

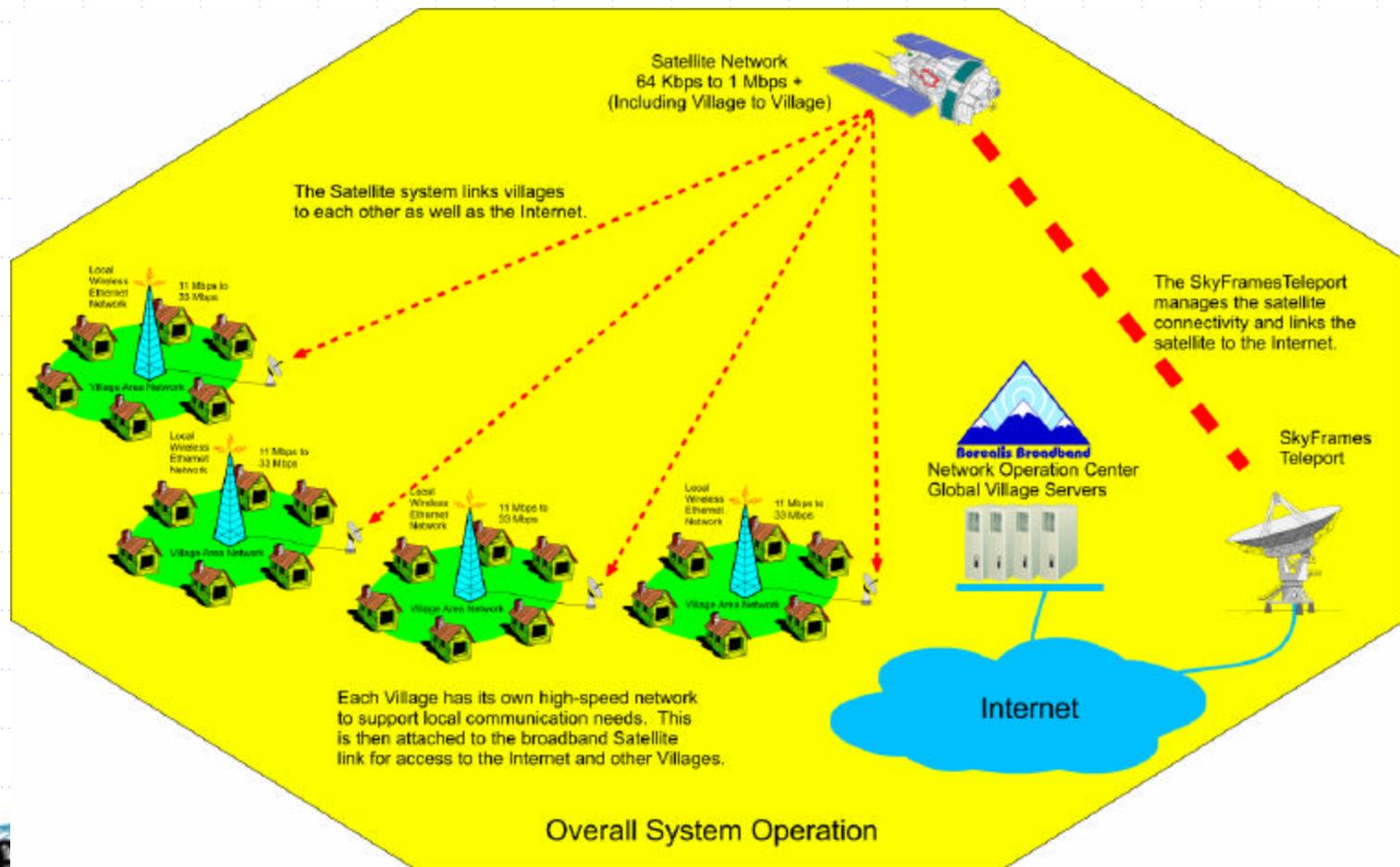


Satellite Broadband

Bandwidth Allocation
Considerations for Rural
Communities



System Architecture



Coffman Cove Install



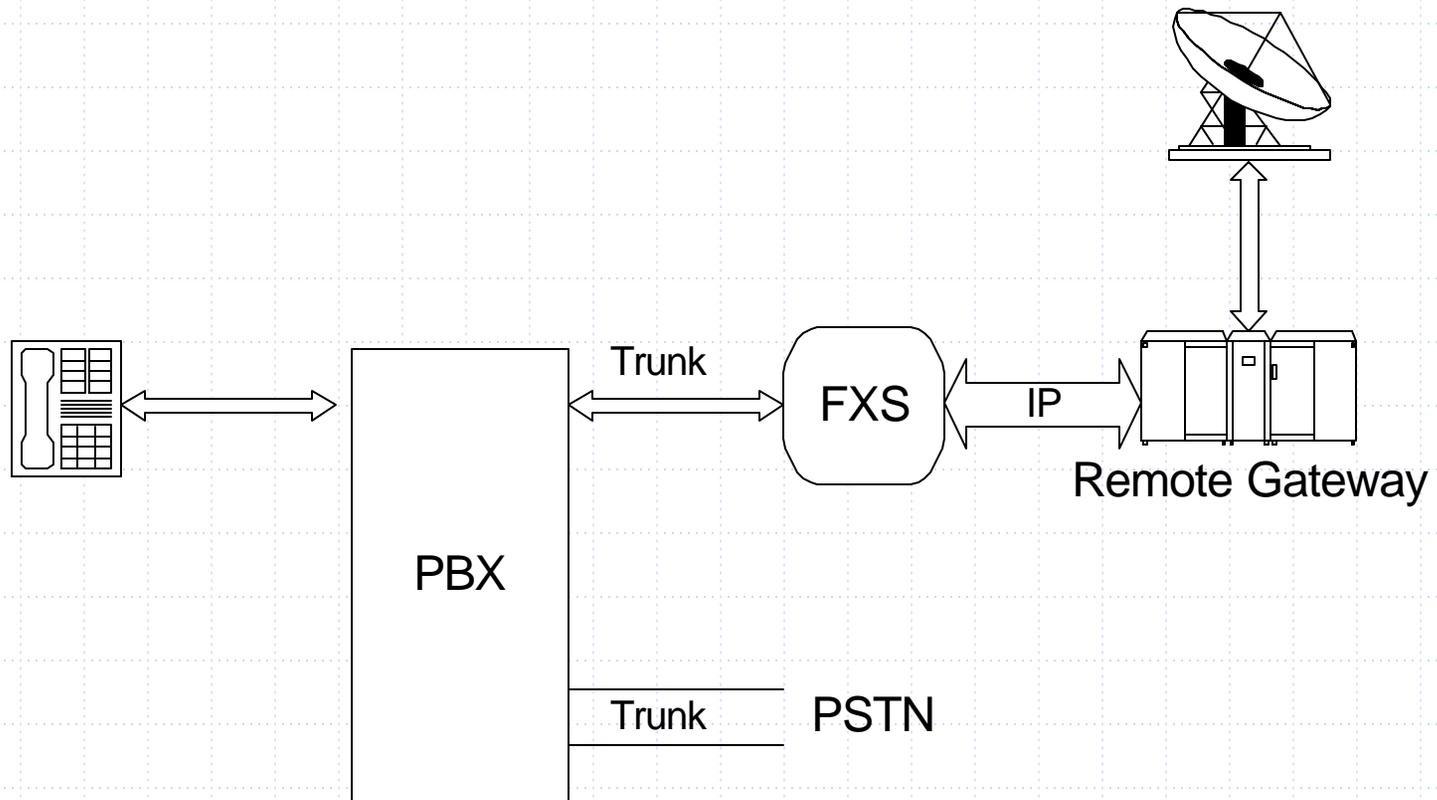


Features

- ◆ **Two-Way IP broadband interactive satellite system**
- ◆ **Supports all Internet Protocol (IP) applications**
- ◆ **DVB-S forward link up to 72 Mbps (1-45Msps)**
- ◆ **16 Kbps up to 2 Mbps return link**
- ◆ **Advanced Network Management System (NMS) to optimize satellite utilization**
- ◆ **Conforms to Intelsat specs on return link:**
- ◆ **IESS-309/ETSI-TBR28**



