

# Hughes Vsat Overview



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STRICTLY CONFIDENTIAL



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## RE: Hughes VSAT SYSTEMS

Remington Communications assures you of our capability to provide the following:

- Turnkey project design and engineered solution
- Installation and project management services
- Network services and support
- Ability to accomplish project goals within required time and finance budgets

This document provides:

- Turnkey project overview
- Broad technical solution overview

### INTRODUCTION

Remington Communications utilizes Orion Satellite Systems Pty Ltd is an Australian company as its bandwidth provider, Orion provides Broadband Network Services to all areas in Australia and offshore. Orion's satellite-based service delivers highly reliable solutions for home, small office, enterprise, and government applications.

The Orion network is based on the highly proven HughesNet™ technology [formerly known as DirecWay®] developed by Hughes, USA. Having pioneered the development of high-speed satellite networking and Internet access products and services, Hughes is the world's leading provider of broadband satellite network solutions for businesses and consumers, with product shipped to 1 million clients in over 100 countries and currently holds 65% of the world Vsat market.

Orion Satellite Systems has a swiftly growing client base who now enjoy cost effective, robust, and rapidly deployable broadband with download speeds comparable to terrestrial services. Voice telephony has been highly successful, offering business quality voice and fax telephony at highly affordable rates.



## VSAT FEATURES AND BENEFITS

- Always-on satellite connection providing remote-site Broadband Data Access and Telephony Services
- Utilising 2-way satellite technology, allowing on-line data access for email, Internet, file transfer, etc. as well as having the phone and fax lines available for use, all at the same time
- Permitting multiple users fast access to the Internet, simultaneously
- The service provides secure and reliable broadband communications anywhere in Papua New Guinea using equipment that is robust and rapidly deployable.
- The service includes an initial 12-month replacement return-to-base warranty and telephone support, as well as after-hours telephone support for satellite equipment and system-related failures.
- The solution supplied by Orion Satellite Systems is based on world-leading technology from Hughes, the foremost provider of broadband satellite products and services around the world. Hughes pioneered the development of high-speed satellite Internet services, using technology that is compliant with the global IPoS (*IP over Satellite*) standard, the only standard approved by the international standards organisations. IPoS enables the Orion Satellite broadband system to provide superior performance and efficiency.

## REMOTE SITE VSAT OVERVIEW

- At the remote site, a 1.2m diameter antenna with the Outdoor RF Unit (*includes the Transceiver*), will be installed using either a wall / vertical surface mount, heavy-duty flexi-mount or attached to a pole fixed in the ground.
- A clear and unobstructed line of sight is required to the west from the satellite antenna.
- The antenna Outdoor RF Unit is connected via short coaxial cable (*less than 30m*) to the Orion HN7740 Broadband Satellite Modem, which will be installed in the operations building. This Broadband Router is designed to be installed in an office environment. It takes only a small footprint contains no fans and hence is not intrusive. No power is required to the antenna as the Outdoor RF Unit derives its power from the Broadband Satellite Router.
- The Broadband Satellite Modem provides a 10/100 BaseT Ethernet LAN RJ-45 interface which is directly connected to the site Local Area Network via a hub or switch. The hub or switch is to be supplied by the Customer.
- Data is received and transmitted at the remote site over the satellite via the Orion Satellite Systems NOC in Perth WA (*Network Operations Centre*).
- Connectivity between the Orion Satellite Systems NOC and the client's core network is via the public Internet using a Tier 1 Internet carrier. Alternatively, a secure backhaul from the Orion Satellite Systems NOC via a private IP circuit may be established, if required. (*This cost can be formulated and provided if required at a later date*)
- TCP/IP data connections can be initiated to or from hosts and PCs located on the remote site LAN
- Security is assured through DES encryption and an integrated conditional access methodology
- DES encryption for data
- Triple DES encryption for key distribution on the out-route carrier (*downlink*)
- Standards-based IPSec solutions for remote access and site-to-site VPN's are also available
- Bandwidth for the service is scalable; for this service we have access rates of 1024 kbps x 256 kbps, i.e. data from the Internet and corporate office via the satellite to the remote site will be 1024 kbps and data outgoing from the remote site will be 256 kbps.
- The HN7740 Broadband Satellite Modem, which forms the basis of this proposal, offers high-performance broadband satellite functionality integrated with Voice over IP (*VoIP*) capabilities in the one module. The unit provides 2 x 10/100BaseT Ethernet LAN RJ-45 ports as well as 2 x FXS 2-wire RJ-11 telephone ports.



## TELEPHONY

Telephony and facsimile services are delivered using an Orion Broadband Satellite Modem. Each HN7740 provides 2 x FXS 2-wire RJ-11 telephone ports for connecting standard telephone handsets or fax machine.

While the telephony service is transported over the network as Voice over IP (*VoIP*) packets, the system is engineered to provide end-to-end toll quality, optimized for satellite transmission with guaranteed Quality of Service using the Bandwidth Manager for prioritisation of the voice packets over the data traffic.

