

# NULINK NETWORK MANAGEMENT PRACTICES

(Pursuant to 47 C.F.R. § 8.1 et seq)

NuLink has developed the following network management practices with respect to its broadband Internet access services in Georgia. This document is intended to meet the Transparency requirements of the Protecting and Promoting the Open Internet regulations promulgated by the Federal Communications Commission ("Commission") (codified in 47 C.F.R. §§ 8.1, et seq.). This document is in addition to and supplements any other existing terms, policies and procedures relating to NuLink's broadband Internet access services (sometimes referred to as "BIAS"). **NULINK'S NETWORK MANAGEMENT PRACTICES, AS WELL AS THE PERFORMANCE CHARACTERISTICS AND TERMS OF SERVICE, FOR ITS BROADBAND INTERNET ACCESS SERVICES ARE SUBJECT TO CHANGE.** We will provide updates to this document, the most recent version of which is located at: [www.nulink.com](http://www.nulink.com), and in other appropriate locations if we make important or significant changes to our network management practices.

## I. OVERVIEW

The purpose of this document is to disclose information regarding NuLink's network management practices, performance, and commercial terms of its broadband Internet access service (the "Service") sufficient for consumers to make informed choices regarding use of such Service and for content, application, service, and device providers to develop, market, and maintain Internet offerings, consistent with the Commission's Protecting and Promoting the Open Internet regulations. High-speed bandwidth and network resources are limited and managing the network is essential to promote the use and enjoyment of the Internet by all of our customers. NuLink is committed to providing the best online experience possible for all of its customers and uses reasonable network management practices to ensure that the NuLink Service is used in ways that are consistent with the specifications of a shared network, and the standards of our local municipalities and the Internet community. NuLink also aims to ensure that the Internet access resources we provide are used in a manner that benefits everyone. The network management practices used by NuLink are consistent with industry standards. For example, we use tools and practices to reduce the negative effects of spam, viruses or other harmful code or content, security attacks, network congestion, and other risks and degradations of the Service. By engaging in reasonable and responsible network management, NuLink can deliver the best possible broadband Internet experience to all of its customers.

NuLink maintains an Acceptable Use Policy located at: [www.nulink.com](http://www.nulink.com). The AUPs contain a series of use policies, guidelines and restrictions that NuLink expects its customers to adhere to as they use the Service.

NuLink also has terms and conditions of service that apply to both its residential and business customers, which are located at: [www.nulink.com](http://www.nulink.com) (the "Terms"). Overall, the AUPs, the terms and conditions of service and this Network Management Practices disclosure address NuLink's (and where applicable its providers') network management techniques and approaches.

NuLink's use of various tools and techniques to manage its network, deliver its service, and ensure compliance with the AUPs and its terms and conditions of service, can and do change periodically. As the Internet and related technologies continue to evolve and advance, NuLink's network management practices, techniques and tools will also change so that we can deliver a reliable and safe service to all of our customers. We will provide updates to this document, the most recent version of which is located at: [www.nulink.com](http://www.nulink.com) and in other appropriate locations if we make important or significant changes to our network management practices.

## II. NETWORK PRACTICES

Overall, NuLink follows these network management practices:

- **No blocking.** NuLink does not block access to legal content, applications, services or non-harmful devices, subject to reasonable network management.
- **No throttling.** NuLink does not impair or degrade lawful Internet traffic on the basis of content, applications, services, or non-harmful devices, subject to reasonable network management.
- **No paid prioritization.** NuLink does not favor some lawful Internet traffic over other lawful traffic in exchange for consideration of any kind, or to benefit an entity affiliated with NuLink.

### A. Congestion Management:

NuLink monitors its network on a continual basis to determine if an area of congestion could occur. The area of possible congestion will be identified and network improvements will attempt to be made prior to any congestion occurring. These network improvements may include: the addition of network hardware or network segregation to accommodate additional traffic. If a period of congestion occurs, customers may experience things like: longer times to download or upload files, surfing the Web may seem somewhat slower, or playing games online may seem somewhat sluggish. NuLink does not manage congestion based on the online activities, protocols or applications a customer uses; it only focuses on the areas with the heaviest usage and works to alleviate any congestion prior to any customer impact. The purpose is to eliminate periods of congestion as quickly as possible.

