



HOW TO DEVELOP A STRATEGIC NETWORK PLAN

INTRODUCTION

Mining companies and EPCMs know that strategic investment in their corporate communications network is critical to operational and business success. Finding the right networking solution to support their unique challenges within the mining industry is essential.

IP-based satellite communications provide a powerful solution. Strategically designed VSAT networks enable mining companies to address all their core communications challenges.

Mining and engineering companies need to design a reliable network that can handle dynamic applications while delivering a consistent, high-quality user experience to all remote sites. Failing to plan and invest adequately in a high-performance communications strategy can put people, business and overall reputations at risk. This is critically important today, especially as mining companies continue to expand operations into some of the most remote and harsh environments in the world.

When planning a communications network, mining companies should follow five fundamental principles of financial planning and network design. Ultimately, these five principles will help mining companies stand out in a highly competitive industry by enhancing their infrastructure, protecting employees and operations, and seamlessly connecting remote sites to headquarters for strategic growth.

5 FUNDAMENTAL PRINCIPLES

..... of Financial Planning and Network Design

1 CUSTOMIZED, FULLY ENGINEERED NETWORK

2 CONTINUOUS COVERAGE

3 BANDWIDTH UTILIZATION PLAN

4 NETWORK INTEGRATION

5 ACCOUNTABILITY

1

CUSTOMIZED, FULLY ENGINEERED NETWORK

FINANCIAL PRINCIPLE:

A financial plan must be tailored to unique business goals

NETWORK DESIGN PRINCIPLE:

A network design should meet unique applications and operational requirements

When designing a network, it's important to understand the unique requirements of each site and to tailor the network to meet multiple, distinct needs while ensuring a consistent user experience across every location.

Every site requires access to the corporate network and basic telephony service, but certain sites may also require dedicated bandwidth for control and automation of SCADA, Internet access, and sundry command and control systems. Security and content filtering are also important elements of a network and require certain bandwidth. As corporate applications run across the network, each site will have a distinct bandwidth profile and usage pattern and therefore must have unique quality of service properties.

A properly designed and engineered network will address most unique issues associated with VSAT technology. A customized network design should include four elements:

- Per-site technical plan to deliver required service levels and availability
- Capacity plan to allocate bandwidth per traffic volume requirements for the overall network
- WAN optimization plan to address dynamic bandwidth needs of each application
- IP address and routing plan to govern the flow of different traffic types and establish a failover plan

PROFILE EACH SITE TO DETERMINE UNIQUE TECHNOLOGY REQUIREMENTS AND CAPACITY PLAN



2

CONTINUOUS COVERAGE

FINANCIAL PRINCIPLE:

A proper financial plan should account for immediate and ongoing needs over an investor's life

NETWORK DESIGN PRINCIPLE:

A properly designed network should deliver continuous communications support during each unique phase of your operation

As exploration operations move into new areas, mining companies need a network that can support the communications challenges of each phase of the mining process. In the early exploration phase, mining companies need satellite phones and other highly mobile communications technology. During the initial development phase, mining companies need a portable VSAT solution and basic Internet and telephony service.

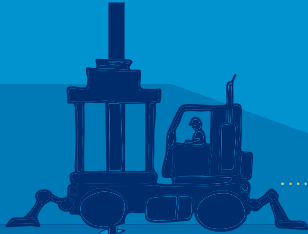
When development and construction moves into the production phase, mining companies need a dedicated, secure, and private VSAT solution that supports multiple applications (Voice, Internet, VoIP) and synchronizes seamlessly with the corporate network. Finally, mining companies need a back-up network to support their operations in the event of a natural disaster.

By designing a plan that adapts throughout each phase of the mining process, companies can anticipate their hardware and bandwidth requirements, helping them reduce expenses without jeopardizing the performance of key applications.

