Day 5 course

VSAT Equipment and bandwidth procurement

1- Define your needs

Purchasing end-to-end services vs. purchasing component services

In order to use a VSAT, you will need to acquire both VSAT equipment and network services. Services can be divided into four categories.

You can purchase all the services together (end-to-end services) or individually (component services). The four categories are:

- Supply, installation and maintenance of VSAT equipment installed at your premises
- Satellite space segment or bandwidth
- Hub or teleport services
- Connection to public or Internet backbone.

1- Define your needs

Purchasing end-to-end services vs. purchasing component services

If you purchase end-to-end services, you will engage and deal with a single provider.

Acquisition of component services requires engaging several providers, but in most cases will involve dealing with two service providers:

one to supply, install and maintain your equipment and the other to provide network services (bandwidth, hub services and connection to public network).

1- Define your needs

Purchasing end-to-end services vs. purchasing component services

	Pros	Cons
Component Services	• You have full control of your network and can optimize it as you see fit- useful for large and complex networks	• Dealing with many providers increases administrative overheads • Risk and cost of integration of services is borne by you • Requires that you have highly skilled technical personnel or consultants for design and integration, who can be very expensive
End-to-end Services	• You do not have to deal with integration- risks transferred to provider • You have only one service provider to deal with, simplifying overall administration, monitoring and management of service provider • You do not have to engage expensive and highly skilled technical staff or consultants	• Service provider is responsible for optimizing your network- you usually will have no or little say. May not make the most optimal configuration for your needs

1- Define your needs

Some common technical considerations

There are a whole host of technical considerations you will need to make when buying a VSAT. Most of them involve making trade offs among the technical characteristics that give you what you want and what you can afford.

The common considerations you may be forced to make are:

- Whether to use inclined orbit satellites
- Whether to use C or Ku band
- Whether to use shared or dedicated bandwidth.`

1- Define your needs

Some common technical considerations

Use of Inclined Orbit Satellite

The price of bandwidth on inclined orbit satellites is usually much lower since these satellites are nearing their end of life. The downside is that it requires a dish with tracking capabilities that can be very expensive. The high capital costs associated with the expensive antenna can be offset by lower operating costs but only if you are purchasing large amounts of bandwidth.

You should therefore make sure that you carefully consider both your capital and operating costs over the period you intend to operate the VSAT. Of course, remember to ascertain the exact remaining life of the satellite, when making this consideration. If you decide to opt for inclined orbit capacity, caution is advised as the service can be down for a while in the event that you are running mission critical applications.

1- Define your needs

Some common technical considerations

C Band vs. Ku Band

One of the big decisions you are likely to encounter when buying a VSAT is whether to use C band or Ku band. In order to enable you to arrive at an informed decision, we have briefly presented the advantages and disadvantages of each band.

1- Define your needs

Some common technical considerations

C Band vs. Ku Band

Advantages of using C band

C band is less affected by rain. If you happen to live in a high rain-fall area such as the tropics and your VSAT applications are “mission critical”, in other words, you want your system available all the time, you can opt for C band over Ku band. However, this does not exclude the use of Ku band systems in the tropics especially for home TV and Internet access since these are not mission critical applications and the consumers can live with a few hours of intermittent service.

1- Define your needs

Some common technical considerations

C Band vs. Ku Band

Advantages of using C band

C band systems have been around longer than Ku band systems and thus rely on proven technology. However, Ku band systems seem to be overtaking C band systems as the preferred technology in the home consumer business in the last few years. Note that Ku band dishes are more likely to be smaller and therefore cheaper for any given application, because of Ku band's higher frequencies. You should also bear in mind that Ku band bandwidth prices are higher than C band prices and therefore any savings on capital costs could be offset by higher operating costs.

1- Define your needs

Some common technical considerations

C Band vs. Ku Band

Advantages of using C band

C band satellite beams have large foot prints with the global beam covering almost a third of the earth's surface. If you are looking for single satellite hop operation (e.g. for real time applications such as telephony or videoconferencing) to connect locations far apart from one another, you may be forced to choose the wider coverage C band beams. However, the latest satellites launched have large Ku band beams covering entire continents. You should also note that two beams on the satellites can be connected through a method called "cross strapping" thus allowing two or more locations covered by two separate beams to be connected in a single hop.

