

# Viasat Unlimited Streaming

## Service description

### Introduction

Viasat Unlimited Streaming (Unlimited Streaming) is an add-on service that enables a user or passenger to stream live and video on demand content without having to worry about how much data is used. The service is offered for a fixed fee, and all data used while streaming does not count toward the main data service's monthly data allocation. At this time, the service is only available for a single user or single device, which could be a TV player connected to the cabin monitor or a personal device such as a tablet or PC.

Unlimited Streaming is a separate service flow from the data service so any impact on data service user experience is eliminated or minimized. This service flow is configured to deliver typical video quality equivalent to watching a DVD, but resolution may vary depending on the specific video service selected by the user. Viasat does not directly control the video resolution.

Implementing this service in the cabin requires that each customer configure a dedicated Wi-Fi network (SSID) on the cabin router to enable management and control of the Unlimited Streaming service.

This overview includes a list of definitions to ensure there is a common understanding of the terms used in this document, a comprehensive service description, and an appendix with recommendations for specific video service providers, streaming devices, and links to assist with service and device configuration issues.

### Definitions

**Customer:** For the purpose of this document, "customer" means the customer of one of Viasat's service resellers or a Viasat direct customer who is a subscriber of the data service. This can include any business aviation customer that is a valid subscriber to a Viasat data service or the Viasat data service plus Viasat Unlimited Streaming.

**Viasat Data Service:** The "data service" means the service that enables basic connectivity between the equipment on the customer aircraft and the internet for the purpose of transferring data to and from the aircraft and the internet or other data servers such as a customer owned and operated private network. For the purpose of this document, the data service is provided by Viasat's Ka-band network, or Ka-band and Ku-band as part of Viasat's Dual-band service. The data service does not include the Viasat Unlimited Streaming service.

**Viasat Unlimited Streaming:** "Viasat Unlimited Streaming" or "Unlimited Streaming" means the add-on service that enables the customer to use it for accessing the video service.

**Video Service:** The "video service" means a third-party video content service that a customer or user subscribes to with separate terms of use. The video service subscription is not included in Unlimited Streaming. The customer or user is responsible for subscribing to the video service separately from this agreement.

**Recommended Video Services:** A list of "recommended video services" is the Viasat list of video services that have been validated to work well with Unlimited Streaming. While the user may stream any video service available in the market, if the video service is not included on the recommended video services list, then the video quality or resolution may be lower.

**Equipment:** "Equipment" means the Viasat proprietary airborne mobile broadband hardware equipment, software, accessories, or any part thereof, registered for use on the Viasat network. Equipment excludes the aircraft cabin router or Wi-Fi equipment.

**User:** A "user" means the end user or passenger on board the customer's aircraft that is accessing Viasat's network by using the data service or Unlimited Streaming.



## Service description: Viasat Unlimited Streaming

- › Unlimited Streaming is a fixed monthly fee add-on service available to any Viasat Ka-band or Dual-band data service subscriber that enable a user to stream video via their Viasat in-flight connectivity service.
- › All Unlimited Streaming data usage while streaming is not counted against the monthly data plan allowance enabling “worry-free” streaming. Note that it is not possible for Viasat to detect Unlimited Streaming when using a VPN, which means that streaming data will be included in the monthly data allowance.

### Subscription and contract terms

- › The customer can purchase Unlimited Streaming from any of Viasat’s authorized VARs that also sell the Viasat Ka-band and Dual-band service products, or from Viasat directly if the service product is also provided directly.
- › Pricing for this service is available from the VARs that provide the data connectivity service or available directly from Viasat, if the data service is or was purchased directly from Viasat.
- › To subscribe to Unlimited Streaming requires a contract that will be made concurrent and co-terminus with the customers’ service product. For example, if the customer is 4 months into a 24-month data service contract and wishes to add Unlimited Streaming, the Unlimited Streaming contract would be for the remaining period in the data service contract or 20 months. In that case the Unlimited Streaming fee would be provided at the 2-year contract price. For customers on the month-to-month plan, the Unlimited Streaming service would also be month to month.
- › Unlimited Streaming is currently only available to customers who have purchased either a Ka-band or a Dual-band service product; not for Ku-band data service
- › Viasat will offer each new data service customer a one-month Unlimited Streaming trial free of charge. If the customer is already a data service customer, they can request to add a one-month free trial. Once the trial period is over, the customer can elect to continue the service or not.
- › For customers with multiple aircraft, Viasat requires that the customer purchase one Unlimited Service subscription for each aircraft.
- › Unlimited Streaming is not available for Ku-Band data service customers; however, streaming will work when a Ku+Ka data service customer operates on the Ku network.
- › Initially, Viasat is offering only a single Unlimited Streaming service per aircraft, meaning only one user or one device can be used at a time. The device can include a TV player such as a Roku connected to the in-cabin monitor. In the future this service may be expanded to include additional streams.