PROVIDE SOLUTIONS FOR EACH PHASE OF MINING EXPLORATION DEVELOPMENT AND PRODUCTION



EARLY EXPLORATION
Satphones



**DRILLING—EARLY DEVELOPMENT,
CONSTRUCTION**
Trans-Portable VSAT, Internet, Phones



PRODUCTION
VSAT, Internet, Phones, Networking,
IT Security, Private Networks

**DISASTER RECOVERY –
BACKUP SYSTEMS**
Failover System



3

BANDWIDTH UTILIZATION PLAN

FINANCIAL PRINCIPLE:

Diversify your investment portfolio without risking your financial security

NETWORK DESIGN PRINCIPLE:

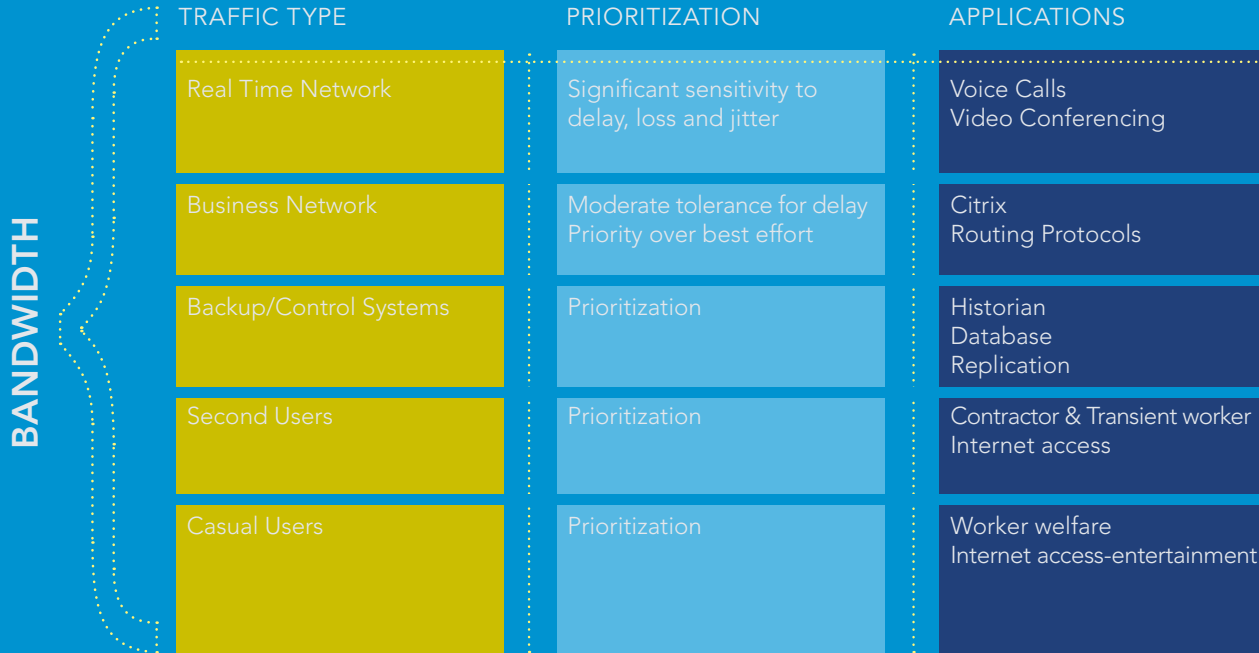
Spread bandwidth efficiently while preserving priority traffic

Bandwidth is an expensive resource and mining companies try to use it as sparingly as possible while protecting the priority of their critical applications. Purchasing too much bandwidth can be costly. Yet, if companies do not secure enough capacity, it can result in network congestion and lead to application degradation, or even failure.

Since multiple applications dynamically share the same bandwidth pool, mining and engineering companies need rules in place to govern prioritization. Analyzing workflow and usage patterns is essential to create an effective prioritization plan across the entire network. Also, it is better to first design the network for overall activity and then layer bandwidth based on user and application profiles with finely tuned priority settings to manage real-time allocation.

By establishing prioritization levels, companies can effectively segment their capacity investment at the right levels to avoid unnecessary cost without jeopardizing the performance of key applications when it matters most.

ALLOCATE BANDWIDTH AS EFFICIENTLY AS POSSIBLE WHILE PROTECTING APPLICATION RELIABILITY



4

NETWORK INTEGRATION

FINANCIAL PRINCIPLE:

An integrated investment portfolio working toward a common goal

NETWORK DESIGN PRINCIPLE:

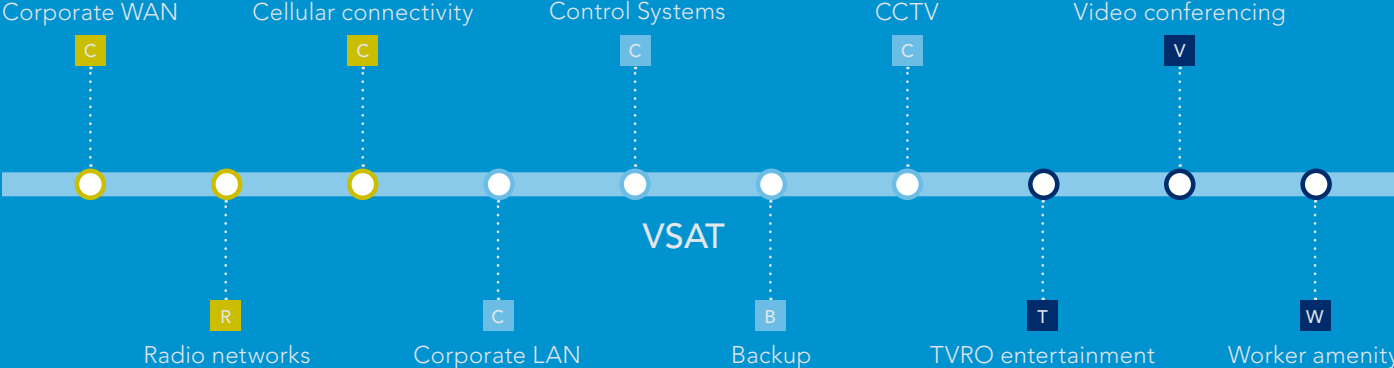
Integrated communications over a single IP network

The growth of IP communications is enabling more technologies to run simultaneously on the same network. The results include greater simplicity, consistency and accountability, as well as significant cost savings. Designing the right network involves systematic planning to ensure all these technologies can work together seamlessly.

When it comes to satellite networks, mining and engineering companies should consider an IP-based network. This creates an IP backbone that can also support SCADA and DCS serial connections, deliver IP-based voice and video traffic, and trunk hand-held radio traffic.

An integrated network is best managed by a single service provider. It establishes a single point of contact for a broad range of communications needs and it better ensures a seamless performance across an entire network.

ESTABLISH AN IP FRAMEWORK FOR UNIFIED COMMUNICATIONS UNDER A SINGLE SERVICE PLAN



5

ACCOUNTABILITY

FINANCIAL PRINCIPLE:

A vigilant eye on the markets to mitigate risk and capitalize on new opportunities

NETWORK DESIGN PRINCIPLE:

A team to monitor, manage, optimize, and scale a network

Once a communications network is implemented, it must be continually managed to ensure maximum availability and reliability. The goal is total control to ensure operations are never jeopardized. At remote sites, this means ensuring constant access to the network through real-time monitoring, remote trouble shooting and local support. It also requires an out-of-band backup network in place that can handle critical operations should an outage threaten service availability.

At headquarters, visibility and access are just as critical. An IT director is accountable for how the network supports business requirements and measures up to Service Level Agreements. IT managers must have access to a portal that tracks performance across every location on the network and includes both real-time metrics and historical data analysis.

Regular IT advisory, planning and support is essential across the entire network. Because mining operations are dynamic and growing globally, mining companies need a partner that can readily adapt the network as requirements change. A network should have the flexibility to allow for changes in bandwidth and services at a particular site, and be able to grow to accommodate additional sites without significant redesign.

MANAGE DAILY OPERATIONS AND ADJUST TO NEW REQUIREMENTS

HQ OFFICE

- V Visibility to network at remote locations
- S SLA monitoring and reporting
- H Historical data analysis
- N Network optimization
- I IT advisory, planning and support

REMOTE SITE

- C Committed Information Rate/ Minimum Information Rate
- B Back up network
- R Real-time networking monitoring
- L Local support
- R Real-time remote trouble shooting

WHAT TO LOOK FOR IN A SERVICE PROVIDER

When mining and engineering companies look for a partner to help design, build and manage their strategic communications plans, it's important that they find a managed service provider with the experience and global resources to meet their unique requirement.

A managed satellite service provider should offer the following:

1. Customized approach to ensure core operations and future requirements drive decisions
2. Managed service that includes all hardware, network services, engineering and support
3. Integrated networking technologies and services in a complete service offering
4. Comprehensive reporting on Key Performance Indicators, including service and capacity utilization, availability, latency, and response times
5. Business continuity solution, including alternate teleport locations and out-of-band network
6. IT advisory to ensure service continually adapts to changing operational requirements
7. Best of breed technologies which are continually reviewed to optimize network performance
8. Seamless global bandwidth coverage that can scale with operational growth

