OpenVault

Broadband Insights Report (OVBI)

1Q23

Introduction

A key broadband usage trend arrived at an inflection point during the first quarter of 2023, with important implications for service providers.

The 1Q23 edition of the OpenVault Broadband Insights (OVBI) report indicates that, for the first time, while differences remain in growth and speed tier composition, the amount of data consumed by subscribers effectively reached parity across both usage-based billing (UBB) and flat-rate billing (FRB) plans, even as overall usage continues to rise.

The 1Q23 report shows that consumption by UBB subscribers rose to 562.7 GB during the first quarter, slightly more than the 555.5 GB used by subscribers on FRB plans. Average weighted data across all subscribers was 560.5 GB, an increase of 9.1% over the 513.8 GB average in the first quarter of 2022. The practical implications of this trend on broadband network monitoring and maintenance will be explored later in this report.

As with all editions of the <u>OpenVault Broadband Insights Report (OVBI)</u>, this 1Q23 edition uses data points from millions of individual broadband subscribers, aggregated from <u>OpenVault's software-as-a-service (SaaS) technology solutions</u> to pinpoint usage patterns that can affect network performance, operator revenue and customer satisfaction.

Key findings from the 1Q23 OVBI include:

Usage
Both average and median usage significantly increased year-over-year, rising 9.1% and 11.9%, respectively.

Power Users
The number of power users of 2 TB or more per month increased by 27% over the previous year.

Speed Tiers
Subscribers continue upgrading to faster speed tiers, with 40% now receiving 500 Mbps or faster.

Key ARPU Insight
FRB operators have 7x more subscribers than UBB operators in the lowest ARPU speed tier (50 Mbps or slower).

Key Bandwidth Usage Insight
Usage growth continues, with 76% of subscribers in 1Q23 consuming >100 GB, compared to 64% in 1Q22.
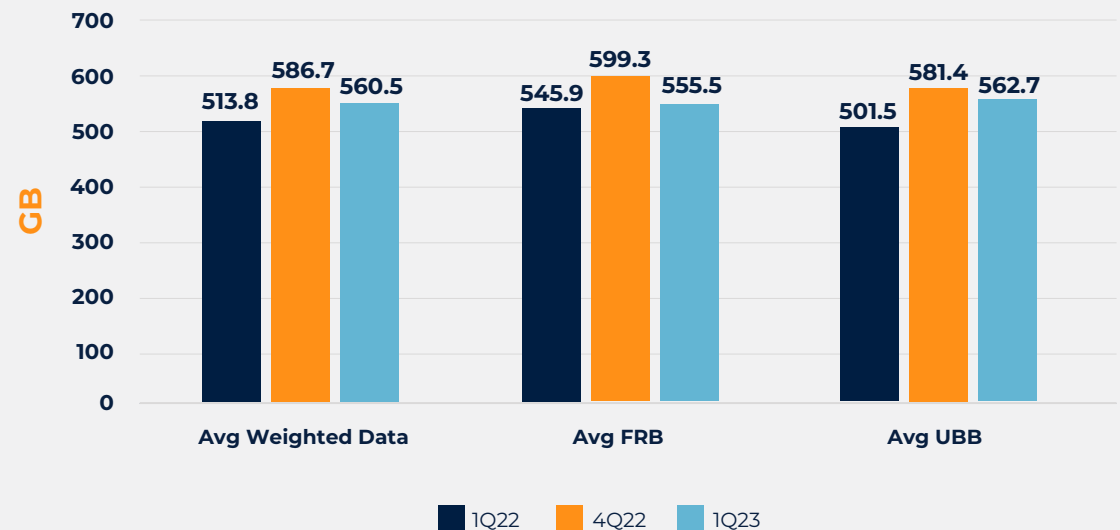
Key UBB vs FRB Insight
Nearly 90% of UBB subscribers receive speeds of 200 Mbps or faster, compared with only 63% of FRB subscribers.

1Q23 Broadband Usage Key Findings

The following broadband usage trends were observed in 1Q23.

