configuration * Not Synce Device Uptime Device Uptime Device Uptime Device Uptime DSL Status Port 1 Handshaking[0x10], line rate 0 (Klops) Main Item Main Menu	🔶 Favorites 🛛 🏀 G.SHDSL Configur	ration		
Main Item Device Information C.Studie LAN External Model Name 0.SHDSL Lan Extender Basic Configuration Model Name 0.SHDSL Lan Extender Firewall v.2.6:305:1.3:-QA59 Device Uptime 1 min DSL Status Port 1 Main Item Main Menu	G.SHDSL Series			
Device Information Gase: Configuration Basic Configuration Admin System Admin DSL Status DSL status Port 1 Main Item Main Item	31/8/2013 15:31:31			G.Shdsl LAN Extender
• Ouck Setup Model Name G SHDSL Lan Extender • Basic Configuration • 2.6-505-1.3-QA59 • Advance Configuration • 2.6-505-1.3-QA59 • Firewall 1 min • System 1 min • Admin DSL Uptime • Tools DSL status Port 1 Handshaking[0x10], line rate 0 (Kbps)	<u>Status</u>	Device Information		
Main Item Main Menu	Quick Set-up	Model Name	G.SHDSL Lan Extender	
 Advance Configuration Frewall System Admin Tools DSL status Port 1 Handshaking(0x10), line rate 0 (Kbps) Main Item Main Menu	Bridge Interface	Firmware version	v.2.6-505-1.3-QA59	
 System Admin Tools DSL Uptime Not Sync DSL status Port 1 Handshaking[0x10], line rate 0 (Kbps) Main Item Main Menu	Advance Configuration Eirewall	Device Uptime	1 min	
Admin Tools DSL status Port 1 Handshaking[0x10], line rate 0 (Kbps) Main Item Main Menu	* System	DSL Uptime	Not Sync	
Port 1 Handshaking[0x10], line rate 0 (Kbps) Main Item Main Menu	Admin Tools	DSL status		
Main Item Main Menu	10005	Port 1	Handshaking[0x10], line rate 0 (Kbps)	
	Main Item		Main Menu	



4.2.1 Status

Menu item STATUS allows user to view and verify the unit's identity information as shown below.

This menu item displays device information such as: model name, firmware version, device up time, DSL up time and DSL status.

Also Menu item STATUS further allows user to view status for DSL, ATM, LAN & Routing Table for the device.



Items	Field Items	Description	
	Model Name	Display the model name of the device.	
DEVICE	Firmware Version	Display the current software version of the device.	
INFORMATION	Device uptime	Display the total system running time of device.	
	DSL uptime	Display the total time of DSL sync between 2 LAN Extenders.	
DSL STATUS	DSL status of port1	Display the line status of DSL port.	



4.2.1.1 DSL

This menu item allows user to view DSL Performance and Statistics of the device. User can view information such as version, standard, service mode etc.



Items	Field Items	Description	
	Version	Display the version of DSL driver	
DSL LINE STATUS	Standard	Display the standard type of DSL configured for device.	
	Service mode	Display the Service mode of DSL configured for device.	
	Attenuation	Display the attenuation of DSL line.	
	Signal-to-Noise Ratio(SNR)	Display the SNR of DSL line.	
	Power back-off	Display power back-off status	
	Tx Power	Display the Tx Power of DSL	
	Dying Gasp	Display the dying gasp of remote device	
	DSL info	Display DSL performance statistics	
	Port 1 status	Display line status of DSL port	



4.2.1.2 ATM

This menu item allows user to view ATM channel performance and statistics for all ATM channels available. User can view information such as VC Index, VPI/VCI, Encapsulation, MTU etc.

If the VC set with the encapsulation type of PPPoE or PPPoA, then in the Status field it displays the status of PPP connection: 'Down', 'Connecting' or 'Connected'.

If the VC set with the encapsulation type RFC2684-bridge, RFC2684-routing, IPoA, then in the Status field it displays status of connection as 'Up', 'Down' or 'Connecting'.

C G.SHDSL Configuration - Wit	ndows Internet	Explorer								∎₽⊻
🔆 🗢 🖉 http://192.168.0.	1					~ >	× [Live Search		P •
Eile Edit View Favorites Tool	ls <u>H</u> elp									
🔶 Favorites 🏾 🌈 G. SHDSL Configu	uration									
G.SHDSL Series										
10/1/2013 21:35:48									G.St	ndsi LAN Extender
Home Status	ATM Chan	iels Status								
- DSL	Description	VC Index	VPI/VCI	Encapsulation	IP adddress	IPv6 adddress	MTU	Rx/Tx (bytes)	Status	
LAN	ATM	1	0/32	rfc2684-br	10.0.0.100		1500	38546215/8185347	Up	
- Routing Table Quick Set-up	<td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>									
Basic Configuration										
Bridge Interface Advance Configuration										
Firewall System										
I → Admin										
Tools										

Items	Field Items	Description
	Description	Display the description of ATM channel set by user
ATM CHANNEL STATUS	VC Index	Display the VC Index of ATM channel
	VPI/VCI	Display the VPI/VCI of ATM channel
	Encapsulation	Display the encapsulation of ATM channel
	IP address	Display the WAN IP of ATM channel
	IPv6 address	Display the WAN IPv6 address of ATM channel
	MTU	Display the MTU of ATM channel
	Rx/Tx(bytes)	Display the Rx/Tx of ATM channel
	Status	Display the status of ATM channel

JIGISOL

4.2.1.3 LAN

This menu item allows user to view LAN Performance and Status. User can view information such as IP address, MTU, MAC Address, Port Status etc.

C G.SHDSL Configuration - V	Vindows Internet Explorer		- 7 🛛
💽 🗢 🔊 http://192.168	.0.1/	🖌 🚧 🔀 🔯 Live Search	P -
Elle Edit View Favorites I	ools <u>H</u> elp		
G.SHDSL Con	figuration		
G.SHDSL Series	*		
10/1/2013 21:35:29			G.Shdsl LAN Extender
Status	Ethernet Status		
DSL	IP address	192.168.0.1	
LAN	IPv6 link	fe80::217:7cff:fe28:fb09/64	
Routing Table	IPv6 address		
Basic Configuration	MTU	1500	
Bridge Interface Advance Configuration	Rx/Tx packets	1269/994	
• Firewall	Rx/Tx bytes	183211/457019	
System Admin	Rx/Tx dropped	0/0	
• Tools	MAC address	00:17:7C:28:FB:09	
	Connectivity mode	Auto-negotiation	
	Port status	1:Up,100Mbps-Full; 2:Down; 3:Down; 4:Down	
	<		

Items	Field Items	Description	
	IP address	Display the IP address of LAN	
	IPv6 link	Display the IPv6 link status	
	IPv6 address	Display the IPv6 address	
	MTU	Display the MTU of LAN port	
	Rx/Tx packets	Display the Rx/Tx packets of LAN port	
LANSIAIUS	Rx/Tx bytes	Display the Rx/Tx bytes of LAN port	
	Rx/Tx dropped	Display the Rx/Tx dropped of LAN port	
	MAC address	Display the MAC address of LAN	
	Connectivity mode	Display the connectivity mode of LAN port	
	Port status	Display the port status of LAN port	



4.2.1.4 Routing Table

This menu item allows user to view all active route entries presently configured for LAN Extender.



Items Field Items		Description	
	Target IP	Display target IP address of route entry	
ROUTING TABLE	Device/Gateway	Display Device/Gateway of route entry	
	Source IP/Interface	Display Source IP/Interface of route entry	



4.2.2 Quick Setup

Using this quick setup menu, device can be quickly configured for basic parameters for ATM channels, WAN interface & PPP.



