Common data usage and bandwidth requirements

Understanding your internet data usage and bandwidth needs is crucial for selecting the best 5G or Starlink airtime plan ensuring a smooth online experience. These needs vary depending on individual users and overall vessel online activity.

Here is a breakdown of data usage and bandwidth requirements for the most common online activities:

Data usage (measured in MB and GB)

Browsing and social media:
Light usage for web browsing and occasional social media scrolling uses less data. Streaming video or loading image heavy pages can increase data consumption.

Music Streaming:
Streaming music at standard quality uses around 45MB per hour. Higher quality streaming consumes more data.

Video Streaming:
Video streaming is one of the heaviest forms of data use. A standard two hour movie watched in HD can consume 6GB of 5G or Starlink data.

- Netflix at low quality: around 1GB per 6 hours
- Netflix at medium quality: around 1GB per 4 hours
- Netflix at high quality: 3GB or more per hour
- 4K streaming consumes even more data, with Netflix recommending 25 Mbps and potentially using 7 GB per hour.

Online Gaming:
Casual gaming requires less data, around 3-300MB per hour, but streaming or playing online multiplayer games in higher definition uses significantly more.

Video Calling:
Video calls consume more data than standard voice calls or messaging. A 60 minute video call can use around 540MB to 2.5GB depending on the number of people and call quality.

Email:
Checking and sending emails uses minimal data unless large attachments are involved.

Downloading/Uploading Files:
Downloading large games or files for work can quickly consume substantial amounts of data.

Bandwidth (measured in Mbps)

Browsing and Email:
Minimum speeds of 1 Mbps are sufficient for browsing and email, but 10 Mbps or more provides a smoother experience.

Music Streaming:
A download speed of 1 Mbps is recommended for streaming music.

Video Streaming:
- Standard Definition (SD): 2 Mbps
- High Definition (HD): 5 Mbps
- 4K streaming requires an internet speed of at least 25 Mbps.

Video Calling:
Recommended download speeds for HD video calls vary depending on the service, from 2 Mbps for Teams to 4 Mbps for Zoom.

Online Gaming:
Recommended download speeds for online gaming are aroaund 25 Mbps, with low latency (ping) being very important for a smooth online gaming experience.

Working from Vessel:
For a stable working from vessel where video conferencing and file sharing is essential, you would require at least a minimum of 100 Mbps download and 20 Mbps upload speed recommended per person.

Factors affecting data usage
Number of Users:
More users sharing the same connection will increase overall data consumption and potentially require a higher bandwidth from additional ISP WAN connections.

Number of Devices:
Each device connected to your network consumes bandwidth. Personal devices, smart devices, and other connected gadgets contribute to overall data usage.

Usage Habits:
Heavy streaming, gaming, and large file transfers significantly impact data usage compared to occasional browsing and email.

Network Quality and Congestion:
Poor signal strength, network congestion, and outdated equipment can negatively affect data speeds and performance, potentially leading to increased data consumption for the same tasks due to buffering or latency.

Optimising data usage and bandwidth

Reduce Unnecessary Streaming:
Limit streaming quality (e.g., watch in SD or HD instead of UHD) or avoid streaming when high bandwidth is needed for other activities.

Turn Off Devices Not in Use:
Even in the background, WiFi and ethernet connected devices can still consume bandwidth when left online or in a standby state.

Prioritise Critical Traffic with QoS Settings:
Configure Quality of Service (QoS) settings on your Peplink network to prioritise bandwidth for essential applications like video conferencing during working hours.

Use Wired Connections for Important Devices:
Ethernet connections offer more stable and faster speeds than WiFi, especially for devices needing consistent, high quality bandwidth.

Schedule Heavy Tasks for Off Peak Hours:
Schedule large downloads, software updates, and cloud backups to run overnight or during times of low network traffic to avoid congestion.

Upgrade Router and Modem:
Ensure your networking equipment supports the speeds you need, as outdated hardware can bottleneck your connection.

Implement Network Monitoring:
Use your router's admin panel or third party tools to monitor data usage by device and identify bandwidth hogs.

In summary:
By identifying the specific data requirements and usage habits of your vessel and its onboard users, as well as evaluating overall bandwidth demands, you will be equipped to choose the most suitable 5G and Starlink airtime plans. This understanding enables you to optimise connectivity, ensuring a smooth and uninterrupted online experience for everyone aboard.

Typical Data Consumption Scenario on a Modern Vessel:
A typical scenario aboard most vessels involves four regular users, each commonly carrying up to four personal devices capable of connecting to the internet. When combined with an average of more than 30 onboard IoT and smart devices, the total monthly data consumption for the vessel and its users generally exceeds 350GB.

App Data Usage Guide

This chart is useful for understanding how much internet data and bandwidth may be required or consumed per user or device by the most common online activities and apps, this should provide crucial insight for understanding and managing your vessel onboard data or optimising network performance to maximise data cost efficiency.

By understanding these factors, you can take steps to minimise unnecessary data usage and ensure that your vessel network is optimises for the best performance and cost efficiency this is where Clase Connected can help.

Examples of Common Data Usage Per User/Device

Typical usage for popular apps and minimum data speed required. Actual performance may vary.