FIGURE 1

Data Usage Trends by Billing Type — 1Q23

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The monthly weighted average data consumed by subscribers in 1Q23 was 560.5 GB, up 9.1% from 1Q22's average of 513.8 GB, and down 4% from 4Q22. This is in line with historical seasonal patterns in the first quarter, which typically show flat or slightly negative growth compared to the fourth quarter of the prior year. Weighted averages combine data from all subscribers.
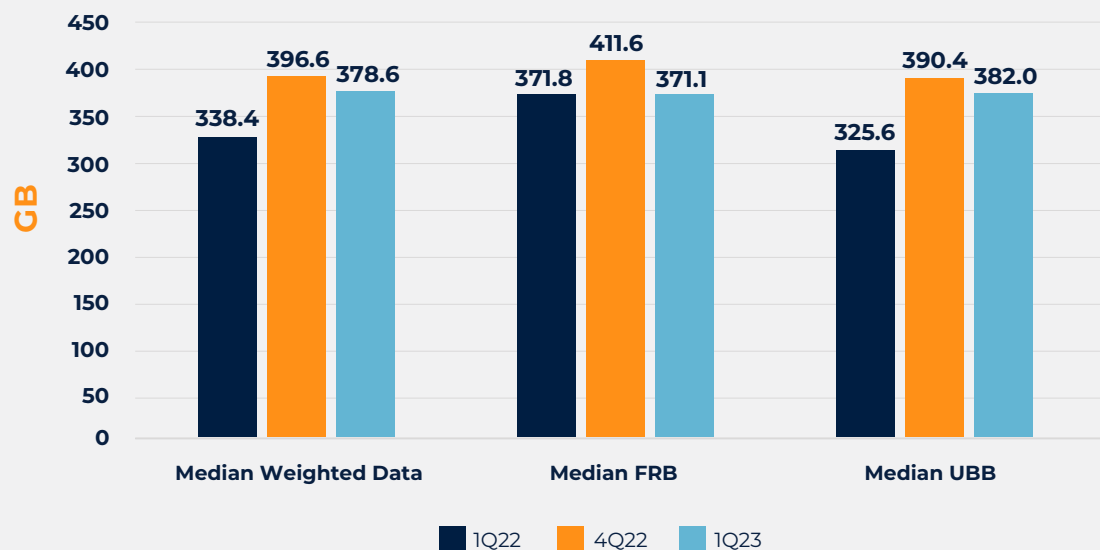
Average consumption annual growth for UBB subscribers continues to significantly outpace that of subscribers on FRB plans. In 1Q23, average data usage growth among UBB subscribers was 12.2% versus 1Q22, almost 7x the growth rate of FRB subscribers.

FIGURE 2

Median Usage Trends by Billing Type — 1Q23
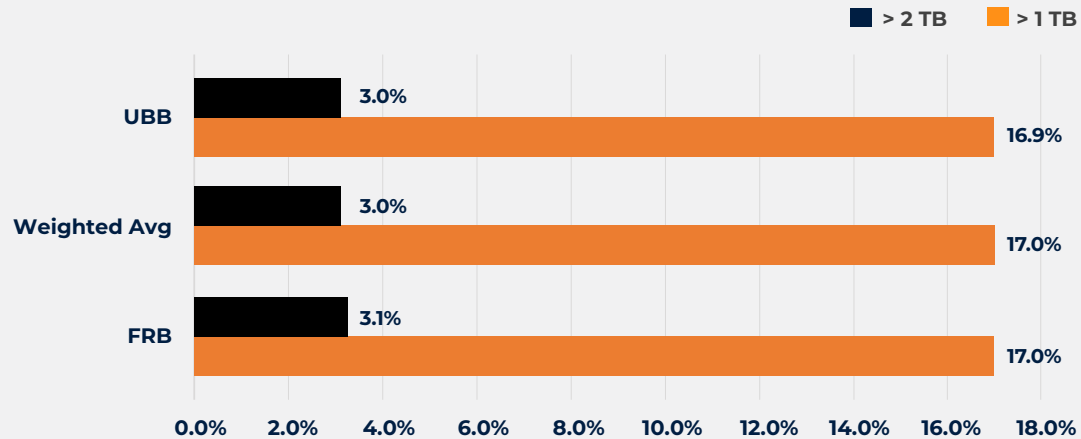