The criteria or indicators that we use to determine if NuLink should implement a congestion reducing practice is when utilization has reached a predetermined level, typically above 70%, we begin developing a network design to accommodate the additional traffic as well as calculating for future growth.

Congestion in the NuLink network most often occurs during the evening hours between 5pm and 11pm, although congestion may occur at any time. NuLink's goal is to ensure your connection is as stable as possible so that you receive the bandwidth you are expecting.

NuLink does not have usage limits, but will remove network access to any users determined as being abusive to the system, which we generally define as any user violating our Terms of Service or Acceptable Use Policy.

#### *B. Application-Specific Behavior:*

NuLink does not block P2P traffic or applications like BitTorrent, Gnutella, or others as part of its current network congestion management technique.

NuLink does not discriminate against particular types of lawful online content. NuLink provides its customers with full access to all the lawful content, services, and applications that the Internet has to offer. However, we are committed to protecting customers from spam, phishing, and other unwanted or harmful online content and activities. In that connection, we use industry standard tools and generally accepted practices and policies to help ensure that our customers are protected from unwanted or harmful content and activities. NuLink's use of these tools, techniques and policies help to identify and restrict certain harmful and unwanted online content, such as spam or phishing Web sites. In other cases, these tools, techniques and policies may permit customers to identify certain content that is not clearly harmful or unwanted, such as bulk email or Web sites with questionable security ratings, and enable those customers to inspect the content further if they want to do so.

#### *C. Device Attachment Rules:*

NuLink allows for customer owned equipment to be used on the network, so long as such devices do not interfere with the NuLink network or NuLink's ability to provide the Service. These devices are not supported or managed by NuLink, unless it is in the best interest of NuLink and the operation of the network.

#### *D. Security:*

NuLink employs a number of practices to help prevent unwanted communications such as spam as well as protect the security of our customers and network. NuLink limits the number of login, SMTP, DNS, and DHCP transactions per minute (at levels far above "normal" rates) that customers can send to NuLink's servers in order to protect them against Denial of Service (DoS) attacks. We do not disclose the exact rate limits in order to maintain the effectiveness of these measures, which ensure that these critical services are available for all of our customers. In order to further protect our customers, NuLink blocks a limited number of ports that are commonly used to send spam, launch malicious attacks, or steal a customer's information, for example, SQL Exploits and Microsoft communication protocol ports. In addition, NuLink conducts several security initiatives, and offers security tools for our customers, such as DoS monitoring and Virus Scanning software.

#### *E. User or Application-Based Practices and Likely Effect on End Users:*

We do not presently employ any practice that is applied to traffic associated with a particular user or user group, including any application-agnostic degradation of service to a particular end user.

### **III. PERFORMANCE CHARACTERISTICS**

#### *A. Service Description:*

NuLink is a cable television provider that offers high speed cable modem Internet service. NuLink provides residential and business customers with a variety of high speed Internet plans from which to choose, ranging from our lowest tier (with download speeds up to 25 megabits per second ("Mbps"), and upload speeds up to 3 megabits per second ("Mbps") to our highest tier (with download speeds up to 250Mbps, and upload speeds up to 50 Mbps). NuLink provisions its customers' modems and engineers its network to ensure that its customers can enjoy the speeds to which they subscribe. However, NuLink does not guarantee that a customer will actually achieve those speeds at all times. Without purchasing an expensive, dedicated Internet connection, no Internet Service Provider ("ISP") can guarantee a particular speed at all times to a customer. NuLink advertises its speeds as "up to" a specific level based on the tier of service to which a customer subscribes.