1- Define your needs

Some common technical considerations

C Band vs. Ku Band

Disadvantages of using C band

- C band requires the use of larger dishes which can be quite cumbersome to install and are more expensive to acquire and transport.
- C band systems share the same frequency bands as allocated to terrestrial microwave systems. As such care must be taken when positioning C band antennas in areas where terrestrial microwave systems exist (for example TV or radio stations). For this reason, C band satellite transponder power is deliberately limited during the satellite's design and manufacture according to sharing criteria laid down by the ITU, leading to a requirement for larger dishes on the ground.

1- Define your needs

Some common technical considerations

C Band vs. Ku Band

Advantages of using Ku band

- Ku band systems require smaller dishes because of their higher satellite transponder power and higher frequencies, which translates into smaller, cheaper antennas on the ground and therefore lower start up and transport costs.

o The smaller Ku Band dishes can be easily installed on almost any surface- the ground, roofs or bolted to the side of buildings. This is an important consideration for areas with limited space.

1- Define your needs

Some common technical considerations

C Band vs. Ku Band

Disadvantages of using Ku band

- Ku band systems are more affected by rainfall because of their higher operating frequencies and as such are usually considered unsuitable for mission critical applications in the tropics, unless specific measures are taken to provide for the added rain attenuation, for example by using larger dishes. This drawback has also been slightly offset by the higher power satellites being manufactured today. As noted above, Ku band systems are gaining popularity even in the tropics for home use where users can survive a few hours of intermittent service a month.

1- Define your needs

Some common technical considerations

C Band vs. Ku Band

Disadvantages of using Ku band

o Ku band satellite systems usually have smaller beams covering a small surface of the earth. Therefore if you intend to cover two locations a large distance apart, within a single hop or with a broadcast system, you may need to consider C band systems.

o Ku band bandwidth is more expensive that C band bandwidth. As noted above, the savings in capital cost you gain using Ku band's smaller antennas may be negated by the higher operating costs imposed by high bandwidth prices.

1- Define your needs

Some common technical considerations

C Band vs. Ku/Ka Band

Advantages of using Ka band

o Ka band dishes can be much smaller than Ku band dishes because of the even higher Ka band frequencies and higher satellite power. The smaller dishes translate to lower start up costs for equipment.

1- Define your needs

Some common technical considerations

C Band vs. Ku /Ka Band

Disadvantages of using Ka band

o The higher frequencies of Ka band are significantly more vulnerable to signal quality problems caused by rainfall and therefore Ka band VSATs are usually unsuitable for mission critical or high availability systems in the tropical and sub-tropical regions without the provision of measures to combat adverse weather conditions.

o Also, Ka-band systems will almost always require tracking antennas.

o Ka band bandwidth is more expensive than C band or Ku band bandwidth.

Ka band is currently (2013) becoming available over Africa.

1- Define your needs

Some common technical considerations

C Band vs. Ku Band

Summary

	C Band	Ku Band	Ka Band
Advantages	Less affected by rain Proven technology Wider coverage	Smaller dishes Easy installation	Smaller dishes than Ku Band
Disadvantages	Larger dishes Interferences with terrestial microwaves frequencies	Affected by rain Smaller beam More expensive than C Band	Affected by rain Require tracking antennas More expensive bandwith Currently scarce coverage over Africa

1- Define your needs

Some common technical considerations

Shared vs. Dedicated Bandwidth

It is critical for you to decide whether you will accept shared or dedicated bandwidth. Shared bandwidth refers to bandwidth that is shared with other customers of your service provider.

Dedicated bandwidth is “committed” solely to you. Shared bandwidth is obviously cheaper than dedicated bandwidth because you are also sharing the cost of the bandwidth among other users.

Unfortunately, some service providers pass off shared bandwidth as dedicated bandwidth and charge you rates equivalent to those for dedicated bandwidth.

You therefore have to be clear what you are buying.