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- The monthly weighted median usage in 1Q23 was 378.6 GB, up 11.9% from 338.4 GB a year ago.
- Median usage among UBB subscribers (382.0 GB) surpassed that of FRB subscribers (371.1 GB) for the first time.
- Annual median usage growth for UBB providers was 17.3%, while FRB providers experienced an effective growth rate of zero in median usage.
- Among UBB subscribers, year-over-year median usage growth (17.3%) was 42% higher than average usage growth (12.2%), indicating widespread usage increases across the UBB subscriber base. The opposite is true among FRB subscribers: average usage increased slightly, but median usage did not.

Power Users Monthly Consumption — 1Q23

■ > 2 TB　■ > 1 TB

UBB
- 3.0%
- 16.9%

Weighted Avg
- 3.0%
- 17.0%

FRB
- 3.1%
- 17.0%

0.0%　2.0%　4.0%　6.0%　8.0%　10.0%　12.0%　14.0%　16.0%　18.0%

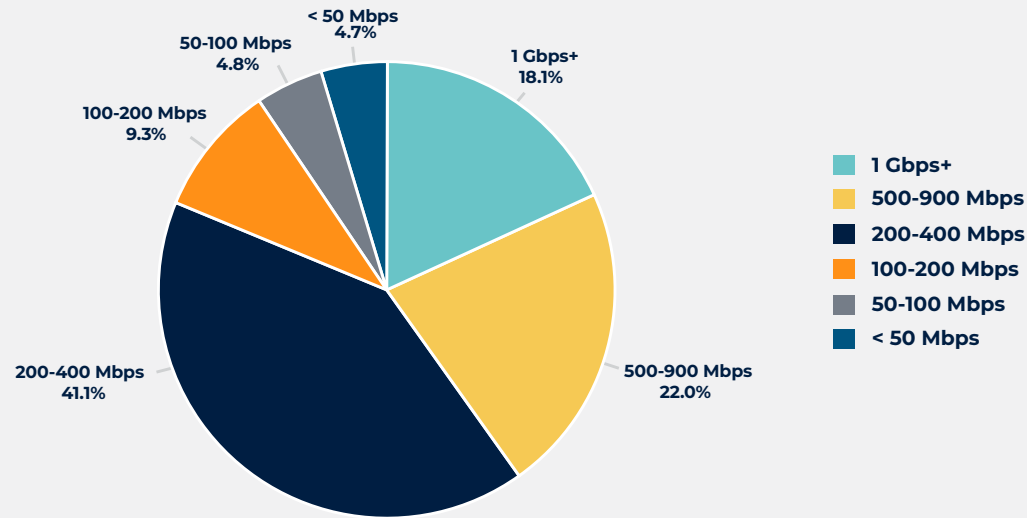OpenVault Broadband Insights Report 1Q23

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- The percentage of power users consuming 1 TB or more per month in 1Q23 was 17%, a year-over-year increase of 16.2%.
- Super power users consuming 2 TB or more per month rose to 3% in 1Q23 from 2.4% a year earlier, a 26.9% YoY increase.
- Power user growth on UBB networks was 20.4%, compared to only 12.6% on FRB networks, resulting in a nearly equal percentage of power and super power users in both UBB and FRB subscriber groups.

FIGURE 4

Provisioned Broadband Speeds — 1Q23

< 50 Mbps 4.7%
50-100 Mbps 4.8%
100-200 Mbps 9.3%
200-400 Mbps 41.1%
1 Gbps+ 18.1%
500-900 Mbps 22.0%

Legend:
- 1 Gbps+
- 500-900 Mbps
- 200-400 Mbps
- 100-200 Mbps
- 50-100 Mbps
- < 50 Mbps