#### **Expected and Actual Speeds**

The "actual" speed that a customer will experience while using the Internet depends upon a variety of conditions, many of which are beyond the control of an ISP such as NuLink. These conditions include:

**1. Performance of a customer's computer**, including its age, processing capability, its operating system, the number of applications running simultaneously, and the presence of any adware and viruses. You should make sure you are running the most up-to-date operating system your Internet connected device can handle (with all available patches installed) to maximize your connection speeds.

**2. Type of connection between a customer's computer and modem.** If there is a wireless router between your modem and your Internet connected device, the connection speed you experience can often be slower than direct connections into a router or modem, and depends on the model and configuration of the router that you use. Certain routers are able to pass data to your Internet connected device more quickly than others. Wireless connections also may be subject to greater fluctuations, interference and congestion. Wireless modem connections used with higher speed tiers may be particularly impacted, as many wireless connections do not perform at the speeds delivered by these tiers.

**3. The distance packets travel (round trip time of packets)** between a customer's computer and its final destination on the Internet, including the number and quality of the networks of various operators in the transmission path. The Internet is a "network of networks." A customer's connection may traverse the networks of multiple providers before reaching its destination, and the limitations of those networks will most likely affect the overall speed of that Internet connection.

**4. Congestion or high usage levels at the website or destination.** If a large number of visitors are accessing a site or particular destination at the same time, your connection will be affected if the site or destination does not have sufficient capacity to serve all of the visitors efficiently.

**5. Gating of speeds or access by the website or destination.** In order to control traffic or performance, many websites limit the speeds at which a visitor can download from their site. Those limitations will carry through to a customer's connection.

**6. The performance of the cable modem you have installed.** Modem performance may degrade over time, and certain modems are not capable of handling higher speeds. For speeds exceeding 20 Mbps, a DOCSIS 3.0 modem is required. For up to 1 Gig service, a DOCSIS 3.1 modem with 1 Gig Ethernet ports and 32 by 8 channel bonding and OFDM capabilities is required. The up to 1 Gig service may be particularly impacted by computer and communications limitations. We encourage you to promptly contact NuLink customer service if you have any concerns about your modem performance or speed capabilities.

This is the reason that NuLink, like other ISPs, advertises speeds as "up to" a particular level, and does not guarantee them. See below for additional information.

#### **Provisioned Speeds**

Generally, NuLink "over provisions" its customers' modems. This is intended to provide an extra buffer for speed performance. As a result, in some circumstances NuLink customers experience speeds in excess of that provisioned as part of their chosen speed tier.

#### **Latency**

Latency is another measurement of Internet performance. Latency is the time delay in transmitting or receiving packets on a network. Latency is primarily a function of the distance between two points of transmission, but also can be affected by the quality of the network or networks used in transmission. Latency is typically measured in milliseconds, and generally has no significant impact on typical everyday Internet usage. As latency varies based on any number of factors, most importantly the distance between a customer's computer and the ultimate Internet destination (as well as the number and variety of networks your packets cross), it is not possible to provide customers with a single figure that will define latency as part of a user experience.

In general, NuLink's SLO for average round-trip latency in any metro market is less than or equal to 45ms and is measured from the customer premise demarcation where service is provided to the nearest interconnection location in 15-minute samples throughout the month. See below for additional information.

#### **IP Packet Delivery and Loss**

Packet loss is defined as the percentage of packets that are dropped between the customer premise demarcation where service is provided to the nearest interconnection location and is measured in 15-minute samples throughout the month. Like latency, packet loss varies based upon a number of factors and to it is not possible to provide customers with a single figure that will define packet loss as part of a user experience. In general, NuLink's SLO for IP packet delivery is 99.9% in any given month, which equates to a packet loss percentage of less than or equal to 0.1%. See below for additional information.

### **Recent Performance Metrics**

Below is a summary of speed, and latency test results conducted February 16, 2018 to February 22, 2018 and collected by NuLink. The information is based upon median NuLink cable modem customer speed test results. As explained in further detail above, although NuLink engineers its network to achieve the “up to” speeds for each of the service levels offered, we cannot guarantee that individual customers will always experience those speeds. At any point in time, a customer’s actual speed may be faster or slower than the “up to” speed.

