Aloha Protocol

Random Access Protocols

- When node has data to send, it transmits at full channel data rate R.
- If two+ nodes transmit simultaneously, there is a “collision.”
- A random access protocol specifies:
  - How to detect collisions
  - How to recover from them

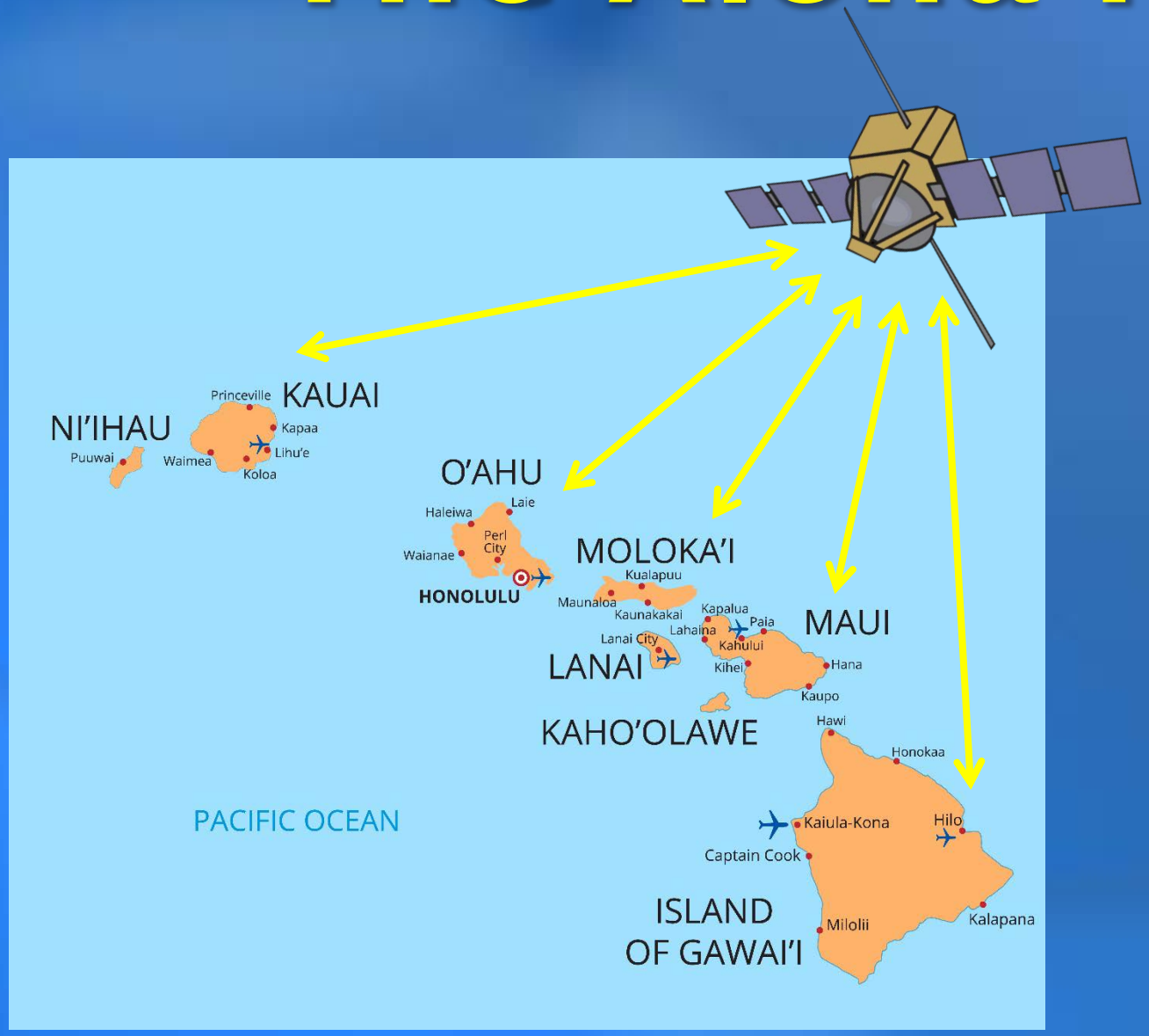
Advantages

- No a priori coordination among nodes.
- Scale dynamically with size of network.
- Single active node can transmit at full channel rate.
- Simple

Disadvantages

- Collisions and methods for dealing with them reduce utilization.

The Aloha Protocol



Developed by Norm Abramson of the University of Hawaii to connect the islands via a satellite network.

Islands all transmit to satellite on one frequency, and listen to satellite on another.

Islands could not "hear" each other.

The Aloha Protocol

Simple example of a randomized contention protocol.

Each node executes

- If have packet, then transmit.
- If a collision is detected, each node waits a random amount of time before re-transmitting the packet.
  - These nodes are said to be **backlogged**.

Example