Cisco Satellite Services Platform: Evolved Packet Core Satellite Radio Access Network

Using Terrestrial Wireless Standards for Service Delivery over Satellite

Overview

Meeting user expectations for consistent service delivery experience requires integration of satellite communications with terrestrial networks. To accomplish this, satellite service providers must transparently integrate with terrestrial wireless standards while also finding strategies for monetization of new bandwidth coming to market with high-throughput satellites.

The Cisco® Satellite Services Platform architecture meets these needs by enabling managed services delivery for differentiated user experiences over satellite communications. The architecture provides a range of features and important attributes that are crucial for service delivery solutions today: scalability and reliability, multiaccess flexibility, and service velocity.

Addressing Service Delivery Challenges

This architecture supports the transition of satellite service provider business models from circuit-switched "pipes" sold as bandwidth by the MHz to managed services delivering business outcome service-level agreements (SLAs). The Cisco Evolved Packet Core (EPC) Satellite Radio Access Network (SatRAN) solution enables the change in technical delivery for differentiated subscriber management to monetize these new sales models and deliver the experience demanded by users.

A modular, scalable architecture, the Cisco Satellite Services Platform supports multiple access types and flexible subscriber management underpinned by common policy management and enforcement. The solution uses terrestrial research and development (R&D) investments in mobile wireless technology and standards using Cisco validated IP architectures. The Cisco elastic EPC supports multiple SatRANs, creating a unified network across multiple hubs with interoperability at both the data and control planes across multiple platforms. This allows for increased operational efficiency and reductions in operational complexity. The virtualized service delivery framework lets the operator "build once and sell many."

Figure 1. Cisco Satellite Services Platform Architecture
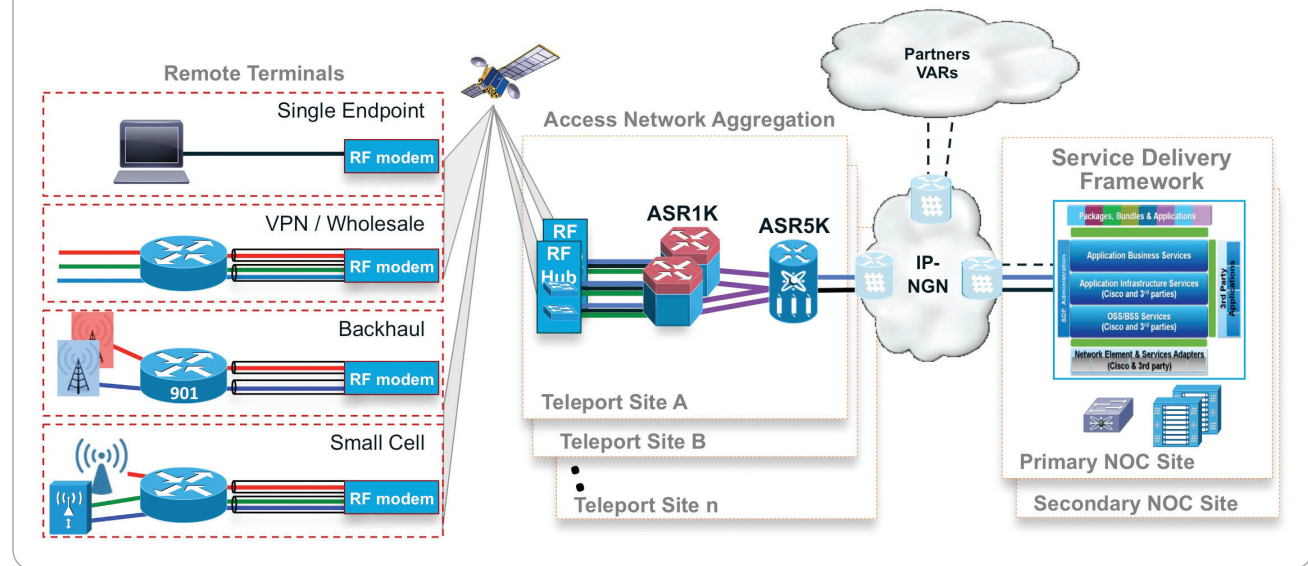
Centralized subscriber management, services, and policy are obtained without unnecessary duplication of hardware and systems. Optionally, policy enforcement may be distributed within the infrastructure elements to support larger remote communities. Virtual network operator (VNO) capability enables multiple commercial and government entities to share the service provider's common platform in a secure manner.

The end-to-end Cisco Satellite Services Platform architecture (Figure 1), incorporating the Cisco EPC SatRAN solution, also demonstrates how satellite service providers can offer multitenant, cloud-based services, such as infrastructure as a service (IaaS) and platform as a service (PaaS), to their channel partners or end-user consumers. The architecture provides the satellite industry with a standards-based approach to integrate satellite networks with terrestrial wireless networks, creating managed service models that can be developed once and deployed many times.

