

DrayTek Training

DrayTek WAN Connectivity Options

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Table of Contents

Introduction	3
Types of Routers	3
xDSL Routers	3
Broadband Routers	5
LTE Routers	7
WAN Connectivity Options	7
xDSL WAN (ADSL2/2+, VDSL2)	8
ADSL	8
VDSL	10
Checking the VDSL Connection Status	12
Ethernet WAN	14
Configuration of Ethernet WAN	14
USB WAN	17
WAN Access Modes	17
LTE WAN	19
LTE Configuration	19
Checking the Status of LTE WAN	21
Fibre WAN	22
Wireless (Wi-Fi) WAN	22
Configuring Wireless WAN	23
Additional Resources	26
Exercises	26

Introduction

DrayTek routers support a variety of WAN connectivity options. Routers are available in single, dual and multi-WAN versions. In this training guide we will go through each WAN connectivity option and the configuration parameters involved.

Types of Routers

xDSL Routers

These routers will have at least one WAN interface that will be either ADSL or VDSL. The dual WAN routers will have one xDSL WAN interface and an Ethernet WAN Interface. The tables below provide a list of these routers and the type of WAN interface available.

Single WAN Routers – Only one WAN is active			
Router Model	WAN Type		
	WAN 1	WAN 2	WAN 3
Vigor120	ADSL2+	-	-
Vigor130	ADSL2+/VDSL2	-	-
VigorNIC 132F	ADSL2+/VDSL2	SFP	-
Vigor2710ne	ADSL2+	-	-
Vigor2760 Series	ADSL2+/VDSL2	LAN 4 (Gigabit Ethernet)	USB backup



Vigor120



Vigor130



VigorNIC 132F



Vigor2710ne



Vigor2760 Series

Dual WAN Routers – Multiple WANS can be active at same time				
Router Model	WAN Type			
	WAN 1	WAN 2	WAN 3	WAN 4
Vigor2832 Series	ADSL2+	Gigabit Ethernet	USB	USB
Vigor2860 Series	ADSL2+/VDSL2	Gigabit Ethernet	USB	USB
VigorBX 2000	ADSL2+/VDSL2	Gigabit Ethernet	USB	USB



Vigor2832 Series



Vigor2860 Series



VigorBX 2000 Series

Broadband Routers

Broadband routers will have one or more Ethernet WAN interfaces. These routers can be connected to a NBN NTU (Network Termination Unit) for services like FTTH/FTTP (Fibre to the Premise), HFC, Satellite, or fixed wireless. . The tables below provide a list of these routers and the type of WAN interface available.

Single WAN Routers – Only one WAN is active			
Router Model	WAN Type		
	WAN 1	WAN 2	WAN 3
Vigor2120 Series	Gigabit Ethernet	USB backup	-
Vigor2132 Series	Gigabit Ethernet	-	-



Vigor2120 Series



Vigor2132ac

Dual WAN Routers – Multiple WANS can be active at same time				
Router Model	WAN Type			
	WAN 1	WAN 2	WAN 3	WAN 4
Vigor2912 Series	Fast Ethernet	Fast Ethernet	USB backup (Shared with WAN 2)	-
Vigor2925 Series	Gigabit Ethernet	Gigabit Ethernet	USB	USB
Vigor2952	Gigabit Ethernet	Gigabit Ethernet/SFP	USB	USB
Vigor2960	Gigabit Ethernet	Gigabit Ethernet	USB	USB



Vigor2912 Series



Vigor2925 Series



Vigor2952



Vigor2960

Multi- WAN Routers – Multiple WANS can be active at same time						
Router Model	WAN Type					
	WAN 1	WAN 2	WAN 3	WAN 4	WAN 5	Additional WAN
Vigor3220	Gigabit Ethernet	Gigabit Ethernet	Gigabit Ethernet	Gigabit Ethernet	USB	-
Vigor3900	Gigabit Ethernet	Gigabit Ethernet	Gigabit Ethernet	Gigabit Ethernet	SFP	2 x USB



Vigor3220



Vigor3900

LTE Routers

These routers have an embedded 4G LTE modem. The table below provide a list of these routers and the type of WAN interface available.

LTE Routers – Multiple WANS can be active at same time				
Router Model	WAN Type			
	WAN 1	WAN 2	WAN 3	WAN 4
Vigor2860L Series	ADSL2+/VDSL2	Gigabit Ethernet	Embedded LTE	USB
Vigor2925L Series	Gigabit Ethernet	Gigabit Ethernet	Embedded LTE	USB



Vigor2860L Series



Vigor2925L Series

WAN Connectivity Options

In addition to the physical WAN interface in the router, there are a number of different methods of establishing a connection to the service provider.

- PPPoE – Point to Point Protocol over Ethernet – Connects the users to Internet through Ethernet with a single medium: DSL, Cable or WLAN
- PPPoA – Point to Point Protocol over ATM – uses PPP dial-up protocol with ATM.
- MPoA - 1483 Bridge IP
-1483 Routed IP

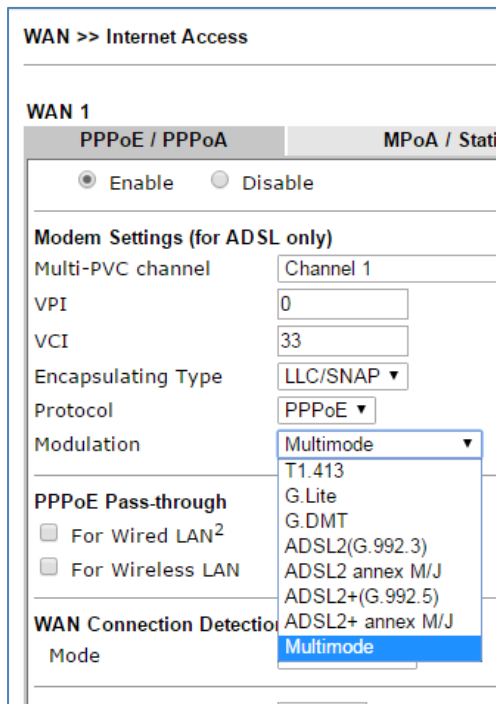
MPoA is a specification that enables ATM services to be integrated with existing LANs, which use either Ethernet, token-ring or TCP/IP protocols. The goal of MPoA is to allow different LANs to send packets to each other via an ATM backbone.

xDSL WAN (ADSL2/2+, VDSL2)

The xDSL WAN is suitable for premises with existing copper wires and connection to the internet can be ADSL2/2+ or VDSL2. One of the examples for deployment with DSL in the last mile is FTTB (Fibre to the Building) or FTTN (Fibre to the Node) that utilises copper wires on VDSL2 technology to end user.