Items	Field Name	Description	Value
	Channel Description	Specify the description for ATM channel. The description must be one word, no space in between	Atm-Channel-1 to Atm- Channel-32 [User/System defined]
ATM CHANNEL PARAMETER WAN OPTION	Channel Index The numeric index of creation		0 – 32 [Read only]
	VPI	Virtual Path Identifier for ATM channel	0 - 8
	VCI	/CI Virtual Channel Identifier for ATM channel	
	Encapsulation	The encapsulation type is given by ISP. Select from the drop-down list.	RFC2684 - routed/ RFC2684 - bridged/ PPPoE/PPPoA/IPoA
	Local IP Address	The WAN local IP Address of router.	xxx.xxx.xxx.xxx User defined
	Subnet Mask	The WAN local IP subnet mask of router.	xxx.xxx.xxx.xxx User defined
	Peer IP Address	The WAN IP Address of paired LAN Extender/DSLAM.	xxx.xxx.xxx.xxx User defined
	NAT	Enable Network Address Translation (NAT) if you want all system behind the LAN sharing a single local IP address of this channel	Enable/Disable
	IP version	Set IP version to be used	IPv4 or IPv4/IPv6

PPP OPTION	Username	ISP login user name, given by ISP. It is set for the encapsulation type of PPPoE or PPPoA	User defined
	Password	ISP login password, given by ISP. It is set for the encapsulation type of PPPoE or PPPoA	User defined
	Default route	Enable this if you want all un- defined IP traffic to go outside via this channel. Enable default Route if you design your device as a gateway	Enable/Disable
	MTU	Maximum Transmit Unit in bytes over PPP link	64-1500

After configuring menu item, click the "Apply" button for configuration to be effective.
4.2.3 Basic Configuration

In menu Basic Configuration, the device can be configured in individual submenu: LAN setup, WAN setup and DSL.

4.2.3.1 LAN Configuration

In LAN configuration menu, LAN related configurations such as: IPv4 address, Subnet Mask, MTU, Connectivity Mode etc can be configured by user.

	0.1/	💉 🛃 🔀 Live Search	
<u>Eile E</u> dit <u>V</u> jew F <u>a</u> vorites <u>T</u> o	ools <u>H</u> elp		
👷 Favorites 🛛 🏀 G.SHDSL Confi	guration		
G.SHDSL Series			
0/1/2013 21:36:43			G.Shdsl LAN Extender
ome Status Quick Set-up		LAN Configuration	
Basic Configuration	Parameters		5
Configuration	• IPv4 Address	192.168.0.1	
- VLAN DHCP server	Subnet Mask	255.255.255.0	
• WAN	IPv6 Link address	fe80::217:7cff:fe28:fb09/64	
DSL Bridge Interface	● IPv6 Address		
Advance Configuration	IPv6 Prefix	64	
System	IPv6 Auto-configuration	Stateless 💌	
Admin	Start interface ID		
TOOIS	End interface ID		
	Leased time in hour	10	
	Connectivity Mode	Auto-negotiation 💌	
	• MTU	1500	

Item	Field Name	Description	Value
	IPv4 Address	IPv4 address format. This address is in the form of xxx.xxx.xxx	User defined [Default:192.168.0.1]
	Subnet Mask	Subnet mask IP address and divides the IP address into network address and host	User defined [Default: 255.255.255.0]
PARAMETER	IPv6 Link Address	A link-local address is an Internet Protocol address that is intended only for communications within the segment of a local network (a link) or a point-to-point connection that a host is connected to. Routers do not forward packets with link- local addresses	[Read only]
	IPv6 Address	IPv6 address format (xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxx xx)	[Optional feature]
	IPv6 Prefix	Decimal value that indicates the number of contiguous, higher-order bits of ipv6	Default: 64
	IPv6 Auto- configuration		Stateless/ Stateful / None Default: Stateless

JIGISOĽ

	Start Interface ID	Setup start interface ID (IPv6)	User defined
	End Interface ID	Setup end interface ID (IPv6)	User defined
	Leased Time in Hour	Setup leased time of IP pool address	User defined
_	Connectivity Mode	Physical connectivity mode of Ethernet interface	Auto-negotiation 100 Mbps-Full Duplex 100Mbps-Half Duplex 10Mbps-Full Duplex 10Mbps-Half Duplex [Default: Auto-negotiation]
	MTU	Maximum Transmission Unit	1280~2000 Default: 1500



4.2.3.2 VLAN Configuration

This menu item allows user to configure VLAN features available for LAN Extender.

🖉 G.SHDSL Configuration - Wi	ndows Internet Explorer					- 6 🛛
🚱 🗢 🙋 http://192.168.0	.1/		~	😽 🗙 🔯 Live Se	arch	P -
<u>Eile Edit V</u> iew F <u>a</u> vorites <u>T</u> oc	ols <u>H</u> elp					
🚖 Favorites 🏾 🏈 G. SHDSL Config	uration					
G.SHDSL Series						
10/1/2013 21:37:14						G.Shdsl LAN Extender
Status Quick Set-up		VL	AN Configurat	tion		
 Basic Configuration LAN 	Active VLAN interfaces					
Configuration	Description VLAN Index	Main interface	VLAN Id IP address	Subnet Status	Action	
DHCP server	Create New VLAN					
DSL						
Bridge Interface Advance Configuration						
• Firewall						
 System Admin 						
• Tools						

To create and configure VLAN Configuration click on 'Create New VLAN'

C G.SHDSL Configuration - Wi	indows Internet Explorer		- 7
🚱 🗢 🙋 http://192.168.0	.1/	💙 🗲 🔀 🖬 Eive Search	P -
<u>File Edit View Favorites Too</u>	ols <u>H</u> elp		
🙀 Favorites 🛛 🏀 G.SHDSL Config	uration		
G.SHDSL Series			
10/1/2013 21:43:31			G.Shdsl LAN Extender
Home * Status Quick Set-up		VLAN Configuration	
Basic Configuration	Parameters		
Configuration	Description	Vlan-1	
DHCP server	Index	1	
• WAN	VLAN ID	100	
DSL Bridge Interface	Local IP Address	0.0.0.0	
Advance Configuration	Subnet Mask	255.255.255.0	
Firewall System			
Admin	(Apply) Coppel		
* 100IS	Apply Cancer		

Item	Field Name	Description	Value
PARAMETER	Description	VLAN description	[User/System defined]
	Index	VLAN index	[Read only]
	VLAN ID	Configuration VLAN ID	1~2000 [Default: 100]
	Local IP Address	Configure local IP address in VLAN	xxx.xxx.xxx.xxx [Default: 0.0.0.0]
	Subnet Mask	Configure subnet mask in VLAN	xxx.xxx.xxx.xxx [Default: 255.255.255.0]



4.2.3.3 DHCP Server

Dynamic Host Configuration Protocol (DHCP) feature allows acquiring IP addresses automatically for any host connected to device.

C G.SHDSL Configuration - W	indows Internet Explorer		
💽 🗢 🙋 http://192.168.0	0.1/	🖌 🛃 🔀 Live Search	P -
Eile Edit View Favorites Io	ols <u>H</u> elp		
🙀 Favorites 🛛 🏾 🏾 🎉 G. SHDSL Config	guration		
G.SHDSL Series			
10/1/2013 21:43:11			G.Shdsl LAN Extender
+ Status Quick Set-up		DHCP Configuration	
Basic Configuration	Parameters		
Configuration	DHCP Server	⊙ Enable ○ Disable	
DHCP server	Start of IP Address	192.168.0.32	
• WAN	End of IP Address	192.168.0.254	
DSL Bridge Interface	Leased Time	864000	
Advance Configuration	ONS 1	8.8.8.8	
System	DNS 2	8.8.4.4	
Admin Tools	Apply Cancel		

Item	Field Name	Description	Value
PARAMETER	DHCP Server	Dynamic Host Configuration Protocol allows dynamically for any connected hosts on LAN (supporting DHCP clients) to acquire IP address.	Enable / Disable [Default: Enable]
	Start of IP Address	Starting IP Address in the range in which the IP address of hosts on the LAN will be assigned, in case of DHCP server is enabled.	xxx.xxx.xxx.xxx [User defined] e.g. 192.168.0.120
	End of IP Address	End IP Address in the range in which the IP address of hosts on the LAN will be assigned, in case of DHCP server is enabled.	xxx.xxx.xxx.xxx [User defined] e.g. 192.168.0.254
	Leased Time	Amount of time that a given IP address will be valid.	0-99999 [Default: 86400]
	DNS 1	Domain Name System - Primary DNS server IP address for resolving the symbolic IP address to numeric IP address.	xxx.xxx.xxx.xxx [User Defined]
	DNS 2	Domain Name System - Secondary DNS server IP address for resolving the symbolic IP address to numeric IP address.	xxx.xxx.xxx.xxx [User Defined]



4.2.3.4 WAN Configuration

Menu WAN Setup allows user to configure Virtual channels, WAN interface & PPP options. LAN Extender supports both Bridge and Router function at the same time if required.



