Amateur Packet Radio and CERT in Santa Clara County

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Agenda

- What is packet radio?

- Why use packet radio?

- Outpost Packet Message Manager & PacFORMS

- Live Overview of Outpost setup and controls

- Live demonstration of sending and receiving a simple message

- Live demonstration of sending a PacFORMS Message

What is Packet Radio?

- One of many digital modes available in Amateur Radio
- Transmitted information is received 100% error free!
- Sends a "packet" of data (envelope + payload) at a time
- Typically operates at 1200 or 9600 baud

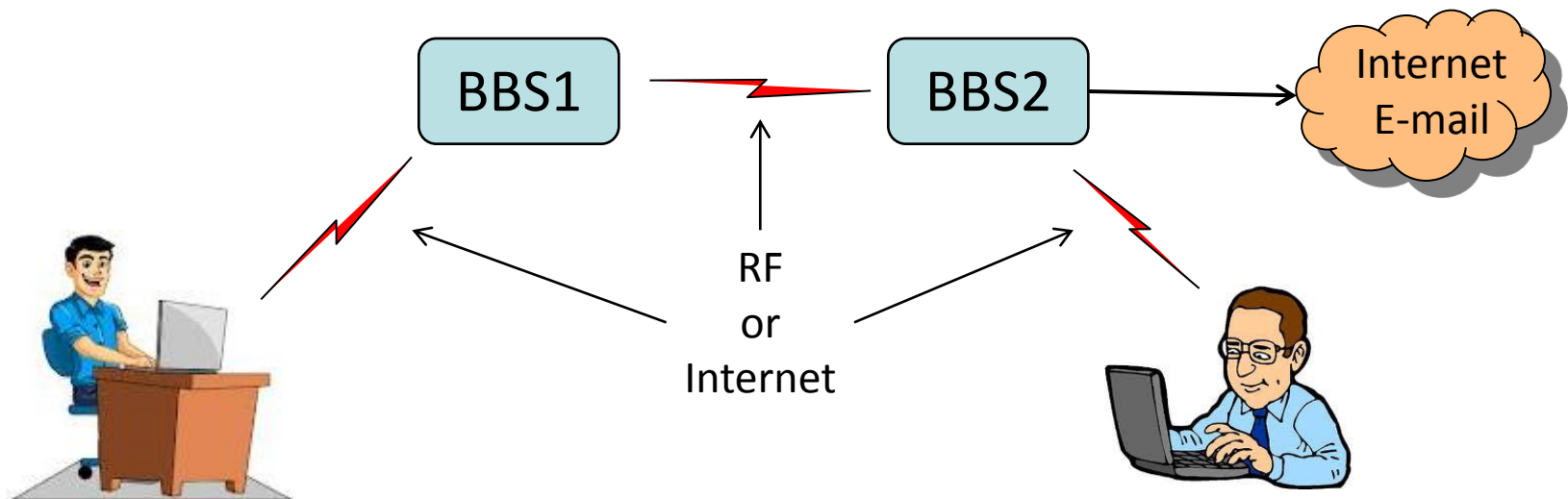| Header	Payload	CHK

Some Common Packet Radio Usage Types

- Keyboard – to – keyboard
  - Similar to text messaging
  - Short, interactive messaging between individuals
  - Connect direct or navigate a network of "nodes" to reach farther
  - O.K. for information message traffic; not good for formal messages

