



## Network Management Policy (“Policy”) – Exede by ViaSat<sup>1</sup>

### I. OVERVIEW

ViaSat’s Network is a shared network; at any given time, subscribers within a given geographic area must share available network capacity. ViaSat aims to provide each subscriber with a “fair share” of that capacity, while providing all subscribers with a high-quality online experience. To achieve these goals, ViaSat employs network management practices designed to prevent any subscriber from placing a disproportionate demand on network resources. Certain of these practices are used only when the Network is congested; others are used more generally.

Traffic levels on the Network are usually below a congestion point that would have a significant impact on the user experience. ViaSat has designed its Network carefully to achieve this result.

At other times, however, simultaneous transmissions from multiple subscribers result in a total demand for capacity exceeding that available on the Network, resulting in congestion. During these times, ViaSat’s congestion management practices, as further described in this Policy (in Part III), strive to treat traffic in a manner that minimizes adverse impacts on the user experience while preventing a subscriber from exceeding his or her “fair share” of available capacity.

In addition to its congestion management practices, ViaSat utilizes a number of other practices and policies designed to enhance the user experience as well as the security and reliability of the Network, including “Other Forms of Network Management” (described in Part IV of this Policy) and the “Exede Terms of Service” (defined in Part V of this Policy). This Policy does not separately address the treatment of traffic that is inconsistent with the intended use of the Network as described in the Exede Terms of Service.

The goal of these measures is for subscribers, on the whole, to enjoy a better overall service experience than they otherwise would without these practices.

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<sup>1</sup> This Policy applies to ViaSat’s Exede broadband network in which ViaSat provides Internet services through the ViaSat-1, WildBlue-1, and Anik F2 satellites using second generation SurfBeam 2 equipment (the “Network”). As ViaSat’s network management practices evolve, we will update this Policy and post any updates on our website, [www.exede.com/legal](http://www.exede.com/legal).

## II. NETWORK ARCHITECTURE

ViaSat’s Network incorporates space-based components (satellites) and ground-based components (*e.g.*, subscriber terminals, “gateway” earth stations, and fiber “back-haul” connectivity). The communications links between space-based and ground-based components use a pre-defined amount of radiofrequency spectrum to communicate without wires.

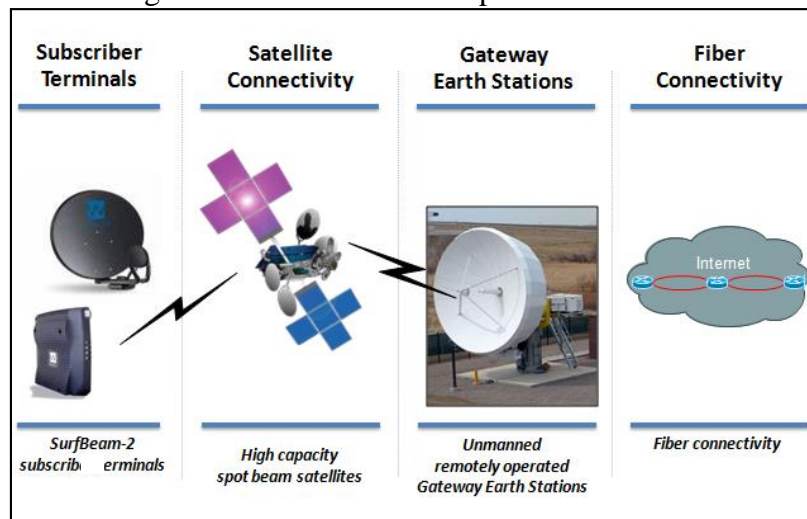
The satellites in the Network utilize a “bent-pipe” spot-beam architecture. Signals are transmitted from ground facilities to the satellite through a wireless link. The satellite then operates as a “bent pipe” and retransmits those signals back to the ground, through another wireless link. Transmissions occur within individual “spot” beams, each of which covers a defined geographic area.

The traffic of each subscriber is associated with a single spot beam. ViaSat strives to load its system so that at any given time the traffic load across different channels (subsets of the capacity available on a spot beam) within a given spot beam is roughly comparable. Available capacity within any given spot beam or beam channel is largely fixed; subscribers assigned to a channel share the available bandwidth in that channel.

Subscriber traffic is routed to and from the Internet (and other public networks) through a designated ground-based facility known as a “gateway” earth station. At each gateway, traffic is processed through a satellite modem termination system (“SMTS”) and other terrestrial networking equipment, which then interconnects with a terrestrial fiber optic network and, eventually, the Internet.

Subscribers are required to utilize certain ViaSat equipment, including an antenna and modem, in order to obtain a Network connection at their locations. Once they have that Network connection, almost any computer device with an Ethernet port can be connected to the Exede modem. ViaSat does not restrict the ability of subscribers to connect devices of their choice to the Network in this fashion (other than as described in the Exede Terms of Service).

The following illustration shows a simplified version of the Network architecture:



### **III. CONGESTION MANAGEMENT PRACTICES**

#### **A. Congestion Management Overview**

The Network is designed to ensure that it generally does not experience congestion. Under normal traffic conditions, it is not necessary for ViaSat to employ congestion management practices. That said, while network capacity is abundant, it is not unlimited. Stated differently, the Network can be expected to experience some level of congestion, necessitating the congestion management practices described in this Policy.

ViaSat manages its Network to minimize the adverse impact that congestion may have on the user experience. Congestion typically occurs in the link between the subscriber terminal and the gateway earth station via the satellite. In order to determine if the link is congested, ViaSat continuously monitors the traffic load in each spot beam channel. If the instantaneous traffic load exceeds the available capacity of the spot beam channel, ViaSat invokes a congestion management algorithm described below.

