

Meeting Communications Challenges by Two-Way IP Satellite Services

Richard Pang, Executive Director, Sales
Loral Skynet

South Asia Network Operators Group (SANOG VI)
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Strengths of Satellite Communications Today

- **Point to multi-point distribution, especially broadband**
 - >90% of global network television distributed via satellite
 - Star TV; HBO Asia; BBC World; Al Jazeera; etc.
- **Ubiquitous access; instant infrastructure**
 - Trunked high bandwidth connectivity to difficult-to-reach locations
 - Central office telephony
 - Internet access for Internet Service Providers
 - Medium bandwidth access to business/consumer points of presence
 - Point-of-sale access via VSATs
 - IP and Internet access for small offices and homes
- **Mobile Connectivity**
 - Telephony – Inmarsat, Thuraya
 - Internet – Connexion by Boeing

- **Fixed Satellite Service (FSS) stable to moderate growth**
 - Improved compression and coding
 - MPEG II being replaced with MPEG IV
 - Turbo coding
 - High Definition Television expanding
- **Direct-to-Home Television expanding in North America, Europe, Asia**
 - “Open Skies” evolving in many parts of Asia
 - Satellite Radio continuing to expand
- **Convergence of IP Broadband Services and Satellites**
 - IP broadband solutions expanding the range of VSAT services

- ***The Opportunity:*** Businesses and governmental organizations throughout Asia have come to recognize the role that IP-based communications can play in boosting productivity
- ***The Challenge:*** Asian countries seeking to capitalize on the benefits of IP convergence often face limitations in their existing networks:
 - Limitations of bandwidth (capacity)
 - Limitations of reach
- ***The Solution:*** Providing a specific solution that offers the needed IP broadband capabilities and services of the target business and application

Comprehensive Satellite-Delivered IP Broadband Services

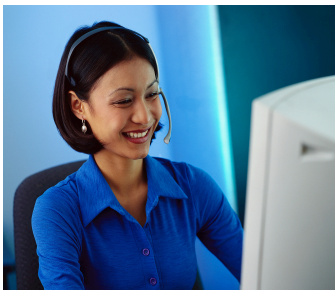
Ideal 2-way IP Satellite Service :

Provides customers with highly flexible and scalable options for the seamless integration of IP connectivity across the network, regardless of location.

Addresses the growing demand to optimize network performance and deliver maximum value by combining IP technologies and content mediums.

Provides significant operational and cost advantages to customers in the following core markets:

Enterprise



Telco



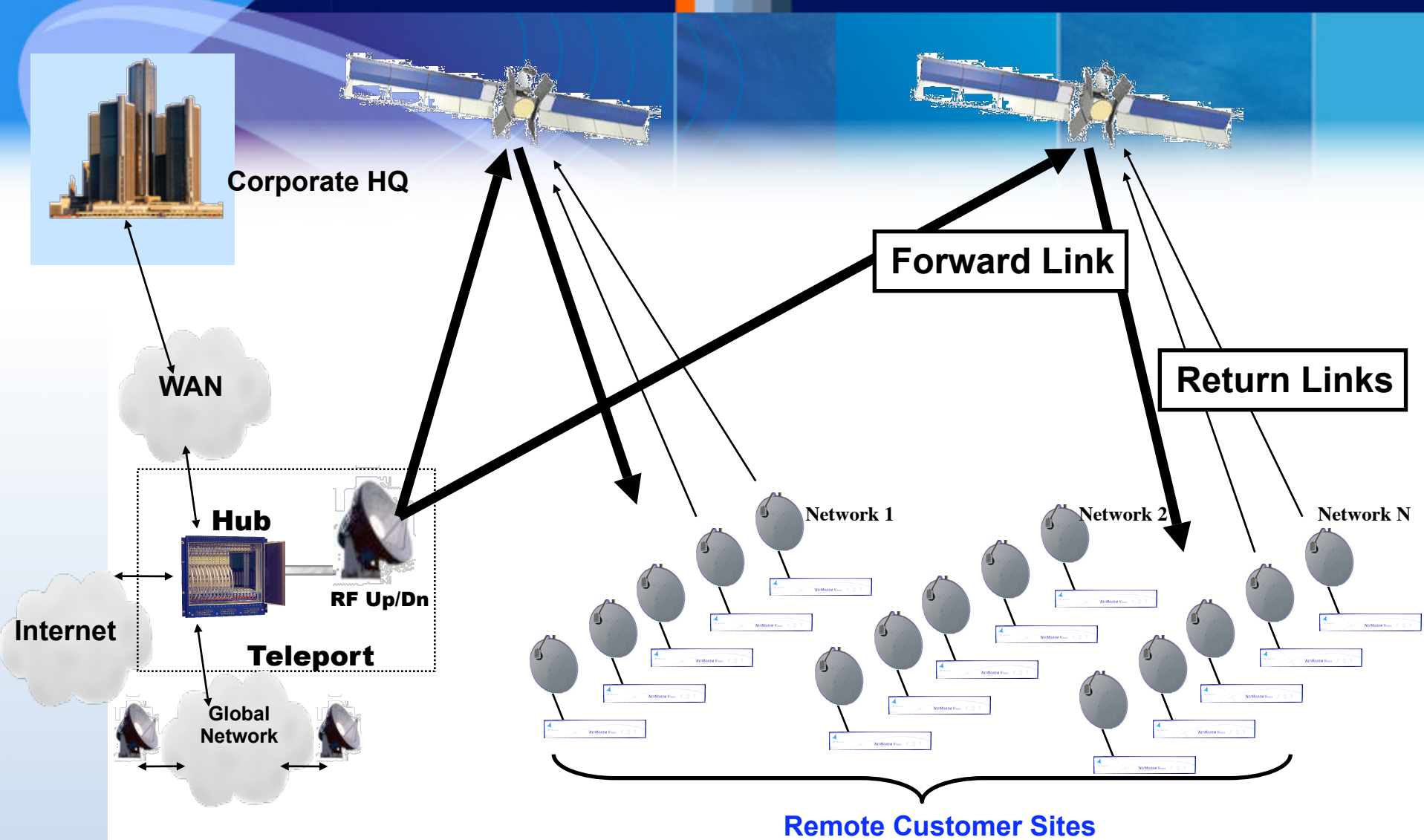
Government



Media & Entertainment



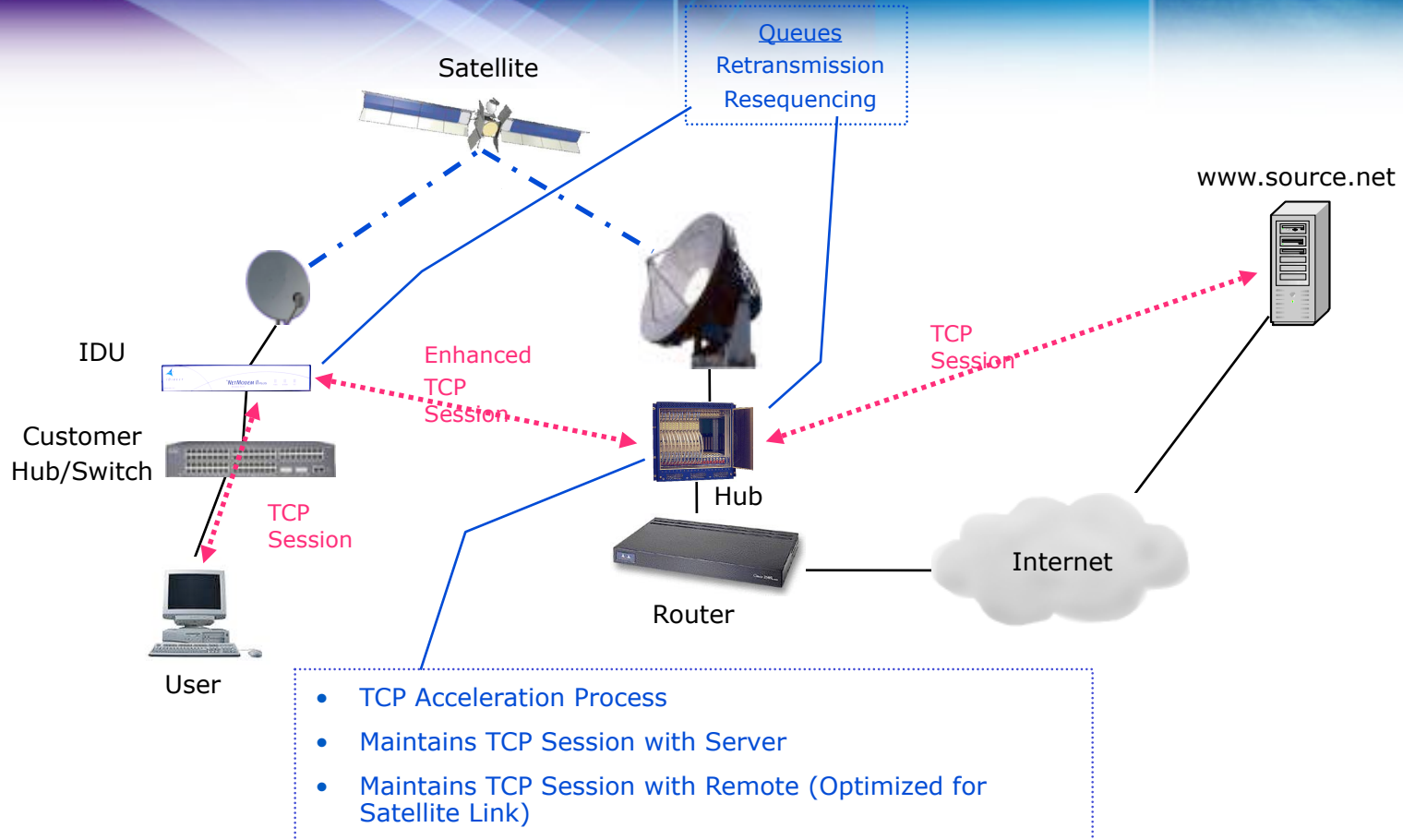
How 2-way IP Network Works



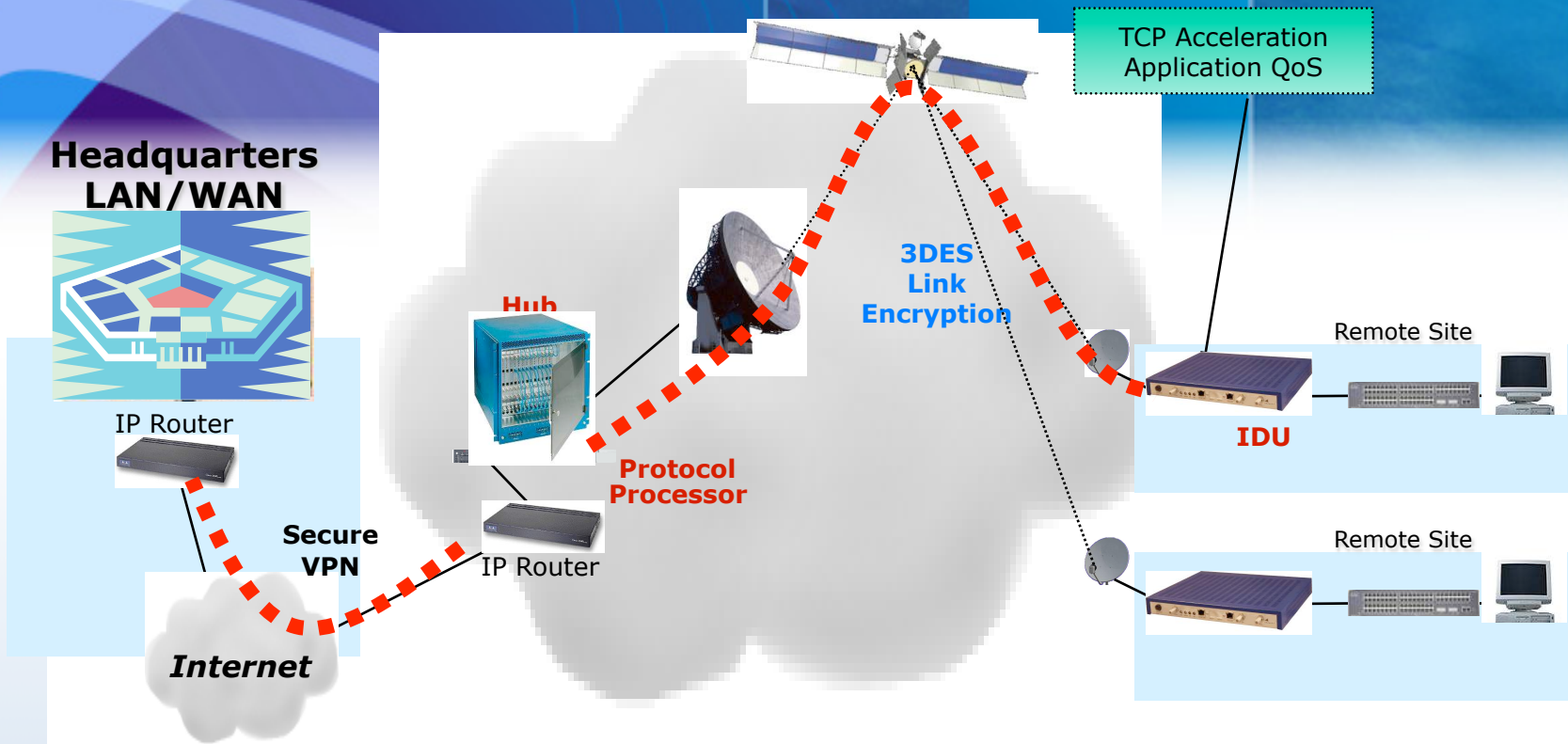
- **IP-enabled applications**
 - Internet connectivity
 - Private WAN extension using IP
 - Voice over IP
 - Video and videoconferencing over IP
 - Web browsing
 - File transfer
 - Multicasting
- **Disaster Recovery**
- **Restoration for Cable Cut**

- **Latency: TCP/IP Protocol Enhancement Proxy (PEP)**
- **Security: Triple DES Encryption**
- **Service Level Agreements**
 - Class of Service
 - Real Time (VoIP)
 - Non-real Time (Web Browsing)
 - Quality of Service
 - Packet Loss
 - Delay
 - Jitter