To create and configure new WAN Channels click on 'Create New Channels'

C G.SHDSL Configuration - W	indows Internet Explorer		
🕒 🗢 🖉 http://192.168.0	D.1/	😽 🔀 🚺 🖬 Live Search	
Eile Edit View Favorites Io	ols Help		
👷 Favorites 🛛 🏀 G.SHDSL Config	guration		
G.SHDSL Series	-		
10/1/2013 21:29:32			G. Shdsl LAN Extender
+ Status Quick Set-up		WAN Configuration	<u></u>
 Basic Configuration LAN 	Virtual Channel parameter	s	
B WAN	Channel Description	Atm-Channel-1	
DSL	Channel Index	1	
Bridge Interface	• VPI	0	
Advance Configuration Eirewall	VCI	35	
• System	Encapsulation	PPPoE	
Admin Tools	Multiplex		
	QoS type	UBR V	
	Peak Cell Rate	5424	
	Sustained Cell Rate	0	
	Maximum Burst Size	0	
	WAN option		
	Local IP Address	0.0.0.0	
	Subnet Mask	255.255.255.0	
	Peer IP Address	0.0.0.0	
	• NAT	Enable	
	• IP version	IPv4	
	PPP option		
	• Username	NA	
	Password		
	Default route	Enable	
	• MTU	1492	
	Apply Cancel		*

JIGISOL

Items	Field Name	Description	Value
	Channel Description	Specify the description of interface. The description must be one word, no space in between	[User/System defined]
	Channel Index	The numeric index of creation	0 – 32 [Read Only]
	VPI	Virtual Path Identifier	0 - 8[Default:0]
	VCI	Virtual Channel Identifier	32 - 4096[Default:35]
VIRTUAL CHANNEL PARAMETER	Encapsulation	The encapsulation type is given by ISP. Select from the drop-down list.	RFC2684 – routed RFC2684 – bridged PPPoE PPPoA IPoA
	Multiplex	Header to identify the protocol that Virtual Circuit being carrying. LLC: Logical Link Control Multiplexing VCMUX : VC-based Multiplexing Select from the drop-down list.	LLC VCMUX
	QoS type	Quality of Services UBR: Unspecified Bit Rate. CBR: Constant Bit Rate. VBR: Variable Bit Rate. VBR-rt: Real-Time Variable Bit Rate.6000 Select from the drop-down list.	UBR CBR VBR VBR-rt
	Peak Cell Rate(PCR)	The maximum transmission rate.	0 – 9999 [Default:5424]
	Sustained Cell Rate(SCR)	The Transmission rate in burst traffic.	0 - 9999[Default:0]
	Maximum Burst Size(MBS)	Maximum number of transmission cell at the peak rate.	0 - 9999[Default:0]
	Local IP Address	The WAN local IP Address of router.	xxx.xxx.xxx.xxx [Default:0.0.0.0]
	Subnet Mask	The WAN local IP subnet mask of router.	xxx.xxx.xxx.xxx [Default: 255.255.255.0]
WAN	Peer IP Address	The WAN IP Address of paired LAN Extender/DSLAM.	xxx.xxx.xxx.xxx [Default: 0.0.0.0]
WAN OPTION	NAT	Enable Network Address Translation (NAT) if you want all system behind the LAN sharing a single local IP address of this channel	Enable/Disable
	IP version	Select IP version for ATM Channel	IPv4 or IPv4/IPv6
	Username	ISP login user name, given by ISP. It is set for the encapsulation type of PPPoE or PPPoA	User defined
PPP OPTION	Password	ISP login password, given by ISP. It is set for the encapsulation type of PPPoE or PPPoA	User defined

Default route	Enable this if you want all un- defined IP traffic to go outside via this channel. Enable default Route if you design your device as a gateway.	Enable/Disable
MTU	Maximum Transmit Unit in bytes over PPP link	64-1500 [Default:1492]

JIGISOĽ

4.2.3.5 DSL Configuration

This menu item allows user to configure DSL Interface of LAN Extender.

C G.SHDSL Configuration - W	/indows Internet Explorer		
🔆 🔊 🗢 🙋 http://192.168.	0.1/	💌 🛃 🔀 🔯 Live Search	P-
<u>Eile E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> o	ools <u>H</u> elp		
🔶 Favorites 🏾 🏈 G. SHDSL Confi	iguration		
G.SHDSL Series			
10/1/2013 21:46:03			G.Shdsl LAN Extender
Home Status Quick Set-up		DSL Configuration	
 Basic Configuration I AN 	Parameters		
• WAN	Service Type	RT/2wires	
Bridge Interface	Standard Type	annex-B 💌	
Advance Configuration	🛛 Data Mode	Adaptive 💌	
System	Data Min Rate	64 Kbps 💌	
Admin Tools	🔍 Data Max Rate	2304 Kbps 💌	
10013	SL Mode	atm-mode 💌	
	Apply Cancel		

Item	Field Name	Description	Value
PARAMETERS	Service Type	DSL operation service. System can be operated as RT/2wires, CO/2wire. Select from the drop-down list.	CO/2wires or RT/2wires [Default: RT/2wires]
	Standard Type	Physical standard mode. Select from the drop-down list. DSL Standard type must be same for both paired LAN Extenders.	annex-A(ANSI) annex-B(ETSI) annex-AB [Default: annex-B]
	Data Mode	Data transfer rate mode. DSL data mode must be same for both paired LAN Extenders.	Adaptive Fixed [Default: Adaptive]
	Data Min Rate	DSL data speed negotiation. The Data rate negotiation both min & max applied must be same for Fixed data mode	Adaptive: 64~5696 kbps Fixed: 64 ~ 5696 kbps [Default: 64 kbps]
	Data Max Rate	DSL data speed negotiation. The Data rate negotiation both min & max applied must be same for Fixed data mode	Adaptive: 64 ~5696 kbps Fixed: 64 ~ 5696 kbps [Default: 2304kbps]
	DSL Mode	Select DSL physical line mode DSL mode must be same for both paired LAN Extenders.	atm-mode efm-mode ptm-mode auto-mode [Default: atm-mode]



4.2.4 Bridge Virtual Interface Configuration

If you set RFC2684-bridged encapsulation in WAN configuration, you need to create BVI interface and add both LAN and ATM VC into that BVI, it means you create a Bridge for LAN and ATM channel.



To create and configure new BVI Channels click on 'Create New BVI'.

Note that User needs to configure LAN (Basic Configuration>>LAN>>Configuration) & ATM (Basic Configuration>>WAN>>ATM Channel) channel before configuring BVI.



JIGISOĽ

Item	Field Name	Description	Value
	Bridge Description	Specify the description of interface. The description must be one word, no space in between.	[User/System defined] Default: BVI-1
BRIDGE	Bridge Index	Bridge Index The numeric index of creation	
PARAMETERS	Dridge maex	The numeric index of creation	[Read only]
	STP	Spanning Tree Protocol	Enable / Disable
			[Default:Disable]
	Duides uniquity	ty Bridge priority of STP	0-65535
	Bridge priority		[Default: 32768]
	T 1 ID A 11	Dect - Line - framest	XXX.XXX.XXX.XXX
BRIDGE OPTION	Local IP Address	IP v4 audress format.	[Default: 0.0.0.0]
	Subnet Mask	Subnet mask IP address and divides the IP address into network address and host	xxx.xxx.xxx.xxx [Default: 255.255.255.0]

The details of the items are described in the table below:

After configuring menu item, click the "Apply" button for configuration to be effective.

On creating new BVI, click on Bridge Index number (e.g. Bridge Index '1')

G.SHDSL Configuration - Micro	osoft Internet Explorer					
<u>Eile E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> ools	Help					
🚱 Back 🝷 🚫 - 💌 📓 (🏠 🔎 Search 📩 Favorib	es 🚱 🔗 🎍 🛛	2 43			
Address 🕢 http://192.168.0.1/						🔽 🛃 Go 🛛 Links 🂙
G.SHDSL Series						
10/1/2013 21:29:37						G.Shdsl LAN Extender
Home * Status Quick Set-up		Bridge Virt	ual Interface C	Configurat	ion	
Basic Configuration Bridge Interface	Active Bridge Virtual	Interface				
* Advance Configuration	Description	Bridge Index	IP address	Members	Action	
	BVI-1	1 î	0.0.0		Delete	
🗄 Admin	Create New BVI					
± lools						
🕘 Done						🥩 Internet



Click on lan(+) & atm Vc1(+) (On 'Available member to add to bridge' item) separately, to add the interfaces to BVI.