ADSL

ADSL routers have the option to select the required modulation for the Internet connection as shown in the diagram below.



ADSL Modulation Modes

- T1.413** – 1.5 Mb/s downstream
- G.Lite** - ITU G.992.2 1.5 Mb/s downstream
- G.DMT** – 8Mb/s downstream, 1Mb/s upstream
- ADSL2** (G992.3) 12Mb/s downstream, 1Mb/s Upstream
- ADSL2 annex M/J** 12Mb/s downstream, 3Mb/s Upstream
- ADSL2+ (G992.5)** - 24 Mb/s downstream, 1Mb/s Upstream
- ADSL2+ annex M/J** -24 Mb/s downstream, 3Mb/s Upstream
- Multimode** – Router will auto-detect line type

For ADSL connections in Australia and New Zealand we use the following settings:

Parameter	In Australia		In New Zealand	
VPI	8		0	
VCI	35		100	
Protocol	PPPoE/PPPoA	MPoA		
Encapsulation	LLC/SNAP	LLC		

ADSL Modem Codes

Draytek provides various modem codes for getting better operability with different ISPs/ IPDSLAMs. . Usually the standard modem code will be suitable for most installations, but where stability issues are encountered you can try one of the alternative modem codes.

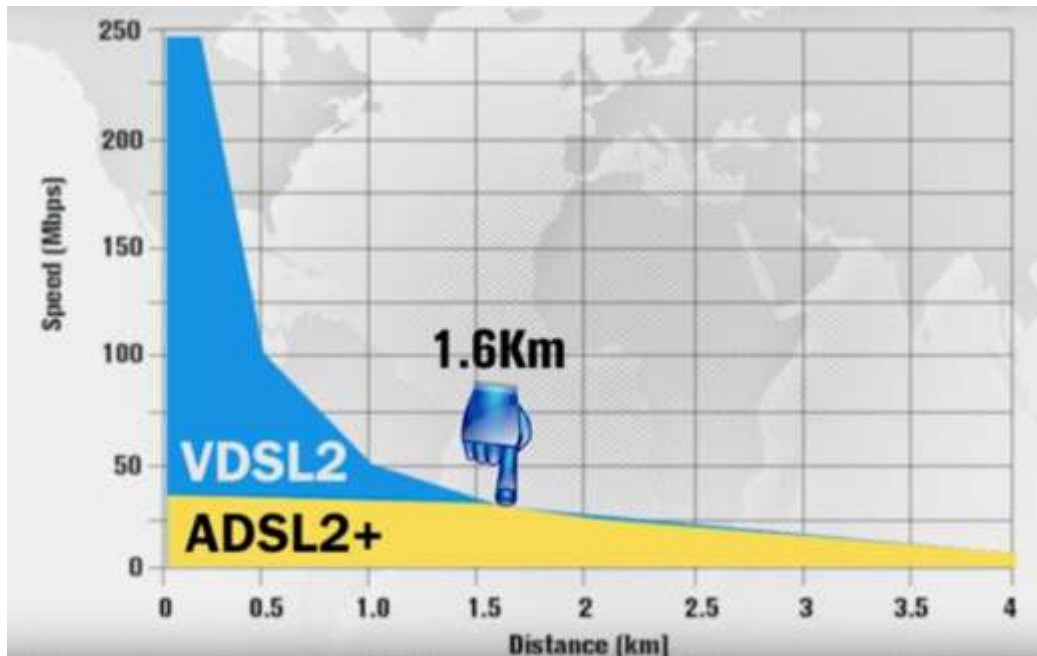
Below we have the modem codes for the Vigor120 router. Usually the standard modem code will be suitable for most installations, but where stability issues are encountered you can try one of the other modem codes.

Firmware Downloads

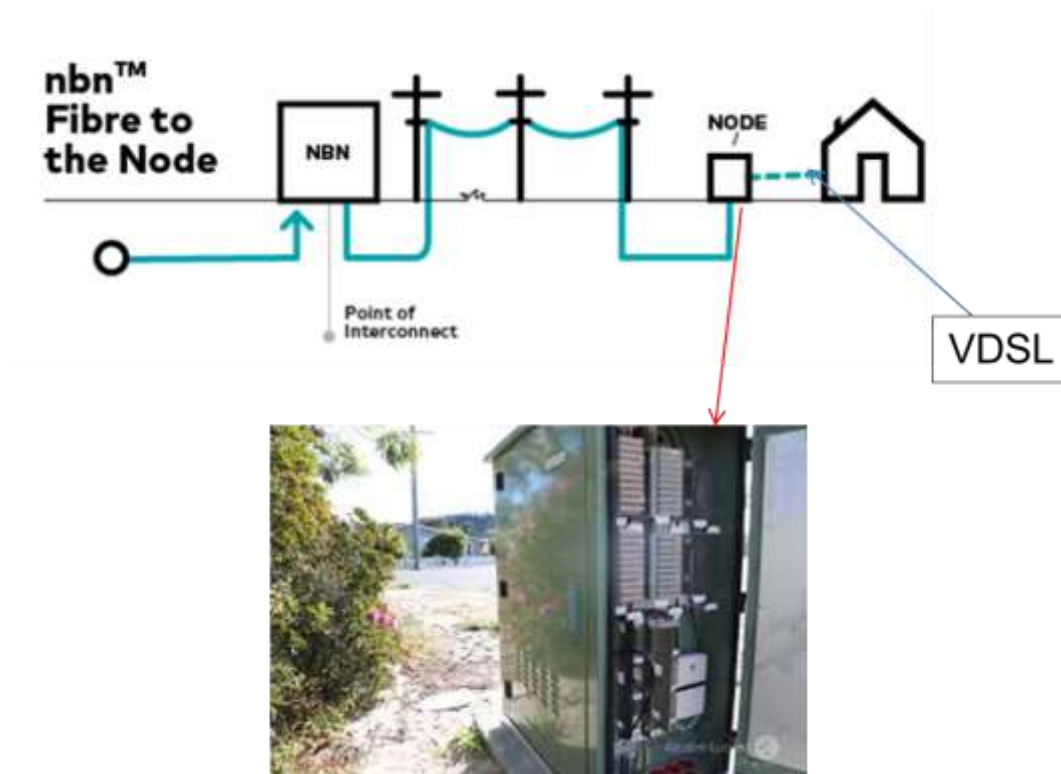
Name	Description
Vigor120+v3.2.4.4+annex+A_STD.zip	Annex A modem code 321311. (Standard)
Vigor120+v3.2.4.4+annex+A_310801.zip	Annex A for modem code 310801
Vigor120+v3.2.4.4+annex+A_310811.zip	Annex A for modem code 310811
Vigor120+v3.2.4.4+annex+A_3211201.zip	Annex A for modem code 3211201
Vigor120+v3.2.4.4+annex+A_2_332201.zip	Annex A_2 for modem code 332201
Vigor120+v3.2.4.4+annex+A_2_3431301.zip	Annex A_2 for modem code 3431301
Vigor120+v3.2.4.4+annex+A_2_343601.zip	Annex A_2 for modem code 343601
Vigor120+v3.2.4.4+annex+A_2_343701.zip	Annex A_2 for modem code 343701
Vigor120+v3.2.4.4+annex+A_2_344001.zip	Annex A_2 for modem code 344001
Vigor120+v3.2.4.4+annex+A_2_344101.zip	Annex A_2 for modem code 344101

