Namaste Link Discussion
22 March 2008

Performance Modes

Definitions for the ground station performance modes

Plebeian Mode - ground station capable of text messaging
Populist Mode - ground station capable of voice communications
Elite Mode - ground station capable of high-speed data
Overhead Message - contains status and configuration and broadcast data
List of Channels - most recently used channels and signal strengths

Vision Statement: To make the system appropriately social, it is very important for as many stations as possible to be able to monitor at least voice communications. We're going to refer to this as amateur monitoring mode.

Pros of amateur monitoring mode

1. Enables community building
2. Enables self-enforcement
3. Builds a unique atmosphere
4. Familiar amateur radio flavor
5. Better information sharing

Cons of amateur monitoring mode

1. Emergency communications concerns with respect to privacy and security
2. Uses more power on the downlink compared with using minimal power point-to-point links.

Proposed Requirement: Voice communications shall be transmitted in populist mode.

Anyone that wants to monitor voice communications and is capable of monitoring voice communications should be able to monitor voice communications. A minimal communications station should ideally be able to receive all voice transmissions. Video, etc. can be transmitted in elite mode since minimal stations would never have a chance to receive these communications anyway. You always transmit voice in populist mode. You make special arrangements in order to use elite mode.

Question: How does the transmitting station know the class of the receiving station a priori? It doesn't unless it's in a point-to-point link and doesn't care about wanting to make it easy to monitor the transmissions.

Question: How can a low-bandwidth station best monitor communications? If certain classes of communications are always sent at rates that low-bandwidth stations can receive. You trade efficiency for monitoring access.

A station's modal designation should be flexible. A station that suddenly gets better bandwidth for whatever reason should be able to scale up and receive without reflashing the entire whizbang. A station that experiences degradation in their link for whatever reason should be able to scale down in performance mode. If the station is already at plebeian mode, then the next step down is silenced.

Question: What happens if a station falls below the minimum bandwidth? Does it get any service at all or does it drop off the face of the earth?

"Station no longer meets minimum bandwidth requirements. QSO will self-destruct in 9...8...7..."

Welcome to Termination Services. Arnold tells you that you are about to be terminated.

Question: What about asymmetric modes? What if you can transmit much better than you can receive? What if your receiver is broken?

Entries in table are what you are capable of doing if the list of channels and status messages are sent in populist mode.

	Transmitter broken	Transmitter plebeian	Transmitter populist	Transmitter elite
Receiver broken	X	send short message in the blind, either randomly without access to the list of channels, or on a designated channel for this condition.	send voice in the blind, either randomly without access to the list of channels, or on a designated channel for this condition.	send any sort of transmission, either randomly without access to the list of channels, or on a designated channel for this condition.
Receiver plebeian	you can monitor unreliably	you can send short messages unreliably	you can send voice unreliably	you can send everything unreliably
Receiver populist	you can monitor voice	you can send short messages reliably	you can send voice reliably	you can send everything reliably
Receiver elite	you can monitor everything	you can send short messages reliably	you can send voice reliably	you can send everything reliably

The status message and the list of channels messages are sent in populist mode?
Or are they sent sub-populist, as if text messages?

what is the difference in the table if the list of channels and status messages are sent in plebeian mode?

	Transmitter broken	Transmitter plebeian	Transmitter populist	Transmitter elite
Receiver broken	X	send short message in the blind, either randomly without access to the list of channels, or on a designated channel for this condition.	send voice in the blind, either randomly without access to the list of channels, or on a designated channel for this condition.	send any sort of transmission, either randomly without access to the list of channels, or on a designated channel for this condition.
Receiver plebeian	you can monitor text messages reliably	you can send short messages reliably	you can send voice reliably	you can send everything reliably
Receiver populist	you can monitor voice	you can send short messages reliably	you can send voice reliably	you can send everything reliably
Receiver elite	you can monitor everything	you can send short messages reliably	you can send voice reliably	you can send everything reliably

Ban data, ban unnecessary repetitions, enforce priority (without cheating?) "win" the lottery? Choose a logical channel at random and terminate it with a nice going-away present?

The satellite picks somebody. Sends them a message, and that guy is responsible for terminating the room.

When capacity has been used up, then a cap on bandwidth is enforced, from the top down. Robin Hood Protocol.
Drop everyone down to a lower rate vocoder for instance. This means you actually have to have another vocoder available.

Question: The satellite is full of voice. Everyone is complying with the rule that voice transmit is in populist mode. Everyone can monitor every channel. We robbed from the rich. We gave to the poor. It's a worker's paradise out there. Then, another communication is added. What happens?

If every downlink slot is full, and every conversation is being transmitted with full repetitions in populist mode, then allocate additional bandwidth by sacrificing the ability for minimal stations to monitor.

There exist conversations that really do need full repetition and there are other communications that do not need full repetition. They can communicate with less bandwidth. if you can identify those conversations and then lower their repetition count, then new communications can be added.

The requirement above is controlled by an element of the status message. When the satellite is not congested, then all voice communications are sent in populist mode. When the satellite is congested, then all point-to-point voice communications upgrade to elite, if all stations participating in the conversation can support elite mode. This is called the Trilateral Commission Protocol.

And then what happens when more communications are added?

Now you really are full and you have to sacrifice some actual communications.

Question: How do you shed load?