G.SHDSL Configuration - Micro	osoft Internet Explorer		🗖 🗗 🔀
<u>File Edit View Favorites Tools</u>	Help		A.
🕒 Back 🔹 🕥 🕤 💌 🛃 🔮	🏠 🔎 Search 🤺 Favorites 🧔	B- 😓 🖂 🚜	
Address 🖉 http://192.168.0.1/			🖌 🎦 Go 🛛 Links 🎽
G.SHDSL Series			
10/1/2013 21:30:12			G.Shdsl LAN Extender
Home Status Quick Set-up	Bri	dge Virtual Interface Configuration	
 Basic Configuration Bridge Interface 	Bridge Parameters		
+ Advance Configuration	Bridge Description	BVI-1	
E System	👻 Bridge Index	1	
Admin Tools	• STP	Enable	
- 100IS	Bridge priority	32768	
	Bridge Option		
	🐱 Local IP Address	0.0.0.0	
	Subnet Mask	255.255.255.0	
	Current member in bridge		
	Available member to add to bridge	lan(♣),atmVc1(♣),	
	Apply Cancel		
🙆 Done			🥥 Internet

If Interfaces have been successfully added to BVI, they will be shown in item 'Current member in bridge'

G.SHDSL Configuration - Micr	rosoft Internet Explorer		- 6 🛛
<u>File E</u> dit <u>Y</u> iew F <u>a</u> vorites <u>T</u> ools	Help		
🚱 Back 🔹 🕥 🐇 📓 1	🏠 🔎 Search 🤸 Favorites) 🗟 • 💺 🖂 🥸	
Address 11 http://192.168.0.1/			🖌 🎦 Go 🛛 Links 🂙
G.SHDSL Series			
10/1/2013 21:35:57			G.Shdsl LAN Extender
Home * Status Quick Set-up	В	ridge Virtual Interface Configuration	
 Basic Configuration Bridge Interface 	Bridge Parameters		
Advance Configuration	Bridge Description	BVI-1	
 ■ Firewall ■ System 	🧧 Bridge Index	1	
Admin Table	STP STP	Enable	
I Tools	👻 Bridge priority	32768	
	Bridge Option		
	Local IP Address	192.168.0.1	
	🧧 Subnet Mask	255.255.255.0	
	Current member in bridge	atmVc1([¬]) lan([¬]).	
	Available member to add to bridge	•	
	Apply Cancel		
٤			Internet

Click on lan(-) & atm Vc1(-) (On 'Current member in bridge' item) separately, incase interfaces need to be removed from BVI.

4.2.5 Advance Configuration

4.2.5.1Routing

This menu item allows user to configure static or dynamic routing for LAN Extender.

4.2.5.1.1 Static Route configuration



To create and configure new static route click on 'Create New Static Route'



Item	Field Name	Description	Value
STATIC ROUTE Sub	Route Index	The numeric index of creation	1-49 [Read only]
	Network	The destination IPv4 network address for which route needs to be added	xxx.xxx.xxx.xxx [Default:0.0.0.0]
	Subnet Mask	The Subnet Mask for the network configured in the static routing table	xxx.xxx.xxx [Default:255.255.255.0]
	Gateway	The IPv4 address of WAN interface of paired LAN Extender / Gateway	xxx.xxx.xxx.xxx [Default:0.0.0.0]



4.2.5.1.2 Dynamic Route Configuration >> RIP Configuration

C G.SHDSL Configuration - W	indows Internet Explorer			
💽 🗢 🙋 http://192.168.0	.1/		🖌 🗲 🗙 🔯 Live Search	[P]
<u>Eile E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> or	ols Help			
🔶 Favorites 🏉 🏉 G.SHDSL Config	juration			
G.SHDSL Series				
10/1/2013 21:49:02				G.Shdsi LAN Extender
Home Status Quick Set-up		RIP Configu	ration	
Basic Configuration Bridge Interface	Parameters			
Advance Configuration	RIP version	version-2 👻		
Static	• RIP	🗌 Enable		
Dynamic <u>RIP</u>	Apply Cancel			
DHCP Relay Firewall				
System				
• Tools				

Item	Field Name	Description	Value
	RIP version	RIP version determines the format and broadcasting method of any RIP transmissions by the device	version-1 version-2 [Default: version-2]
PARAMETERS	RIP	With Dynamic Routing, you can enable device to automatically adjust to physical changes in the network's topology.	Enable/Disable [Default: Disable]

4.2.5.2 DHCP Relay Configuration

🖉 G.SHDSL Configuration - Wi	ndows Internet Explorer		
🚱 🗢 🙋 http://192.168.0	.1/	🖌 🎸 🗶 🔯 Live Search	
<u>Eile E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> oc	ols <u>H</u> elp		
🙀 Favorites 🏼 🎉 G.SHDSL Config	uration		
G.SHDSL Series			
10/1/2013 21:49:40			G.Shdsl LAN Extender
Home • Status Quick Set-up		DHCP RELAY Configuration	
Basic Configuration Bridge Interface	Parameters		
Advance Configuration	DHCP relay	Enable	
DHCP Relay	Server interface	none 💌	
Firewall System	• Relay server IP Address	192.168.0.2	
• Admin	Client interface	none 💌	
• Tools	Status	DHCP relay is not running	
	Apply Cancel		

Item	Field Name	Description	Value
PARAMETERS	DHCP relay	Enable / Disable DHCP relay feature	Enable / Disable [Default: Disable]
	Server interface	The interface that the remote DHCP server is connected	None LAN atmVc1 [Default:None]
	Relay server IP Address	IP address of remote DHCP server that Router will forward client request.	xxx.xxx.xxx [Default: 192.168.0.2]
	Client interface	The interface that listens to DHCP client requests	None LAN atmVc1 [Default: None]
	Status	Status of DHCP relay	Running/Not running [Default: Not running]



4.2.6 Firewall

Firewall menu item allows user to configure Port Forwarding, VPN Passthrough & Prevent attack features.

4.2.6.1 Port Forwarding



To create and configure new Port forward settings, click on 'Create New Port Forward'

🖉 G.SHDSL Configuration - Wi	indows Internet Explorer			- 6 🛛
🚱 🗢 🔊 http://192.168.0	.1/		💉 🍫 🔀 Live Search	P -
Eile Edit View Favorites Too	ols Help			
🔆 Favorites 🏾 🏀 G.SHDSL Config	uration			
G.SHDSL Series				
10/1/2013 21:50:33				G.Shdsi LAN Extender
+ Status Quick Set-up		Port Forwa	arding Configuration	
 Basic Configuration Bridge Interface 	Port forwarding parameters	3		
Advance Configuration	Description	pFw-1		
Port Forwarding	Index	1		
VPN Passthrough	Protocol	both 💌		
System	Starting port	0		
Admin Taolo	Ending port	0		
10015	Local server IP address	0.0.0.0		
	Local server port	0		
	Wan Channel	×		
	(Apply) Cancel			

JIGISOĽ

Item	Field Name	Description	Value
	Description	The designated port forwarding alias	User defined [Default: pFW-1]
	Index	Designated port forwarding sequence	[Read only]
	Protocol	Designated port forwarding the use of agreement	TCP UDP Both [Default: both]
PORT	Starting port	The start of the designated port forwarding number	1-65535 [User defined]
FORWARDING PARAMETERS	Ending port	The end of the designated port forwarding number	1-65535 [User defined]
	Local server IP address	Designated local server IP address	xxx.xxx.xxx.xxx [Default: 0.0.0.0]
	Local server port	Designated local server port number	1-65535 [User defined]
	WAN channel	Designated port forwarding WAN channel. Select option from drop down list.	[User defined]

4.2.6.2 VPN Passthrough

🖉 G.SHDSL Configuration - Wi	ndows Internet Explorer		- 7 🛛
😋 🗢 🖉 http://192.168.0	.1/	💌 🏍 🔯 Live Se	arch
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> oc	ils <u>H</u> elp		
🔆 Favorites 🏼 🏈 G. SHDSL Config	uration		
G.SHDSL Series			
10/1/2013 21:50:52			G.Shdsl LAN Extender
Home • Status Quick Set-up		VPN Passthrough Configuration	
Basic Configuration Bridge Interface	Parameters		
Advance Configuration Firewall	• IPSec	Enable	
Port Forwarding	• L2TP	Enable	
Prevent attack	PPTP	L Enable	
 System Admin Tools 	Apply Cancel		

Item	Field Name	Description	Value
PARAMETERS	IPSec	Enable / Disable use of internet protocol security	Enable / Disable
	L2TP	Enable / Disable use of Layer 2 Tunneling Protocol	Enable / Disable
	РРТР	Enable / Disable use of point to point tunneling protocol	Enable / Disable
	Wan channel	Designated WAN channel for VPN	[Lean defined]
		Select option from drop down list.	