VDSL

VDSL2 has a theoretical maximum of 350 Mbit/s at the source to 100 Mbit/s at 0.5 km and 50 Mbit/s at 1 km but degrades at a much slower rate from there. At 1.6 km its performance is equal to ADSL2+ as shown in the diagram below.



VDSL2 is used in Fibre to the Node deployment of NBN connections. Here optic fibre is installed from the NBN point of Interconnect to a node which is usually a roadside cabinet. From here existing copper cabling is utilised to provide a VDSL2 service to the premises. The distance between the node and the premises is about 300m, to ensure the required NBN speeds are provided.



VDSL Modem Codes

NBN installations requires VDSL2 with vectoring, hence there are two modem codes that are suitable:

- AnnexA_574307_571801
- Annex A _579C17_573F01

DrayTek VDSL routers are shipped with modem code “AnnexA_574307_571801” pre-installed. This will work with NBN VDSL2 installations as well as ADSL2+ installations. The other modem code “Annex A _579C17_573F01” has been developed to improve sync speeds with VDSL2 connections but is not recommended for ADSL+ installations.

WAN >> General Setup

WAN 1

Enable:	Yes
Display Name:	
Physical Mode:	VDSL2
DSL Mode:	Auto
Physical Type:	Auto negotiation
DSL Modem Code:	AnnexA_574307_571801
VLAN Tag insertion (ADSL):	Disable
Tag value:	0 (0~4095)
Priority:	0 (0~7)
VLAN Tag insertion (VDSL2):	Disable
Tag value:	0 (0~4095)
Priority:	0 (0~7)

VLAN Tag

Many service providers require the use of a VLAN tag to access the NBN. The most common VLAN tag is 100.

VLAN Tag insertion (ADSL):	Disable	(Please configure Internet
Tag value:	0	(0~4095)
Priority:	0	(0~7)
VLAN Tag insertion (VDSL2):	Enable	
Tag value:	100	(0~4095)
Priority:	0	(0~7)
Active Mode:	Always On	Load Balance: <input checked="" type="checkbox"/>

Note:

Checking the VDSL Connection Status

When VDSL connection issues are encountered you can have a look at the **Diagnostics>>DSL status** page in the router. The details on this page will give an indication of error conditions that are affecting the VDSL connection.

Diagnostics >> DSL Status

General
| [Refresh](#) |

ATU-R Information

Type: ADSL2/2+
 Hardware: Annex A
 Firmware: 05-04-08-00-00-06
 Power Mngt Mode: DSL_G997_PMS_NA
 Line State: TRAINING
 Running Mode:
 Vendor ID: b5004946 544e0000

ATU-C Information

Vendor ID: 00000000 00000000 [unknown]

Line Statistics

	Downstream		Upstream	
Actual Rate	0	Kbps	0	Kbps
Attainable Rate	0	Kbps	0	Kbps
Path Mode	Fast		Fast	
Interleave Depth	0		0	
Actual PSD	0.0	dB	0.0	dB
	Near End		Far End	
Trellis	ON		ON	
Bitswap	OFF		OFF	
ReTx	0		0	
SNR Margin	0	dB	0	dB
Attenuation	0	dB	0	dB
CRC	0		0	
FECS	0	s	0	s
ES	0	s	0	s
SES	0	s	0	s
LOSS	0	s	0	s
UAS	0	s	0	s
HEC Errors	0		0	
RS Corrections	0		0	
LOS Failure	0		0	
LOF Failure	0		0	
LPR Failure	0		0	
NCD Failure	0		0	
LCD Failure	0		0	
NFEC	0		0	
RFEC	0		0	
LYSMB	0		0	

NBN VDSL Configuration Examples

There are a number of configuration examples available on the Internet showing how to configure VDSL routers for NBN connections. Below is a list of useful resources:

Application Notes

1. NBN Configuration Application notes –
http://www.i-helpdesk.com.au/index.php?/default_import/Knowledgebase/List/Index/49/nbn
2. How to Connect DrayTek Vigor router to VDSL2 connection on NBN network –
http://www.i-helpdesk.com.au/index.php?/default_import/Knowledgebase/Article/View/673/49/how-to-connect-draytek-vigor-router-to-vdsl2-connection-on-nbn-network
3. Configuring Vigor130 for VDSL Bridge mode –
http://www.i-helpdesk.com.au/index.php?/default_import/Knowledgebase/Article/View/704/51/configuring-vigor130--for-vdsl-bridge-mode