TCP Acceleration



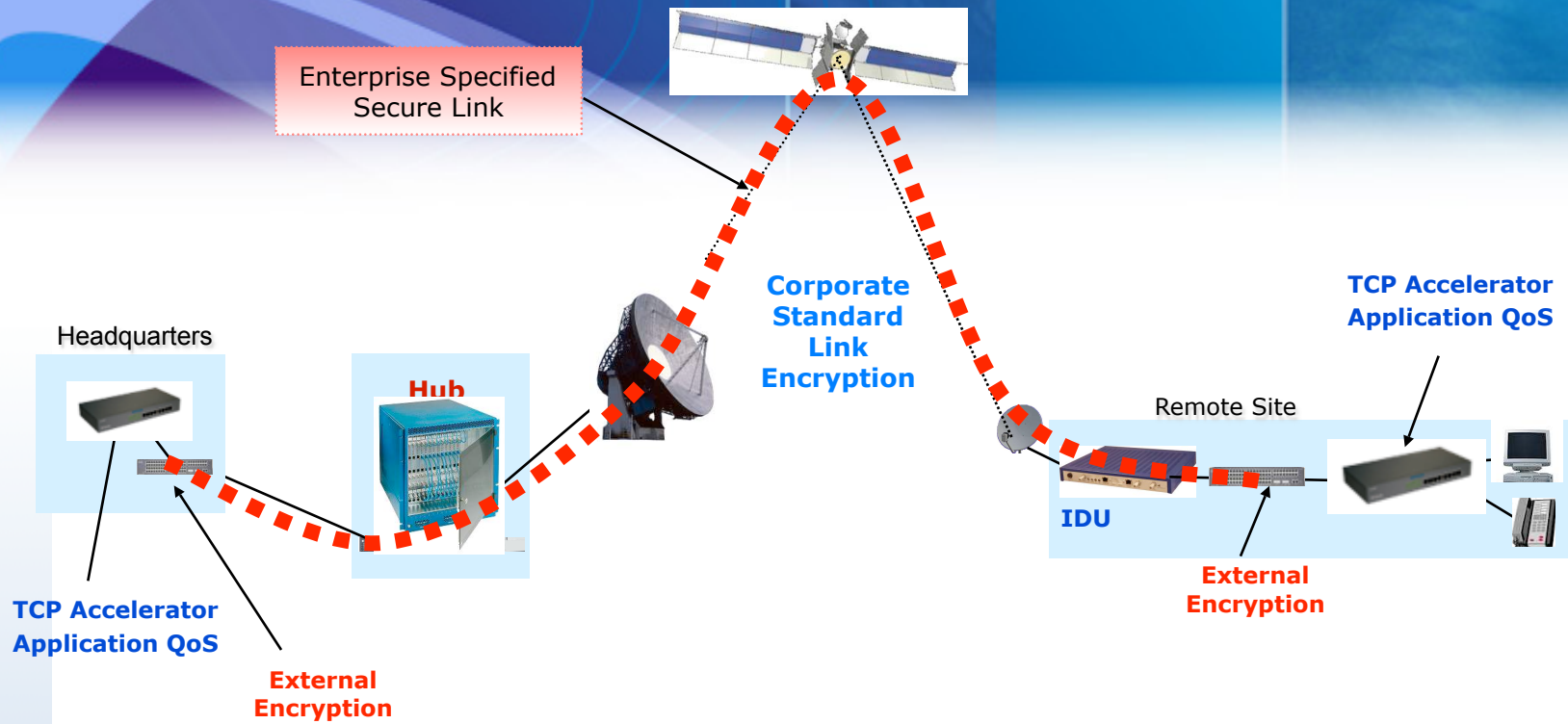
3DES Link Encryption Security



Enterprise Security without Affecting Performance

Retains the Benefits of TCP Acceleration and QoS

External Encryption Architecture



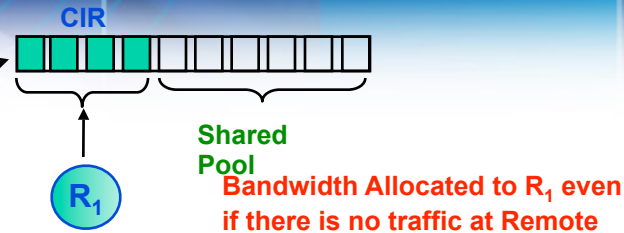
Use Enterprise Specified Security/Encryption Devices