1- Define your needs

Some common technical considerations

Shared vs. Dedicated Bandwidth

Shared bandwidth is desirable when you will not be using all the bandwidth all the time. If your primary applications will be email and web surfing and you do not have many users e.g. a community telecenter, then shared bandwidth may well work for you.

However, if you have a large volume of users accessing the system throughout the day or if you intend to run real time applications such as telephony or videoconferencing, then you will need dedicated bandwidth.

There are three key metrics you will need to consider when purchasing shared bandwidth:

1- Define your needs

Some common technical considerations

Shared vs. Dedicated Bandwidth

The contention ratio

Contention is a term that comes from terrestrial internet systems such as Digital Subscriber Link (DSL) and refers to sharing. The contention ratio is the number of users sharing the bandwidth.

Obviously the more users sharing the bandwidth, the less bandwidth you get if they are all online.

For instance if you are sharing bandwidth with a capacity of 1 Mbps among 20 customers (contention ratio of 20:1), then your maximum connection speed when all the customers are using the bandwidth is 50 kbps, equivalent to a dial up modem connection.

1- Define your needs

Some common technical considerations

Shared vs. Dedicated Bandwidth

The contention ratio

If, however, the contention ratio is 50:1 or 50 customers sharing the connection, then your maximum speed when all customers are using the system is 20 kbps.

As you can imagine, how much of the 1 Mbps promised by the service provider you actually get depends on the contention ratio. Contention is also called “over booking” or “over selling” capacity.

1- Define your needs

Some common technical considerations

Shared vs. Dedicated Bandwidth

Committed Information Rate (CIR)

Even with shared bandwidth capacity, your service provider may guarantee you certain minimum capacity at all times. This guaranteed capacity is the CIR.

In our example above using a contention ratio of 20:1, this CIR would be 50 kbps, even though you are quoted a bandwidth capacity of 1 Mbps.

1- Define your needs

Some common technical considerations

Shared vs. Dedicated Bandwidth

Bursting capacity

Bursting refers to the ability of a VSAT system to utilize capacity above and beyond its normal allocation. Bursting is only possible when you purchase shared bandwidth.

If your service provider has implemented bursting, a portion or all of the shared bandwidth capacity will be pooled. For instance, several portions of 1 Mbps may be pooled together.

When other customers are not using their capacity, you may be able to “burst” or use more than your allocated capacity.

1- Define your needs

Some common technical considerations

Shared vs. Dedicated Bandwidth

Bursting capacity

Note that bursting also only occurs when there is ‘free’ or available capacity in the pool. The amount of additional or burst capacity to which any VSAT station sharing the pool is entitle to is limited to a set maximum, usually less than the total pool capacity to ensure that there is always capacity available for other VSAT stations.

In summary, when purchasing shared capacity, you should ask your service provider to specify the contention ratio, your CIR and how much bursting capacity you can get.

2- Acquire the VSAT

Selecting a partner provider

The acquisition process involves either competitive or non competitive selection of your VSAT equipment and service provider(s). Under competitive selection, two and usually more service providers are asked to submit proposals or “bids”. The selection is based on the best offer, arrived at by comparing all the proposals received using a pre-determined evaluation scheme.

Under non-competitive selection, only a single service provider is invited to submit a proposal, and no other service providers are considered. Non-competitive selection is also referred to as single sourcing or direct contracting.

As you can imagine competition is healthy in order to obtain the best solution that matches your business requirements at the best price and in the most efficient way.

2- Acquire the VSAT

Selecting a partner provider

Therefore, a competitive approach is strongly recommended except in very extreme situations that can and should be clearly justifiable on economic and efficiency grounds.

Non competitive acquisition or single sourcing should only be considered:

- In an emergency, for example if a VSAT is required to establish communication capabilities following a natural disaster and expediency is the over-riding factor.
- If there is only a single authorized or licensed supplier in your country or region.
- If you want to ensure compatibility and integration with existing equipment or systems.
- If you are extending an existing contract based on prior good performance and for continuity purposes.

2- Acquire the VSAT

Selecting a partner provider

In case of competitive selection when you have analyzed your requirements and completed your vendor search, you are ready to start the vendor selection process.