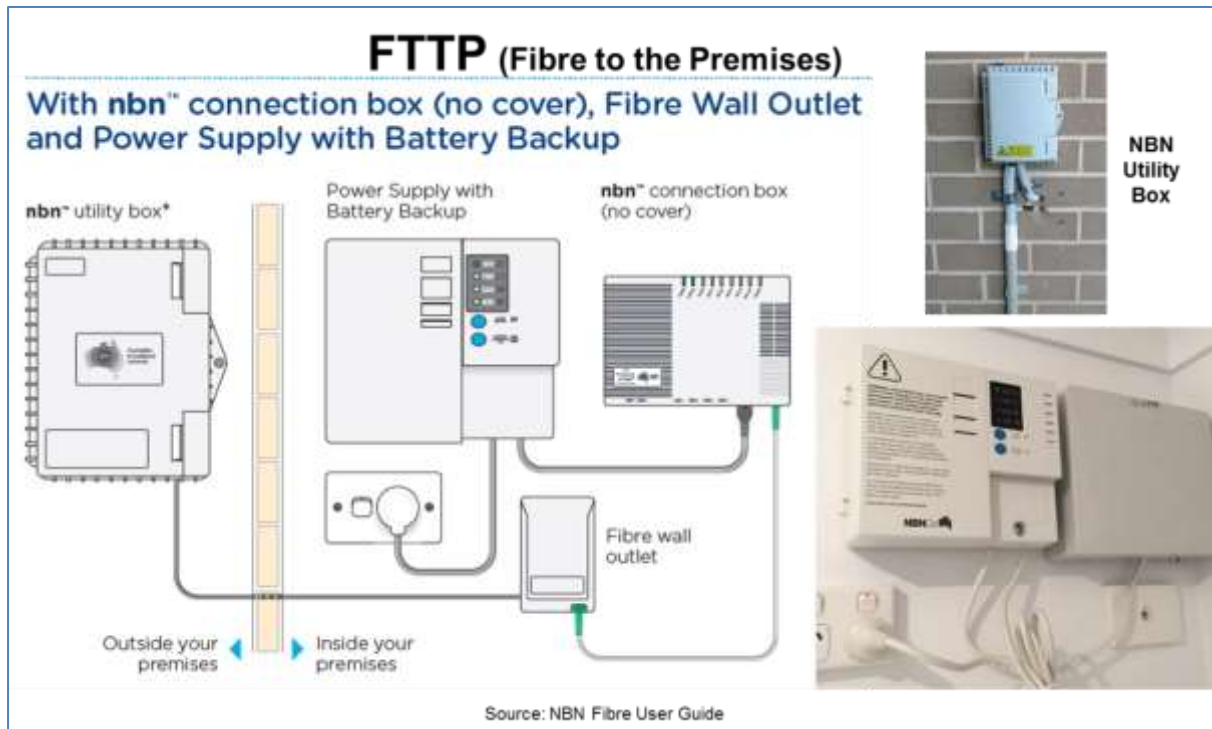
Videos

1. How to Configure the Vigor 2760 Router for NBN VDSL Network -
<https://youtu.be/EMzJxOXeG9U>
2. How to Configure the Vigor2860 Router for VDSL2 Connection on NBN Network -
<https://youtu.be/G2U9M4Vp4as>
3. How to Configure the Vigor130 Router for VDSL2 Bridge Mode -
<https://youtu.be/DFFr3b1Psoo>

Ethernet WAN

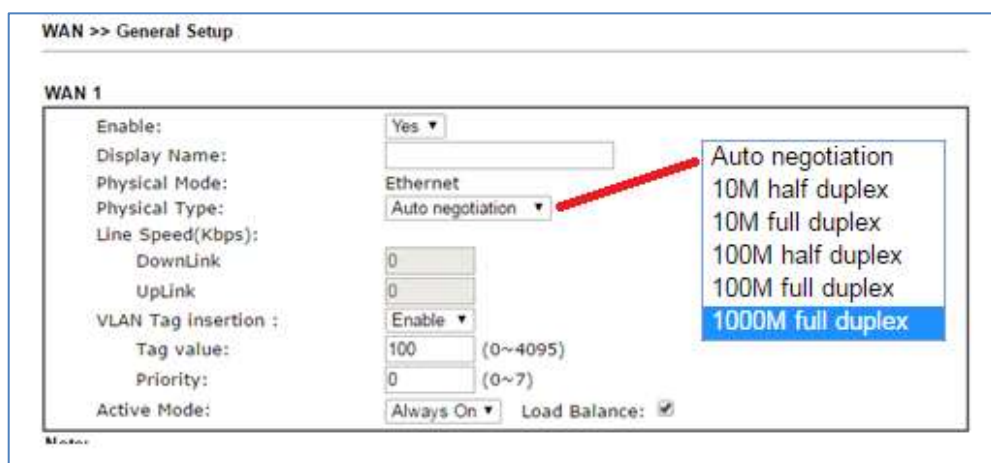
Another common WAN application is Ethernet WAN, where the user can connect the router to Ethernet switch, cable modem or DSL modem provided by ISP.

The customer can connect the Ethernet WAN on a DrayTek router to a NBN NTU (Network Termination Unit) for services like FTTH/FTTP (Fibre to the Premise), HFC, Satellite, or fixed wireless.



Configuration of Ethernet WAN

The Ethernet WAN interface can be configured to auto-negotiate the WAN connection speed. You can select a fixed connection speed and duplex setting, for instances where auto negotiation does not work. Some NBN connections will also require a VLAN tag value to be inserted.



WAN Access Mode Settings

There are three modes that can be selected for Internet access. These are: PPPoE, Static or Dynamic IP and PPTP/L2TP.

None
PPPoE
Static or Dynamic IP
PPTP/L2TP

PPoE

WAN >> Internet Access

WAN 1

PPPoE	Static or Dynamic IP	PPTP/L2TP	IPv6
<input type="radio"/> Enable <input checked="" type="radio"/> Disable		PPP/MP Setup PPP Authentication: PAP or CHAP Idle Timeout: -1 second(s)	
ISP Access Setup Service Name (Optional): Username: Password: Index(1-15) in Schedule Setup: => [] [] [] []		IP Address Assignment Method (PCP) WAN IP Alias: Fixed IP: <input type="radio"/> Yes <input checked="" type="radio"/> No (Dynamic IP) Fixed IP Address:	
WAN Connection Detection Mode: ARP Detect		<input checked="" type="radio"/> Default MAC Address <input type="radio"/> Specify a MAC Address MAC Address: 00 -1D -AA -E0 -F9 -81	
MTU Path MTU Discovery: Detect			

Note: (Optional) Required for some ISPs. Leave blank if in doubt because the connection request might be denied if "Service Name" is incorrect.

