Satellite Communications Market Growth

Introduction

The satellite communications market continues to grow,[1] providing critical enabling services to all types of industries and research communities. Recent investments in high-bandwidth satellite capacity for consumer applications and the mainstream adoption of small satellites[2] indicate that this growth is likely to accelerate, making performance, security, and resilient connectivity from satellite to teleport to customers and resources ever more important—and more challenging.

Today, bandwidth capacity is growing at a faster rate than demand, which—together with increased competition—creates downward pricing pressure.

This reality is reflected in the fact that, while overall revenue is growing, revenue per bit is declining. In this environment, profitable growth demands operational efficiency.

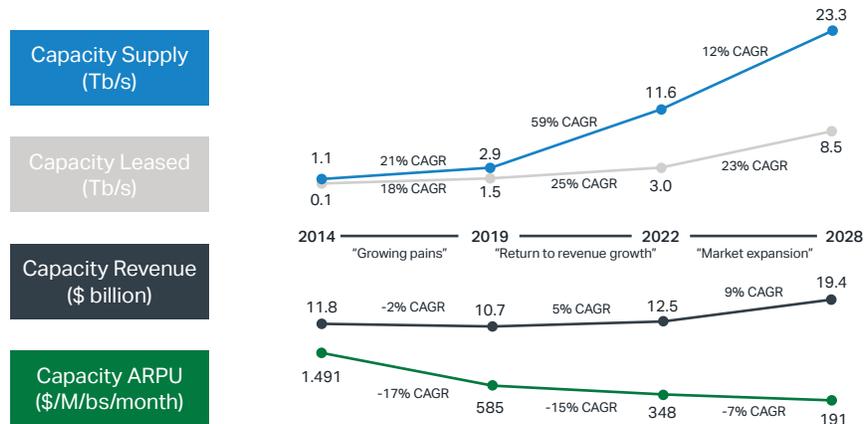### Satellite communications market forecast summary

Figure 1. NEED CAPTION

Teleport IT: Network operations today

Teleports support a wide array of revenue-generating voice, video, data, and other services, and use LANs and WANs to move traffic from the satellite gateway to customers and other systems that reside on premises and in remote data centers and cloud networks.

Unfortunately, there is an operational disconnect between the IT systems and the infrastructure, and highly skilled technicians must utilize various vendor-specific CLIs and management systems to manage and maintain the network. This reliance on slow, expensive, and error-prone manual intervention limits operational scale and prevents teleport operators from efficiently scaling to meet increased demand. For example, to add a new customer, technicians must first gather and correlate data from multiple statically configured inventory systems to identify available resources. Technicians then manually configure the network elements and attached resources—which is increasingly difficult, given the adoption of virtual appliances and cloud-hosted resources. In aggregate, these processes can take weeks, wasting valuable technical resources, delaying time-to-revenue, and frustrating customers.

These same issues delay service restoration when issues arise. Techs must manually gather and correlate alarm, alert, and event data from a variety of different network and service monitoring tools i to isolate the issue before they can even begin to resolve it.

Introducing Blue Planet®

Blue Planet, a division of Ciena, offers a comprehensive, open software suite that enables highly programmable closed-loop lifecycle management automation to foster operational excellence.

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Importantly for teleport operators, Blue Planet provides open, standards-based interoperability across its entire service and network ecosystem. Blue Planet uses published open REST APIs to integrate with modern BSS/OSS, ITSM, and SDN controllers, and native protocols to communicate with proprietary systems and elements. This approach extends Blue Planet to any IT environment and network infrastructure, enabling automated discovery, orchestration, and assurance across complex heterogeneous ecosystems.

Blue Planet federates data from pre-existing inventory systems and synchronizes it with actual network data to create an accurate single 'source of truth' for all resources. Blue Planet also offers advanced catalog-driven service order management and orchestration that enable rapid, accurate, zero-touch service activation end to end across network vendors, layers, and both physical and virtual elements.

Blue Planet provides intent-based Network Configuration and Change Management (NCCM) that eliminates the errors associated with CLI-driven configuration changes and 'stare and compare' compliance audits. It automates pre- and post- change validation checks and can roll back configurations to a prior known working state if the post-validation check fails[4].

