



Broadband Insights Helps ISPs Build Smarter Networks with Custom Analytics Platform

Broadband Insights uses Dash Enterprise to help Internet Service Provider (ISP) startups improve broadband builds in rural areas through smoother operations and cross-departmental analytics.

Executive Summary

- Broadband Insights helps bridge the digital divide by supporting rural and underserved communities with data analytics for network planning and construction.
- By aggregating disparate data sources into one cohesive platform, Broadband Insights uses Dash Enterprise to simplify operations, reporting, and decision-making for network engineers, field operators, and sales personnel at ISPs.
- The company sees significant improvements in efficiency, cost reduction, and faster infrastructure deployment for broadband providers.

Introduction

[Broadband Insights](#), a subsidiary of Staged Systems, LLC, has built an analytics platform to serve internet service providers (ISPs), fiber and wireless builders, and [telecom](#) industry advocates. The platform focuses on broadband deployments which span planning, construction, operations, and billing. Services offered via the platform to startup ISP companies include gathering and aggregating data, ensuring data integrity, and building reports and dashboards.

Challenge

One of the most significant challenges in expanding broadband access in the United States lies in serving rural and underserved communities. High-speed internet providers often find it financially impractical to invest in rural areas, where constructing expensive fiber networks or upgrading existing infrastructure is unlikely to yield sufficient profit. Many large ISPs focus on wealthier neighborhoods where they can charge more for premium services like fiber. This practice leaves low-income and rural communities without adequate service, creating a persistent digital divide.

In the absence of substantial federal funding or incentives, rural residents often resort to building makeshift solutions. Individuals and small, local groups in these areas set up their own towers and antennas, purchasing the most affordable equipment they can find. While these efforts allow some communities to achieve minimal connectivity, they often lack the reliability, speed, and scalability of fiber networks. Additionally, the makeshift setups lack sophisticated network management tools, resulting in limited visibility and control over performance and capacity.

Federal initiatives like the [Broadband Equity, Access, and Deployment \(BEAD\)](#) program aim to close these gaps by providing billions of dollars for broadband expansion. However, even with these funds, smaller, emerging ISPs still face challenges. They often lack the experience and tools to manage complex network builds effectively. Data analytics, by providing insights into network gaps and costs, can support these smaller ISPs in assessing the viability and impact of their builds, helping them bridge the divide with sustainable infrastructure.

The telecom industry has a fragmented ecosystem of software tools, each handling specific needs: for instance, solutions like 3-GIS, Vetro Fibermap, and IQGeo are prominent for asset management, while others like Vitruvi and Render specialize in fiber-specific construction management.

To unify these disparate data sources, developers typically rely on APIs or even direct data scraping, which requires deep knowledge of the ecosystem. For an analytics platform to provide actionable insights, the challenge is in aggregating data from multiple sources and presenting it in dashboards or [data apps](#).

Another complexity comes from balancing flexibility with accuracy, especially given the wide range of data formats used across different broadband tools. Some companies still rely on basic spreadsheet tools for tracking, while others use specialized Geographic Information Systems (GIS), CRM, and subscriber management systems.

An effective analytics platform must accommodate all these formats, creating a unified experience that meets clients “where they are.” It requires a broad technical approach that can accommodate everything from fiber management to CRM data, often requiring custom APIs or partnerships to maintain reliability and precision across all components.

Solution

Broadband Insights offers a custom-built analytics platform, scaled on Azure, to help startup ISPs manage data and track fiber assets effectively.

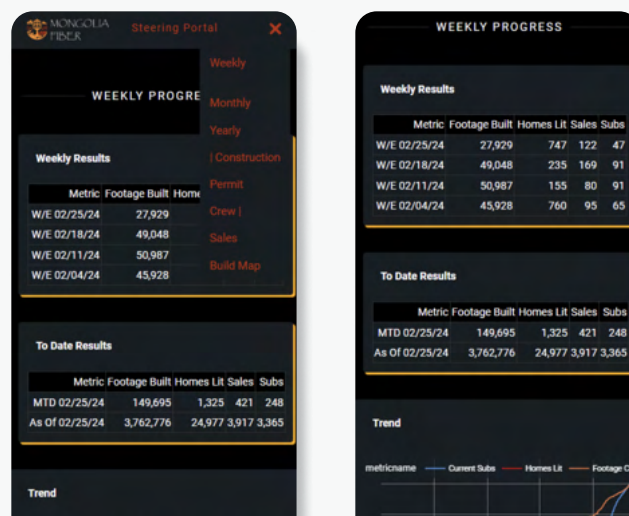
The company initially struggled to balance daily data collection from dispersed sources, executive reporting, and user-specific accessibility, exploring Looker Studio and Google Sheets to create quick, shareable updates for stakeholders. However, these tools fell short in customizability, limiting their ability to design dynamic, responsive data applications tailored to investor and construction needs.