Static or Dynamic IP

WAN >> Internet Access

WAN 1

PPPoE	Static or Dynamic IP	PPTP/L2TP	IPv6
<input checked="" type="radio"/> Enable <input type="radio"/> Disable		WAN IP Network Settings WAN IP Alias	
Keep WAN Connection <input type="checkbox"/> Enable PING to keep alive PING to the IP: PING Interval: 0 minute(s)		<input type="radio"/> Obtain an IP address automatically Router Name: Mgor Domain Name:	
WAN Connection Detection Mode: ARP Detect		<input type="checkbox"/> DHCP Client Identifier Username: Password:	
MTU Path MTU Discovery: Detect		<input checked="" type="radio"/> Specify an IP address IP Address: 172.16.2.242 Subnet Mask: 255.255.255.0 Gateway IP Address: 172.16.2.1	
RIP Protocol <input type="checkbox"/> Enable RIP		<input checked="" type="radio"/> Default MAC Address <input type="radio"/> Specify a MAC Address MAC Address: 00 -1D -AA -E0 -07 -89	
Bridge Mode <input type="checkbox"/> Enable Bridge Mode Bridge Subnet: LAN 1		DNS Server IP Address Primary IP Address: 8.8.8.8 Secondary IP Address: 8.8.4.4	

PPTP/L2TP

The screenshot shows a web-based configuration interface for WAN settings. The main heading is 'WAN >> Internet Access'. Below this, there are tabs for 'WAN 1', 'PPPoE', 'Static or Dynamic IP', 'PPTP/L2TP', and 'IPv6'. The 'PPTP/L2TP' tab is selected. The interface is divided into several sections: 'PPP Setup' with options for 'Enable PPTP', 'Enable L2TP', and 'Disable' (selected), a 'Server Address' field, a 'Specify Gateway IP Address' field (containing '192.168.3.1'), 'PPP Authentication' set to 'PAP or CHAP', an 'Idle Timeout' field (set to '-1'), and an 'IP Address Assignment Method (IPCP)' section with a 'WAN IP Alias' button. Below this is a 'Fixed IP' section with 'Yes' and 'No (Dynamic IP)' (selected) radio buttons, and a 'Fixed IP Address' field. The 'WAN IP Network Settings' section has 'Obtain an IP address automatically' (selected) and 'Specify an IP address' radio buttons. The 'Specify an IP address' section includes an 'IP Address' field (containing '192.168.3.53') and a 'Subnet Mask' field (containing '255.255.255.0'). There is also an 'ISP Access Setup' section with 'Username' and 'Password' fields, and an 'Index(1-15) in Schedule Setup' section with a grid of input fields. At the bottom, there is an 'MTU' section with a value of '1460' (Max:1460) and a 'Path MTU Discovery' button labeled 'Detect'.

NBN Configuration Examples

There are a number of configuration examples available on the Internet showing how to configure DrayTek broadband routers for NBN connections. Below is a list of useful resources:

Application Notes

1. NBN Configuration Application notes – http://www.i-helpdesk.com.au/index.php?/default_import/Knowledgebase/List/Index/49/nbn
2. How to Connect a DrayTek Vigor2925 router to DODO NBN – http://www.i-helpdesk.com.au/index.php?/default_import/Knowledgebase/Article/View/582/53/how-to-connect-a-draytek-vigor2925-router-to-dodo-nbn
3. How to Connect a DrayTek Vigor2860 Router to TPG NBN – http://www.i-helpdesk.com.au/index.php?/default_import/Knowledgebase/Article/View/664/54/how-to-connect-a-draytek-vigor2860-router-to-tpg-nbn
4. How to Connect a DrayTek Vigor2860 router to AAPT NBN – http://www.i-helpdesk.com.au/index.php?/default_import/Knowledgebase/Article/View/608/66/how-to-connect-a-draytek-vigor2860-router-to-aapt-nbn

Video

1. How to Configure the DrayTek Vigor 2860 for TPG NBN - <https://youtu.be/hX9Ow0TN0g>

USB WAN

DrayTek routers also have the flexibility to support 3G and 4G connection with external USB dongle. The list of supported dongles on DrayTek products is available on our web site:

<http://www.draytek.com.au/support/3g-4g-modem-compatibility>

WAN Access Modes

There are two access modes available for 3G/4G USB modems. These are PPP mode and DHCP mode.

WAN >> Internet Access

Internet Access

Index	Display Name	Physical Mode	Access Mode	Details Page	IPv6
WAN1		ADSL / VDSL2	PPPoE / PPPoA	Details Page	IPv6
WAN2		Ethernet	Static or Dynamic IP	Details Page	IPv6
WAN3		USB	None	Details Page	IPv6
WAN4		USB	None 3G/4G USB Modem(PPP mode) 3G/4G USB Modem(DHCP mode)	Details Page	IPv6

Note: 1. Device on USB port 1 applies WAN3 configuration.
Device on USB port 2 applies WAN4 configuration.

PPP Mode

For this mode enter the APN Name (Access Point Name) for the service provider that you will be connecting to. The APN is a gateway between a GSM, GPRS, 3G or 4G mobile networks and another computer network, frequently the public Internet.

For some service providers you may also need to enter a username and password for authentication.

WAN >> Internet Access

WAN 3

3G/4G USB Modem(PPP mode) | 3G/4G USB Modem(DHCP mode) | IPv6 | [Modem Support List](#)

3G/4G USB Modem(PPP mode) Enable Disable

SIM PIN code:

Modem Initial String: (Default: AT&FE0V1X1&D2&C1S0=0)

APN Name:

Modem Initial String2:

Modem Dial String: (Default: ATDT*99#, CDMA: ATDT#777, TD-SCDMA: ATDT*98*1#)

Service Name: (Optional)

PPP Username: (Optional)

PPP Password: (Optional)

PPP Authentication:

