Introduction of 4th Gen ONT

Overview

The Nokia G-140W-C, also known as the 3rd Generation ONT (Type 300) is our current standard NGA ONT, used for most of our installs. Nokia has been managing global component supply shortages arising from the COVID-19 pandemic but is now unable to manufacture the 3rd Gen ONTs beyond the end of the year. Based on our current run rate, this would mean 3rd Gen stock exhaustion sometime between April and June 2022.

Nokia has offered an alternative ONT model 4th Generation ONT (Type 400) G-1425G-A which has a more secure supply. The new 4th Gen ONT is largely similar in functionality to the 3rd Gen ONT and provides some additional benefits.

We can now confirm that we have agreed to deploy the 4th Gen ONT as our new standard ONT for all Bitstream 2 NGA connections and have secured sufficient supply to meet our forecasted demand.

To see our indicative timeline please refer to slide 5.

3rd Gen vs 4th Gen ONT: Key differences

Similar size
Different look and feel

Improved Wi-Fi signal (Wi-Fi 5)

NGA Business (Bitstream 3/3a)

High performance for your customers

May support BS3 offers in future

4th Generation ONT G-1425G-A

Ethernet ports exit back of the ONT (towards wall). We are working on an install solution and will communicate it as soon as we can

	3rd Gen ONT	4th Gen ONT
2.4Ghz	(100mW)	(up to 500mW)
5Ghz	(200mW)	(up to 500mW)

	3rd Gen ONT	4th Gen ONT
BS3	Not capable	Hardware ready Software development required

CHORUS

3rd Gen ONT vs 4th Gen ONT side-by-side comparison

	3rd Gen ONT	4th Gen ONT (New)
Nokia model	G-140W-C	G-1425G-A
System on chip	MTK-EN7526G	MTK-EN7528DU
Wi-Fi 11n Chipset and EIRP	MT7592N	MT7592N
2.4Ghz	(100mW)	**(up to 500mW)**
Wi-Fi 11ac Chipset and EIRP	MT7612N	MT7613B
5Ghz	(200mW)	**(up to 500mW)**
LED on/off	On/Off feature	On/Off feature
SLIC (Voice POTS)	LE9641	**PEF32001**
POTS	1	1
Ethernet	4GE – ports exit bottom of the ONT	**4GE – ports exit back of the ONT (towards wall)**
USB	1	0
BS3/3a	N	**(Hardware ready)**
PSU Power	1.5A	1.5A same PSU
Wall Mount	Yes	Yes
Size (excl ant)	125 x 170 x 34	138 x 180 x 50

Improved Wi-Fi range

May require Chorus testing due to analogue input

Ports exit back of the ONT - working on a solution

BS3 capable (software development required)

PSU is same as 3rd Gen, simplifying missing PSU process

4th Gen ONT specifications

Features
- Four RJ-45 10/100/1000 Ethernet ports
- One POTS port for voice service
- Wireless IEEE 802.11 b/g/n: 2.4GHz
- Wireless IEEE 802.11ac: 5GHz
- Network Address Translation (NAT) and firewall
- Voice interworking function from the analogue POTS line to the voice over IP (VoIP) and Ethernet layers
- Dual-band concurrent Wi-Fi: 2.4GHz and 5GHz
- Optics support received signal strength indication (RSSI)
- Supports virtual private network (VPN)
- Support Layer 2 Tunnelling Protocol (L2TP) and IPSec
- Port forwarding and demilitarized zone (DMZ)
- Dynamic Domain Name System (DDNS)

Benefits
- Integrates the ONT and wireless access point functions to allow for one less device in the home
- Delivers connectivity to Ethernet devices within the home
- Supports full triple play services, including voice, video and data
- Allows service-per-port configurations
- Supports IP video distribution
- Delivers voice service using VoIP
- Delivers video services efficiently with multicasting or unicasting
- Facilitates network management using Nokia 5520
- Flexible video delivery options of Ethernet or wireless to set-top boxes (STBs)

Physical
- Height:135 mm (5,3 inch)
- Width:170 mm (6,7 inch)
- Depth:30 mm (1,2 inch)