You can then proceed by the following ways :

- Request For Proposal (RFP)
- Request For Quotation (RFQ)

A well written *Request for Proposal* (RFP) or *Request for Quotation* (RFQ) is the key for selecting the best vendor at the best value for your company. Writing a RFP or RFQ is not difficult if you understand the objectives and function of the document.

2- Acquire the VSAT

Selecting a partner provider

RFP

A **request for proposal** (**RFP**) is an early stage in a procurement process, issuing an invitation for suppliers, often through a bidding process, to submit a proposal on a specific commodity or service. The RFP process brings structure to the procurement decision and allows the risks and benefits to be identified clearly upfront.

The RFP may dictate to varying degrees the exact structure and format of the supplier's response. The creativity and innovation that suppliers choose to build into their proposals may be used to judge supplier proposals against each other, at the risk of failing to capture consistent information between bidders and thus hampering the decision making process. Effective RFPs typically reflect the strategy and short/long-term business objectives, providing detailed insight upon which suppliers will be able to offer a matching perspective. [2]

2- Acquire the VSAT
Selecting a partner provider

RFQ

A **request for quotation (RFQ)** is used when discussions with bidders are not required (mainly when the specifications of a product or service are already known) and when price is the main or only factor in selecting the successful bidder.

An RFQ may also be used as a step prior to going to a full-blown RFP to determine general price ranges. In this scenario, products, services or suppliers may be selected from the RFQ results to bring in to further research in order to write a more fully fleshed out RFP.

2- Acquire the VSAT

Selecting a partner provider

RFQ and RFP Content

The RFP or RFQ should contain the following sections. Keep in mind, that each document will be different depending upon the type of company and product you are searching for. Tailor each section for your individual needs.

- **Submission Details**
- **Introduction and Executive Summary**
- **Business Overview & Background**
- **Detailed Specifications**
- **Terms and Conditions**
- **Selection Criteria**

2- Acquire the VSAT

Selecting a partner provider

RFQ and RFP Content

It is usual to request for the following specific information to be included in the Bid:

- The overall VSAT network and service design, including outbound, inbound channel system and VSAT stations.
- Satellite used with detailed coverage zones (transmit and receive).
- Detailed link budgets.
- Description of the hub/teleport, with location, staff, organization, interconnection to terrestrial networks (e.g. internet backbone, ISDN), and extra provided services

2- Acquire the VSAT

Selecting a partner provider

RFQ and RFP Content

For end-to-end service, you should, in addition to the above information, also request for:

- A confirmation of the space segment provider, that the space segment offered by the Bidder is available.
- A confirmation of the teleport provider, that the teleport service is available.
- A confirmation of the VSAT station hardware supplier, that the VSAT systems offered by the Bidder are available.

2- Acquire the VSAT

Partner provider factors to be considered

Before buying VSATs, an enterprise has to consider many factors.

Though cost has remained the main discussion point for enterprises, the importance of factors like feasibility, bandwidth capacity and reliability should not be underestimated.

2- Acquire the VSAT

Partner provider factors to be considered

Feasibility

A feasibility check is a must before going the VSAT way. Connectivity options should be taken into account before making decisions because while in some areas a limited range or even single connectivity is feasible, in others multiple connectivity options might be available.

VSAT may be the most suitable connectivity option for remote rural villages with no terrestrial telecommunications network. Urban areas though may have a good fiber or other terrestrial telecommunications network.

2- Acquire the VSAT

Partner provider factors to be considered

Bandwidth Capacity

Bandwidth capacity of a particular technology is one of the most important factors in selecting the connectivity option. You should determine the bandwidth capacity depending on the applications you run or intend to run in the future.

For example, high capacity applications such as videoconferencing may preclude the use of low capacity options such as dial-up Internet connections. It is important to keep future requirements in mind, otherwise, you may find yourself having to buy a new system when your bandwidth needs increase.

2- Acquire the VSAT

Partner provider factors to be considered

Reliability

Reliability consists of multiple factors such as latency, availability, mean time between failure (MTBF) and mean time to restore (MTR). For example, for real-time or VPN applications under certain conditions, VSATs as well as some other technologies have high latency, making them unsuitable to deploy.