4.2.6.3 Attack Prevention

C G.SHDSL Configuration - Wi	indows Internet Explorer		- 7 🛛
😋 🗢 🖉 http://192.168.0	.1/	💌 😝 🗙 📴 Live Search	
Eile Edit View Favorites Too	ols <u>H</u> elp		
🔆 Favorites 🛛 🄏 G.SHDSL Config	juration		
G.SHDSL Series			
10/1/2013 21:51:09			G.Shdsi LAN Extender
Status		Attack Prevention	
Basic Configuration			
Bridge Interface	Parameters		
Firewall	Anti-Synchood	Linable	
Port Forwarding VPN Passtbrough	Anti-Ping of Death Daniel of Service	Enable	
Prevent attack	Anti-Spoof		
System Admin			
Tools	Apply Cancel		

Item	Field Name	Description	Value
PARAMETERS	Anti-Syncflood	Prevent anti-syncflood	Enable / Disable
	Anti-Ping of Death	Prevent anti-ping of death	Enable / Disable
	Denial Service	Prevent denial of service attack	Enable / Disable
	Anti-Spoof	Prevent anti-spoof	Enable / Disable



4.2.7 System

This menu item allows user to configure System settings, DNS Configuration along with management features TR069 & SNMP

4.2.7.1 System settings



Item	Field Name	Description	Value
SYSTEMS	Hostname	Specify a hostname for LAN Extender	[User defined] [Default: GSHDSL]

4.2.7.2 DNS Configuration >> System DNS

C G.SHDSL Configuration - W	indows Internet Explorer			
💽 🗢 🙋 http://192.168.0	0.1/		💽 🍫 🗙 🔯 Live Search	
<u>F</u> ile <u>E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> o	ols <u>H</u> elp			
Favorites 🖉 G.SHDSL Config	guration			
G.SHDSL Series				
10/1/2013 21:52:00				G.Shdsl LAN Extender
Home • Status Quick Set-up		System DNS	Settings	
Basic Configuration Bridge Interface	DNS Settings			
Advance Configuration	DNS 1	8.8.8.8		
E System	DNS 2	8.8.4.4		
Configuration DNS Configuration System DNS	Apply Cancel			
Management				
Tools				

Item	Field Name	Description	Value	
DNS SETTINGS	DNS1	Specify the remote Domain Name	xxx.xxx.xxx [Default: 8.8.8.8]	
	DNS2	Server address	xxx.xxx.xxx [Default: 8.8.4.4]	

4.2.7.3 Management

4.2.7.3.1 TR069

TR-069 (shortform for Technical Report 069) is a DSL Forum (which was later renamed as Broadband Forum) technical specification entitled CPE WAN Management Protocol (CWMP). It defines an application layer protocol for remote management of end-user devices.

As a bidirectional SOAP/HTTP based protocol it provides the communication between customer-premises equipment (CPE) and Auto Configuration Servers (ACS). It includes both a safe auto configuration and the control of other CPE management functions within an integrated framework.

Using TR-069 the terminals can get in contact with the Auto Configuration Servers (ACS) and establish the configuration automatically. Accordingly other service functions can be provided. TR-069 is the current standard for activation of terminals in the range of DSL Products.

Functions supported by TR-069:

- ✤ Auto configuration and dynamic service activation
- \cdot Initial CPE configuration
- \cdot Remote CPE configuration
- Firmware management
- · Version management
- · Update management
- Status and performance control
- · Logfile analysis and dynamic messages
- · Diagnostics
- \cdot Connectivity and service control.

LAN Extender can access ACS automatically and send periodic information with the interval time configured by customer. ACS can get detailed information of LAN Extender such as the hardware version, the software version and so on. User may presently have access to most functions for 'get' & limited functions/parameter for 'set'.





Item	Field Name	Description	Value
	TR069 service	Enable/Disable TR069 functionality	Enable/Disable [Default:Disable]
PARAM- ETERS	ACS Username	Username used to authenticate the CPE when making a connection to the ACS using the CPE WAN Management Protocol.	[User Defined]
	ACS Password	Password used to authenticate the CPE when making a connection to the ACS using the CPE WAN Management Protocol.	[User Defined]
	ACS Server	URL, for the CPE to connect to the ACS using the CPE WAN Management Protocol. The parameter must be in the form of a valid HTTP or HTTPS URL.	e.g.'http://192.168.1.57:8080/ dps/TR069'sss [User Defined]
	CPE Username	Username used to authenticate an ACS making a Connection Request to the CPE.	[User Defined]
	CPE Password	CPE password to be authenticated	[User Defined]
	WAN Connection	The parameter must be in the form IP: PORT. The IP address and the PORT are used for the connection between CPE and ACS. ACS can access to CPE using the CPE WAN Management. Protocol through the	xxx.xxx.xxx.xxx:y e.g. '219.30.66.140:8082'

	IP and the PORT. The IP must be an external IP.	
Periodic Inform	Enable / Disable if CPE must periodically send CPE information to the ACS using the Inform method call.	Disable / Enable [Default: Disable]
Interval	The duration in seconds of the interval for which the CPE must attempt to connect with the ACS if Periodic Inform is enabled	1 – 86400s

After configuring, click the "Apply" button to save the configuration



4.2.7.3.2 SNMP & TRAP

Simple Network Management Protocol (SNMP) is an Internet-standard protocol for managing devices on IP networks.

C G.SHDSL Configuration - V	Vindows Internet Explorer		
💽 🗢 🙋 http://192.168	.0.1/	🖌 🛃 🔀 Live Search	P -
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u>	ools <u>H</u> elp		
🚖 Favorites 🛛 🄏 G.SHDSL Conf	iguration		
Configuration Favorites Favori	SNMP Parameters iguration SNMP Read Only Community Read Only Community Read Write Community Trap Community Apply Cancel	SNMP Configuration	G. Shdsi LAN Extender

Item	Field Name	Description	Value
SNMP PARAMETERS	SNMP	Enable/Disable SNMP functionality	Enable / Disable
	Read Only Community	Read Only community	Public / Private
	Read Write Community	Read and Write community	Public / Private
	Trap Community	Trap community	Public / Private

To configure the SNMP, go through the following steps.

Click the button to **Enable** or **Disable** SNMP management.

Community

Read-Only Community:

 Specify the community name of external SNMP Managers allowed with access level of "Read" to the unit's MIB.

Read-Write Community:

 Specify the community name of external SNMP Managers allowed with access level of "Read & write" to the unit's MIB.



SNMP Trap

🖉 G. SHDSL Configuration - Wi	ndows Internet Explorer						- 6 🛛
🚱 🗢 🙋 http://192.168.0.	.1/		×	47 🗙	Live Sea	rch	P -
File Edit View Favorites Too	ils Help						
🔆 Favorites 🏼 🏈 G.SHDSL Config	uration						
G.SHDSL Series							
10/1/2013 21:52:36							G.Shdsl LAN Extender
Home • Status Quick Set-up			TRAP Configurat	ion			
Basic Configuration	Current TRAP configura	tion					
Advance Configuration	Description	TRAP Index	Version		IP address	Action	
Firewall System	Create New TRAP						
Configuration							
Management							
SNMP							
SNMP Trap Admin							
 Tools 							

To create and configure new TRAP, click on 'Create New TRAP'

C G.SHDSL Configuration - W	'indows Internet Explorer			
(3) - E http://192.168.	0.1/		💉 😽 🗙 🔯 Live Search	P -
<u>File Edit View Favorites T</u> i	ools <u>H</u> elp			
🙀 Favorites 🏾 🏀 G.SHDSL Conf	iguration			
G.SHDSL Series				
10/1/2013 21:52:54	-			G. Shdsi LAN Extender
Home * Status Quick Set-up		TRAP Cor	nfiguration	
Basic Configuration Bridge Interface	Parameters			
Advance Configuration Eirowell	Description	Trap-1		
E System	• Index	1		
Configuration	TRAP version	version-1 💌		
 DNS Configuration Management TR669 SNMP SNMP Trap Admin Tools 	Apply Cancel			

Item	Field Name	Description	Value
PARAMETERS	Description	Set a description name	[User defined]
	Index	Designated sequence	[Read-only]



TRAP version	Select TRAP version	Version-1 Version-2 [Default: Version-1]
IPv4 remote Trap	Set remote trap server IP	xxx.xxx.xxx.xxx
server	address	[User defined]



4.2.8 Admin

Admin menu item allows user to set unit to factory default, saving device parameters, Rebooting device & upgrading firmware for unit.