Please note that NuLink sometimes changes its available service tier packages or offers some service tier packages only in certain service locations, and so the service tiers reflected below may not be available in all of NuLink’s service locations. We expect to further update and augment this information as additional data becomes available.

Advertised Speed	7pm - 11pm		
	Download Speed (Mbps)	Upload Speed (Mbps)	Latency (ms)
30/3 Mbps	29	3	18
100/4 Mbps	91	4	18
150/6 Mbps	140	6	17
250/10 Mbps	202	10	18

Advertised Speed	Packet Loss
	7pm-11pm
30/3 Mbps	0%
100/4 Mbps	0%
150/6 Mbps	0%
250/10 Mbps	0%

Packet loss statistics were determined by sending packets between customer demarcations (modems) from its nearest interconnection location.

### **Customer Speed Test**

NuLink offers its customers the ability to test the speeds that they are receiving on NuLink’s network from the customer’s computer to a test site on NuLink’s network. Simply go to the speed test site for your service location to test your connection at: <http://speedtest.com>

Please note that this and other commercially available speed tests are dependent on several of the factors outlined above, especially the customer’s in-home Wi-Fi network. Therefore, these tests do not necessarily reflect the performance of the NuLink network alone.

The limitations will particularly affect our 1G speed tier. Our 1G speed tier generally will not test and respond the same as our other service tiers for reasons related to technological limitations of Ethernet ports in current hardware. Most personal computers today have only a 1G Ethernet port, which has a theoretical limit of 1G. However, if you take into account packet overhead, you will never see 1G as a test result. The modem is also limited by the same 1G port limitation. For this reason, two 1G interfaces are provided on the modem and the user must spread traffic over both ports to truly utilize the full 1G offering. This service is best thought of as providing the 1G for many devices in your home to share. Also, any medium (such as a Wi-Fi router) other than directly connected wired Ethernet will result in lower performance. Any speed tests completed over Wi-Fi are subject to actual limitations of the Wi-Fi network and the lowest capability of devices on the network. For example, wireless routers using the 802.11b protocol are limited to 11 Mbps and, depending on your signal strength, will likely give you significantly slower connection speeds. An 802.11b network typically operates no faster than about 50 percent of its theoretical peak, or around 5.5 Mbps. Other wireless network protocols also have much lower actual speeds than the theoretical maximum speed. As explained in detail above, wireless connections also may be subject to greater fluctuations in speed and latency and may be affected by interference, congestion, distance and other factors.

### **Suitability of the Service for Real-Time Applications**

NuLink offers a variety of Service plans, with different speeds. Some of NuLink’s low tier plans would not be suitable for certain real time applications. Generally speaking, real-time applications such as streaming video or video conferencing may require subscription to NuLink’s Service plans with speeds at or above 25Mbps.

#### ***B. Impact of Non-BIAS Data Services:***

We provide Quality of Service for our Voice platform, which gives priority access for voice traffic throughout the network. This helps to ensure your calls will remain as clear and error free as possible. If congestion has met the maximum capacity for last mile traffic, there may be a temporary delay in last mile HSD traffic. We use congestion management techniques to prevent or minimize such delays. We also give priority access for business customers that subscribe to our Ethernet virtual private line services. We do not similarly prioritize traffic from BIAS services.

#### IV. COMMERCIAL TERMS

As stated above, NuLink provides a range of residential Internet Services, which are subject to our AUPs and Terms. The Terms can vary depending upon the service location. NuLink also has AUPs and “standard” terms of service that apply to our business customers, but those terms can vary from customer to customer based upon individual negotiations. Prospective residential and business customers should read both agreements before purchasing Services from NuLink. The Terms and the AUPs may be changed at NuLink's discretion in accordance with the terms of the agreements. The current versions of the AUPs and Terms are posted on our website at [www.nulink.com](http://www.nulink.com).