### Streaming on the data service

- › Unlimited Streaming does not affect another users’ ability to stream using the data service.. The Viasat data service will support multiple simultaneous video streams in addition to Unlimited Streaming. For example, if one of the users is streaming on the Unlimited Streaming service, then other users who wish to stream can do so. However, their video streaming data will be counted against the monthly data allowance for that aircraft.
- › Viasat recommends that to ensure users do not inadvertently stream on the Viasat data service when they intended to use Unlimited Streaming, each aircraft be provided with a dedicated device such as a tablet or TV player such as Roku, with all of the service subscriptions (user names and passwords) and apps pre-loaded. This should simplify streaming for the users and at the same time ensure that any other users who wish to stream are fully aware that if they wish to stream as well, then their streaming data will be applied against the monthly data allowance.

### Operation on Ku-band (only for Dual-band data service subscribers)

- › The Dual-band data service will allow streaming on either Ku- or Ka-band networks. Switching between bands is expected to be near seamless and should not affect streaming video continuity. However, different video services behave differently during this switch, which may result in a brief interruption.
- › One caveat for Dual-band customers is that the video quality or resolution may degrade when operating in Ku-band regions, subject to available capacity. Streaming on Ku-band networks is supported on a commercially reasonable basis. If a user experiences any problems during Ku- to Ka-band or Ka- to Ku-band transitions, please let your VAR, Viasat or the preferred technical support organization know immediately to investigate the problem.

### Regional limitations

- › Unlimited Streaming is supported in all regions included in the data service with the exception of Viasat’s partner region in Europe. Viasat is working to implement Unlimited Streaming in that region as quickly as possible.
- › Each video service provider has specific terms and conditions regarding use of their service outside of the region in which the service was purchased. Each have different means by which they control, or do not control, the use of their service in geographic regions outside of their home region. This means that video service may not work in a region, even if the Viasat networks support Unlimited Streaming in that region. For example, if a U.S.-based customer purchases a video service subscription in the U.S. region, that service may or may not work as expected if the customer is leaving the U.S. region while flying to Europe. This is largely outside of the control of Viasat and each customer is responsible for understanding and complying with the specific terms and conditions of use for their video services.

### Use of VPN for streaming

- › Streaming will work over a VPN tunnel, but *Viasat cannot detect what kind of traffic a user is transferring through the VPN* (which is the purpose of the VPN). In such cases, since Viasat cannot detect if a user is streaming or not, all data in the tunnel will be applied to the customer's monthly data service allowance.

### Impact of Unlimited Streaming on data service

- › Viasat has set up a separate connection for streaming on Unlimited Streaming, meaning that it will not impact the speeds that would otherwise be available for the normal data service.
- › Actual speeds available for Unlimited Streaming and the data service will vary somewhat based on network loading and other factors that may impact the satellite link.

### Video service providers

- › There are no restrictions on what video services a user can stream via Unlimited Streaming, however, not all video services perform to the same level. This is largely due to the efficiency of the algorithms that each video service provider uses to transmit its data in the bandwidth available.
- › Viasat has validated several video service providers that it recommends and should provide a satisfactory video quality or resolution. These include the following:
  - Netflix,
  - Amazon Prime
  - YouTube/YouTube TV, and
  - AT&T TV
  - Hulu
- › If the user is experiencing poor quality video for any video service, including the recommended ones, please let us know and our engineering team will test the service and if possible work to improve the video quality.