4.2.8.1 Factory Default

1. To set LAN extender to factory default, click on 'Factory Default' item in Admin menu.



2. Click on 'OK' to confirm Factory default or 'Cancel' to abort command.





4.2.8.2 Save Configuration

1. To save all parameter set by user, click on 'Save Configuration' item in Admin menu.

C G.SHDSL Configuration - W	/indows Internet Explorer		
🕞 🗢 🖻 http://192.168.4	0.1/	😪 🐓 🔀 🔯 Live Search	P -
<u>File Edit View Favorites I</u> d	ools <u>H</u> elp		
👷 Favorites 🛛 🏾 🏀 G.SHDSL Confi	iguration		
G.SHDSL Series	· •		
10/1/2013 21:55:30			G.Shdsl LAN Extender
• Status	Device Information		
Quick Set-up	Model Name	G.SHDSL Lan Extender	
Bridge Interface	Firmware version	v.2.6-505-1.3-QA59	
Advance Configuration Eirewall	Device Uptime	25 mi	
💌 System	DSL Uptime	Not Sync	
 Admin Factory Default 	DSL status		
Save Configuration	Port 1	Handshaking[0x10], line rate 0 (Kbps)	
Upgrade Firmware			
• Tools			

2. Click on 'OK' to save or 'Cancel' to abort command.

🖉 G.SHDSL Configuration - W	'indows Internet Explore	7		
💽 🗢 🔊 http://192.168.	0.1/		💌 😽 🗙 🗖 Live Sea	irch 🖉 🔹
File Edit View Favorites To	ools Help			
🔶 Favorites 🏾 🏀 G.SHDSL Confi	guration			
G.SHDSL Series				
10/1/2013 21:55:47				G.Shdsl LAN Extender
Home Status Quick Set-up Braidge Interface Advance Configuration Firewall System Admin Factory Default Save Configuration Reboot Device Upgrade Firmware Tools	Device Information Model Name Firmware version Device Uptime DSL Uptime DSL status Port 1	Message from webpage	C SHDSL Lan Extender v.2.6-505-1.3-QA59 25 mi Not Sync Kbp4) Cancel	



4.2.8.3 Reboot

1. To reboot LAN extender, click on 'Reboot' item in Admin menu.



2. Click on 'OK' to reboot or 'Cancel' to abort command.

G.SHDSL Configuration - V	findows Internet Explorer		- 8 🗙
🔆 🗢 🖉 http://192.168	0.1/	💌 🐓 🔀 🔯 Live Search	P -
File Edit View Favorites T	ools Help		
🙀 Favorites 🛛 🌈 G.SHDSL Conf	iguration		
G.SHDSL Series			
10/1/2013 21:56:27			G. Shdsi LAN Extender
+ Status	Device Information		
Quick Set-up	Model Name	G.SHDSL Lan Extender	
 Basic Configuration Bridge Interface 	Firmware version	v.2.6-505-1.3-QA59	
Advance Configuration Firewall	Device Uptime	26 mi	
🖲 System	DSL Uptime	Not Sync	
Save Configuration Save Configuration Reboot Device Upgrade Firmware Tools	DSL status Port I	Message from webpage Do you want to reboot the device CK Cancel	



4.2.8.4 Firmware Upgrade

To upgrade firmware of LAN Extender, go to 'Upgrade Firmware' item in Admin menu. Browse to location where firmware file is stored & click 'Apply' for firmware update to begin. Kindly note that upgrading the unit with the wrong file would render LAN Extender faulty.





4.2.9 Tools

4.2.9.1 Ping

To ping remote device, input IP address of remote device & click 'Apply'

C G.SHDSL Configuration - \	Windows Internet Explorer			
🕒 🕞 🗢 🙋 http://192.168	3.0.1/	✓	🗲 🗙 📴 Live Search	2
Eile Edit View Favorites]	[ools Help			
🔶 Favorites 🛛 🔏 G. SHDSL Con	figuration			
	- paration			
G.SHDSL				
Series				
10/1/2013 21:20:57	-			G.Shdsl LAN Extender
iome • Status		Ping Utility		
Quick Set-up		r ng cuity		
 Basic Configuration 	Ping to Host			
Bridge Interface	Duranta Haut	102 169 0 16		
Firewall	Remote riost	192.100.0.10		
System	Apply Cancel			
Admin				
Ping				
, mg				

If remote device is connected, response is 'IP address is alive!' e.g. '192.168.0.16 is alive!'.





If remote device in not connected, response is 'No response from IP address' e.g. 'No response from 192.168.0.10'



5. Typical Application

This chapter explains the typical applications of this device.

5.1 BRIDGE MODE

This typical application is used to extend the corporate LAN network from the central site to the remote site. User has to configure one unit as "CO" and second unit as "RT". The device is configured in bridge mode since the central and remote sites are in same LAN IP class. Please follow the settings as shown below while configuring both the devices.



- Central Site LAN IP Range: 192.168.0.1 /24
- ✤ Remote Site LAN IP Range: 192.168.0.2 /24
- ♦ Note that IP addresses are in the same IP class in central site & remote site

CONFIGURATION THROUGH WEBPAGE

Refer the table below to configure the DG-IC422A devices for above application using Webpage:-



Additional settings may have to be made on device depending on user application to make the setup work.

User is advised to put LAN Extender in Factory Default prior to configuring the Unit.

Menu item	DG-IC422A (CO)	DG-IC422A (RT)	
Basic Configuration>>LAN>> Configuration	Parameters IPv4 Address: 192.168.0.1 Subnet Mask: 255.255.255.0 Click 'Apply'	Parameters IPv4 Address: 192.168.0.2 Subnet Mask: 255.255.255.0 Click 'Apply'	

DG-IC422A User Manual

JIGISOL

Basic Configuration>>LAN>> DHCP Server	Parameters DHCP Server: Disabled Click 'Apply'	Parameters DHCP Server: Disabled Click 'Apply'	
Basic Configuration>>WAN>> ATM Channel>> Create new channel	<u>Virtual Channel Parameters</u> VPI: 0 VCI: 32 Encapsulation: RFC2684-bridged Click 'Apply'	<u>Virtual Channel Parameters</u> VPI: 0 VCI: 32 Encapsulation: RFC2684-bridged Click 'Apply'	
Basic Configuration>> Bridge Interface>> Create new BVI	Bridge Parameters Bridge Description: BVI-1 Bridge priority: 32768 Click 'Apply' Active Bridge Virtual Interface Click '1' in Bridge Index Click 'lan(+)' and 'atmVc1(+)' in section. Available member to add to bridge Ian(+). atmVc1(+). Once LAN & ATM channel have been added to bridge they will be	Bridge Parameters Bridge Description: BVI-1 Bridge priority: 32768 Click 'Apply' Active Bridge Virtual Interface Click '1' in Bridge Index Click 'lan(+)' and 'atmVc1(+)' in section. Available member to add to bridge Ian(+), atmVc1(+), bridge Once LAN & ATM channel have been added to bridge they will be	
	Current member in bridge	Current member in bridge	
Basic Configuration>>DSL	Parameter Service Type: CO/2wires Standard Type: annex-A Data Mode: Adaptive Click 'Apply'	Parameter Service Type: RT/2wires Standard Type: annex-A Data Mode: Adaptive Click 'Apply'	
	NB: If user chooses Data Mode: Fixed - Data Rate Min & Max must be same.	NB: If user chooses Data Mode: Fixed - Data Rate Min & Max must be same.	
Admin>>Save Configuration	Save Configuration	Save Configuration	
CONFIGURATION THROUGH CONSOLE