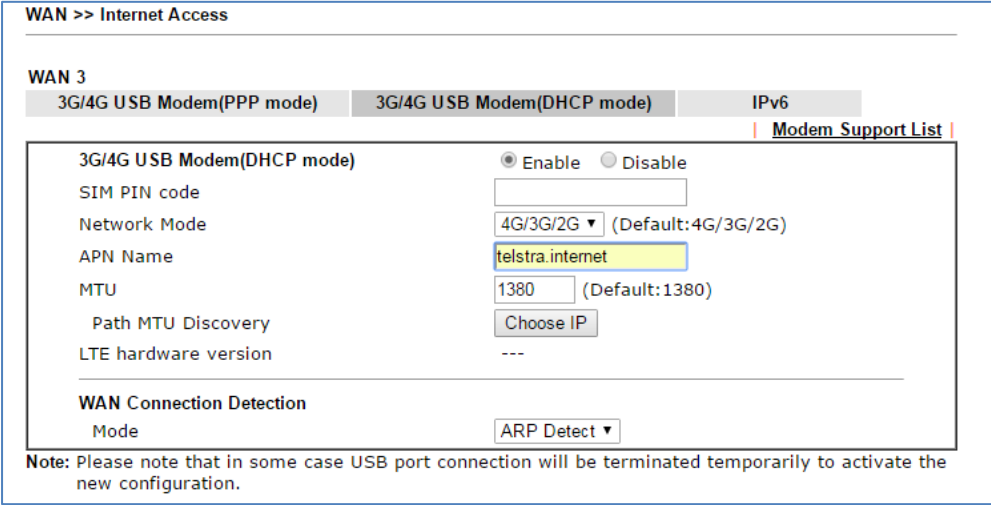
Index(1-15) in [Schedule](#) Setup:
=> , , ,

WAN Connection Detection

Mode:

DHCP Mode

For DHCP mode you just need to select enable and enter the APN Name.



WAN >> Internet Access

WAN 3

3G/4G USB Modem(PPP mode) 3G/4G USB Modem(DHCP mode) IPv6 | Modem Support List |

3G/4G USB Modem(DHCP mode) Enable Disable

SIM PIN code

Network Mode 4G/3G/2G (Default:4G/3G/2G)

APN Name telstra.internet

MTU 1380 (Default:1380)

Path MTU Discovery Choose IP

LTE hardware version ---

WAN Connection Detection Mode ARP Detect

Note: Please note that in some case USB port connection will be terminated temporarily to activate the new configuration.

Notes:

1. Most service providers now only allocate a private IP address for the 3G/4G WAN connection. This can cause problems for incoming VPN connections. It is possible however with some service providers to request a public IP address for the WAN connection.
2. Most modern 3G/4G USB modems are running NAT so the router will always see a private IP address on the WAN connection. If a public IP address has been assigned to the 3G/4G modem you will need to enable port forwarding in the modem so you can access services on the LAN from the Internet. For example port forward port 5060 for SIP services from the Internet to a server on the LAN.

Configuration Examples

There are a number of configuration examples available on the Internet showing how to configure DrayTek routers for 3G/4G connections. Below is a list of useful resources:

Application Notes

1. 3G/4G Application notes - http://www.i-helpdesk.com.au/index.php?/default_import/Knowledgebase/List/Index/33/3g4g
2. Configure 4G Netgear 320U on Draytek Vigor 2830 – http://www.i-helpdesk.com.au/index.php?/default_import/Knowledgebase/Article/View/670/33/configure-4g-netgear-320u-on-draytek-vigor-2830
3. Vigor2960 / 3900 / 300B 4G Configuration - http://www.i-helpdesk.com.au/index.php?/default_import/Knowledgebase/Article/View/606/33/vigor2960--3900--300b-4g-configuration

Videos

1. How to Configure the DrayTek Vigor2860 and Vigor2925 Routers for 4G USB WAN Connections - <https://youtu.be/k9b37S7cGIa>
2. Vigor2960 / 3900 /300B 4G Configuration - <https://youtu.be/A8DM5-nPZMw>

LTE WAN

LTE WAN routers support 4G LTE connection with the embedded 4G LTE modem. This function is available in Vigor2860L and Vigor2925L series.



LTE routers are unlocked and accept SIM cards from major providers:

- Australia: Telstra, Optus, Vodafone, etc.
- New Zealand: Spark, 2Degrees and Vodafone

Have a built in SIM card slot with cover protection.

Supported are 4 G LTE bands are:

- B3 (1800MHz)
- B7 (2600MHz)
- B8 (900MHz)
- B20 (800MHz)

Note 1: Band 28 (700MHz) and 3G WCDMA Band 5 (850MHz) is currently not supported

The maximum data rate for downlink is 150Mbps and the data rate for uplink is 50Mbps.

LTE Configuration

Ensure the SIM card is inserted into the SM card slot as shown in the diagram above paying attention to the notch in the SIM card.

LTE Access Mode configuration is only available for DHCP mode.

WAN >> Internet Access

Internet Access

Index	Display Name	Physical Mode	Access Mode		
WAN1		Ethernet	Static or Dynamic IP ▼	Details Page	IPv6
WAN2		Ethernet	Static or Dynamic IP ▼	Details Page	IPv6
LTE		USB	3G/4G LTE Modem(DHCP mode) ▼	Details Page	IPv6
WAN4		USB	None ▼	Details Page	IPv6

Note:
Device on USB port applies WAN4 configuration.

You can configure DHCP client options here.

Enter the relevant details including the APN Name.

WAN >> Internet Access

LTE

3G/4G LTE Modem(DHCP mode) IPv6

3G/4G LTE Modem(DHCP mode) Enable Disable

SIM PIN code

Network Mode (Default:4G/3G/2G)

APN Name

Username (Optional)

Password (Optional)

Authentication

MTU (Default:1380)

Path MTU Discovery

LTE hardware version 20002

WAN Connection Detection Mode

Notes

1. Most service providers now only allocate a private IP address for the 3G/4G WAN connection. This can cause problems for incoming VPN connections. It is possible however with some service providers to request a public IP address for the WAN connection.
2. In some instances when using 4G modems the assigned public IP address may not be sent to the modem via DHCP. To overcome this DrayTek have added a CLI command to manually assign an IP address for the WAN connection. For example to manually assign a fixed IP address for the LTE WAN use the command:
 - **wan lte set fixed 1.1.1.1**