### Video quality

- › Unlimited Streaming will typically provide a video quality equivalent to DVD resolution. Viasat does not control the video resolution directly as the resolution is determined by each of the video service providers and can vary depending on how efficiently the service uses the available bandwidth. In addition, each video service takes a varying amount of time to adapt the resolution to the best possible quality. What this means is that when a user first selects a certain channel, the video quality can start lower, but then slowly improve over the next 15, 30 or more seconds. This process is caused by the fact that most video services are designed for terrestrial networks that have a shorter delay than networks that use satellites.
- › Another video service variable is how long the service takes to launch or start up in the first place. Each video service provider

has a different approach to launching a video stream; some start quickly with a low-quality video, and others delay the start, possibly as much as 30 seconds or more, but then launch with a higher quality resolution. Again, Viasat does not have control over these variables.

### Acceptable use of Unlimited Streaming

- › Unlimited Streaming is intended to be used as much as a user wants while using the aircraft. There is no limit on data usage to stream video when the service is used as intended.
- › *However, all network service providers must protect their network and service quality from users that misuse their service in some manner. Viasat reserves the right to restrict or cancel a customer's Unlimited Streaming if it determines that a user is misusing Unlimited Streaming in some way that negatively impacts network performance. An example of misuse might be to use Unlimited Streaming on board the aircraft for prolonged periods of time when the aircraft is not in use.*
- › There is a possibility that the Viasat systems that monitor and control data on the network may fail to accurately detect video data for a specific video service. This could result in a user streaming video via Unlimited Streaming, but the data is not correctly subtracted from the service product monthly data allowance.
  - Please contact the service provider if you suspect that this has occurred and Viasat will correct any errors.

### Customer responsibilities

- › Each customer is responsible for purchasing subscriptions to the video services their users want to watch while on the aircraft. Alternatively, a user could use the subscriptions that they use at home, such as Netflix, or services that may offer internet streaming that are part of a user's home video services providers such as AT&T, Spectrum, Cox, etc.
  - Note that some video service providers may prohibit the use of a service that is set up on a user's home network TV Player like Roku or Apple TV, from also being used on other networks, such as on the aircraft. Each video service has their own terms regarding use of the service in different locations so it's important for the customer to understand what those terms are. This issue would not apply if the customer has purchased a video service dedicated for use only on the aircraft.
- › If a customer purchases a video service subscription specifically for one of their aircraft it is up to the customer to control and disseminate any associated usernames and passwords required for the users to use the video services on their own devices such as their laptop or iPad. This can be avoided if the customer sets up a dedicated device or TV player that already has the necessary authentication credentials saved.
- › Viasat strongly recommends that the flight departments set up a dedicated device for ease of operation and managing access to

Unlimited Streaming.

### Device compatibility

- › Any device can be used for Unlimited Streaming provided the user has the appropriate apps and log-in credentials.
- › The Viasat Ka-band system can support the use of any mobile device and a number of streaming TV players, including smart TVs.
- › Viasat will continue to validate recently released iOS, and Android mobile devices, laptops, and TV players such as Roku, Apple TV and others. Note that not all devices, TV players, and apps work equally well.
- › To watch streaming video on the aircraft cabin monitor, the aircraft must be equipped with either a smart TV or an integrated TV player with the appropriate video service apps, or alternatively a carry-on device such as a Roku or Apple TV. Viasat recommends Roku, which works well and is simple to use.
- › If a customer experiences poor quality or problems streaming with their device, please contact your data service provider who will work with Viasat to investigate any problems.

### In-cabin equipment configuration

- › No additional hardware equipment is required for Unlimited Streaming to work on a mobile device. To use Unlimited Streaming on the aircraft cabin monitor, the customer must install a “carry-on” TV player.
- › Unlimited Streaming will be provisioned in two phases as shown below:

#### Phase 1: Dedicated streaming Wi-Fi

- › In phase 1, the cabin router must be configured for a second Wi-Fi network (or SSID) that is dedicated to Unlimited Streaming (the “streaming or media Wi-Fi”). See figure 1 for more details.
- › This second SSID is used by Viasat to separate the video streaming data traffic from the other data traffic and remove it from using the monthly data allowance.
- › Viasat recommends that the streaming SSID be hidden so only someone who is aware that it exists and knows what it is called will be able to connect a device to it.
  - If necessary, Viasat can provide simple instructions so that a director of maintenance, pilot, flight attendant, or other crew member can help connect a user to Unlimited Streaming.
- › While this approach is easy to implement, it imposes some operational constraints.
  - Any user streaming while connected to the data service Wi-Fi network or SSID, instead of the video SSID, will inadvertently accrue data usage toward their monthly data allowance, and not to Unlimited Streaming.
  - Once the first user is connected, only that user can access the internet via the streaming Wi-Fi network. Also, only that user’s traffic will be applied to the Unlimited Streaming service. This provides a secondary mechanism to ensure that only one

person can stream using the Unlimited Streaming service. Note that if a user is connected to the video SSID and stops streaming to perform some other task such as browsing, checking emails, etc., the data associated with the other apps will be counted toward the monthly allowance.

- Once a user’s device has been connected to this special wireless network, the user’s device will, in most cases, automatically connect to that same SSID the next time that user’s device is on the plane. For example, if the CFO has used Unlimited Streaming on a prior flight, and now he gets on the plane with the CEO who has not previously used Unlimited Streaming, the CFO’s device will connect automatically. But if the CEO desires to stream, his device will not work, even if he is connected to the special wireless network, until the CFO’s device is disconnected first. Viasat will include simple instructions on how to do that, but it is a manual process.
- › The streaming SSID is intended for Unlimited Streaming but will not prevent internet access for other applications or uses. The user experience will be identical to the experience on the data SSID. *It is important to note that non-video data received via the streaming SSID will be counted against the user’s monthly data allowance.*

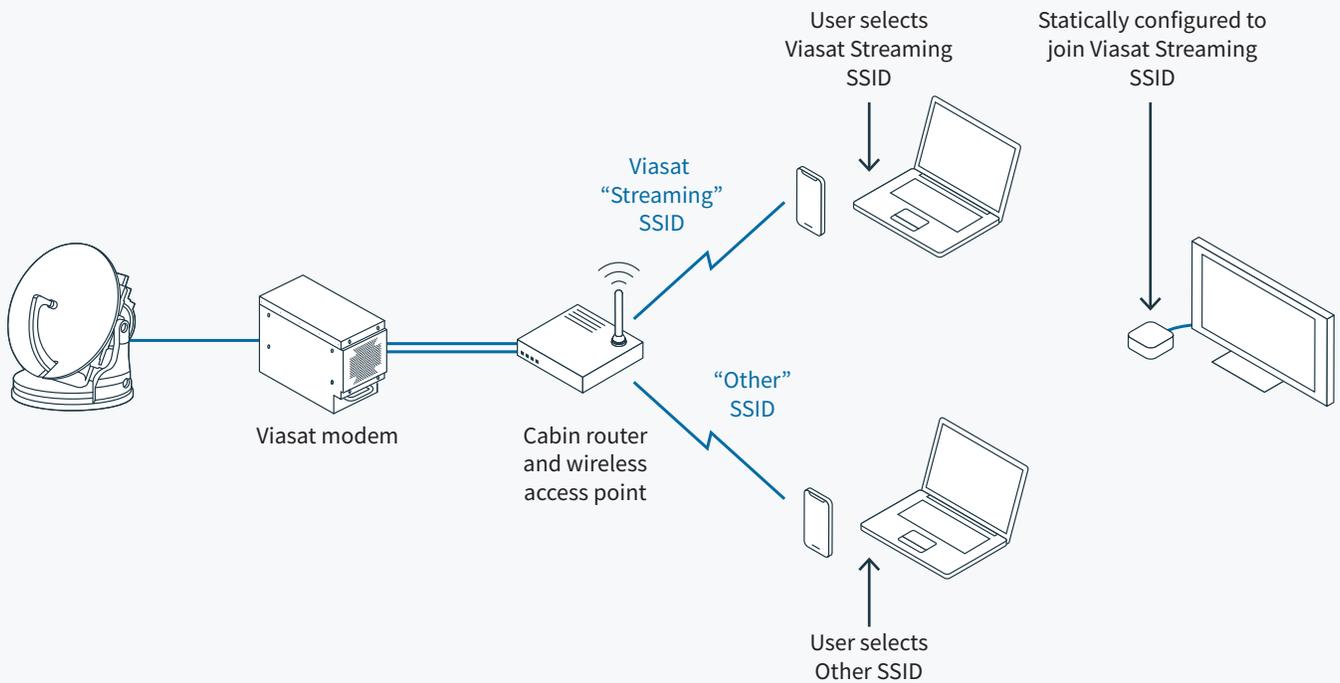
#### Phase 2: Fully integrated Unlimited Streaming

- › In phase 2, Unlimited Streaming will no longer require a special streaming Wi-Fi network. Unlimited Streaming can be accessed by the normal Wi-Fi network for the Viasat service.
- › It is still up to the customer to manage access and priority for Unlimited Streaming.