Blue Planet also streamlines troubleshooting and remediation via state-of-the-art AIOps assurance capabilities that unify and correlate alarm, fault, event, and performance data from the entire network, providing technicians with the information they need to rapidly isolate and address problems.
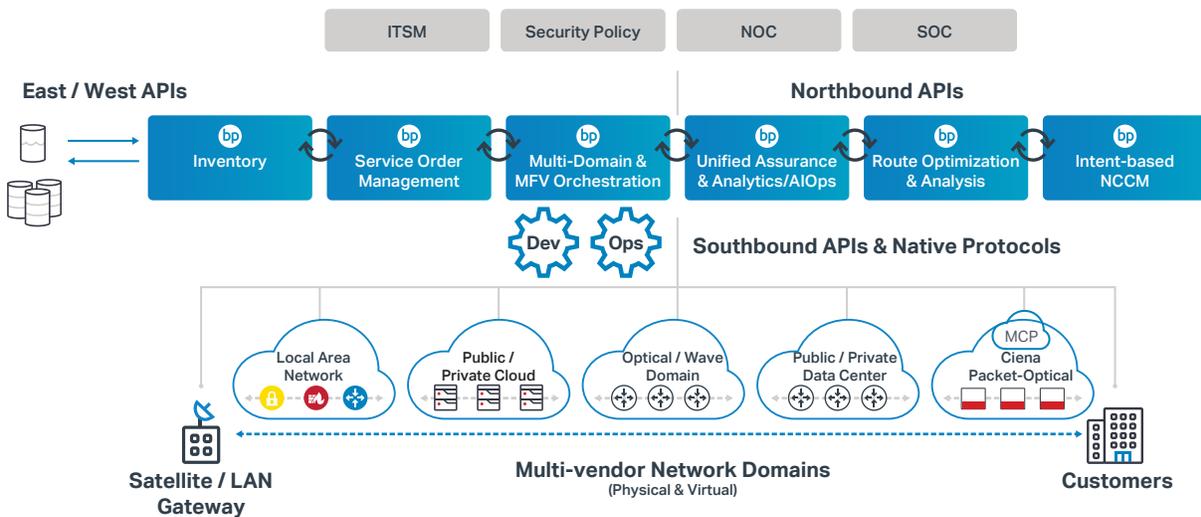

Figure 1. NEED CAPTION

The Blue Planet Intelligent Automation portfolio

By addressing operational needs with accurate inventory, dynamic service activation, and automated recovery, Blue Planet helps teleport operators modernize their operations, increase profitability, improve service agility, and enhance customer experience, at scale.

Blue Planet for teleport automation

Blue Planet eliminates the silos that exist between IT and the network, and overcomes the limitations of error-prone manual operations with automated discovery, orchestration, NCCM, and AIOps Assurance.

Using intent-based NCCM automation, the IT staff simply defines configuration policies and Blue Planet discovers the devices and verifies their configuration network-wide and in real time. Valid configurations can be dynamically applied to non-compliant devices or flagged for manual remediation, and the system keeps a record of all network and configuration changes for forensic and compliance purposes.

Similarly, Blue Planet helps automate service design and activation for new customers, without manually gathering inventory data, using off-line design tools, or manually configuring elements[5]. Technicians simply specify the service endpoints, select the bandwidth rate, QoS, and protection scheme, and activate the service or select a time/date for service activation using sophisticated Blue Planet calendaring features. For teleports that deliver services over a private fiber network, Blue Planet uses intent-based orchestration to automate end-to-end service fulfillment across multi-vendor optical domains, enabling service activation in mere minutes, not months, without manual intervention.

The AlgoSec 2019 Cloud Security survey finds that the two main causes of network outage in 2018 were human error in managing devices and in configuration changes.

Network misconfiguration risks

by Avivi Siman-Tov

According to the Uptime Institute, up to 75% of data center failures are caused by human error.