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- Nine out of ten UBB subscribers received broadband speeds of 200 Mbps or faster in 1Q23.
- The percentage of subscribers on speed tiers of 500 Mbps or faster reached 40% in 1Q23, an increase of 106% over 1Q22.
- The percentage of subscribers provisioned for speeds under 200 Mbps continued to decrease, dropping 39% since 1Q22 to 19%.
- Gigabit speed tier adoption among UBB subscribers increased by 46% since 1Q22, as these subscribers continue to outpace FRB subscribers in upgrading to gig speed. More than one in five UBB subscribers (20.7%) is provisioned for gigabit speeds, vs 12.6% of FRB subscribers.
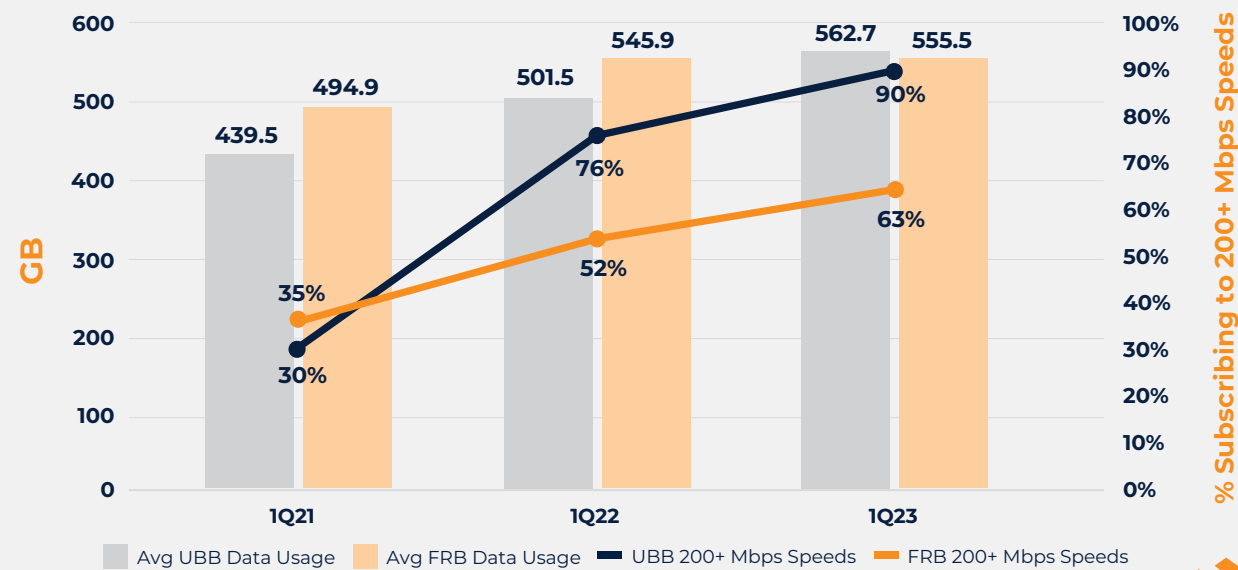
Data Consumption Converges Between UBB and FRB Subscribers

While the adoption of faster internet speeds by all subscribers has resulted in increased data consumption in general, OpenVault's analysis shows that UBB network subscribers are propelling this growth at a much swifter rate than their FRB counterparts (Figure 5).

FIGURE 5

Data Usage and Speed Tier Trends by Billing Type — 1Q21 to 1Q23

Legend:
- Avg UBB Data Usage
- Avg FRB Data Usage
- UBB 200+ Mbps Speeds
- FRB 200+ Mbps Speeds

GB values:
- 1Q21: 439.5 (UBB), 494.9 (FRB)
- 1Q22: 501.5 (UBB), 545.9 (FRB)
- 1Q23: 562.7 (UBB), 555.5 (FRB)

% Subscribing to 200+ Mbps Speeds:
- UBB 200+ Mbps Speeds: 30% (1Q21), 76% (1Q22), 90% (1Q23)
- FRB 200+ Mbps Speeds: 35% (1Q21), 52% (1Q22), 63% (1Q23)

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In 1Q23, approximately 30% more UBB subscribers (90%) enjoyed speeds of 200 Mbps or faster than FRB subscribers (63%). Both average (12.2%) and median (17.3%) year-over-year data usage growth among UBB subscribers significantly surpassed the usage growth registered by subscribers on FRB plans.

Implications for the broadband industry are mixed. On the one hand, faster speed adoption often results in higher ARPU for operators and increased satisfaction for consumers as they "right-size" to subscription plans that are aligned with their actual usage.

