TELCO HOME NETWORK SOLUTIONS

INNOVATION FOR THE WELL CONNECTED HOME

ARRIS

arris.com

TELCO CHALLENGES IN THE ULTRA-BROADBAND ERA

Consumers are seeking high-quality connected experiences that deliver ultra high-definition (UHD) streaming video, virtual reality, OTT services and large volumes of subscriber generated content. To keep pace, you must be well equipped to handle massive traffic growth – investing in fiber to the home while maximizing the performance of existing copper access while providing the in-home networking to connect the ever increasing number of devices. ARRIS offers fiber, copper and fixed wireless access technologies to reach any subscriber and deliver reliable Wi-Fi to every corner of the house.

Diverse Connectivity

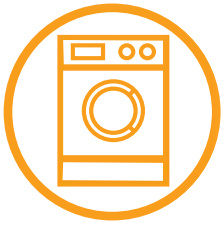
You need the latest technologies in your armory to deliver maximum bandwidth - whether that is via fiber using GPON, XG-PON, XGS-PON, or existing copper using VDSL, G.fast, or wireless using LTE, CBRS. No matter how subscribers are connected, whether they are in high-density urban or rural locations, you must be able to reach them with high-quality, consistent services.

Wi-Fi™ to Every Corner

Today's consumers are streaming content on multiple screens in the home and they expect Wi-Fi that "just works" and bandwidth that complements the broadband data rates. A quality home Wi-Fi network improves consumer satisfaction and reduces the cause of costly help desk calls.

Video over Wi-Fi

Wireless connectivity is the preferred choice for set-tops, providing flexibility of location and freedom from cables. With subscribers paying for premium UHD/High Dynamic Range content, they expect video quality over Wi-Fi to be the same as wired set-tops.



The IoT Explosion

The proliferation of IoT devices has created a need for specialized radio types and resulted in a battle for control of the home IoT hub.

AN ARCHITECTURE FOR TODAY'S CONNECTED HOME

There is no one-size-fits-all approach to enabling the connected home. That's why ARRIS has designed its architecture around quality of experience, while offering a full suite of technologies, management offerings and consumer self-service tools to support it. We offer a strong foundation on which you can build reliable, high-performance home networks that are easy to manage and unique to each subscriber for enhanced quality of experience.

ROBUST SOLUTIONS BUILT FOR OPERATIONAL EFFICIENCY

ARRIS has developed a variety of tools that make it simple and streamlined to deploy and manage the ultimate connected experience. With flexible interfaces and wireless networks that virtually configure themselves, we're helping you reduce the complexities and operational costs of service delivery. The ARRIS 9.x gateway firmware is a mature, proven platform with over 17 years of development and 20M+ devices deployed.

A PLATFORM FOR NEW SERVICES

The gateway has become the hub of service delivery in the home. ARRIS gateways support Docker® Containers to simplify and accelerate the introduction of new applications, for example enhanced security or IoT (Internet of Things) services. IoT is fueling the desire for the ultimate connected experience, as a result the gateways offer IoT radios for wireless connected devices.