VoIP Applications



VoIP over Satellite



Low Latency

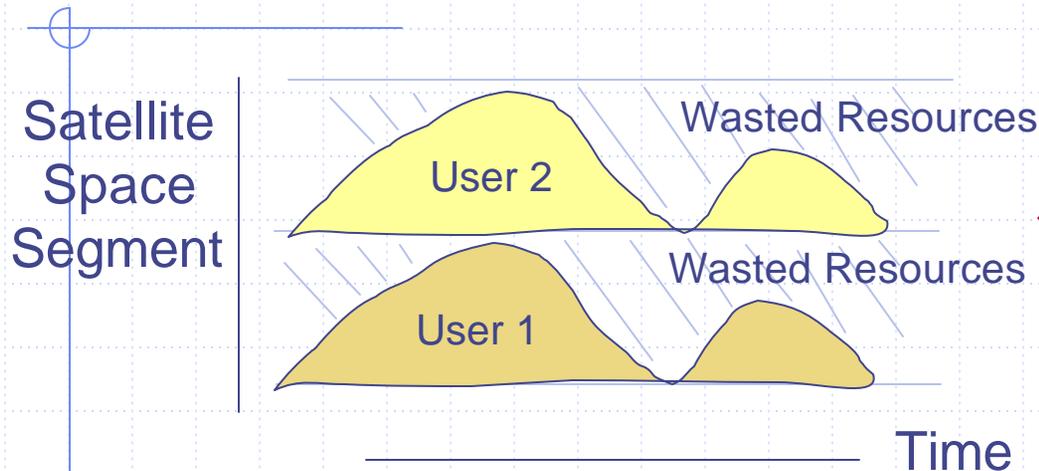
- ◆ Uses:
 - Corporate inter-office communication
 - International calling card access
- ◆ VoIP equipment connections:
 - one to the telephone equipment network
 - one to the IP network.
- ◆ VoIP equipment types:
 - **FXO**: Provides two-wire analog connection to the PSTN or PBX. It imitates a telephone to the PSTN or PBX.
 - **FXS** Supplies voltage to operate phones that can be plugged directly to FXS. It can be connected to a PBX for whom it behaves as a trunk



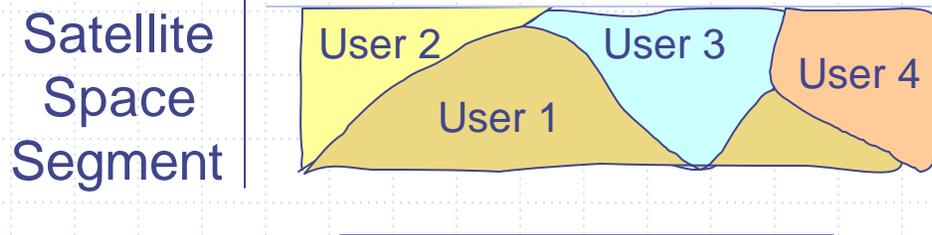
Terms

- ◆ **DAMA** (Demand Assigned Multiple Access) – a channel (bandwidth) is only assigned when it is required.
- ◆ **BOD** (Bandwidth On Demand) – the size of the return channel is varied according to the terminal needs
- ◆ **APC** (Automatic Power Control) – return carrier transmitter optimization
- ◆ **AFC** (Automatic Frequency Control) – center frequency corrections.
- ◆ **FDMA/BM-FDMA + QPSK** – the transmission scheme and modulation used to implement the above features.

BOD/APC vs. DAMA / SCPC / TDMA



- ◆ DAMA uses full line rate even when traffic is less



- ◆ BOD uses line rate per user/application according to traffic rate

GSM Support

- ◆ Create Remote GSM POP
 - ◆ Provides solution to GSM deployment problems
 - ◆ Works in areas with no terrestrial infrastructure
 - ◆ Can be used for emergency back-up