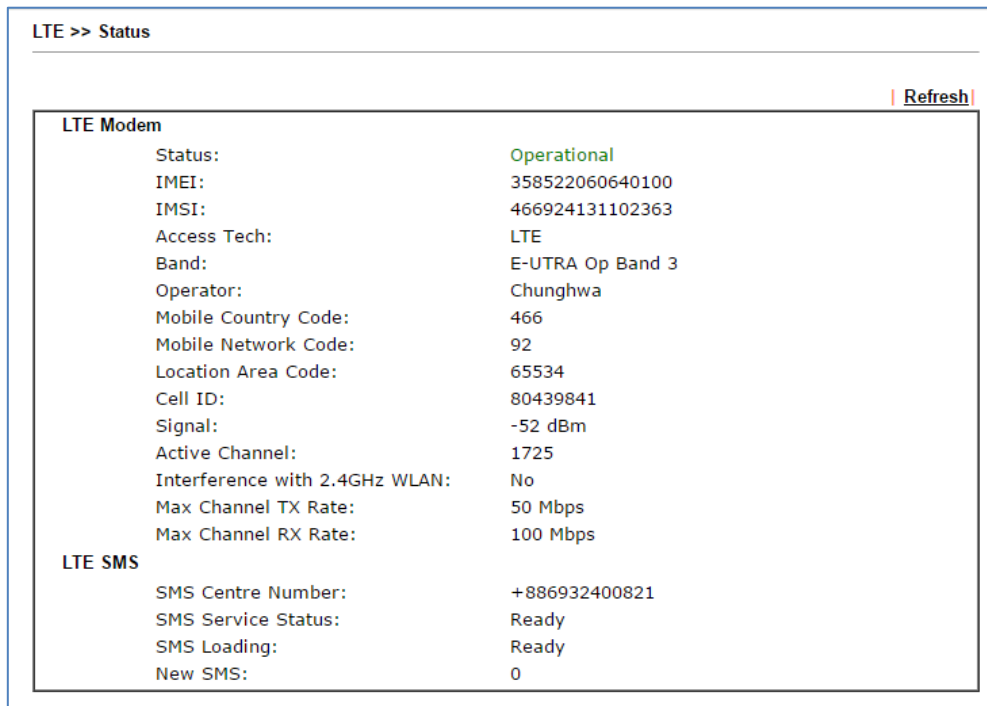
Video Demonstration

Configuring the Vigor2860L and Vigor2925L for LTE Internet Access

<https://youtu.be/iLWPmZyen6g>

Checking the Status of LTE WAN

You can view the current status of the LTE WAN connection by going to **LTE >> Status** menu in the router. Here you can check the LTE details including the LTE band used, signal strength etc.



The screenshot shows the 'LTE >> Status' page with a 'Refresh' button in the top right corner. The page is divided into two sections: 'LTE Modem' and 'LTE SMS'. The 'LTE Modem' section lists various parameters such as Status (Operational), IMEI, IMSI, Access Tech (LTE), Band (E-UTRA Op Band 3), Operator (Chunghwa), Mobile Country Code (466), Mobile Network Code (92), Location Area Code (65534), Cell ID (80439841), Signal (-52 dBm), Active Channel (1725), Interference with 2.4GHz WLAN (No), Max Channel TX Rate (50 Mbps), and Max Channel RX Rate (100 Mbps). The 'LTE SMS' section lists SMS Centre Number (+886932400821), SMS Service Status (Ready), SMS Loading (Ready), and New SMS (0).

LTE Modem	
Status:	Operational
IMEI:	358522060640100
IMSI:	466924131102363
Access Tech:	LTE
Band:	E-UTRA Op Band 3
Operator:	Chunghwa
Mobile Country Code:	466
Mobile Network Code:	92
Location Area Code:	65534
Cell ID:	80439841
Signal:	-52 dBm
Active Channel:	1725
Interference with 2.4GHz WLAN:	No
Max Channel TX Rate:	50 Mbps
Max Channel RX Rate:	100 Mbps

LTE SMS	
SMS Centre Number:	+886932400821
SMS Service Status:	Ready
SMS Loading:	Ready
New SMS:	0

Configuration Examples

There are a number of configuration examples available on the Internet showing how to configure DrayTek routers for LTE connections. Below is a list of useful resources:

Application Notes

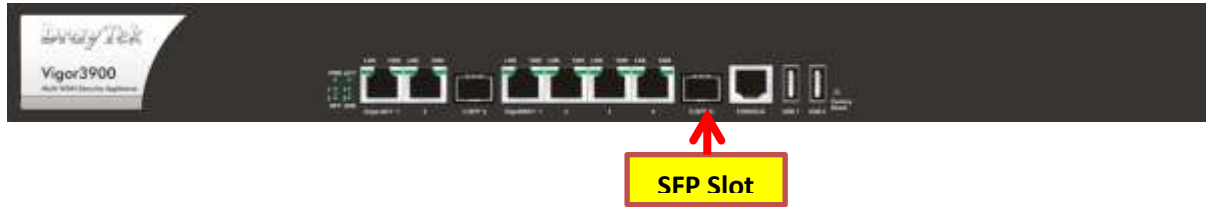
1. Configuring the Vigor2860L and Vigor2925L for LTE Internet access
http://www.i-helpdesk.com.au/index.php?/default_import/Knowledgebase/Article/View/693/33/configuring-the-vigor2860l-and-vigor2925l-for-lte-internet-access
2. Troubleshooting LTE Connectivity Issues with DrayTek LTE Routers
http://www.i-helpdesk.com.au/index.php?/default_import/Knowledgebase/Article/View/709/33/troubleshooting-lte-connectivity-issues-with-draytek-lte-routers
3. How to check if the DrayTek Vigor2860/2925 LTE Router Frequency Bands are supported on your Area
http://www.i-helpdesk.com.au/index.php?/default_import/Knowledgebase/Article/View/710/33/how-to-check-if-the-draytek-vigor28602925-lte-router-frequency-bands-are-supported-on-your-area

Video

1. Configuring the Vigor2860L and Vigor2925L for LTE Internet Access –
http://www.i-helpdesk.com.au/index.php?/default_import/Knowledgebase/Article/View/695/33/video---configuring-the-vigor2860l-and-vigor2925l-for-lte-internet-access

Fibre WAN

Fibre WAN connections are available on the Vigor3900 and Vigor2952 routers. These routers have a Small Form-factor Pluggable (SFP) slot and will accept the installation of a SFP fibre module to allow connection to fibre optic cable.