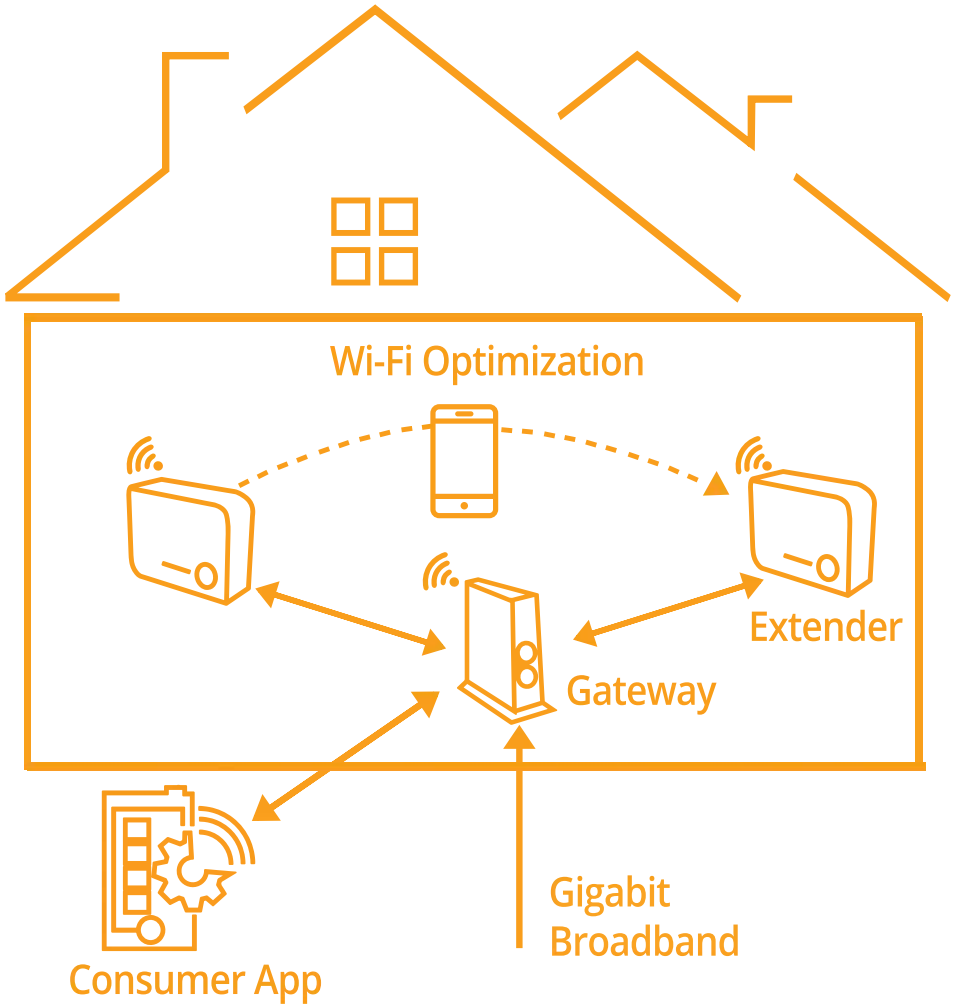
BRINGING SECURITY TO A WHOLE NEW LEVEL

The need for security increases as connectivity increases and more sophisticated services are rolled out. ARRIS applies our extensive knowledge of hardware and software security techniques to protect data, content and hardware integrity against malicious activity, including the signing of firmware images and the authentication of downloaded code. We have implemented strong authentication methods such as 802.1x to prevent service theft. Every software release has to pass our comprehensive security test suit that includes more than 2.8 million security checks.

HI-PERFORMANCE, RELIABLE WI-FI THROUGHOUT THE HOME

Wi-Fi has become the primary means for connecting consumer devices to the Internet. As Service Providers continue to deliver higher speed broadband services, it is becoming increasingly clear that Wi-Fi performance is the determining factor in the consumer experience. When Wi-Fi isn't reliable and ubiquitous, it causes consumer dissatisfaction and increases support costs. In a recent survey[1], 90% of consumers said high-speed Internet through Wi-Fi is important to have in every room of their home.

For Service Providers, the ARRIS HomeAssure™ mesh Wi-Fi solution is an opportunity to differentiate their broadband services while reducing the support costs and customer dissatisfaction arising from unreliable Wi-Fi.



1. ARRIS Connectivity and Entertainment Index Survey 2018

Devices that are ***Wi-Fi Certified EasyMesh*** have been validated by the Wi-Fi Alliance for conformance to the ***Multi-AP (MAP)*** standard. Certified extenders and gateways work together in a multivendor mesh Wi-Fi network. For Service Providers it aids multi-sourcing and opens up the opportunity to on-board and manage retail extenders.

ARRIS was instrumental in developing the MAP standard and the ARRIS VAP4641 Extender was the first Wi-Fi Certified EasyMesh device.

Improve coverage

An ARRIS gateway/router with quality Wi-Fi addresses the coverage requirement in the majority of consumer homes. For additional coverage, subscribers can add network extenders, which are auto-configuring. While extenders may connect to the home gateway over Ethernet or coax cables, Wi-Fi is often the preferred method for ease of installation and flexibility of location.