Data Security without Affecting Performance

Retains the Benefits of TCP Acceleration and QoS

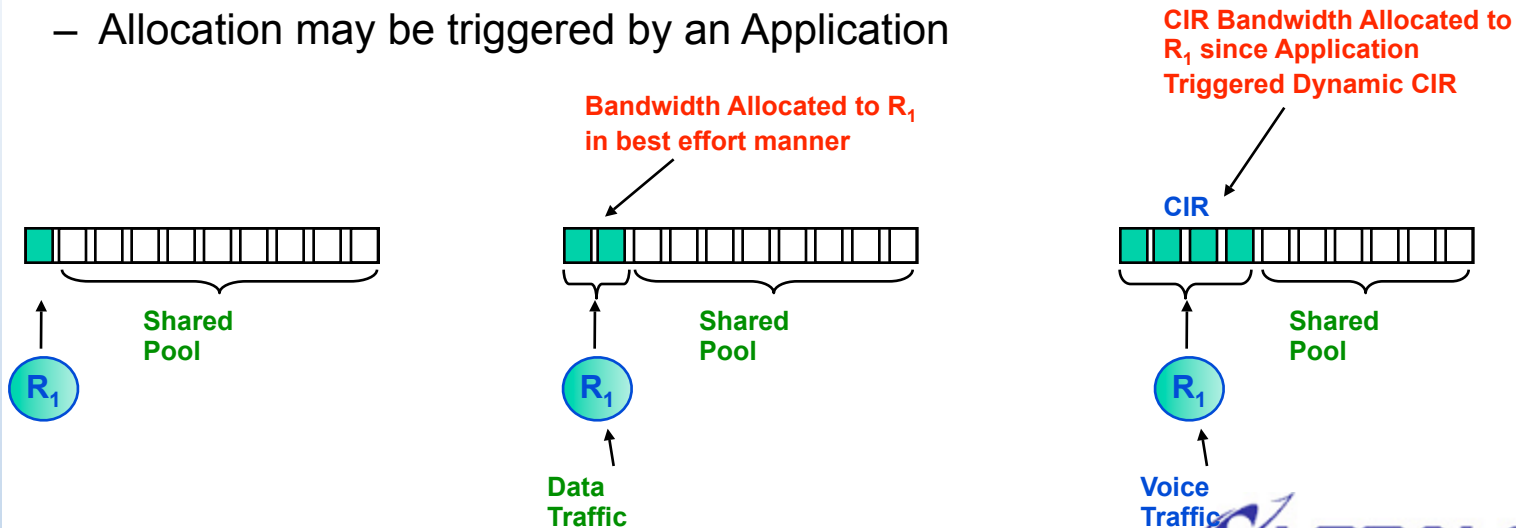
- **Static CIR**

- Committed to Site even if it is not used

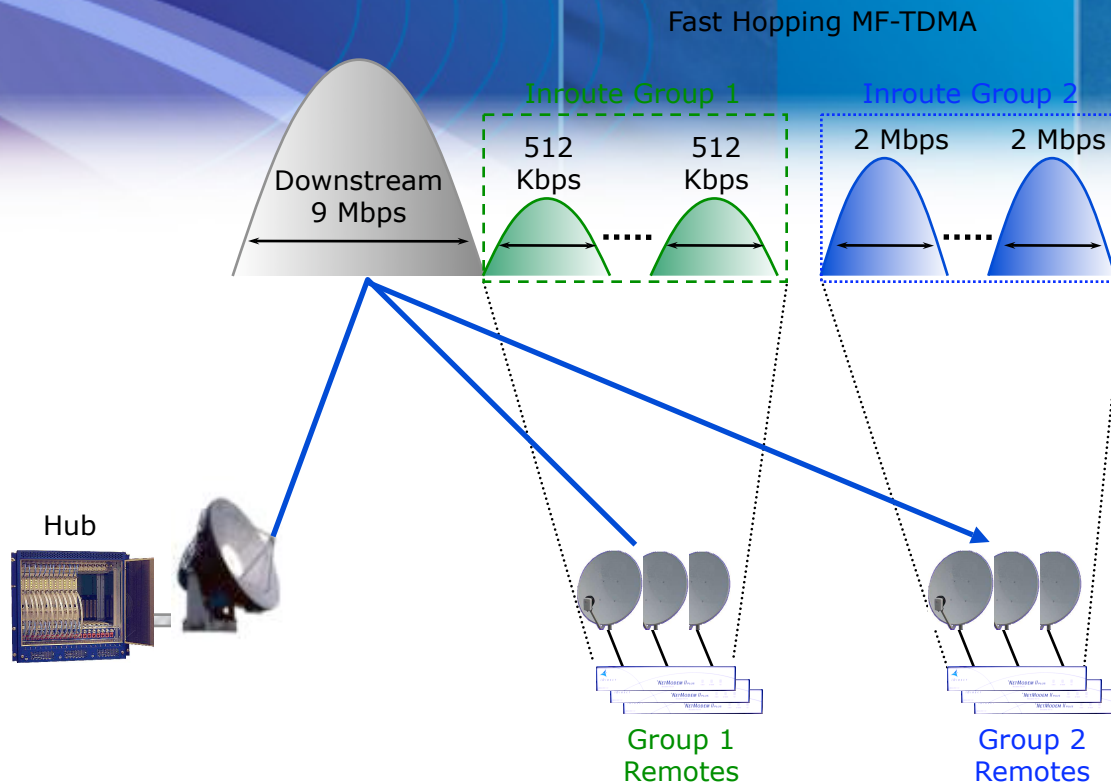


- **Dynamic CIR**

- Allocated to a remote only when traffic present
- < 1 sec allocation time
- Allocation may be triggered by an Application