Installation
- Wall mountable
- Antenna are mounted on swivels and can be moved into different positions

Operating environment
- Temperature: -5°C to 45°C (23°F to 113°F)
- Relative humidity: 10% to 90%

Power requirements
- Local powering with 12 V input (feed uses external AC/DC adapter)
- Dying gasp support
- Power consumption: <18W

GPON uplinks
- Wavelength: 1490 nm downstream, 1310 nm upstream
- Line rate: 2.488 Gb/s downstream, 1.244 Gb/s upstream
- GPON Encapsulation Method (GEM) mode support for IP/Ethernet service traffic
- ITU-T G.984.3-compliant dynamic bandwidth reporting
- ITU-T G.984.3-compliant Advanced Encryption Standard (AES) in downstream
- ITU-T G.984.3-compliant forward error correction (FEC)
- ITU-T G.988 Appendix 1 and Appendix 2 ONT Management Control Interface (OMCI)
- Remote software image download
- BOSA On Board (BOB) type laser, SC/APC connector

CHORUS

Specifications continued…..

Ethernet interfaces

- 10/100/1000Base-T interface with RJ-45 connectors
- Wi-Fi Protected Access (WPA) support, including pre-shared key (WPA-PSK) and WPA2
- Forwarding
- Ethernet port auto-negotiation or manual configuration
- Virtual switch based on IEEE 802.1q virtual LAN (VLAN)
- VLAN tagging/de-tagging per Ethernet port and marking/remarking of IEEE 802.1p
- IP type of service/differentiated services code point (ToS/DSCP) to IEEE 802.1p mapping for untagged frames
- Class of service (CoS) based on VLAN ID, IEEE
- 802.1p bit
- Internet Group Management Protocol (IGMP) v2/ v3 snooping

POTS interface

- One FXS ports for VoIP service with RJ-11 connectors
- Multiple codecs: ITU-T G.711, ITU-T G.729
- SIP (RFC 3261)
- ITU-T G.168 echo cancellation
- Services: caller ID, call waiting, call hold, 3-way call, call transfer, message waiting indication
- 3 ringer equivalence numbers (RENs) per line
- Dual-tone multi-frequency (DTMF) dialling
- Balanced sinusoidal ring signal, 55 V root mean square (RMS)

Interfaces WLAN

- 2x2 MIMO en 802.11b/g/n
- 2x2 MIMO en 802.11ac
- WPA, WPA-PSK/TKIP, WPA2, WPA2-PSK/AES
- Media access control (MAC) filters

Residential gateways

- IPv4 and IPv6
- Point-to-Point Protocol over Ethernet (PPPoE) and IP over Ethernet (IPoE)
- NAT, DMZ and firewall
- Dynamic Host Configuration Protocol (DHCP) and domain name system (DNS) proxy
- IGMP proxy
- Supports TR-069

LEDs

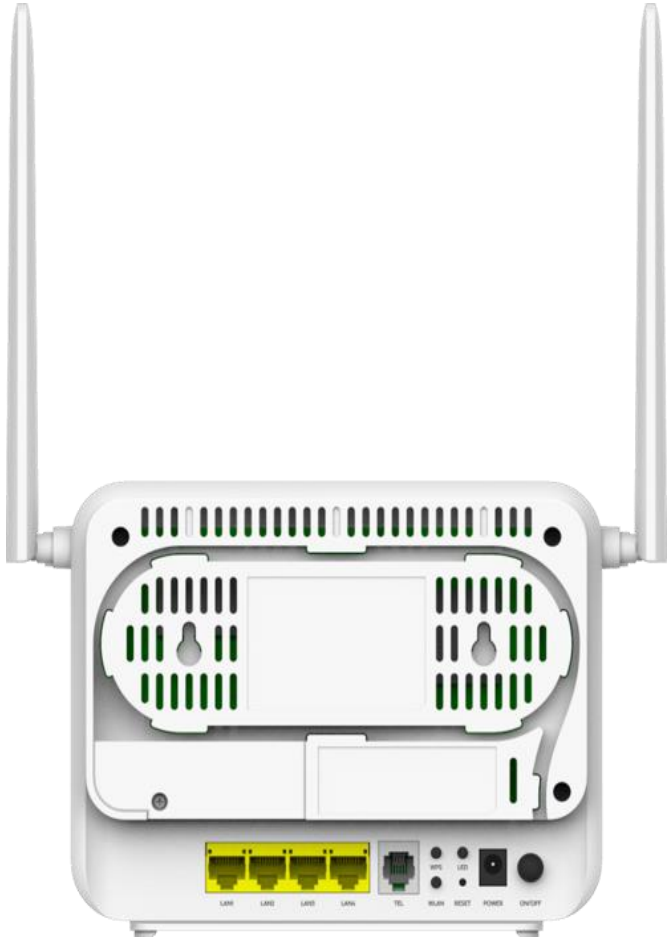
- Power
- Link
- Auth
- LAN (1-4)
- TEL (1)
- Voip
- Wi-Fi Protected Setup (WPS) 2.4G/5G
- WLAN 2.4G/5G
- Internet