Maximize Wi-Fi performance

The performance of the multi-access point home network is optimized by the ARRIS Home Network Controller software in the gateway. The autonomous capabilities of this intelligent software include steering devices to the Wi-Fi access point with the best signal, or to an alternative access point when one access point is congested. It ensures air-time fairness to stop low-performance devices at the edge of the network from excessive use of Wi-Fi resources.

Deep Packet Inspection identifies device types and applications. This information is used to make steering decisions, for example, to prioritize connectivity to a user watching a Netflix video.

Easy self-installation

Simple installation starts with the consumer app, which guides the user through the extender installation process. The configuration of the extender is done without any other consumer action. SSIDs and Wi-Fi passwords are automatically transferred from the gateway to the extender.

Enabling consumers to get the best from their Wi-Fi

End users can easily manage their own network with a choice of tools that suits them, such as the ARRIS consumer app, web portal or voice control. Useful tasks that help assist consumers include:

- Viewing SSIDs, passwords, network topology, status and data usage of connected devices
- Configuring guest access and parental controls that limit children's use of the Internet
- Measuring the Wi-Fi signal to map their Wi-Fi coverage around the home and identify if and where a Wi-Fi extender may be needed
- Assessing both Wi-Fi performance and broadband bandwidth in a two-stage speed test

Lower support costs

HomeAssure delivers intelligent Wi-Fi that 'just works' and is easy to install and manage, reducing calls to the help-desk. The HomeAssure Cloud management platform leverages powerful data analytics to proactively identify and resolve issues and improve the performance of the network.

HomeAssure Cloud is a standards-based platform that delivers remote management of the home network, setting policies for the Home Network Controller, monitoring performance and providing analytics for service improvement. Built on the ARRIS ECO Service Management Software, HomeAssure Cloud is scalable to support tens of millions of devices and is extensively deployed by tier 1 Service Providers. It is available as a hosted software-as-a-service for fast time-to-market and low up-front costs. Alternatively, it can be implemented in the Service Provider's data center and customized to specific requirements, including integration into back-office systems such as LDAP, billing, CRM etc.

ARRIS SOLUTIONS FOR THE WELL CONNECTED HOME

ARRIS has developed a range of products that includes modems, routers, residential voice gateways and network extenders to help you deliver Gigabit services with quality and performance, no matter what services you're offering or how your subscribers connect.

High-performance 10Gb/s PON gateways

The NVG578 family of high-performance gateways provides a cost-effective way for Service Providers to deploy broadband services over existing 2.5Gb/s GPON while offering a smooth and fast migration to XG-PON or XGS-PON using a field installable SFP+ or XFP module. For Service Providers looking to deliver market-leading whole-home Wi-Fi services, the gateway is ARRIS HomeAssure-enabled and there is the option of concurrent tri-band (2.4GHz, 5GHz / 5GHz) Wi-Fi 6 (802.11ax)

Features

- On-board 2.5Gb/s GPON optic
- Upgradable using a small form-factor pluggable+ (SFP+ or XFP) module to 10/2.5 Gb/s XG-PON or 10/10 Gb/s XGS-PON
- High-performance Wi-Fi, including 802.11ac tri-band options
- Support for Docker containers to accelerate application deployment
- Primary line VoIP telephone service
- 2 x USB 3.0 ports

Functionality

- Up to 10Gb/s WAN to LAN performance
- HomeAssure-enabled
- TR-069/TR-098 remote management
- 2 x USB 3.0 ports

Options

- Choice of dual-band or tri-band Wi-Fi
- Choice of 802.11ac or 802.11ax Wi-Fi
- Optional software and hardware support for IoT , including Zigbee®, DECT ULE and Bluetooth® LE radios

Fixed wireless broadband gateways

Fixed Wireless Broadband can be a cost effective alternative to installing a new cable to the home. Examples include where the existing copper cables cannot support high-speed broadband or in rural areas where a small number of homes in a relatively large area need to be served. The ARRIS NVG558 is a high-performance gateway supporting voice, video, data and IoT services over 4G LTE broadband access. The modular platform will offer the choice of LTE or 3.5GHz CBRS (Citizens Broadband Radio System), and potentially 5G in the future. For whole-home connectivity the gateway is ARRIS HomeAssure-enabled and there is the option of concurrent tri-band (2.4GHz, 5GHz / 5GHz) Wi-Fi 6.