On the other hand, operators who have viewed UBB as a tool to reduce strain on the broadband plant will need to explore new solutions for maintaining and improving network health and alleviating network congestion.

Industry Observations

Below are recent milestones or data equivalences that put the observations noted in this OVBI 1Q23 report into perspective.

169.4 Billion
Minutes of video streaming viewed per year.

Source: Forbes

$247 Billion
The global live streaming market revenue estimated by 2027.

Source: Market Research Future

78%
Percentage of Americans now subscribed to at least one of the major streaming services.

Source: Forbes

17%
Internet traffic attributed to live streaming.

Source: Zippia

67%
Viewers who say video quality is the #1 factor when watching a livestream.

Source: Zippia

2 Billion
YouTube's monthly active users.

Source: Comparitech

OpenVault's Average Broadband Household Index — 1Q23

A snapshot of the average U.S. broadband household.

560.5 GB
Average Bandwidth Usage

524.8 GB
Average Downstream Usage

35.7 GB
Average Upstream Usage

435.4 Mbps
Average Downstream Speed

24.1 Mbps
Average Upstream Speed

Conclusion

The vital takeaways from the 1Q23 OBVI report are: (1) the increased rate of data consumption among UBB subscribers is now at parity with FRB subscribers; (2) the continued increase in upgrades to faster speed tiers will drive more data consumption; (3) the continued increase in power users whose data usage significantly impacts network performance.

With data usage growing among all subscriber types, operators must focus on ensuring a positive subscriber experience across the entire network.

UBB is gradually becoming a less effective tool for moderating usage. Thus, UBB operators must evaluate alternative methods of ensuring customers are happy with internet performance, including proactive and automated tools that quickly analyze and pinpoint network issues and resolve these issues quickly. Effectively monitoring and managing network health and congestion so all users have access to adequate bandwidth will be critical for maintaining customer satisfaction and retention in an increasingly competitive broadband landscape.

OpenVault Solutions to Address This Report's Insights

From network congestion to increasing revenue, OpenVault offers solutions to improve the value of broadband networks. Three of the solutions associated with this report's insights are:

Dynamic Network Health Through Congestion Management and Capacity Boosting

For providers that have invested in a DOCSIS 3.1 network, OpenVault offers a means to extend the network's performance and value without significant capital expenditure. Broadband providers can deploy a closed-loop and automated data-driven solution that diagnoses performance issues, pinpoints plant and usage areas to address, and targets remedies. Additionally, OpenVault can dynamically create bandwidth without human intervention. Through persistent analysis of data from each cable modem and CMTS, the OpenVault Profile Management Application (PMA) learns the state of the system and creates profile sets tailored to the unique real-world environment of each OFDM/OFDMA channel – essentially creating "virtual node splits" and opening up more usable bandwidth.

ACP Reporting

OpenVault makes Affordable Connectivity Program audit reporting a simple process. OpenVault's access to subscriber usage data enables us to track usage/zero usage calculating as defined by the FCC. These reports provide a list of accounts that have hit the threshold for consecutive days with zero usage (also as defined by the FCC): 15 Days; 30 Days; or 45 Days. Also included are MAC addresses; billing account; usage by month – upstream, downstream, and total; as well as a data repository providing multiple years of history.

Subscriber Upgrade Candidates

Now broadband providers can identify, in near real-time, subscribers with usage behavior that approaches the maximum speed of their service packages. Perfect candidates for upgrading to higher-speed and more provider-lucrative plans, targeted subscribers will experience higher QoE and reduce their need for customer care.

Learn more about these and other revenue increasing and network management solutions at OpenVault.com.

About OpenVault

OpenVault is a market-leading source of broadband technology solutions and data-driven insights into worldwide broadband consumption patterns. OpenVault's cloud-based, SaaS solutions and tools help service providers optimize network performance, <u>increase revenue</u>, improve subscriber satisfaction and offer <u>remote care solutions.</u> OpenVault aggregates and analyzes the resulting market data to provide unparalleled granular views of consumer usage that can be used to anticipate residential and business broadband trends.

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of broadband