### Caveats

- › To enable either of the two approaches described above, the customer’s aircraft connectivity system router / wireless access point must be configured with the appropriate software for the service to operate correctly.
- › Each router supplier, typically the aircraft OEM if the router is a line-fit, or a VAR, or in some cases where an OEM uses a particular VAR’s router product, must cooperate with Viasat to implement new software that enables Unlimited Streaming.
- › Note there may be certain router brands that are not supported, or older routers that cannot be upgraded, which may require the customer to upgrade the router. If this is the situation for your customer’s aircraft, Viasat and the VAR will work with the customer to recommend a solution.

**Figure 1: In-cabin configuration for Unlimited Streaming SSID**



## Appendix A : Unlimited Streaming device and services recommendations

### Device configuration, testing and recommendations

DEVICE	VENDOR WI-FI CONNECTION INSTRUCTIONS	NOTES
<b>Roku</b>	<a href="https://support.roku.com/article/115015760328-how-do-i-connect-my-roku-streaming-device-to-my-home-network-and-the-internet">https://support.roku.com/article/115015760328-how-do-i-connect-my-roku-streaming-device-to-my-home-network-and-the-internet</a>	Viasat recommended. Roku worked consistently well during testing and is simple to use.
<b>Apple TV</b>	<a href="https://support.apple.com/en-us/HT204400">https://support.apple.com/en-us/HT204400</a>	AppleTV works, but it consistently underestimated the bandwidth compared to Roku, resulting in lower video quality. The reason for this is under investigation, but unlikely to be solvable by Viasat.
<b>iOS</b>	<a href="https://support.apple.com/en-us/HT202639">https://support.apple.com/en-us/HT202639</a>	
<b>Android</b>	<a href="https://support.google.com/android/answer/9075847?hl=en">https://support.google.com/android/answer/9075847?hl=en</a>	
<b>Windows</b>	<a href="https://support.microsoft.com/en-us/help/4027030/windows-10-connect-to-a-wi-fi-network">https://support.microsoft.com/en-us/help/4027030/windows-10-connect-to-a-wi-fi-network</a>	Tested Chrome
<b>MacOS</b>	<a href="https://support.apple.com/en-us/HT201735">https://support.apple.com/en-us/HT201735</a>	Tested Safari

## Live / Video on demand streaming services testing and recommendations

SERVICE PROVIDER	NOTES
<b>AT&amp;T TV Now</b>	Accurate detection and identification of video traffic is a constantly moving target and depends on the video service provider and each channel with the service. This detection can impact quality as well as proper billing. Viasat last verified accurate video detection in May 2020. Customer may experience varying quality across the different channels. AT&T Now VOD content was generally better in quality than its live streaming content.
<b>Hulu – Recommended</b>	Generally good quality and stable detection — particularly with video on demand.
<b>YouTube TV – Recommended</b>	<p>YouTube TV performed consistently well during testing. On laptops, using the Chrome is ideal, but not necessary. Chrome and YouTube Live seem to do the best job of estimating network bandwidth and delivering the best possible picture within the limits of the network connection. YouTube also allows for manual selection of video resolution. Viasat has determined that this is a reasonably reliable method to achieve consistent video quality streaming (480p). Customers wanting to manage video quality manually should select 480p. If a higher video resolution is selected the user is likely to experience periodic video rebuffering.</p> <p>Instructions on setting quality: <a href="https://support.google.com/youtube/answer/91449?hl=en">https://support.google.com/youtube/answer/91449?hl=en</a></p>
<b>Amazon Prime – Recommended</b>	Generally good quality and stable detection.
<b>Netflix – Recommended</b>	Generally good quality and stable detection.

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