Refer the table below to configure the DG-IC422A devices for above application using Console:-

Menu	DG-IC422A (CO)	DG-IC422A (RT)
Login	GSHDSL> login root Password: admin GSHDSL#	GSHDSL> login root Password: admin GSHDSL#
Factory Default	GSHDSL# load default Do you want to load the factory configuration and system will reboot? [yes no cancel]: yes	GSHDSL# load default Do you want to load the factory configuration and system will reboot? [yes no cancel]: yes
Configure Ethernet	GSHDSL# config GSHDSL(config)# set ether GSHDSL(config-ether)# ipv4 192.168.0.1/24 GSHDSL(config-ether)# no dhcp-server enabled GSHDSL(config-ether)# commit -Commit successfully will appear on screen GSHDSL(config-ether)# ex GSHDSL(config)#	GSHDSL# config GSHDSL(config)# set ether GSHDSL(config-ether)# ipv4 192.168.0.2/24 GSHDSL(config-ether)# no dhcp-server enabled GSHDSL(config-ether)# commit -Commit successfully will appear on screen GSHDSL(config-ether)# ex GSHDSL(config)#
Configure ATM	GSHDSL(config)# set atm vc 1 GSHDSL(config-atm)# encapsulation rfc2684-br GSHDSL(config-atm)# vpi 0 vci 32 GSHDSL(config-atm)# commit -Commit successfully will appear on screen GSHDSL(config-atm)# ex	GSHDSL(config)# set atm vc 1 GSHDSL(config-atm)#encapsulation rfc2684-br GSHDSL(config-atm)# vpi 0 vci 32 GSHDSL(config-atm)# commit -Commit successfully will appear on screen GSHDSL(config-atm)# ex
Configure BVI	GSHDSL(config)# set bvi 1 GSHDSL(config-bvi)# add member atm vc 1 GSHDSL(config-bvi)# add member lan GSHDSL(config-bvi)# commit -Commit successfully will appear on screen GSHDSL(config-bvi)# ex GSHDSL(config)#	GSHDSL(config)# set bvi 1 GSHDSL(config-bvi)# add member atm vc 1 GSHDSL(config-bvi)# add member lan GSHDSL(config-bvi)# commit -Commit successfully will appear on screen GSHDSL(config-bvi)# ex GSHDSL(config)#
Configure DSL	GSHDSL(config)# set dsl GSHDSL(config-dsl)# data-mode adaptive GSHDSL(config-dsl)# data-rate min 1 max 89 GSHDSL(config-dsl)# service cot-2wires GSHDSL(config-dsl)# standard annex-A GSHDSL(config-dsl)# commit -Commit successfully will appear on screen GSHDSL(config-dsl)# ex GSHDSL(config)#	GSHDSL(config)# set dsl GSHDSL(config-dsl)#data-mode adaptive GSHDSL(config-dsl)# data-rate min 1 max 89 GSHDSL(config-dsl)# service rt-2wires GSHDSL(config-dsl)# standard annex-A GSHDSL(config-dsl)# commit -Commit successfully will appear on screen GSHDSL(config-dsl)# ex GSHDSL(config)#
Save	GSHDSL(config)# ex GSHDSL# save Do you want to save the configuration? [yes no cancel]: yes GSHDSL#	GSHDSL(config)# ex GSHDSL# save Do you want to save the configuration? [yes no cancel]: yes GSHDSL#

5.2 ROUTING MODE

This typical application is used to connect the corporate LAN network from the central site to the LAN network at the remote site. User has to configure one unit as "CO" and second unit as "RT". The device is configured in routing mode since the central and remote sites are in different LAN IP class. Please follow the settings as shown below while configuring both the devices.



- Central Site LAN IP Range: 192.168.1.1/24
- Remote Site LAN IP Range: 192.168.2.1/24
- ✤ Note that IP addresses are in the different IP class in central site & remote site

CONFIGURATION THROUGH WEBPAGE

Refer the table below to configure the DG-IC422A devices for above application using Webpage:-



Additional settings may have to be made on device depending on user application to make the setup work.

User is advised to put LAN Extender in Factory Default prior to configuring the Unit.

Menu	DG-IC422A (CO)	DG-IC422A (RT)
Basic Configuration>>LAN>> Configuration	Parameters IPv4 Address: 192.168.1.1 Subnet Mask: 255.255.255.0 Click 'Apply'	Parameters IPv4 Address: 192.168.2.1 Subnet Mask: 255.255.255.0 Click 'Apply'
Basic Configuration>>LAN>> DHCP Server	<u>Parameters</u> DHCP Server: Disabled Click 'Apply'	<u>Parameters</u> DHCP Server: Disabled Click 'Apply'



	Virtual Channel Parameters VPI: 0 VCI: 32 Encapsulation: RFC2684-routed	Virtual Channel Parameters VPI: 0 VCI: 32 Encapsulation: RFC2684-routed
Basic Configuration>>WAN>> ATM Channel>> Create new channel	<u>WAN option</u> Local IP Address: 1.1.1.1 Subnet mask: 255.255.255.0 Peer IP Address: 1.1.1.2 NAT: Enable Click 'Apply'	<u>WAN option</u> Local IP Address: 1.1.1.2 Subnet mask: 255.255.255.0 Peer IP Address: 1.1.1.1 NAT: Enable Click 'Apply'
Basic Configuration>>DSL	<u>Parameters</u> Service Type: CO/2wires Standard Type: annex-A Data Mode: Adaptive Click 'Apply'	Parameters Service Type: RT/2wires Standard Type: annex-A Data Mode: Adaptive Click 'Apply'
	NOTE: If user chooses Data Mode: Fixed - Data Rate Min & Max must be same.	NOTE: If user chooses Data Mode: Fixed - Data Rate Min & Max must be same.
Advance configuration>> Routing>>static>> Create new static route	Static Route Network: 192.168.2.0 Subnet Mask: 255.255.255.0 Gateway: 1.1.1.2 Click 'Apply'	Static Route Network: 192.168.1.0 Subnet Mask: 255.255.255.0 Gateway: 1.1.1.1 Click 'Apply'
Admin>>Save Configuration	Save Configuration	Save Configuration

CONFIGURATION THROUGH CONSOLE

Refer the table below to configure the DG-IC422A devices for above application using Console:-

Menu	DG-IC422A (CO)	DG-IC422A (RT)
Login	GSHDSL> login root Password: admin GSHDSL#	GSHDSL> login root Password: admin GSHDSL#
Factory Default	GSHDSL# load default Do you want to load the factory configuration and system will reboot? [yes no cancel]: yes	GSHDSL# load default Do you want to load the factory configuration and system will reboot? [yes no cancel]: yes
Configure Ethernet	GSHDSL# config GSHDSL(config)# set ether GSHDSL(config-ether)# ipv4 192.168.1.1/24 GSHDSL(config-ether)# no dhcp-server enabled GSHDSL(config-ether)# commit -Commit successfully will appear on screen GSHDSL(config-ether)# ex GSHDSL(config)#	GSHDSL# config GSHDSL(config)# set ether GSHDSL(config-ether)# ipv4 192.168.2.1/24 GSHDSL(config-ether)# no dhcp-server enabled GSHDSL(config-ether)# commit -Commit successfully will appear on screen GSHDSL(config-ether)# ex GSHDSL(config)#
Configure ATM	GSHDSL(config)# set atm vc 1 GSHDSL(config-atm)# encapsulation rfc2684-rt GSHDSL(config-atm)# vpi 0 vci 32 GSHDSL(config-atm)# interface GSHDSL(config-atm-if)# ipv4 1.1.1.1/24 GSHDSL(config-atm-if)# peer-ip 1.1.1.2 GSHDSL(config-atm-if)# nat enabled GSHDSL(config-atm-if)# ex GSHDSL(config-atm)# commit -Commit successfully will appear on screen GSHDSL(config-atm)# ex	GSHDSL(config)# set atm vc 1 GSHDSL(config-atm)#encapsulation rfc2684-rt GSHDSL(config-atm)# vpi 0 vci 32 GSHDSL(config-atm)# interface GSHDSL(config-atm-if)#ipv4 1.1.1.2/24 GSHDSL(config-atm-if)# peer-ip 1.1.1.1 GSHDSL(config-atm-if)# nat enabled GSHDSL(config-atm-if)# ex GSHDSL(config-atm)# commit -Commit successfully will appear on screen GSHDSL(config-atm)# ex
Configure Static route	GSHDSL(config)# set routing ipv4 1 GSHDSL(config-route)# network 192.168.2.0/24 via 1.1.1.2 GSHDSL(config-route)# commit -Commit successfully will appear on screen GSHDSL(config-route)# ex	GSHDSL(config)# set routing ipv4 1 GSHDSL(config-route)# network 192.168.1.0/24 via 1.1.1.1 GSHDSL(config-route)# commit -Commit successfully will appear on screen GSHDSL(config-route)# ex
Configure DSL	GSHDSL(config)# set dsl GSHDSL(config-dsl)# data-mode adaptive GSHDSL(config-dsl)# data-rate min 1 max 89 GSHDSL(config-dsl)# service cot-2wires GSHDSL(config-dsl)# standard annex-A GSHDSL(config-dsl)# commit -Commit successfully will appear on screen GSHDSL(config-dsl)# ex GSHDSL(config)#	GSHDSL(config)# set dsl GSHDSL(config-dsl)#data-mode adaptive GSHDSL(config-dsl)# data-rate min 1 max 89 GSHDSL(config-dsl)# service rt-2wires GSHDSL(config-dsl)# standard annex-A GSHDSL(config-dsl)# commit -Commit successfully will appear on screen GSHDSL(config-dsl)# ex GSHDSL(config)#
Save	GSHDSL(config)# ex GSHDSL# save Do you want to save the configuration? [yes no cancel]: yes GSHDSL#	GSHDSL(config)# ex GSHDSL# save Do you want to save the configuration? [yes no cancel]: yes GSHDSL#

