



**HOW TO DEVELOP A STRATEGIC NETWORK PLAN**

# INTRODUCTION

For oil & gas companies, making a strategic investment in a corporate communications network is critical to operational and business success. Yet, this is often a decision that many companies don't fully plan. While VSAT-based networks are helping oil & gas companies solve core communications challenges, many don't understand how to properly design a network to maximize its effectiveness and help them grow their business.

Oil & gas companies need to design a reliable network that can handle dynamic applications while delivering a consistent, high-quality user experience to all of their offshore and onshore locations. 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 oil & gas companies look to meet stricter health, safety and environment regulations.

Leaders at oil & gas companies that want to be effective need to follow five fundamental principles of financial planning and network design. Ultimately, these five principles will help you make a sound investment in the success of a business. Your people and operations will be better protected. You'll be able to seamlessly expand operations to new regions and grow the business strategically. And you can ensure that your operations remain best in class in a highly competitive industry.

# 5 FUNDAMENTAL PRINCIPLES

..... of Financial Planning and Network Design

1 CUSTOMIZED, FULLY ENGINEERED NETWORK

2 BANDWIDTH UTILIZATION PLAN

3 NETWORK INTEGRATION

4 ACCOUNTABILITY

5 GLOBAL SCALE

# 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 planning the design of your network, it's important to understand the unique requirements of each site. You need 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. Certain sites may also require bandwidth for control and automation of SCADA, as well as for "second users" such as contractors, and Internet access for crew welfare. As you run corporate applications across the network, each site will have a distinct bandwidth profile and usage pattern and must have unique quality of service properties.

A customized network design should always include:

- **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 traffic types and establish a failover plan

PROFILE EACH SITE TO DETERMINE UNIQUE TECHNOLOGY REQUIREMENTS AND CAPACITY PLAN

SHORE BASE

- C Corporate WAN
- R Radio networks
- C Cellular connectivity

SHALLOW WATER

- C Corporate LAN
- S SCADA
- D DCS
- C CCTV
- T TVRO entertainment

DEEPER WATER

- C Corporate LAN
- T SCADA
- D DCS
- C CCTV
- T TVRO entertainment
- V Video conferencing
- C Crew amenity



## 2

# 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 oil & gas 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, you need rules in place to govern prioritization. Examine your workflow and usage patterns to effectively create a prioritization plan across the entire network. Design your network to account 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, you can effectively segment your capacity investment at the right levels to avoid any unnecessary cost without jeopardizing the performance of key applications when it matters most.

# ALLOCATE BANDWIDTH AS EFFICIENTLY AS POSSIBLE WHILE PROTECTING APPLICATION RELIABILITY

BANDWIDTH

TRAFFIC TYPE	PRIORITIZATION	APPLICATIONS
Real-Time Network	<ul style="list-style-type: none"><li>▪ Significant sensitivity to delay, loss and jitter</li></ul>	<ul style="list-style-type: none"><li>▪ Voice Calls</li><li>▪ Video Conferencing</li></ul>
Business Network	<ul style="list-style-type: none"><li>▪ Moderate tolerance for delay</li><li>▪ Priority over best effort</li></ul>	<ul style="list-style-type: none"><li>▪ Citrix</li><li>▪ Routing Protocols</li></ul>
DCS/SCADA	<ul style="list-style-type: none"><li>▪ Moderate tolerance for delay</li><li>▪ Dropped when network is congested in favor of best effort</li></ul>	<ul style="list-style-type: none"><li>▪ Historian</li><li>▪ Database</li><li>▪ Replication</li></ul>
Second Users	<ul style="list-style-type: none"><li>▪ Moderate tolerance for delay</li><li>▪ Priority over best effort</li></ul>	<ul style="list-style-type: none"><li>▪ Contractor &amp; transient worker</li><li>▪ Internet access</li></ul>
Casual Users	<ul style="list-style-type: none"><li>▪ Normal Internet traffic or best effort delivery with lightweight SLA based on delay and loss</li></ul>	<ul style="list-style-type: none"><li>▪ Crew welfare</li><li>▪ Internet access</li><li>▪ Entertainment</li></ul>