##### *A. Pricing:*

###### General Pricing Policy.

All prices for NuLink Internet services are provided to customers at the point of sale and before services are provided to the customer. **ALL OF NULINK'S PRICES ARE SUBJECT TO CHANGE.** Prices for NuLink broadband Internet access services vary by region and often change over time or based on current promotions. Current subscribers can find pricing information concerning their service on their monthly bill, by contacting a customer service representative, or by accessing their accounts through the “Account” portal, available at <https://cableanytime.com/NuLink/>.

Residential Prospective customers can obtain pricing information for broadband Internet access service by contacting a NuLink sales representative.

Business Prospective customers can obtain pricing information for broadband Internet access service by contacting a NuLink Business sales representative. NuLink typically sells its broadband Internet access service to business customers for a specified term (generally ranging from 1-5 years). Pricing may vary depending upon the length of the agreed upon service term. Customers that agree upon a longer service term may receive more favorable pricing. In most cases, our Business agreements automatically renew for an additional term (usually one year) at the end of the initial term. **All of NuLink's prices are subject to change.**

NuLink offers a variety of service plans in its operating regions, which include pricing for Internet Services that vary depending upon the plan and whether the Internet Services are bundled with NuLink's other service offerings. All of NuLink's current pricing and offers are located at: [www.nulink.com](http://www.nulink.com).

###### Promotional Rates.

NuLink periodically offers promotional rates, which are most often available to new customers. The length of the promotional rate varies depending upon the offer. At the end of the promotional rate period, pricing will be adjusted to reflect NuLink's then current standard rate.

We typically agree with our business customers that the agreed upon BIAS pricing will not change for the initial term of our agreement. After the initial term, pricing is subject to change.

Standard Fees and Charges.

**Residential.** For our residential services BIAS customers, our standard the fees and charges vary depending on the service location, but can include:

Residential Installation, Equipment, & Other Service Rates	
Standard Installation	\$49.95
Install Additional Outlet - Separate Trip	\$49.95
Install Additional Outlet - Same Trip	\$19.95
Wall Fish (includes one outlet)	\$40.00
Service Call Charge	\$49.95
Service Protection Plan (Monthly)	\$5.00
Collection Fee	\$30.00
Wireless Router	\$9.95

**Internet Equipment excludes service pricing, fees, installation and sales tax.**

**NuLink Internet Residential Pricing – Internet-Only Promotion**

Pricing for 6 months.

Residential Internet Service				
BasicFAST 25Mbps Monthly Rate	Basic Fast 50Mbps* Monthly Rate	ExpressFAST 100Mbps Monthly Rate	UltraFAST150Mbps Monthly Rate	EXTREME 250Mbps Monthly Rate
\$29.99	\$29.99	\$39.99	\$49.99	\$79.99

\*50Mbps only available in Peachtree City

**Internet service pricing excludes equipment, fees, installation and service call charges.**

**NuLink Internet Residential Pricing - NuLink Monthly Plan**

Residential Internet Service				
BasicFAST 25Mbps Monthly Rate	Basic Fast 50Mbps* Monthly Rate	ExpressFAST 100Mbps Monthly Rate	UltraFAST150Mbps Monthly Rate	EXTREME 250Mbps Monthly Rate
\$55.70	\$55.70	\$65.70	\$72.40	\$100.95

\*50Mbps only available in Peachtree City

**Internet service pricing excludes equipment, fees, installation and service call charges.**

**Business.** For our business services BIAS customers, our standard the fees and charges vary depending on the service location, but can include:

Business Internet Service			
BasicFAST 25Mbps Monthly Rate	ExpressFAST 100Mbps Monthly Rate	UltraFAST150Mbps Monthly Rate	EXTREME 250Mbps Monthly Rate
\$54.95	\$74.95	\$95.95	\$129.95

Internet service pricing excludes equipment, fees, installation and service call charges.