Cost

Cost has always remained the decisive factor in selecting from connectivity options that fulfill the other criteria outlined above. One should consider both initial investment as well as recurring costs throughout the useful life of the technology selected.

2- Acquire the VSAT

Partner provider factors to be considered

Frequency Band

Selecting frequency band is also an important factor that can play an important role in taking a decision. It should be decided which frequency band is most suitable. Alternatively, you can ask your service provider to decide the band for you after specifying your preferred service availability level year around or in the worst month. The latter is the recommended approach to take.

Beam Coverage

If you are installing VSATs in more than one location, you should specify the beam coverage required. If all VSATs in the network use the same beam, sharing central hub facilities is an option. Use of a single beam is necessary to avoid double hops, if opting for a mesh network. Additionally, you should ask the service provider to provide you with footprints or contour maps of the satellite they intend to use.

2- Acquire the VSAT

Partner provider factors to be considered

Dedicated vs Shared Bandwidth

Depending on your business requirements you should decide the bandwidth type dedicated, shared, or burstable. Your choice of bandwidth type also has a bearing on what access scheme you choose, as some access schemes only support shared bandwidth approaches.

Access Technologies

Access technologies should be specified based on your business and functional requirements. Different access schemes have different maximum information throughput rates, which also have a bearing on scalability and future growth. Alternatively, you can ask your service provider to propose alternative schemes if they can justify them on technical, efficiency, and economic grounds. This is especially important for the inbound route.

2- Acquire the VSAT

Partner provider factors to be considered

Topology

Users should select the topology depending on the applications they intend to run. Real-time applications such as telephony or videoconferencing may require a mesh topology, whereas simple Internet access for Web browsing and email is most economically served by a star network.

Access schemes and topologies are the major cost drivers for VSATs as they influence the size and capacities of the remote equipment, efficiency of bandwidth usage, and the type of hub infrastructure required. You should ask the provider for a detailed technical and economical justification for their proposed access scheme and topology.

2- Acquire the VSAT

Partner provider factors to be considered

A Comparison of Common Connectivity Options

Connection method	Capacity (maximum)	Feasibility	Start up costs	Average running costs/per kbps ($)	Reliability	Capacity Scalability
Dial-up connection	56 kbps	**Medium**—anywhere with landline coverage	Low (<$50)	$12.9	Low to medium	Very low (<64 kbps)
Leased wireline	■ ISDN—128 kbps ■ DSL—1.5 Mbps	**Low**—depends on country's telecom infrastructure	Medium (<$2,000)	$2.87	Medium	—
Terrestrial Wireless	■ Wi-Fi 802.11 a and g-54 Mbps ■ Wi-Fi 802.11 b- 11 Mbps ■ WiMax- 75 Mbps	**Low to medium**—depends on the country's telecom infrastructure, although can be set up relatively cheaply	Low to Medium ($50-$2,000)	$6.77	Medium to High	High (<100 Mbps)
Mobile/ Cellular	■ Basic GSM—9.6 kbps ■ GSM-HSCSD—38.4 kbps ■ GPRS—171 kbps ■ EDGE—384 kbps ■ UMTS—2 Mbps	**Medium**—anywhere within cellular coverage	Low (<$50)	$12.9	Low	Low (<2 Mbps)
Fiber	Unlimited (in theory)	**Low**—depends on the country's telecom infrastructure	Medium (<$2,000)	$4.14	High to Very High	Very High (>1 Gbps)
Satellite	■ VSAT—100-155 Mbps (when loaded transponder downlink) ■ Mobile satellite—64 kbps (eg Immarsat, Worldspace)	**Very High**—anywhere on the earth	High to Very High (>$2,000)	$7.3	High to Very High	High (<155 Mbps)

2- Acquire the VSAT
Evaluating proposals

This step involves the comparison of Proposals or Bids to determine whether the solutions offered by the Bidders meet your business, functional, technical and financial requirements.

There are a few points to note here:

- Evaluation is only meaningful if you use clear, unambiguous and measurable criteria
- You should determine, in advance, which criteria are mandatory and which ones are not. Mandatory criteria are scored on a pass/fail basis while non mandatory criteria are scored on a sliding scale, say using a range of 1 to 5, where 1 means the proposal does not meet the criterion and 5 means the proposal fully meets the criterion. A higher score translates into a better and more cost effective technical solution.
- All Bidders should be made aware of the evaluation criteria, including which ones are mandatory or not, upfront.