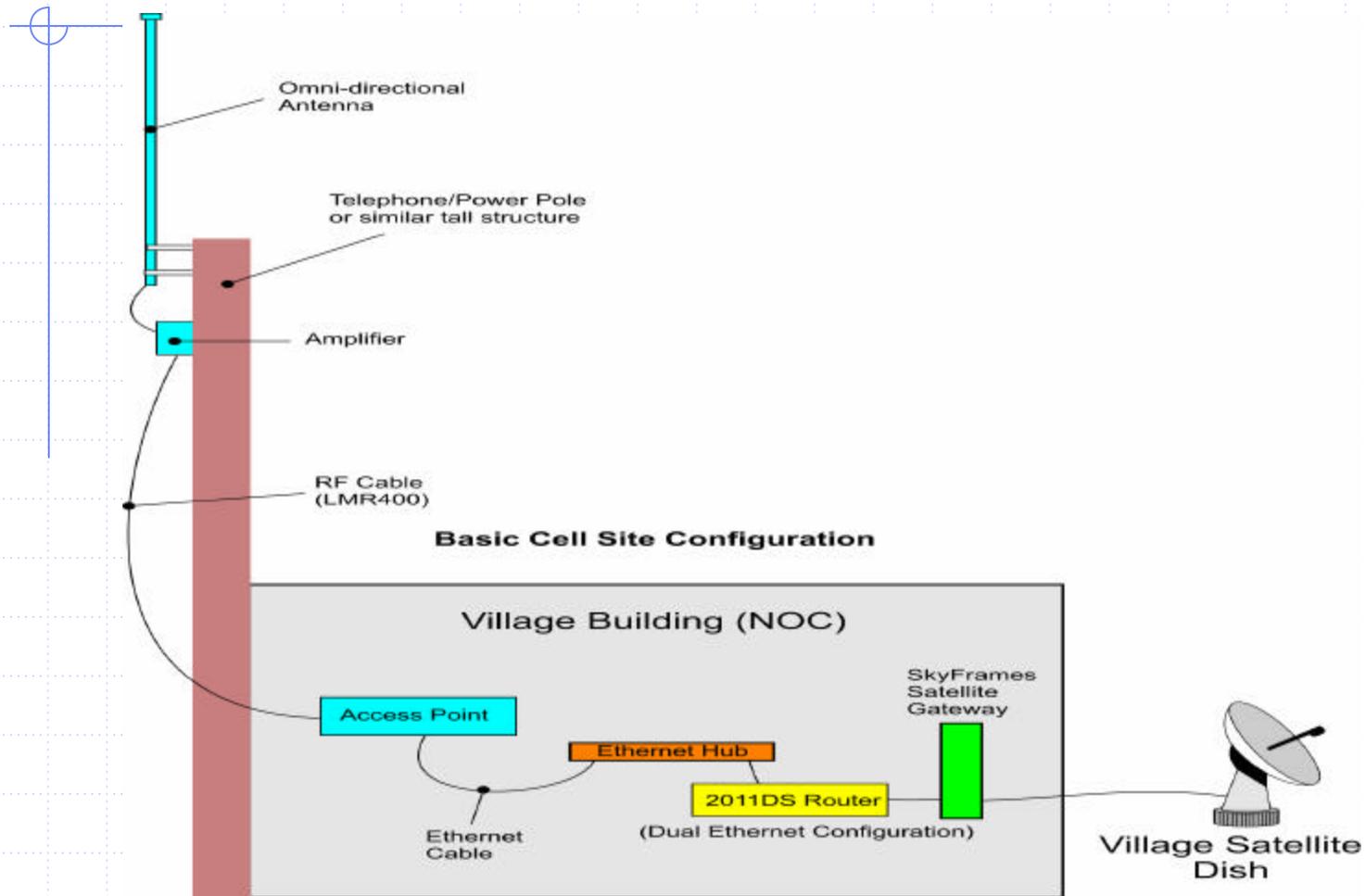
GSM Overview

- ◆ Basic architecture
 - ◆ Access Network: Connects user to nearest hub
 - ◆ Core Network: Connects hub points together
 - ◆ Base Station Controller(BSC): The hub, which connects to a Mobile Switching Center (MSC), which then connects to Home Location Register (HLR)
- ◆ GSM problems
 - ◆ Entire chain must work for call to be completed
 - ◆ Usually requires terrestrial infrastructure

GSM Solution

- Encapsulates contents of timeslot into IP packet & vice versa
- Only encapsulates & reconstructs specified timeslots
- Does not perform compression or decompression
- IP-MUX knows when to sample timeslots
- Device inserts IP data into programmed output timeslots

WiFi Infrastructure



Critical Factors

- ◆ Concentration Points
- ◆ Community Wireless / Local Support
- ◆ Security
- ◆ VoIP
- ◆ Mail Servers
- ◆ Game Servers (Popular App)
- ◆ Remote Support
- ◆ Edge Administration / Billing

Thank you!

◆ Questions

◆ Contact: ebukstel@skyframes.com