Features

- 4G LTE Cat > 16 WAN with internal antennas
- High-performance Wi-Fi, including 802.11ax concurrent tri-band options
- Support for Docker containers to accelerate application deployment

Functionality

- Primary line VoIP telephone service
- TR-069/TR-098 remote management
- x USB 3.0 ports
- HomeAssure-enabled

Options

- Optional external antennas
- Future option for 5G access
- Choice of 802.11ac or 802.11ax Wi-Fi
- Choice of dual-band or tri-band Wi-Fi
- Optional software and hardware support for IoT , including Zigbee®, DECT ULE and Bluetooth® LE radios

G.fast bridge modems

The G.fast standard delivers Gigabit broadband over existing copper telephone lines with short (<400m) loop-lengths or coax cable. The range includes small wall-mount or desktop units (FST1203 and FST1305) and SFP modules, the FST1000 (phoneline) and FST1002 (coax) suitable for gateways equipped with an SFP cage. The FST1305 also supports VDSL 34b.

FST1203 G.fast
External Bridge Modem

FST1000 G.fast
Modem SFP Module

Features

- G.fast to Ethernet layer 2 bridge
- Managed via G.997.2 protocol
- Wall-mount or desktop

Flexible xDSL home gateways

The ARRIS NVG44x xDSL residential gateways enable you to cost-effectively deliver robust video, high-speed data and, optionally, primary-line telephony over copper telephone lines. The gateways may be connected to an external fiber ONT or Active Ethernet media converter via a Gigabit Ethernet WAN port. The gateways may form the center of an ARRIS HomeAssure solution for whole-home Wi-Fi coverage.

ARRIS HomeAssure™ Enabled

Features

- VDSL2, ADSL2+ with optional DSL bonding
- Ethernet WAN port for external modem
- Supports triple play (voice, video and data) and dual-play (video and data)
- Concurrent Wi-Fi for 802.11 b/g/n on 2.4 GHz, and 802.11ac on 5 GHz
- Serves as a high-performance converged services platform
- Support for Docker containers to accelerate application deployment

Functionality

- HomeAssure-enabled
- IPTV video
- Four Gigabit Ethernet ports for high-speed home networking
- TR-069/TR-098 remote management
- 802.1x WAN supplicant simplifies CPE authentication

Options

- 4x4 802.11ac Wi-Fi
- Primary line VoIP telephone service

POWERFUL NETWORK EXTENDERS

With a diverse lineup of network extenders, ARRIS enables you to extend the reach and performance of secure connectivity to deliver service offerings to the far reaches of every customer premises.

Wi-Fi connected extenders

Using Wi-Fi to connect the extender back to the gateway offers the greatest flexibility in location and avoids the need to install wires around the home.

ARRIS Wi-Fi Extenders are HomeAssure-enabled, so they are auto-configuring from the home gateway and interwork to form an autonomous self-optimizing Wi-Fi network. High-power and high-performance 4x4 802.11ac Wi-Fi such as the VAP4641, delivers coverage with the minimum number of devices for lower cost and ease of support. The VAP4641 offers the flexibility of desktop or plug socket installation.

Devices that are Wi-Fi Certified EasyMesh have been validated by the Wi-Fi Alliance for conformance to the Multi-Access Point (MAP) standard. Certified extenders and gateways work together in a multivendor mesh Wi-Fi network. For Service Providers, it aids multi-sourcing and opens up the opportunity to on-board and manage retail extenders. ARRIS was instrumental in developing the MAP standard and the ARRIS VAP4641 Extender is the world's first Wi-Fi Certified EasyMesh device.