2- Acquire the VSAT
Evaluating proposals

Mandatory Criteria

Experience of the Bidder

You should select Bidders that have prior experience supplying VSATs of similar technical characteristics to organizations similar to yours or in the same industry and whose projects were comparable to yours in size and scope. The more experienced and knowledgeable about your region and industry the Bidder is, the higher the chances of fulfilling your requirements on time and within budget. Prior experience can be demonstrated with customer references which you should endeavor to check out

2- Acquire the VSAT
Evaluating proposals

Mandatory Criteria

Solid financial standing of Bidder

Bidders must have an annual turnover the previous two years of at least two times the total anticipated contract amount including recurring expenses. You do not want your service provider to fold over and leave you hanging three months into your new contract! You should ask Bidders to provide annual audited accounts or financial statements which your financial staff should examine carefully

2- Acquire the VSAT
Evaluating proposals

Mandatory Criteria

Lead company in joint venture

You should require that in case of a joint venture, the bidding firm have a majority in the partnership and you should evaluate it against the other criteria above. You should be especially careful of service providers and resellers who are just “fronts” for foreign based companies. You should require that the individual firms forming the joint venture clearly spell out what their respective roles are. Be careful to determine who will provide you with monitoring, technical support and maintenance.

2- Acquire the VSAT
Evaluating proposals

Mandatory Criteria

Space segment, teleport and equipment guarantees

For end-to-end service provision, you should ensure that the Bidder has secured access to space segment and teleport services and presents a letter to that effect. You do not want to sign a contract and discover that space segment is unavailable on the satellite proposed by the Bidder (and on which the technical evaluation was based) and that the Bidder will have to use a different satellite with different characteristics. This scenario derails the project schedule and can lead to provision of lower quality services. For purposes of ensuring the Bidder will provide guarantee on equipment, you should ask for a letter from the equipment manufacturer stating that they will honor warranty on the equipment supplied by the Bidder. If the Bidder owns the satellite, teleport or is the equipment manufacturer, they should still provide a letter stating so.

2- Acquire the VSAT
Evaluating proposals

Non Mandatory Criteria

These criteria could include:

- Minimum availability and overall performance of satellite link
- Technical characteristics of the Hub including redundancy schemes, size of antenna
- Quality of preliminary project plan including implementation schedule that will meet your target dates for receiving services
- Quality of proposed project management team (from Curricula Vitae)
- Quality of proposed acceptance testing and commissioning plan

2- Acquire the VSAT
Evaluating proposals

Technical vs Financial Evaluation

A proposal can be accepted on the basis of the technical solution proposed, or the financial proposition or a combination of the two.

It is advisable to conduct an evaluation of both the proposed technical solution and the financial proposal of the Bidder, and the final award made on the basis of a combination of both technical and financial evaluations.

2- Acquire the VSAT
Negociate and award the contract

Negotiations

Negotiations are an art of their own, acquired through extensive experience and training.

This section is not meant to make you an expert negotiator but rather to provide you with a few pointers that may help you obtain a better deal. Negotiations also involve clauses of the contract and culminate in signing the contract. Because of the contractual implications, you should plan to involve your lawyer or provide for some legal consulting in your budget for the negotiation and contracting stages. You should ensure that your lawyer is familiar with your intended business objectives and that he or she can advise you in context.

2- Acquire the VSAT

Negociate and award the contract

Negotiating prices

You should note that most competitive bidding procedures do not allow you to haggle over *unit* prices on the assumption that competition should give you the best possible market price in the first place.

You should also be wary of extremely low prices that appear to be much lower than regular market prices. This may be due to a compromise of quality, for example, a high contention ratio.