# 3

## NETWORK INTEGRATION

### FINANCIAL PRINCIPLE:

*An integrated investment portfolio working toward a common goal*

### NETWORK DESIGN PRINCIPLE:

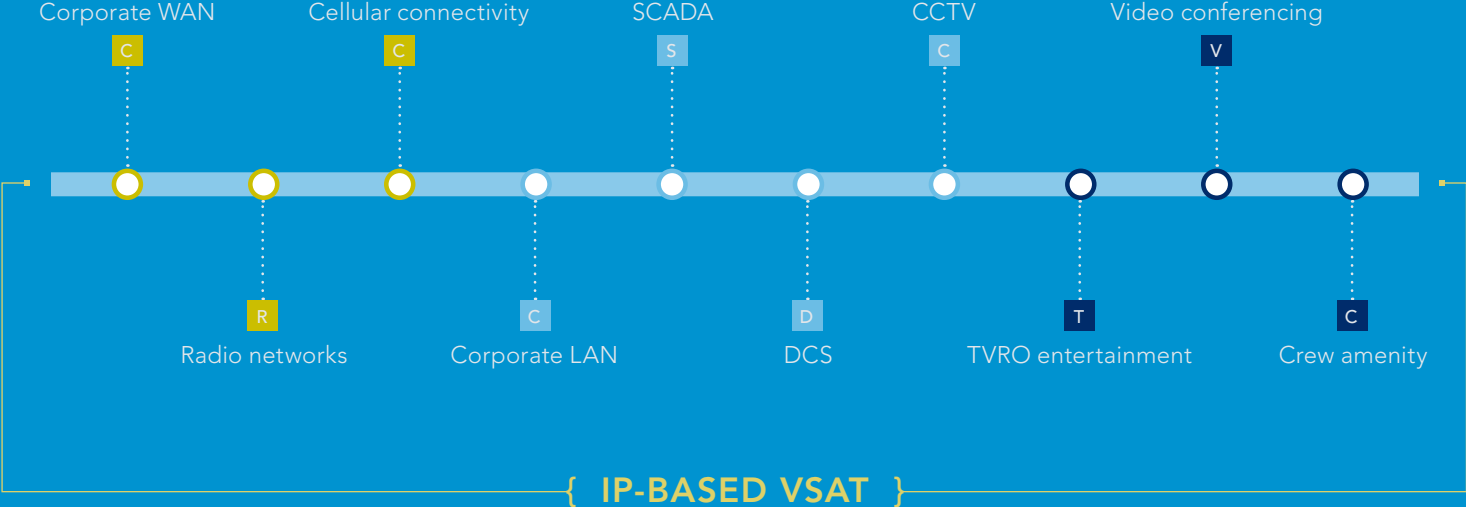
*Integrated communications over a single IP network*

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 dedicated planning, though, to ensure all these technologies can work together seamlessly.

When it comes to satellite networks, you need to 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



# 4

## 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, as well as access to multiple teleports to 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. Oil & gas companies 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.

Across the entire network, you need regular IT advisory, planning and support. Your operations are dynamic and growing globally so you 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 troubleshooting