Frequency Hopping – MF-TDMA



Bandwidth Demand Analysed and Allocated Multiple Times Per Second
"Fast" frequency hopping, on a burst-by-burst basis

Remotes can be configured with Min. CIR, Max. Rate, and Dynamic CIR
Application Triggered Dynamic CIR ensures high bandwidth efficiency

National Elections

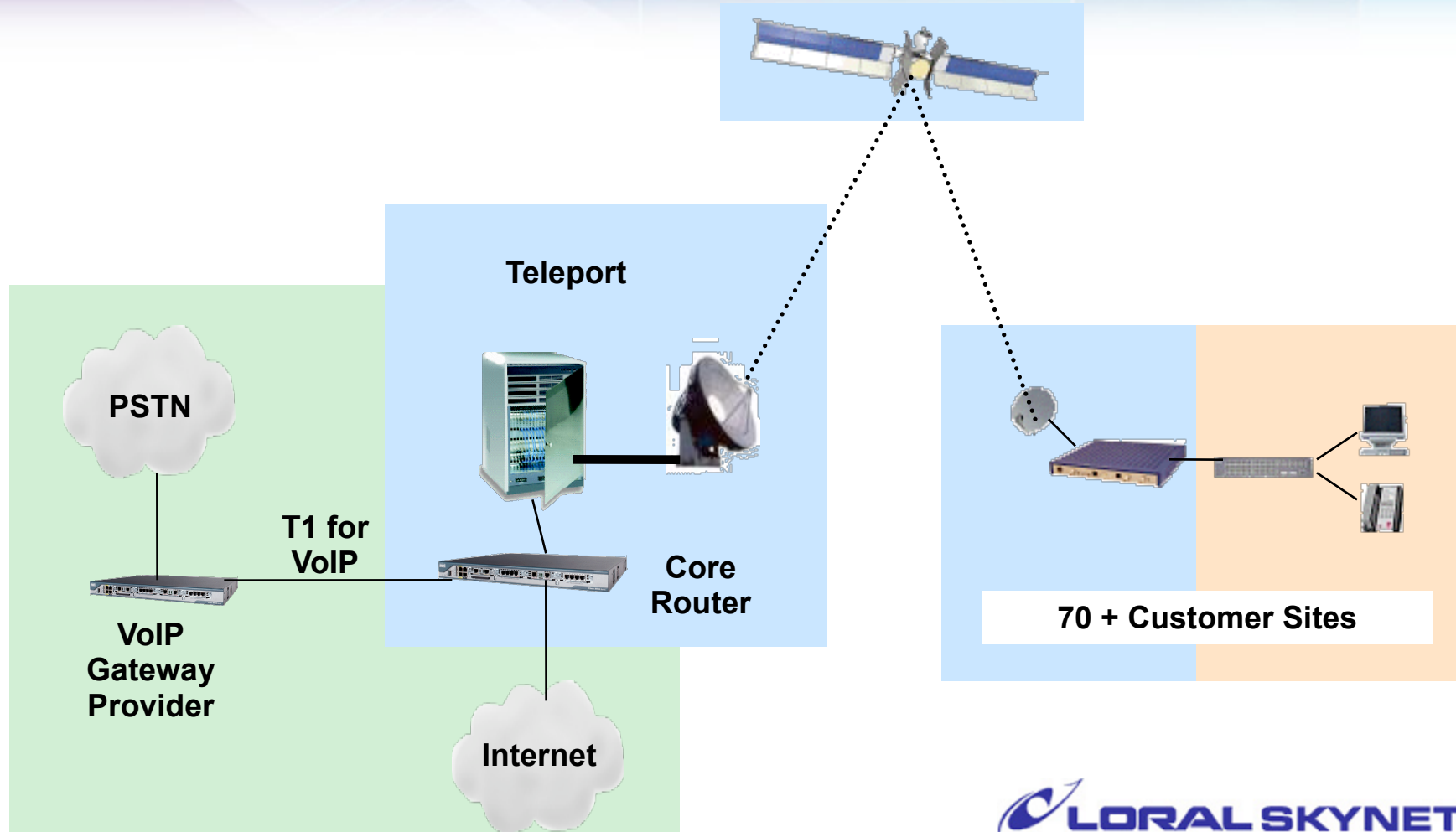
Embassy Networking

- **Challenge: Deploy IP network of at least 30 sites in less than 60 days to support national elections**
 - Urgent need to supplement communications infrastructure for District Election Headquarters, Police Headquarters, Military and other government ministries
 - Required quick site implementation, often within 24 hours of order