2- Acquire the VSAT
Negociate and award the contract

Negotiating prices

In any case, you should be aiming at getting more out of the Bidder for the quoted price. Where the Bidders quotes are way above your budget, you can reduce on the total contract price by varying quantities (of equipment or bandwidth) or other inputs such as human resources. For instance, you could opt to use a local installation company instead of flying in the Bidders engineers from overseas. You should be careful not to significantly alter the scope or even technical solution of the project during negotiations or else you stand to be accused, rightly,of being unfair to the other Bidders

2- Acquire the VSAT
Negotiate and award the contract

Types and length of contracts

If you do not have your own standard contract template, you may have to use the Bidders own contract format. In fact, it is not advisable to try and draft your own contract as legal fees can be very high. It is far cheaper to have a Lawyer review the Bidder supplied contract.

A major question usually arising during contracting is how long the contract should be. The answer is not very simple- it should not be too short or too long. A good contract length is 2 to 3 years with a provision for an extension usually of no more than 1 year.

2- Acquire the VSAT
Negotiate and award the contract

Types and length of contracts

Contracts more than 5 years should be avoided because:

- Technology advancement is rapid and a new and more efficient or cheaper technology may arise during your contract period and so you need some flexibility to be able to switch

- Prices of technology reduce over time either due to newer technologies, competition or maturity. You do not want to be saddled with a high cost contract when prices are reducing.

- There is a high turnover of companies in the technology industry because of cut throat competition and you want to guard against your provider going under and still holding you hostage to your contract (creditors may want to collect and continue running the company with reduced quality of service!)

2- Acquire the VSAT
Negotiate and award the contract

Types and length of contracts

On the other hand, you do not want a very short contract of say 1 year because:

- The process of finding another provider can be very lengthy and resource intensive as the steps above may have revealed. You therefore need a good lead time.
- Switching costs can be very high as switching may require changing the equipment.You do want to incur another huge capital cost so soon after your first contract.
- VSAT networks can take a while to “settle” of up to 6 months in which period they need constant monitoring and fine tuning to provide optimum performance.

2- Acquire the VSAT

Negotiate and award the contract

What to include in the contract

Your lawyer should advise you on the standard clauses that a commercial contract should have, as well as any other clauses to cater for your particular set of circumstances. We shall simply point out a few issues that are important in regard to VSATs and that you should capture in your contract. In any case, you should review each and every one of them with your lawyer to ensure that they reflect your particular set of circumstances.

2- Acquire the VSAT
Negotiate and award the contract

What to include in the contract (Start Date)

Start dates, especially in regard to payment of the monthly recurring bandwidth costs for VSAT contracts can be quite tricky. You should therefore scrutinize and understand these. Start dates can be tied to:

- Date of signature of contract
- Date of start of service provision

Whichever way it is defined, you should make sure that you start paying for services- bandwidth only *after* your equipment is installed, tested, commissioned and you have formally signed off.

This is critical as there could be a significant time lag between signature of contract and provision of services, as equipment has to be ordered, shipped and clear customs and be installed and commissioned before services can begin. This time lag can be several months long for which you do not want to incur bandwidth charges simply because you have signed a contract!

2- Acquire the VSAT
Negotiate and award the contract

What to include in the contract (End Date)

End dates should be very clear. It is not enough to state “one year”- you should provide reference e.g. one year from start of services or from contract signature.

You should reference the end date from start of services, rather than from date of contract signing because there could be a significant delay between the two as the service provider mobilizes and sets up the service.

2- Acquire the VSAT
Negotiate and award the contract

Service Level Agreement

The SLA is a collection of measurable performance metrics that ensures that you are getting the service you are paying for all or most of the time. The following metrics are common:

Availability- you should ensure that the service provider commits to providing you with a service that you can use at least 99% of the time in the worst month. This is known as the availability. If you take a month to be on average 30 days or 720 hours, then 1% unavailability or downtime is 7.2 hours in a month or almost an entire working day. In a year, this translates to about 12 working days or 3 full days. As you can see, do not be fooled by the small percentages.

2- Acquire the VSAT
Negotiate and award the contract

Service Level Agreement

Latency- Remember that Geostationary satellites are about 36,000 km above the earth. A signal sent up from one VSAT to the satellite and down to another satellite or the Hub will traverse about 72,000 km. If you recall, signals are electromagnetic waves and therefore travel at the speed of light (300 million meters per second), the time taken to travel to the satellite and back to earth, from the basic formula time equals distance divided by speed, is about 240 ms or about a 1/4 a second. That means that the round trip from transmitter to receiver and back is 1/2 a second. For a double hop, the round trip is almost 1 second.