# 5

## GLOBAL SCALE

### FINANCIAL PRINCIPLE:

*Broad options no matter how your needs grow and change*

### NETWORK DESIGN PRINCIPLE:

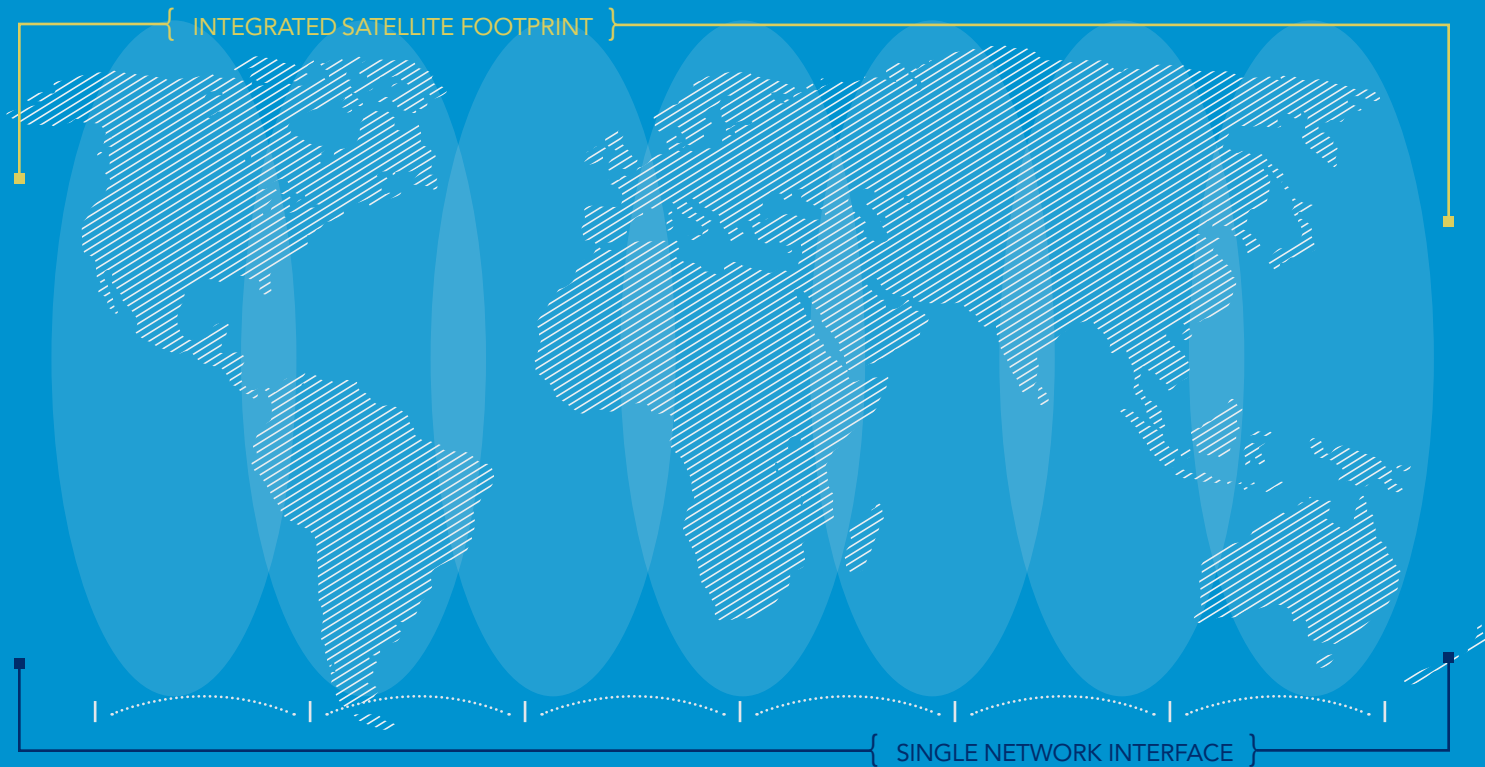
*Ability to easily expand geographically as new opportunities arise*

As oil & gas exploration operations move into new areas, companies need a unified global network that can scale with their businesses. It quickly becomes costly and complex to contract with multiple service providers across multiple geographies while operating disparate networks.

You should incorporate features into your network to enable a seamless service experience as your operations move globally. First, make sure you have a network of integrated satellite beams. Second, make sure you have a single network interface where your assets can maintain a single, global IP address and you can track them from a common system.

These features will allow you to scale the network quickly, easily and with consistency, and maintain predictability wherever your operations take you.

ACCESS A SINGLE NETWORK THAT CAN SPAN ANY GEOGRAPHY



## WHAT TO LOOK FOR IN A SERVICE PROVIDER

When selecting partners to help design, build and manage a strategic communications plan for your business, it's important they have the necessary experience and global resources to meet your unique requirements and enable business growth. They must be able to provide:

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 solutions, including alternate teleport locations and out-of-band network capabilities
6. IT advisory to ensure service continually adapts to changing operational requirements
7. Best of breed technologies that are continually reviewed to optimize network performance
8. Seamless global bandwidth coverage that can scale with your operations

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## Offices

St. Petersburg, Florida USA  
Phone +1 727 898 3835  
sales@itcglobal.net  
www.itcglobal.com

Houston, Texas USA  
Phone +1 855 639 4482  
sales@itcglobal.com  
www.itcglobal.com

San Miguel, Santiago Chile  
Phone +562-9444132  
contacto@itcglobal.net  
www.itcglobal.net

West Perth, Western Australia  
Phone +61 8 6263 0444  
sales@itcglobal.net.au  
www.itcglobal.net.au