#### **B. Mitigating the Impact of Network Congestion on the User Experience**

Internet traffic is “bursty” in nature; traffic flows generally are not continuous, but rather are characterized by staccato “bursts” of data. On occasion, simultaneous transmissions from multiple subscribers in a given spot beam channel result in a total instantaneous demand for capacity exceeding, on a temporary basis, the capacity available within the channel. On such occasions, the Network can experience congestion. Congestion most typically occurs during the network’s “peak” usage hours (which generally can be expected to be from about 5:00 PM to 2:00 AM local time at the subscriber location, depending on the day of the week). Congestion may also occur during certain periods when usage is “unmetered” (such as the Exede “Late Night Free Zone”).

Network congestion, and the resulting transmission delay, impacts the user experience with respect to some types of applications more than others. For example, a delay in the rendering of a web page may be noticeable to a subscriber waiting for the content to appear on his/her screen. On the other hand, a subscriber downloading a bulk file (*e.g.*, a software update) may be less impacted if the download takes longer during congestion than it otherwise would, since the subscriber may already know that the download requires some time to complete.

ViaSat’s goal is to manage its Network to minimize the impact of congestion on traffic that is otherwise consistent with the Exede Terms of Service. To accomplish this objective, ViaSat’s congestion management algorithm is designed to reduce the traffic load, while giving a preference to (*i.e.*, having a lesser effect on) Exede Voice and applications that require less transmission bandwidth such as web page browsing and email. ViaSat determines the nature of relevant traffic using a technique called deep-packet inspection. During periods of congestion, bandwidth intensive applications such as video streaming and file downloading may be slowed more than other applications. As a result, the quality of video streaming may be reduced and/or buffering may occur. In addition, file downloads may take longer to complete during periods of congestion. Under more severe congestion, all applications may need to be slowed, and in those instances, the time to download web pages may take longer.

In addition, Network traffic may be prioritized during periods of congestion based on subscribers' data usage. Some ViaSat service plans (i.e., Liberty and Freedom Plans) provide subscribers with continued use of the internet even after exceeding the monthly data allowance or other usage threshold set forth in the Exede Terms of Service. In general, the Network traffic of Liberty Plan subscribers on Liberty Pass ("Liberty Pass Users") and Freedom subscribers whose monthly data usage is greater than 150 GB ("Excess Freedom Users") receives a lower priority than the traffic of subscribers who have not exceeded their monthly data allowance or usage threshold. As a result, Liberty Pass Users and Excess Freedom Users will likely experience slower speeds during periods of congestion than subscribers who have not exceeded their monthly data allowance or usage threshold.

In addition, if needed to address congestion in a spot beam, ViaSat may further reduce the speeds of the Network traffic of heavier users of Liberty Pass and of Excess Freedom Users through the end of their then-current billing period if deprioritization is not sufficient to adequately manage congestion.

Subject to the terms of the Data Allowance Policy, ViaSat does not intentionally block any particular form of traffic or reset a subscriber connection that otherwise complies with the Exede Terms of Service, except that ViaSat may block certain Transmission Control Protocol ("TCP") or User Datagram Protocol ("UDP") ports that it reasonably believes may be a security risk to the Network. Internet traffic contains data packets that include TCP or UDP port designations identifying the type of data in the packets. Some ports commonly known to contain malicious data packets are generally considered to be a security risk to the Network.

#### **IV. OTHER FORMS OF NETWORK MANAGEMENT**

In addition to its congestion management practices, ViaSat utilizes a number of other techniques designed to enhance the user experience, security, and the reliability of the Network. For example, ViaSat actively works to: (i) suspend accounts to block outbound transmissions of spam; (ii) manage the risk of viruses, worms and similar intrusions from harming the Network; (iii) thwart denial-of-service attacks; and (iv) reduce the risk of an intruder gaining access to a subscriber's computer system. The specific techniques used by ViaSat are not disclosed here, in order to ensure that these practices remain effective and cannot be deliberately circumvented.

In addition, the Exede service plans incorporate a Data Allowance Policy or Bandwidth Usage Policy, which govern ViaSat's Network practices for those subscribers who have exceeded their applicable data allowance or other usage threshold during their current monthly bill cycles. These practices apply regardless of whether the Network is congested. As reflected in the Data Allowance Policy, ViaSat will significantly slow and/or restrict the service, or certain uses of the service, for the remainder of the monthly billing period of subscribers who have exceeded their monthly data allowance on service plans that are subject to a data allowance. As reflected in the Data Allowance Policy and Bandwidth Usage Policy, Network traffic of Liberty Pass Users and Excess Freedom Users will be slowed for the remainder of their monthly billing periods. As a result, for the remainder of their monthly billing periods, Liberty Pass Users and Excess Freedom Users will be unable to engage in activities such as streaming video to multiple devices and may be unable to stream high definition video.

## **V. OTHER TERMS OF SERVICE**

Additional terms relevant to the operation of the Network are contained in the following documents (referred to collectively as the “Exede Terms of Service”), which are available on the Exede website at [www.exede.com/legal](http://www.exede.com/legal), and incorporated in this Policy by reference:

- Customer Agreement
- Subscriber Privacy Policy
- Data Allowance Policy
- Bandwidth Usage Policy
- Acceptable Use Policy

## **VI. QUESTIONS AND COMMENTS**

If you have any questions about the Exede broadband Network or ViaSat’s network management practices, please visit the Exede website at [www.exede.com](http://www.exede.com) or contact customer service at 1-855-GOEXEDE.