Patrick Hutto

Founder, Broadband Analytics

"If I were to not use Dash Enterprise anymore, I would probably just not run the analytics platform. Dash allows us to do everything I want to do; it's really customizable and extendable."

After assessing BI tools such as Tableau and Qlik, Broadband Insights found Plotly Dash Enterprise to be the ideal fit, given its Python compatibility and customization options. Dash Enterprise allowed the team to integrate financials, sales metrics, and construction updates into a multi-page, user-friendly data app, accessible via mobile for team members on the go. This setup provided executive stakeholders with quick insights through automated PDF reports powering faster decisions. Data from third-party APIs is pulled into REDIS as a cache and refreshed from PostgreSQL, with celery workers within the Dash app.

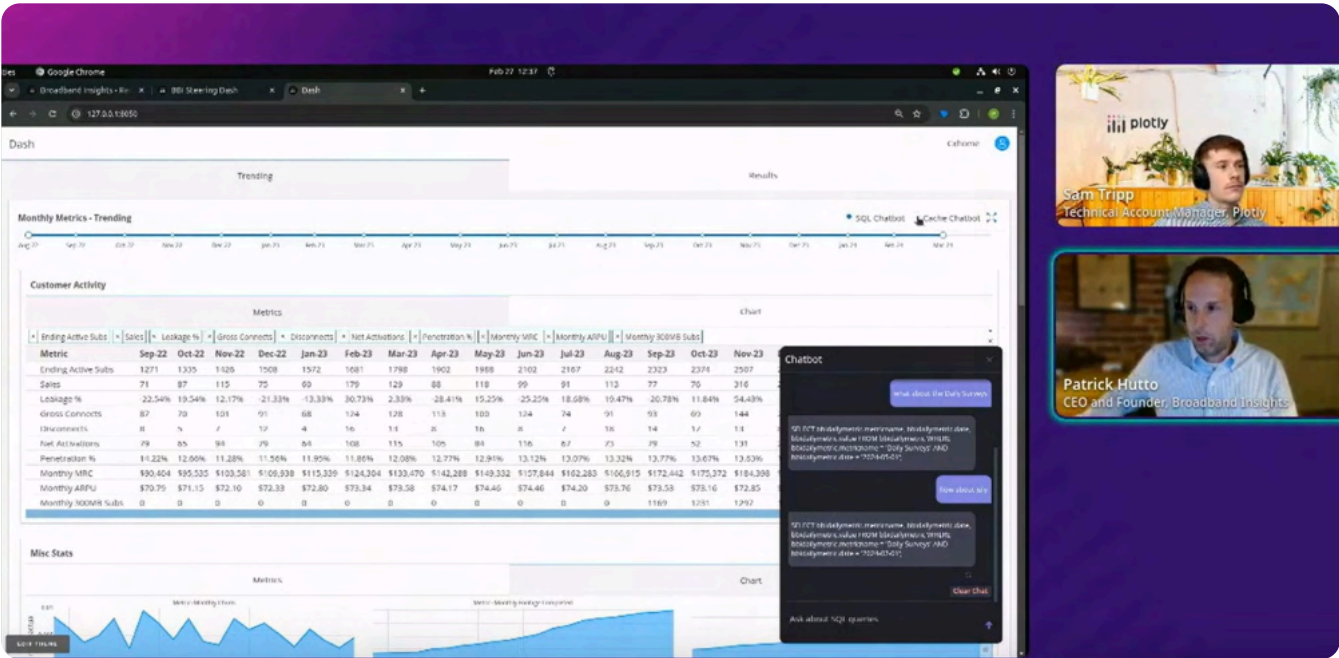


Adding an AI chatbot to telecom Dash apps for deeper insights

Most recently, the team at Broadband Insights has added AI chatbot functionality into their Monthly Metrics data app, using the [Dash Enterprise Chatbot Builder](#). The chatbot helps investors and operations personnel find trends over time within monthly financial and subscriber statistics.