- **Result:**

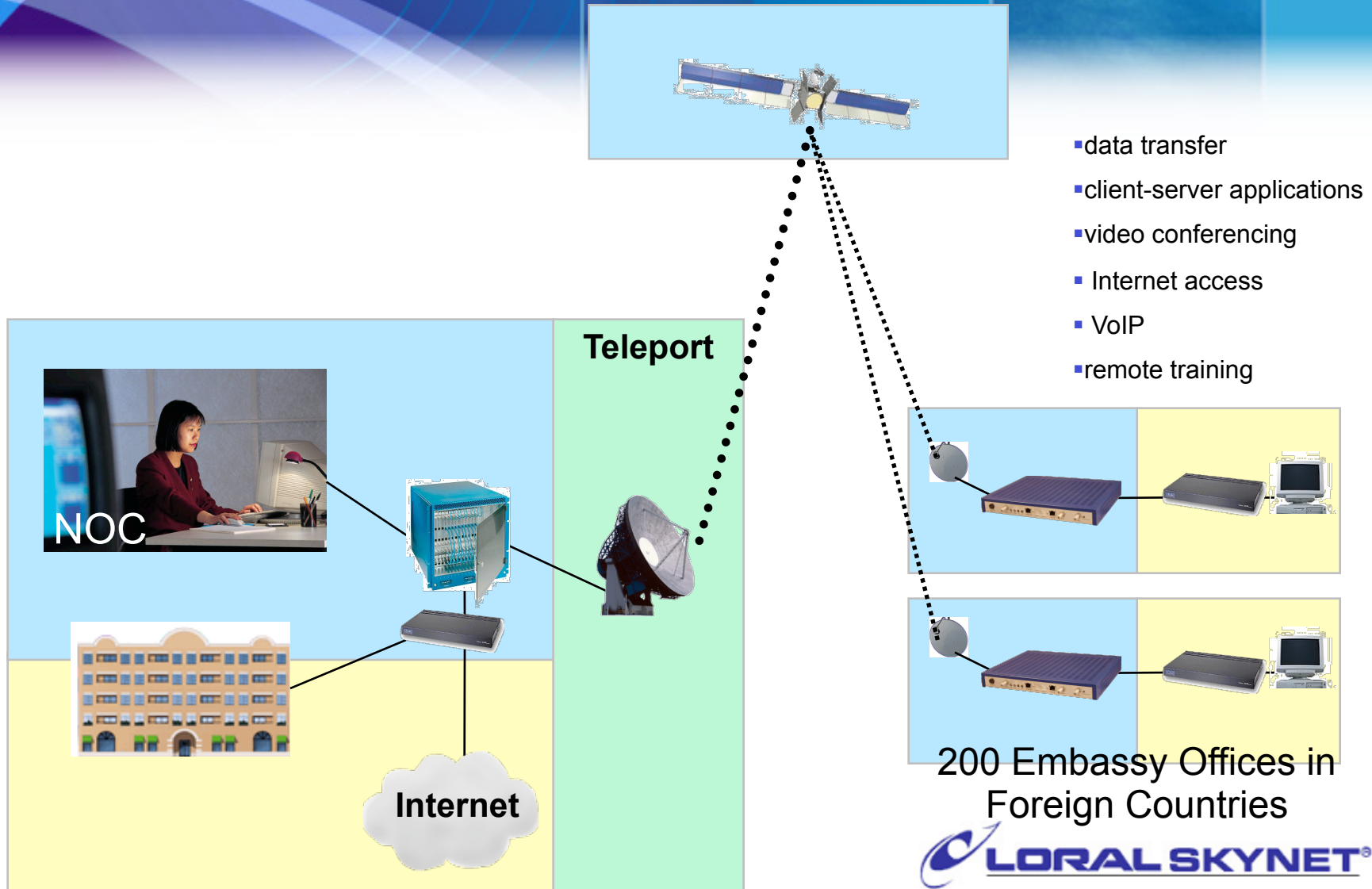
- 37 sites implemented in a month
 - Commissioning time per site reduced from six hours to average of one hour as installers became more experienced
 - Over 90% success rate on first attempt of site installations
- Over 60 sites installed to date with plans to grow to over 100
 - 24 Mbps capacity, currently over subscribed 3.5:1 with plans to expand to 7:1 over subscription.
 - Up to ten VoIP phones per site plus streaming video, Internet browsing and FTP.
 - Future plans for in-country Hub.