The biggest risk to uptime? Your staff

by Andy Patrizio,

At the same time, Blue Planet AIOps Assurance correlates data from multiple sources (such as network elements, controllers, monitoring tools, ITSM, etc.) to help operators rapidly identify root-cause issues. Blue Planet provides comprehensive service visualization, as well as a playback option that allows technicians to 'see' what was occurring on a device before, during, and after alarms were triggered. It also analyzes historic data and applies machine learning techniques to enable in-depth network health monitoring.

Together, AIOps and orchestration enable dynamic, policy-driven bandwidth adjustment in response to demand, and can even execute policy-based closed-loop remediation. Technicians can also use Blue Planet to reroute services in support of planned maintenance windows or to optimize network resource utilization while avoiding the risks associated with manual intervention. Throughout these and all other automated procedures, Blue Planet gives technicians visibility into—and control over—all actions.

To avoid downtime due to fiber Loss of Signal (LOS) conditions, Blue Planet's Preemptive Network Maintenance (PMN) solution uses advanced analytics and Machine Learning, combined with policy and orchestration, to detect and avoid optical signal degradations before they affect service. The solution also provides technicians with device and port details, probable time to failure and impacted services, and guidance on how to address the root-cause issue.

Blue Planet also powers hybrid enterprise/cloud operations by working across IT, network, application, and cloud domains to increase visibility, optimize application performance and resource utilization, and reduce service risks. The solution keeps technicians informed by continuously assessing real-time network conditions, service demands, and resource availability, helping them maintain uptime and determine the best placement of traffic for optimal service quality and resource utilization.

Blue Planet also automates workload migration using a common inventory database and single user interface for both local and cloud-hosted resources, and provides end-to-end visibility of all networked resources, elements, and applications, helping operators avoid unexpected costs and potential outages.

Figure 3. Network performance dashboard, with task- and user-specific views and report-generation that provides technicians and executives the specific information they need at a glance

Summary

Teleport operators are being challenged to manage ever more satellites, bandwidth, and mission-critical applications and services while managing complex LANs, WANs, fiber-based terrestrial/submarine infrastructure, and hybrid cloud networks that span the globe. Cost-effectively managing this complex mix of physical/virtual infrastructure with outdated operational processes and proprietary tactical tools is increasingly impractical. Modern software-centric automation is the answer.

The Blue Planet Intelligent Automation portfolio helps teleport operators modernize and automate their operations across their complex heterogeneous networks. Blue Planet automation speeds service activation by up to 75 percent while decreasing traditional order-to-service OPEX by up to 90 percent; it also helps reduce trouble-to-resolve workflow OPEX by up to 38 percent and eliminates downtime cause by manual errors.

Streamlining operations not only reduces OPEX, it also frees up highly skilled technicians and improves service agility—both important considerations given near-term 5G technology adoption efforts.

Backed by a world-class services organization and the expertise of first-rate system integration partners, Blue Planet helps teleport operators overcome the myriad technical and business challenges they currently and consistently face, allows them to enhance their customers' experience at scale ,and facilitates their digital transformation goals.

Ciena Government Solutions, Inc. (CGSI)

CGSI is a wholly owned Ciena subsidiary serving the unique networking infrastructure needs of the U.S. federal sector. CGSI leverages Ciena's portfolio to provide comprehensive solutions tailored toward U.S. federal, civilian, defense, and research and education networks.

Was this content useful?   (Yes)   (No)

1. The SIA reports that the number of operational satellites grew by >20% in 2018 alone. https://sia.org/22nd_ssir/

2. 302 StarLink satellites were active as of 6/20, <1% of the 42,000 total satellites SpaceX is planning to launch.

3. www.euroconsult-ec.com/24_September_2019

4. Configuration errors are a major cause of network downtime. One noteworthy incident: In 2017, a Cloudflare engineer mistyped a network configuration command and mistakenly shut down a transatlantic fiber cable. See https://cloudscene.com/news/2017/07/datacenterdowntime/

5. Windstream uses Blue Planet to automate SD-WAN controller and Edge router configuration, which eliminates 300 alpha-numeric manual entries and 1.25 hours of manual intervention per customer site. See https://inform.tmforum.org/casestudy/windstream-uses-intelligent-automation-to-cut-provisioning-time-by-80/