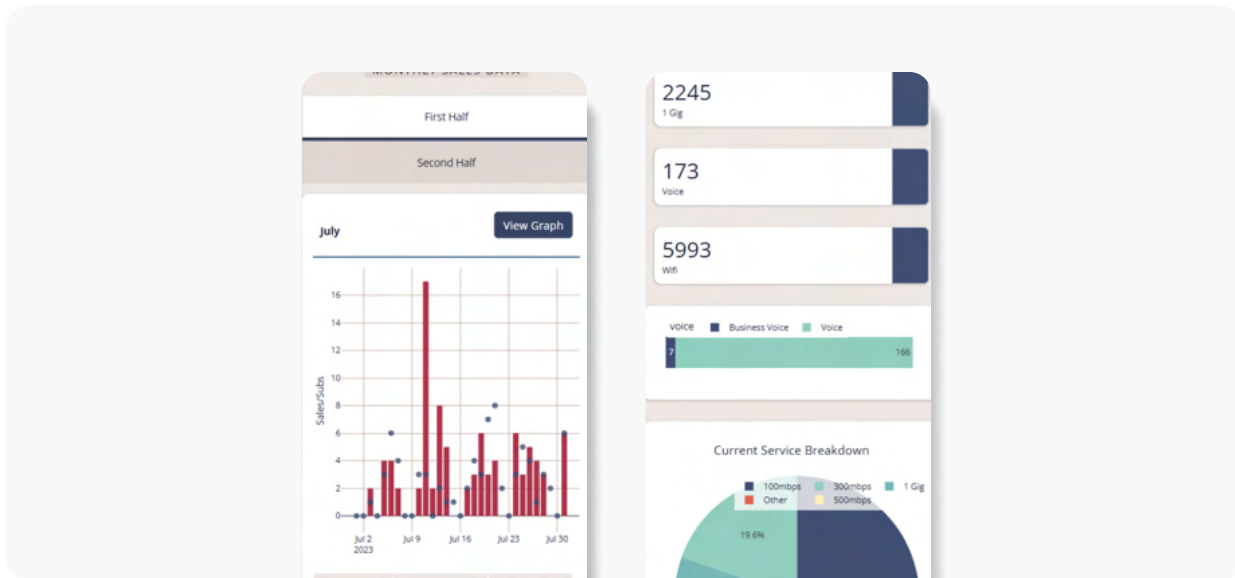
The chatbot is used in two modes that users can switch between with a simple radio button to swap between OpenAI and Ollama APIs.

In the first use case, the chatbot generates raw SQL for deeper data analysis using the Ollama LLM. It is trained on the app's database schema and is able to generate a SQL output from instructions given in natural language.



The second use case involves the ability to ask general data trend questions in natural language. For example, a user could ask for the trend of subscribers between May and October; the chatbot has the ability to parse and respond to these instructions even if they include typos. To achieve this, the Broadband team pivoted their Pandas dataset with just a few lines of Python code, so the LLM could read the dataset like a large text document that surfaces the most relevant results.

Now, Broadband Insights provides a custom platform that enables network engineers, field operators, and sales personnel across departments to access and analyze all relevant data. Using the platform's multi-page layout, executives, project managers, and investors each have a tailored view, improving efficiency and decision-making at every level.



Brian Snider

Founder, Lit Fiber

"Broadband Insights transformed our decision-making process. The automated daily reports gave us a clear snapshot of key metrics every morning, saving hours of manual work and letting us act on critical issues immediately"

Results

Broadband Insights enables broadband startups to optimize operations and enhance decision-making. For example, the company has helped ISPs accomplish the following:

- Achieved 2% increase in subscriber penetration by identifying regions with growth opportunity through targeted data analytics
- Reduced operational costs of 5% by consolidating data from multiple systems, cutting the need for duplicate software licenses
- Decreased weekly report generation time by 5 hours, and monthly report generation by over 10 hours, automating data collection and analysis previously done in Excel or Google Sheets.

- Reduced customer installation timelines by 50% by providing clear data on scheduled installs, crew capacity, and throughput
- Streamlined the monthly reporting process, reducing turnaround time from three weeks to about four days by systematically collecting and calculating operating metrics and KPIs.

With Dash Enterprise, Broadband Insights consistently drives impactful results for its customers, helping them build smarter networks that provide better connectivity to rural and underserved regions in the United States. Broadband Insights emerges as a vital partner for broadband providers aiming for smarter, faster market expansion.

About Broadband Insights

Broadband Insights runs a data analytics platform built specifically for broadband deployments and covers planning and construction all the way through ongoing operations and billing. The BBI team works closely with our clients to identify key metrics and set up custom dashboards and reports to inform decision makers.

About Plotly

Plotly is a software company whose mission is to enable every company, around the world, to build data apps. Our product, [Dash Enterprise](#), is a platform of best-in-class development tools to quickly and easily visualize data in Python from virtually any data source. With customers across the Fortune 500, Plotly is a category-defining leader in enabling data-driven decisions from advanced analytics, machine learning, and artificial intelligence.