Business Equipment, & Other Service Rates	
Business Class Router	\$12.95
Cat5 Installation (Cost per drop up to 300 feet of Cat5e cable; includes one jack)	\$80.00
Static IP (1)	\$6.95

**Internet Equipment excludes service pricing, fees, installation and sales tax.**

NuLink’s “standard” rates that apply to business customers often vary from customer to customer based upon individual negotiations.

**All of NuLink’s prices are subject to change.**

Data Caps, Usage-Based Fees, and Fees for Early Termination or Additional Network Services.

NuLink generally does not limit the amount of usage (by imposing specific data caps) or impose usage-based fees. NuLink also does not impose fees for early termination for its residential service customers, *but NuLink does retain the right under its terms to impose additional charges upon residential customers that use excessive bandwidth, which NuLink considers to be bandwidth that is inconsistent with residential use.* NuLink does impose early termination fees upon its business services customers, as more particularly described in the Business Services General Terms and Conditions, located at <https://www.nulink.com>.

In general (and depending upon a customer's agreement with NuLink), NuLink imposes an early termination fee upon its business customers as follows: early termination charges are equal to: (i) the reasonable expenses and costs incurred by NuLink through the date of termination including but not limited to installation costs, survey costs, competitive contract buyout charges or other third party costs incurred by NuLink, direct labor and materials; plus (ii) the amount of any unpaid invoices; plus (iii) 75% of the agreed upon monthly service charges multiplied by the number of months remaining in the term of the service agreement. These early termination fees can vary depending upon the type of service involved, the applicable terms and conditions of service and our customer's specific agreement with NuLink.

*B. Privacy Policies:*

**Privacy Policy**

NuLink's Privacy Policy is located at: <http://www.nulink.com>.

The Privacy Policy is subject to change.

**Inspection of Network Traffic**

NuLink automatically measures and monitors network performance and the performance of our customer's Internet connection and our network. NuLink may also monitor and record information about a customer's computer, equipment profile or settings and the installation of software it provides. NuLink does not share information collected for the purpose of network or computer performance monitoring or for providing customized technical support outside of NuLink or its authorized vendors, contractors and agents. NuLink reserves the right to modify the password(s) for the router(s) used with the Service in order to safeguard Internet security, the security and privacy of customer information, where required by law, and/or for other good cause to provide, upgrade and maintain the Service, protect the network, other users of the Internet, or its customers.

*C. Redress Options:*

Edge providers and NuLink customers may submit a complaint or question to NuLink with regard to any aspect of the Service, at any time. NuLink maintains a telephone number that is available 8:00AM to 9:00PM Monday through Friday and 8:00AM to 7:00PM on Saturday: 770-683-6988

You can also email us from the "Contact" section at [www.nulink.com](http://www.nulink.com), or write to us at: NuLink, 2 A Jackson St., Newnan, GA 30263

When a call is received regarding a service related issue, a customer care representative (CCR) will attempt to determine the nature of the problem. If possible, the CCR will help the customer resolve the problem over the telephone. If the problem cannot be resolved during the call, the CCR may if necessary schedule a service technician to visit the customer's home or business. If the problem cannot be resolved by the CCR, the problem will be referred to a supervisor who will make best efforts to resolve the issue immediately. If a customer has a complaint requiring further escalation, the customer can contact NuLink at our toll-free numbers or by email or postal mail. NuLink's policy is to reply to an escalated customer complaint within thirty working days of receipt. NuLink will endeavor to include in its reply a statement of action taken, description of future work needed to resolve any issue or an explanation why the complaint is unjustified or outside the jurisdiction of NuLink.

In the event we are unable to resolve in an informal manner a dispute with a customer, the customer or NuLink may elect to arbitrate the dispute in accordance with the applicable arbitration provisions of the Terms, as opposed to litigating the dispute in court. The dispute resolution process is fully described at: [www.nulink.com](http://www.nulink.com).

(REVISED AS OF: March 1, 2018)