The proposal is based on terminating a VSAT service at the customers head office, and interconnecting the analogue lines from the voice appliances to the existing PABX. This will allow remote offices to call '**office to office**' or '**office to HO**' without incurring telephone call charges.

The proposal is presented on the assumption that analogue lines are available on the PABX, and that HO will arrange for the configuration of the PABX. The solution as presented will allow for 10 lines to be interconnected to the PABX, which can be scaled up or down as required.

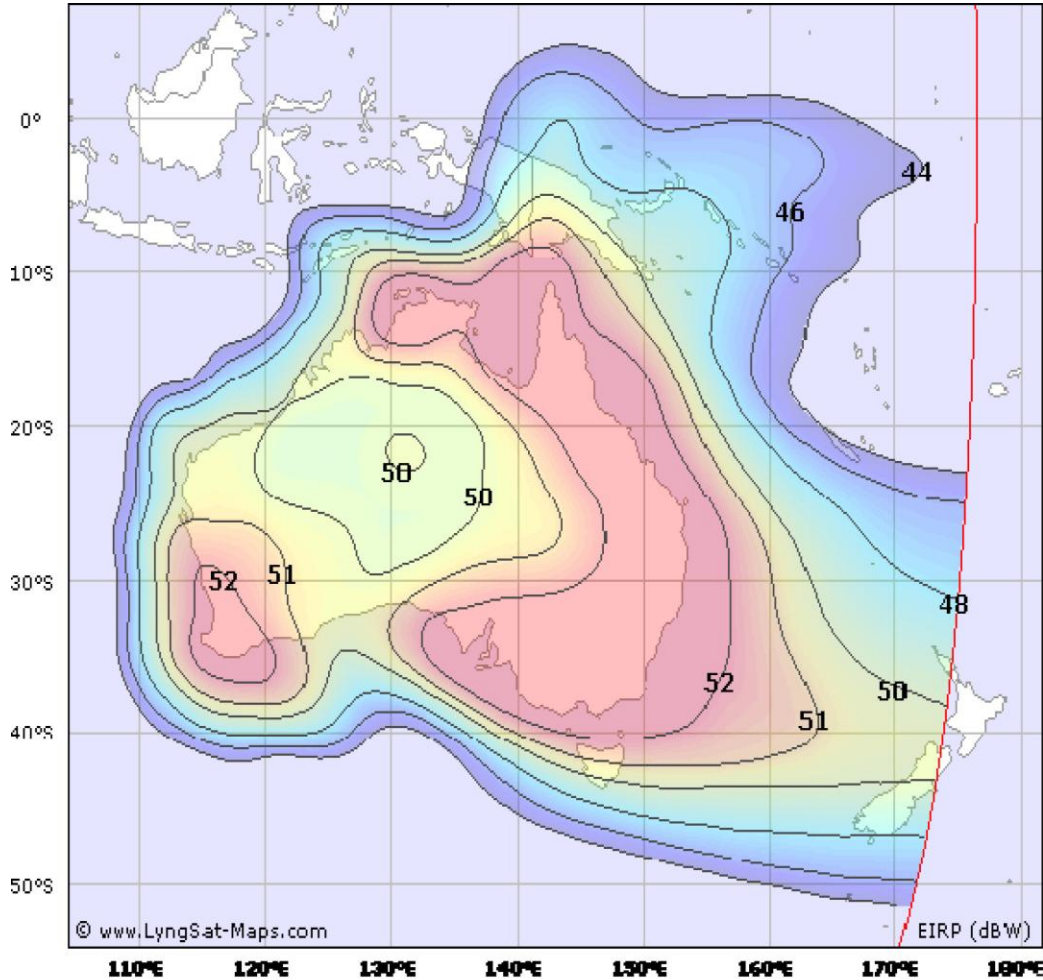
Access to the national PSTN Telikom (*Public Switched Telephone Network*) will be available via the PABX, or alternatively Orion can implement a separate gateway that is directly connected to the PSTN. The latter configuration is currently outside the scope of this proposal due to issues associated with PANGTEL approval, though the service can be implemented at any time during the life of this project.

Cost of calls within the Orion supplied customer network including calls to any service connected directly to the PABX will be free.

HO PABX into the PNG Telikom switched network should be charged by Telikom as a call originating in the client office.



### NSS6 COVERAGE MAP



Ku band	
EIRP (dBW)	Size (cm)
>50	50
50	50-60
49	55-65
48	60-75
47	65-85
46	75-95
45	85-105
44	95-120
43	105-135
42	120-150
41	135-170
40	150-190
39	170-215
38	190-240
37	215-270
36	240-300
35	270-335
34	300-380
33	335-425
32	380-475
31	425-535
30	475-600
<30	>535

# NSS-6

## PROPOSED NETWORK LAYOUT

The following diagram outlines the proposed layout for the customer's network.