JIGISOĽ

6. Appendix

6.1 TELNET

The DG-IC422A can be configured through TELNET.

Procedure:

1. Open the DOS prompt and type the command given below, telnet 'IP address of the device', Press "Enter".

e.g.: C:\> telnet 192.168.0.1, Press "Enter"



2. The following screen will be displayed.



3. Menu items & options for Telnet menu are same as those of Console. Kindly refer chapter <u>3. Configuration of the Device through Console</u> for more details.

6.2 TROUBLESHOOTING

If you find that the device is not working properly or stops responding kindly use steps listed below. Before approaching your dealer of purchase for help, please read this troubleshooting section first. Some problems can be solved by you within very short time.

Scenario	Solution
1) Unit not powering ON	a) Check if the Main's power supply is working.
	b) If the power supply is fine then check if the
	adapter connected to the unit is of the correct
	specification as supplied with the unit.
	c) Check the Power ON/OFF switch which is at the
	Rear end of the unit. The switch has to be in ON
	position.
2) Nothing/Junk characters	a) Check the baud rate set. It should be 115200 bps.
displayed at the console	b) Check if emulation is set to VT-100.
3) DSL not syncing.	a) Check if the RJ-11 cable is properly inserted at
	the RJ-11 port.
	b) Next, check the configurations of the unit. One
	unit has to be in RT mode and the other has to be in
	COT mode to sync with each other.
	c) Check if there is connectivity between 2 ends of
	the cable. The DSL line should show OPEN
	between both limbs, & when looped at one end
	(customer side) should show loop resistance.
	d) Check if DSL of units are configured in Data-
	mode –FIXED, if so check if Min & Max data rates
	are the same.
4) Web page not opening	a) Check if the LAN cable is properly connected
	from the PC to the unit and also check if
	corresponding LAN LED glows.
	b) Check if PC & LAN Extender IP addresses are in
	the same class.

6.3 GLOSSARY

DHCP: Dynamic Host Configuration Protocol. This protocol automatically gives every computer on your home network an IP address.

DNS Server IP Address: DNS stands for Domain Name System, which allows Internet servers to have a domain name (such as www.google.com) and one or more IP addresses (such as 209.85.231.104). A DNS server keeps a database of Internet servers and their respective domain names and IP addresses, so that when a domain name is requested (as in typing "google.com" into your Internet browser), the user is directed to the proper IP address. The DNS server IP address used by the computers on your home network is the location of the DNS server your ISP has assigned to you.

SHDSL Modem: SHDSL stands for Symmetric High Bit Rate Digital Subscriber Line.

Ethernet: A standard for computer networks. Ethernet networks are connected by special cables and hubs, and move data around at up to 10/100 mega bits per second (Mbps).

LAN: Local Area Network. A LAN is a group of computers and devices connected together in a relatively small area (such as a home or office). Your home network is considered a LAN.

MAC Address: MAC stands for Media Access Control. A MAC address is the hardware address of a device connected to a network. The MAC address is a unique identifier for a device with an Ethernet interface. It is comprised of two parts: 3 bytes of data that corresponds to the Manufacturer ID (unique for each manufacturer), plus 3 bytes that are often used as the product's serial number.

NAT: Network Address Translation. This process allows all of the computers on your home network to use one IP address. Using the broadband Access Point's NAT capability, you can access the Internet from any computer on your home network without having to purchase more IP addresses from your ISP.

PPPoE: Point-to-Point Protocol over Ethernet. Point-to-Point Protocol is a secure data transmission method originally created for dial-up connections; PPPoE is for Ethernet connections. PPPoE relies on two widely accepted standards, Ethernet and the Point-to-Point Protocol. It is a communication protocol for transmitting information over Ethernet between different manufacturers

Port: Network Clients (LAN PC) uses port numbers to distinguish one network application/protocol over another. Below is a list of common applications and protocol/port numbers:

Application	Protocol	Port Number
Telnet	ТСР	23
FTP	ТСР	21
SMTP	ТСР	25
POP3	ТСР	110

H.323	ТСР	1720
SNMP	UCP	161
SNMP Trap	UDP	162
HTTP	ТСР	80
PPTP	ТСР	1723
PC Anywhere	ТСР	5631
PC Anywhere	UDP	5632

PPPoE: Point-to-Point Protocol over Ethernet. Point-to-Point Protocol is a secure data transmission method originally created for dial-up connections; PPPoE is for Ethernet connections. PPPoE relies on two widely accepted standards, Ethernet and the Point-to-Point Protocol. It is a communication protocol for transmitting information over Ethernet between different manufacturers

Protocol: A protocol is a set of rules for interaction agreed upon between multiple parties so that when they interface with each other based on such a protocol, the interpretation of their behavior is well defined and can be made objectively, without confusion or misunderstanding.

TCP/IP, UDP: Transmission Control Protocol/Internet Protocol (TCP/IP) and Unreliable Datagram Protocol (UDP). TCP/IP is the standard protocol for data transmission over the Internet. Both TCP and UDP are transport layer protocols. TCP performs proper error detection and error recovery, and thus is reliable. UDP on the other hand is not reliable. They both run on top of the IP (Internet Protocol), a network layer protocol.

WAN: Wide Area Network. A network that connects computers located in geographically separate areas (e.g. different buildings, cities, countries). The Internet is a wide area network.

Web-based management Graphical User Interface (GUI): Many devices support a graphical user interface that is based on the web browser. This means the user can use the familiar Netscape or Microsoft Internet Explorer to Control/configure or monitor the device being managed.

STP: STP stands for Spanning Tree Protocol and is defined as IEEE 802.1d standard for preventing loops in a network.

VPI: VPI stands for Virtual Path Identifier and is 8 bits in length. Used along with VCI (Virtual Channel Identifier) in ATM networks

VCI: VCI stands for Virtual Channel Identifier and is 16 bits in length. Used along with VPI in ATM networks.

RT: RT stands for Remote Terminal. When the LAN extenders are connected back to back in pairs one device has to be RT and the other has to be COT (Central Office Terminal). In case when the LAN extenders are connected to a G.SHDSL DSLAM, then the LAN extender is always the RT and the corresponding port on the DSLAM is configured as COT.

COT: COT stands or Central office terminal. When the LAN extenders are connected back to back in pairs one device has to be RT and the other has to be COT.

RIP: RIP stands for Routing Information Protocol. When the devices are configured in routing mode, and RIP is enabled, the devices share their respective routing tables with each other automatically.

TR069: TR069 is Technical Report 069. This is used to remote manage any device.

NTP: NTP stands for Network Time Protocol. Any NTP server can be used to synchronize the device time with the server.

This product comes with one year warranty. For further details about warranty policy and Product Registration, please visit support section of <u>www.digisol.com</u>