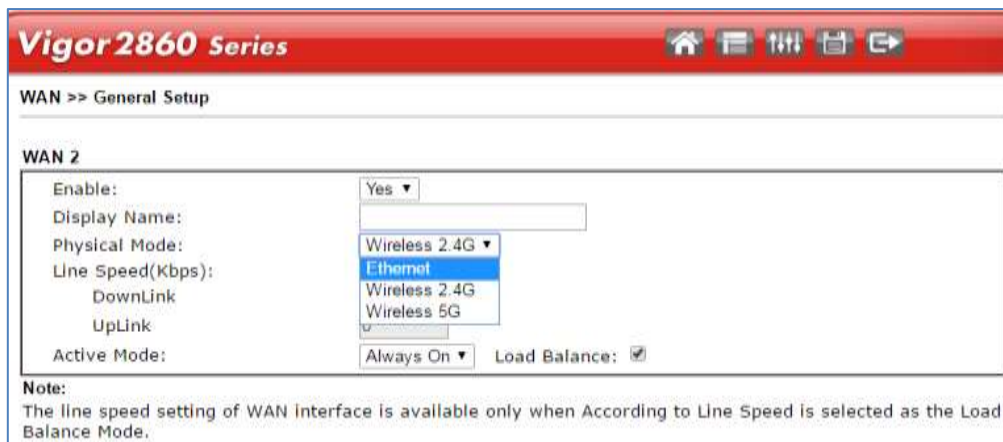


Configuration of the WAN Interface is similar to that of the Ethernet WAN Interface.

Wireless (Wi-Fi) WAN

The Wireless WAN (Wi-Fi WAN) is a new feature that has been added to the Vigor2860n/ac and Vigor2925n/ac routers. It allows the user to connect the router to any Wi-Fi hotspot or Wi-Fi tethering from a mobile phone. This function is useful during an emergency when all wired connections are dropped and no 4G USB dongle is available.

WAN 2 can be configured to use the Gigabit Ethernet WAN port or to use the router's Wireless connection.



Configuring Wireless WAN

After enabling Wireless WAN for WAN 2 in **WAN >> General Setup** configuration menu, go to **WAN >> Internet Access>>WAN2** details page.

- Use the AP Discovery tool to search for available Wi-Fi Hotspots.
- Select the required Hotspot and add it to Universal Repeater Parameters section on this page.

WAN >> Internet Access

WAN 2

Static or Dynamic IP
 Enable Disable

Obtain an IP address automatically
 Specify an IP address

IP Address
Subnet Mask
Gateway IP Address

WAN Connection Detection
Mode:

MTU (Max: 1500)

Universal Repeater Parameters

SSID:

MAC Address (Optional):

Channel:

Security Mode:

Encryption Mode:

Pass Phrase:

Note: If Channel is modified, the Channel setting of wireless 2.4G would be also modified.

Video Demonstration

How to set up a wireless WAN in Vigor Router

<https://youtu.be/hRw4AtdVAgM>

Detailed Wireless WAN Configuration Steps

Vigor2860n/ac and Vigor2925n/ac routers running firmware version 3.8.1 or later, support the Wireless WAN feature.



1. Enable Wireless LAN function on the router: Go to Wireless LAN (2.4GHz) >> General Setup, and enable Wireless LAN.

Wireless LAN >> General Setup

General Setting (IEEE 802.11)

Enable Wireless LAN

Mode : Mixed(11b+11g+11n) ▼

Channel: Channel 6, 2437MHz ▼

	Enable	Hide SSID	SSID	Isolate Member	Isolate VPN
1	<input type="checkbox"/>	<input type="checkbox"/>	DrayTek	<input type="checkbox"/>	<input type="checkbox"/>
2	<input type="checkbox"/>	<input type="checkbox"/>	DrayTek_Guest	<input type="checkbox"/>	<input type="checkbox"/>

2. Change the Physical Mode of WAN 2: Go to WAN >> General Setup >> WAN2, set Physical Mode as "Wireless", click OK to apply and reboot the router.

WAN >> General Setup

WAN 2

Enable: Yes ▼

Display Name:

Physical Mode: Wireless ▼

Line Speed(Kbps):

DownLink

UpLink

Active Mode: Always On ▼ Load Balance:

Note:
The line speed setting of WAN interface is available only when According to Line Speed is selected as the Load Balance Mode.

- Go to WAN >> Internet Access, you will see the WAN2's Physical Mode changed to "Wireless". Set Access Mode as "Static or Dynamic IP" and click Details Page to setup.

WAN >> Internet Access

Internet Access

Index	Display Name	Physical Mode	Access Mode		
WAN1		ADSL / VDSL2	MPoA / Static or Dynamic IP	Details Page	IPv6
WAN2		Wireless	Static or Dynamic IP	Details Page	IPv6
WAN3		USB	3G/4G USB Modem(DHCP mode)	Details Page	IPv6
WAN4		USB	None	Details Page	IPv6

- Enter the details for Wi-Fi connection:

- Enable Static or Dynamic IP
- Set up IP address as required.
- Set up Universal Repeater Parameters, you may use AP Discovery to find available access point.
- Enter Pass Phrase for the SSID.
- Click OK to apply and reboot the router.

WAN 2

Static or Dynamic IP

Enable Disable

Obtain an IP address automatically
 Specify an IP address

IP Address

Subnet Mask

Gateway IP Address

WAN Connection Detection

Mode

MTU (Max:1500)

Universal Repeater Parameters

SSID

MAC Address (Optional)

Channel :

Security Mode

Encryption Mode

Pass Phrase

Note: If Channel is modified, the Channel setting of wireless 2.4G would be also modified.

- After the router reboots, check the WAN connection status via Online Status >> Physical Connection.

Online Status

Physical Connection		System Uptime: 0day 0:0:57			
IPv4		IPv6			
LAN Status		Primary DNS: 172.16.20.1		Secondary DNS: 8.8.8.8	
IP Address	TX Packets	RX Packets			
192.168.86.1	618	623			
WAN 1 Status					
Enable	Line	Name	Mode	Up Time	
Yes	VDSL2		---	00:00:00	
IP	GW IP	TX Packets	TX Rate(Bps)	RX Packets	RX Rate(Bps)
---	---	0	0	0	0
WAN 2 Status >> Release					
Enable	Line	Name	Mode	Up Time	
Yes	Wireless		DHCP Client	0:00:35	
IP	GW IP	TX Packets	TX Rate(Bps)	RX Packets	RX Rate(Bps)
172.16.20.202	172.16.20.1	6	3	181	496
SSID	Channel	Security	PHY Mode	Rate	Signal Strength
staffs_6F	8	WPA2/PSK	11n	300	100%

Additional Resources

Video

How to set up a wireless WAN in Vigor Router

<https://youtu.be/hRw4AtdVAgM>

Exercises

- Configure and test Vigor LTE router for LTE WAN connectivity.
- Configure and test Wi-Fi WAN for Vigor2860n/ac or Vigor2925n/ac