Mean Time to Restore (MTR) - this is a measure of the average time it takes to bring your services back on line in case of a failure. If you define the availability, then there is no need to define MTR.

2- Acquire the VSAT
Negotiate and award the contract

Service Level Agreement

Because SLA involves measurements, you need to be prepared to measure the availability and latency of the service you are getting. For VSAT systems, the most common tools used are software based and include What's up Gold and the open source Multi Router Traffic Grapher or MRTG. You should require that your service provider monitor and measure the level of service you are receiving and provide you with regular (say monthly) reports which you should compare against your own.

Some providers also avail you with access to their monitoring and measuring tools typically through a standard web browser. You should also clearly state whose measurements will be used to determine availability and latency. You should not rely wholly on the service provider for obvious reasons.

2- Acquire the VSAT
Negotiate and award the contract

Enforcing Service Level Agreement

You should not draw up and negotiate the SLA for the fun of it. You should be prepared to exact penalties on the service provider in case they do not provide the service to your expectation. There are two ways of penalizing the provider:

- Money back- for any outage outside the agreed unavailability, the provider should refund some of your monthly payment in cash. Most service providers will not agree to this proposition.

- Service credits- any outage outside the agreed unavailability, the provider should deduct an amount on the next month's service charge by providing you with a "credit". This is the usual approach undertaken. You should be careful to define how the service credits are calculated (usually pro-rata) and exactly when you start earning credits. This is usually captured in the Bidding Document and you should have bidders agree to it as part of their submission.

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Escape clause

You should plan for “escape” clauses that let you get out of or terminate a contract if the provider is not performing to your expectation or if the provider runs into financial difficulties. However, you want to ensure that you receive services up until the last minute. The following escape clauses are useful to negotiate and have included in your contract:

- Consistent or frequent violation of SLA. You can make provision that if your provider violates the agreed upon level of service more than a certain number of times, you are granted the right to terminate the contract without incurring liabilities.
- Mergers, Acquisitions or Liquidation. Because of high turnover of companies in the technology industry, you should ensure that you have a right to automatically terminate the contract without incurring any liabilities if and when your service provider merges with another company, is acquired by another company or goes into liquidation.

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Escape clause

You should also beware of the provider's escape clauses. These are usually "hidden" in the Force Majeure section of the contract. You should have your lawyer scrutinize the contract for the provider's escape clauses, as well as your own escape clauses.

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Acceptance testing

It is advisable to explicitly define how and when you will perform acceptance testing in your contract. As noted above, your services start date and start of payments should be linked to acceptance testing and not to the date when the contract is signed.

We could not stress this point enough as it can be a cause of contention with your service provider

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Contract termination

You should be aware of one important fact- unlike most other commercial contracts, VSAT contracts usually have a termination clause that requires you to pay off the remainder of your bandwidth costs through the life of the contract if you decide to terminate the contract.

You should therefore consider this fact carefully when signing long contracts. Nevertheless, you should try to negotiate for contract termination “with no cause” provided you give ample notice of 3 or 6 months without incurring costs for the remainder of the contract portion.

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Review the Preliminary Project Plan

You should insist on receiving and reviewing a draft project plan from your potential service provider during negotiations, and before contract signing.

The draft project plan should include the implementation plan, schedules and proposed or anticipated roles and responsibilities including the capabilities and qualifications of the service provider's staff.

You should be aware of or negotiate how long it will take to begin receiving services, how the service provider will approach implementation and what your obligations are. All these should be agreed upon prior to contract signature.

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Signing the contract

Once you are happy with all the contract provisions and clauses, it is time to sign the contract.

You should normally ensure that you have written clearances from your lawyer or legal department if you have one, and of course from your top management to sign the contract. You should also ensure that you follow any special procedures for contract signing imposed by your institution.

At least two original copies of contracts should be signed, one each for you and the service provider

End of Day 5 course

VSAT Equipment and bandwidth procurement