Safety and electromagnetic interference (EMI)

- Protection of over voltage/current

Regulatory compliances

- Marca CE
- Marca FCC



Timeline

We will share regular updates with more information over the coming weeks. In the meantime, below is an indicative timeline. We will provide further detail and a firmer timeline by the end of August.

- **April to June 2022 – Launch of 4th Gen ONT**
- March 2022 – RSP readiness check
- Jan 2022 - Service company training
- Oct/Nov 2021 – RSP testing via CCIL lab
- Sept 2021 – 4th Gen ONT test plans provided to RSPs
- Aug 2021 – RSP consultation and Impact assessment
- July 2021 – Initial heads up to RSPs

These timeframes are estimates based on what we know today and are subject to change at our discretion as we learn more. We will endeavour to provide as much notice as possible of any changes.

FAQ's

Why is the 3rd Gen ONT being replaced?	Global component shortages have adversely impacted Nokia's supply of 3rd Gen ONTs (G-140W-C).
How have ONT supplies been during the pandemic?	Nokia has been doing a very good job of manufacturing and delivering ONTs through the disruptions of Covid-19.
How much buffer does Chorus have?	Chorus has maintained a NZ warehouse buffer stock equivalent to 6 - 8 months usage.
What is being done to minimise impact to RSPs?	Chorus and Nokia are working together to minimise the impact of this change on its RSP partners, Service Company contractors and end customers.
What are the dimensions of the 3rd Gen ONT 4th Gen ONT?	3rd Gen = 125 x 170 x 34 4th Gen = 138 x 180 x 50
Is 4th Gen ONT going to be desk or wall mounted?	The Chorus install practice will remain the same as today, wall mounted. Given the new form factor of the 4th Gen ONT, we will be working through the CX implications this presents and we are keen to discuss this with you as we move forward.
Does the 4th Gen ONT have the same or better Wi-Fi performance than the 3rd Gen ONT?	The specification would suggest a better in-home Wi-Fi experience. Actual performance is dependent on home environment
Why doesn't the 4th Gen ONT support Wi-Fi 6?	There is currently a world-wide shortage of Wi-Fi 6 chipsets and we didn't want to select a new ONT that had supply issues.
What value do end customers/RSPs see from this delivery?	Initially this will be an ONT for ONT hardware lifecycle replacement, so the benefits/difference will be minimal. Future services and innovation that will be part of the product roadmap will provide value for both end customers & RSP's however at this early stage, this is still to be defined.
Can we test the 4th Gen ONT?	Yes. 4th Gen ONTs and testing can be organised through your Service Delivery Manager from September 2021.
Does the 4th Gen ONT support Bitstream3?	The 4th Gen ONT hardware supports Bitstream 3 but needs a software development. While we would like to upgrade the software the project has not been scoped yet and is unlikely to get attention until late 2022.
Will we proactively swap out a 2nd or 3rd Gen ONT to a 4th Gen ONT at faults when applicable?	Yes, the plan is to proactively swap out faulty 2nd and 3rd Gen ONT's to a 4th Gen ONT where the service allows. The process around the proactive ONT swaps is currently being defined.