Popular Remote Work & Navigation Applications			
Application	Data Usage (Average 30 Mins)	Data Usage (Average 60 Mins)	Minimum Bandwidth
General Web Browsing	2Mb average webpage		2Mbps
Email	75kB average email with attachment		128Kbps
PredictWind Weather App	15-25kB		<5Kbps
Weather GRIB Files	25-150kB		<5Kbps
Microsoft Teams Audio Call - Low Quality	45MB	90MB	128Kbps
Microsoft Teams Audio Call - High Quality	1.3GB	2.7GB	150Kbps
Microsoft Teams Video - Low Quality	1.3GB	2.7GB	One to One 150Kbps/Meeting 1.5Mbps
Microsoft Teams Video - High Quality	1.3GB	2.7GB	One to One 1.5Mbps/Meeting 2.5Mbps
Zoom Video - Low Quality	270MB	540MB	One to One 600Kbps/Meeting 1Mbps
Zoom Video - Standard Quality 720p	500MB	1GB	One to One 1.2Mbps/Meeting 2.5Mbps
Zoom Video - High Quality 1080p	750MB	1.5GB	One to One 4Mbps/Meeting 4Mbps
Popular Entertainment/Personal Applications			
Application	Data Usage (Average 30 Mins)	Data Usage (Average 60 Mins)	Minimum Bandwidth
YouTube - 480p	132Mb	264Mb	500Kbps
YouTube - 720p	900Mb	2Gb	2.5Mbps
YouTube - 1080p	1.5Gb	3Gb	5Mbps
YouTube - 4K	8Gb	16Gb	20Mbps
Netflix - Low Quality	300Mb	700Mb	500Kbps
Netflix - 720p	500Mb	1Gb	3Mbps
Netflix - 1080p	1.5Gb	3Gb	5Mbps
Netflix - 4K	3.5Gb	7Gb	15Mbps
Sky TV - 720p	500Mb	1Gb	1.5Mbps
Sky TV - 1080p	1.5Gb	3Gb	5Mbps
Sky TV - 4K	3.5Gb	7Gb	30Mbps
Spotify	36Mb	75Mb	500Kbps
Amazon/Apple Music	200Mb	400Mb	500Kbps
Instagram - Browsing	300Mb	600Mb	500Kbps
Instagram - Uploading	2Mb data for images/8Mb for video story		1Mb
Facebook	50Mb	100Mb	128Kbps
Facetime	65Mb	180Mb	128Kbps
TikTok	420Mb	840Mb	1Mbps
WhatsApp Voice Call/Text Only	90Mb	180Mb	75Kbps Voice Call/50Kbps Text
WhatsApp Video Call	150Mb	300Mb	500Kbps
Real Time Online Gaming Xbox/PlayStation	40Mb	100Mb	1Mbps
Game Download Xbox/PlayStation	50 - 200Gb		10Mbps

Common Monthly Data Usage		
Average Usage Per Onboard User	Data Usage	Typical Usage
Vessel Network Daily Use	250MB - 5GB	Background Network and Device Standby Data Usage
Minimal Daily Use	3GB	Web Browsing, Weather, Email and Text Based Messaging
Light Daily Use	2 - 5GB	Daily Social Media and Light Music Streaming
Regular Daily Use	5 - 10GB	Occasional HD Video Streaming and App Downloads
Heavy Daily Use	50+GB	Regular HD Video Streaming and Large File Downloads
Very Heavy Daily Use	200+GB	Daily 4K Video Streaming, Online Gaming and Cloud Backups

FAQ's

How much data does streaming music and video consume?

- Streaming music (Spotify) at standard quality uses around 45MB per hour, while higher quality music streaming consumes more data. Video streaming is one of the heaviest data users, where a two hour movie (Netflix) in HD consuming approximately 6GB of data.

How can I monitor and manage my data usage effectively?

- Monitoring and managing your data usage can help you avoid overage charges and ensure you have enough data for your needs. You can use data monitoring via our client portals; we can also help set data usage alerts and adjust your usage based on your usage data consumption patterns.

How can I optimise my data usage and bandwidth?

- You can reduce unnecessary streaming, turn off devices not in use, prioritise critical traffic with QoS settings, use wired connections for important devices, schedule heavy tasks for off peak hours, upgrade your router and modem, and implement network monitoring we can assist with all these measures.

What factors affect data usage and bandwidth requirements?

- Factors include the number of users, number of devices, usage habits, and network quality and congestion. More users and devices sharing the same connection will increase overall data consumption and potentially require higher bandwidth.

Why data is still being consumed in the background?

- Even if no one on the vessel is actively using their phone, tablet, or laptop, the Peplink network will often still be pushing traffic over Starlink and or 5G. That's because:
- Router keep alive and bonding overhead. Peplink's SpeedFusion bonding or failover tunnels use heartbeat packets to maintain links between the vessel and cloud endpoints. These small but constant pings verify link health.
- Connected devices background activity. Phones, tablets, PCs, and even IoT equipment will perform background tasks. Cloud sync (iCloud, OneDrive, Google Drive), OS updates, Messaging apps checking for notifications, Antivirus/security updates, Smart TVs, chart plotters, cameras, WiFi calling even when "idle," connected devices generate small but steady bursts of data traffic.
- Starlink itself. Starlink terminals maintain a constant handshake with the constellation and ground station. It exchanges telemetry, health data, and routing updates regardless of end user activity. That data counts toward your traffic if it passes through the Peplink network.
- Peplink WAN management. If enabled WAN smoothing, load balancing, or hot failover, the router may duplicate or probe packets across any available Starlink and or 5G connection to guarantee seamless failover. This means two copies of the same packet may be sent over multiple WAN links. Also, bandwidth monitoring, cloud management (InControl2), and firmware auto checks also use some data.

We hope these FAQs help! If you need more information or have any other questions, please contact our Airtime Support Team.

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