National Elections – Solution Architecture



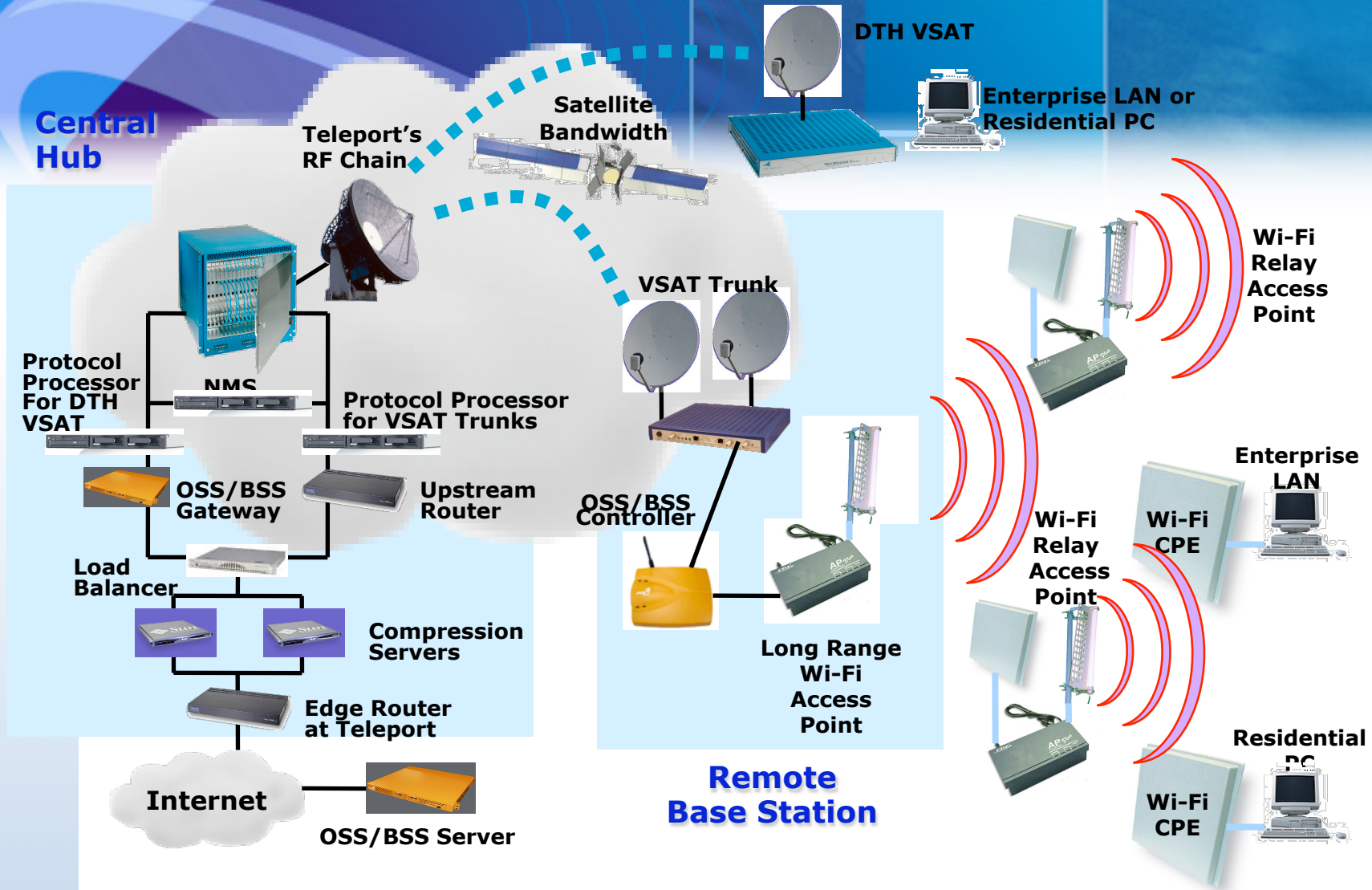
- **Challenge**: Implementing an embassy network with seamless terrestrial and satellite IP connectivity that reaches over 200 locations
 - Traffic: data transfer, client-server applications, video conferencing, Internet access, VoIP, remote training, others

Embassy Network – Solution Architecture



- **Combine wireless technologies such as Wi-Fi or Wi-Max with 2-way satellite service**
- **A remote cluster with multi-users at multi-locations connected by wireless technologies**
- **A 2-way VSAT terminal built for the remote cluster**
- **By increasing users to share the VSAT terminal cost,**
 - Cost per users greatly reduced
 - Service will be highly affordable even at remote villages

Wi-Fi Extension



- **Currently 2-way IP Satellite Services available can help you...**
 - Overcome bandwidth and reach limitations that may be present in existing networks
 - Bring the full benefits of IP convergence to customers in Asia and globally

Thank You

Thomas Antony - tantony@loralskynet.com

Richard Pang – rpang@loralskynet.com