Cisco Solution Supports Managed and Cloud Services

Satellite service providers can reduce the complexity and cost of operating, deploying, and scaling service delivery across satellite access networks using multivendor SatRANs through an EPC with the Cisco EPC SatRAN solution. The solution uses terrestrial wireless standards to address operator requirements for intelligent and scalable service delivery.

The Cisco Satellite Services Platform architecture encompasses solution elements supporting delivery of managed and cloud services, both over satellite and as part of an integrated, or hybrid, heterogeneous network. The major system elements include the:

- Services delivery framework (Cisco Prime™, Cisco Quantum™ Software Suite, data center systems)

- IP next-generation network (NGN) (Multiprotocol Label Switching [MPLS] core)

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- Access network aggregation (EPC and access gateways integrating multivendor SatRANs)
- Mobile edge or remote terminal, which includes customer premises equipment (CPE) routers, plus auxiliary devices such as small cells or wireless LAN systems

Benefits of Cisco EPC SatRAN Solution

The Cisco EPC SatRAN solution uses terrestrial wireless standards to integrate satellite communications with state-of-the-art service delivery models to meet user experience expectations. The Cisco EPC SatRAN solution delivers:

- Reliability of proven technology based on Cisco validated designs deployed with leading service providers worldwide
- Architectures that scale to support large broadband deployments, while enabling enterprise-class services
- Access-type flexibility, with support for multiple SatRANs concurrently integrated with terrestrial wireless options
- Support for business model transitions to migrate customers to differentiated offerings
- Service delivery virtualization to speed time to market for new service offerings
- Policy enforcement and subscriber management to monetize new revenue opportunities
- Reduced OpEx and less complexity with simpler management and fewer points of configuration
- Ability to securely host and provide multiuser access

Flexible Business Models

Cisco offers flexible business models to address the unique business requirements for the satellite service providers:

- **Build, operate, and transfer:** Operators use Cisco build and operate capabilities with system integration in a multivendor environment with transfer after a fixed period of time.
- **Managed capacity:** Operators may use managed operations and flexible pricing arrangements such as pay as you grow (PAYG) and Cisco Capital® leasing.

- **Cloud services enablement:** Operators may use infrastructure and services hosted, operated, and managed by Cisco, which is well integrated within their environment.

Cisco Mobile Wireless Solutions for Service Providers

Cisco offers a broad range of services to successfully meet the operator business requirements at each phase of the satellite services platform solution lifecycle. Each offer is flexible and customizable to meet the needs of individual customers. Cisco Services offers are broadly classified into three categories, with each offer encompassing program management.

Plan

The plan portfolio offers a range of consulting services, with an architectural approach to strategically advance business results by increasing revenue and ARPU, improving user "stickiness," and improving operational efficiency.

Build

Cisco Services bring a wealth of knowledge and deployment methodologies to implement a fully integrated and tested wireless solution in the operator's network. Whether it is a greenfield deployment or transparent migration, Cisco Services bring a proven set of processes to deliver faster time to market, reduce OpEx, and mitigate implementation risks.

Manage

The manage portfolio consists of four flexible service tiers—base, proactive, preemptive, and operate—providing access to a range of options from standard core technical assistance center (TAC) to 24x7 monitoring in remote Cisco network operations centers (NOCs).

Cisco Services Benefits

- Focus on operator business results:
  - Increased revenue and ARPU
  - Enhanced operational efficiency
  - User experience and loyalty
  - Return on investment
- Accelerate time to market, while mitigating risks through best practices and methodologies

- Make sure of future-proof resilient network architecture, which is optimized for upcoming "unknown" real-time services
- Bring depth and breadth of a leading-edge evolved packet core and wireless solutions
- Use vast experience in solution integration in an access-independent environment
- Provide excellence of service deliveries
- Provide optimization support that is prescriptive, proactive, and preemptive
- Provide assurance by SLAs

Why Cisco?

Cisco is the worldwide leader in access-independent, evolved packet core solutions and services. Cisco has the breadth of products, technologies, and experience to provide a scalable and high-performance, carrier-grade satellite services platform solution and the expertise to help customers implement it for measurable benefits.

Cisco Services bring together critical capabilities, such as complex, large-scale, leading-edge deployment expertise; proven methodologies and frameworks; and intellectual, capital-based, specialized tools to provide the support needed from vision to implementation. Cisco Services have a proven track record in partnering with operators to help achieve their business goals.

For More Information

To learn more about the Cisco EPC SatRAN solution or the Cisco Satellite Services Platform architecture, contact your local Cisco account representative or visit www.cisco.com/go/mobile.