For homes cabled with coax, the HomeAssure-enabled AM525 MoCA / Ethernet to Wi-Fi Extender uses the MoCA 2.0 or Ethernet standard to deliver dual-band, 802.11ac Wi-Fi around the home.

Supporting the G.hn standard, the GPE2001 Powerline to Ethernet Extender uses the existing in-building electrical circuits to connect devices to the gateway.

VAP4641 AM525 GPE2001

THE ARRIS IN-HOME PORTFOLIO

FTTH Gateways

Model	GPON 2.5/1.2Gb/s	XG-PON 10/2.5Gb/s	XGS-PON 10/10Gbs	Other WAN	5GHz Wi-Fi	2.4GHz Wi-Fi	LAN	USB/MoCA	VoIP	HomeAssure Enabled
NVG468	N	N	N	1GbE	3x3 802.11ac or 4x4 802.11ac	2x2 802.11n or 3x3 802.11n	4GbE	1xUSB 3.0 MoCa Optional	Optional	Y
NVG578S	Y on-board **	Y SFP+or XFP ***	Y SFP+or XFP ***	Y Up to 10GbE*	4x4 802.11ac or 802.11ax Dual-band or Single-band	3x3 802.11n or 4x4 802.11ax	4GbE plus one port up to 10G*	USB 3.0	Optional	Y
NVG578	Y on-board **	Y SFP+or XFP ***	-	Y Up to 10GbE*	4x4 802.11ac or 802.11ax Dual-band or Single-band	3x3 802.11n or 4x4 802.11ax	4GbE plus one port up to 10G*	USB 3.0	Optional	Y
NVG578L	Y on-board **		-	Y Up to 10GbE*	4x4 802.11ac or 802.11ax Dual-band or Single-band	3x3 802.11n or 4x4 802.11ax	4GbE plus one port up to 10G*	USB 3.0	Optional	Y

* the 10G Ethernet port can be use a LAN or WAN. It can be removed or converted in a 2.5/5G Ethernet port
** BOSA is considered as stuffing option and can be depopulated from the product
*** SFP+ cage can be replaced with an XFP cage to accommodate future support of NGPON2

Fixed Wireless Broadband Gateways

Model	LTE	LTE antennas	Other WAN	5GHz Wi-Fi	2.4GHz Wi-Fi	LAN	USB	VoIP
NVG558	4G LTE up to cat 12 5G LTE optional	Internal, optional external antennas	1GbE	4x4 802.11ac or 802.11ax Dual-band Single-band	3x3 802.11n or 4x4 802.11ac	4GbE	1xUSB 3.0	Optional

G.fast Modems

Model	Form	VDSL2 35b	Phoneline	Coax	Band plan
FST1000	SFP Module	-	Y	-	106MHz
FST1002	SFP Module	-	-	Y	106MHz
FST1203	Wall / desk mount	-	Y	Y	106MHz
FST1305	Wall / desk mount	Y	Y	Y	106MHz

xDSL Gateways Ethernet WAN port

Model	ADSL2+	VDSL2	Bonding	Other WAN	5GHz Wi-Fi	2.4GHz Wi-Fi	LAN	USB/MoCA	VoIP	HomeAssure Enabled
NVG44x Series	Y	Y	Optional	1Gbe	3x3 802.11ac or 4x4 802.11ac	2x2 802.11n or 3x3 802.11n	4	1xUSB 3.0	Optional	Y

Network Extenders

Model	Form	Interconnect	5GHz Wi-Fi	2.4GHz Wi-Fi	Dual-band	LAN GigE Ports	HomeAssure Enabled	Management.
AM525	Desktop	MoCA	4x4 802.11ac	2x2 802.11n	Concurrent	2	Y	TR-069
VAP4402	Desktop	Ethernet, Wi-Fi	4x4 802.11ac	2x2 802.11n	Concurrent	2	Y	TR-069
VAP4641	Plug / Desktop	Ethernet / Wi-Fi	4x4 802.11ac	2x2 802.11n	Concurrent	1	Wi-FI CERTIFIED EasyMesh	TR-069
GPE2001	Plug - USA	PLC (G.hn)	Ethernet only	-	-	1		TR-069