Node

Node

```
*** CONNECTED to KN6PE
Hi Jim – Are you there?
Yup - what's up?
```
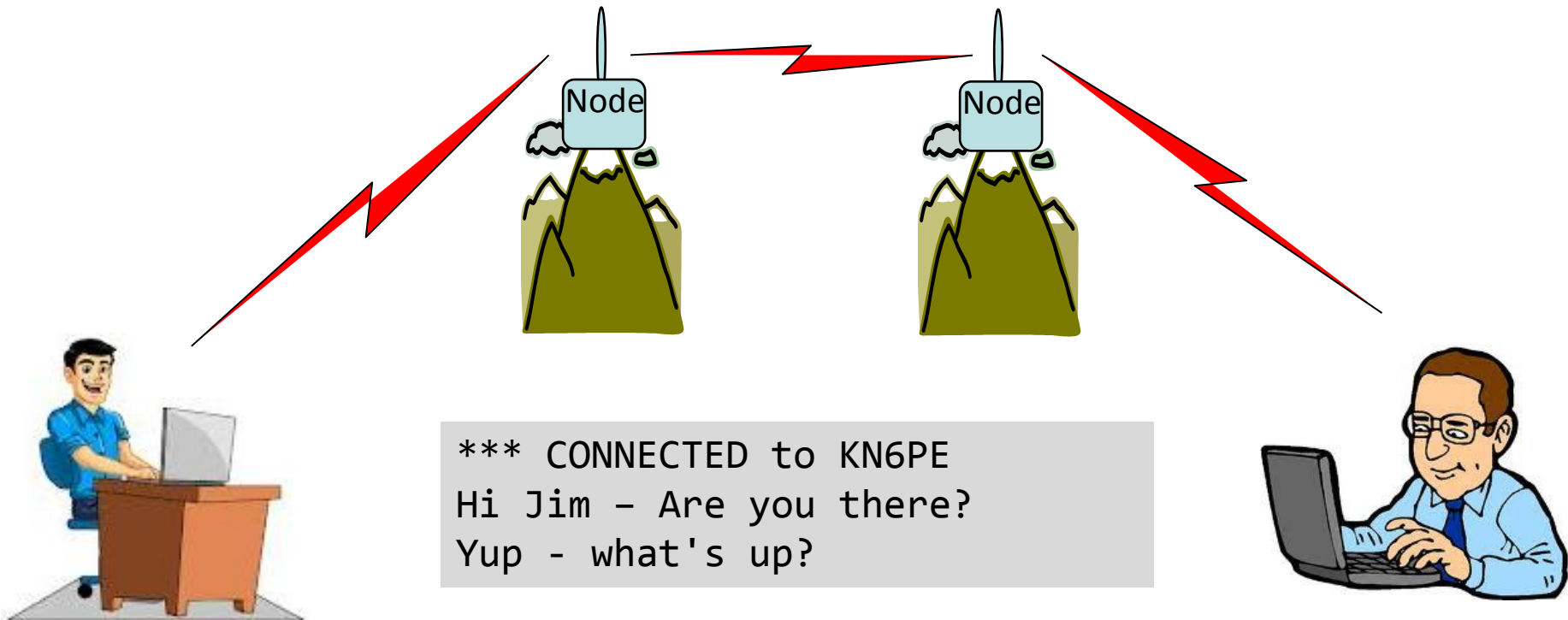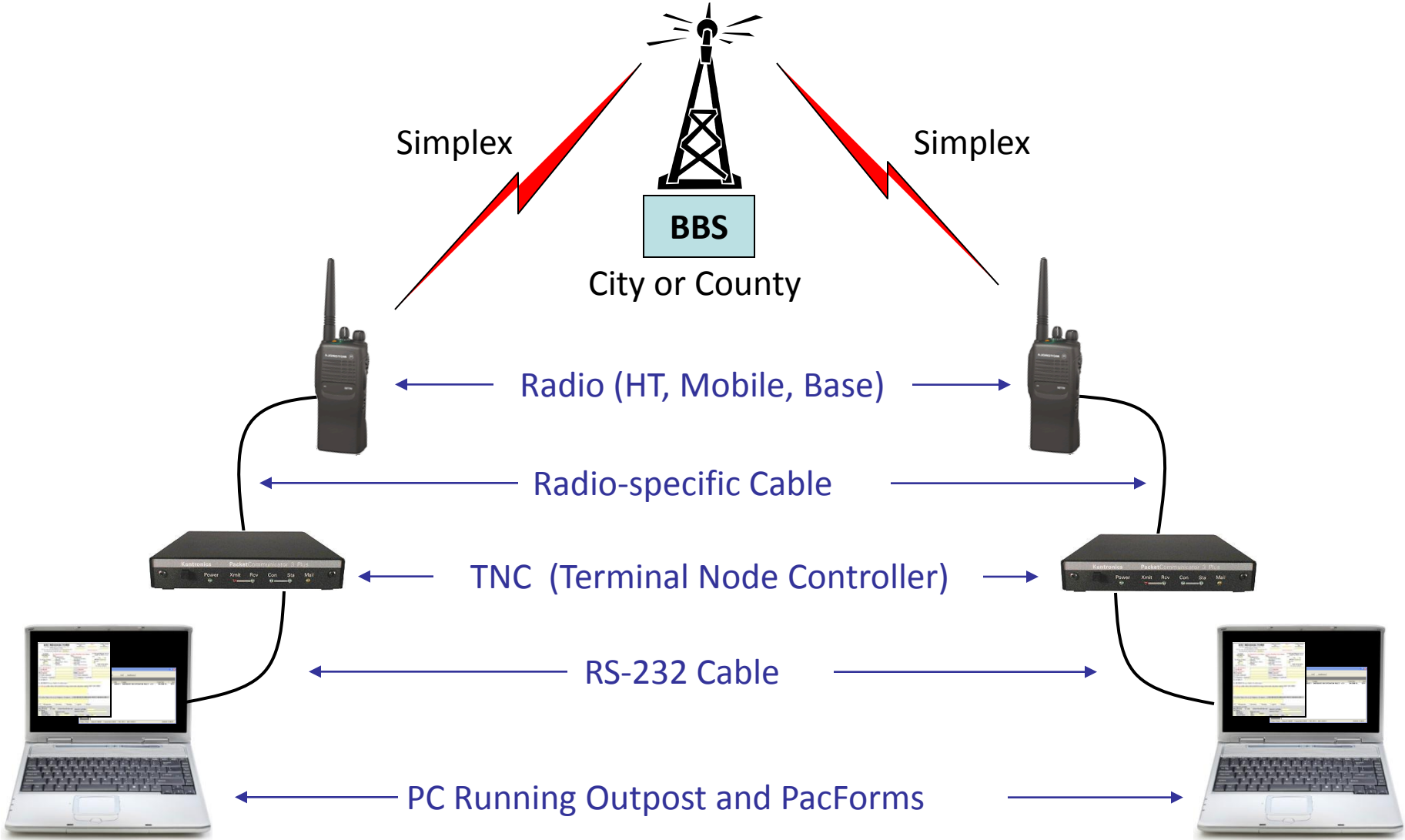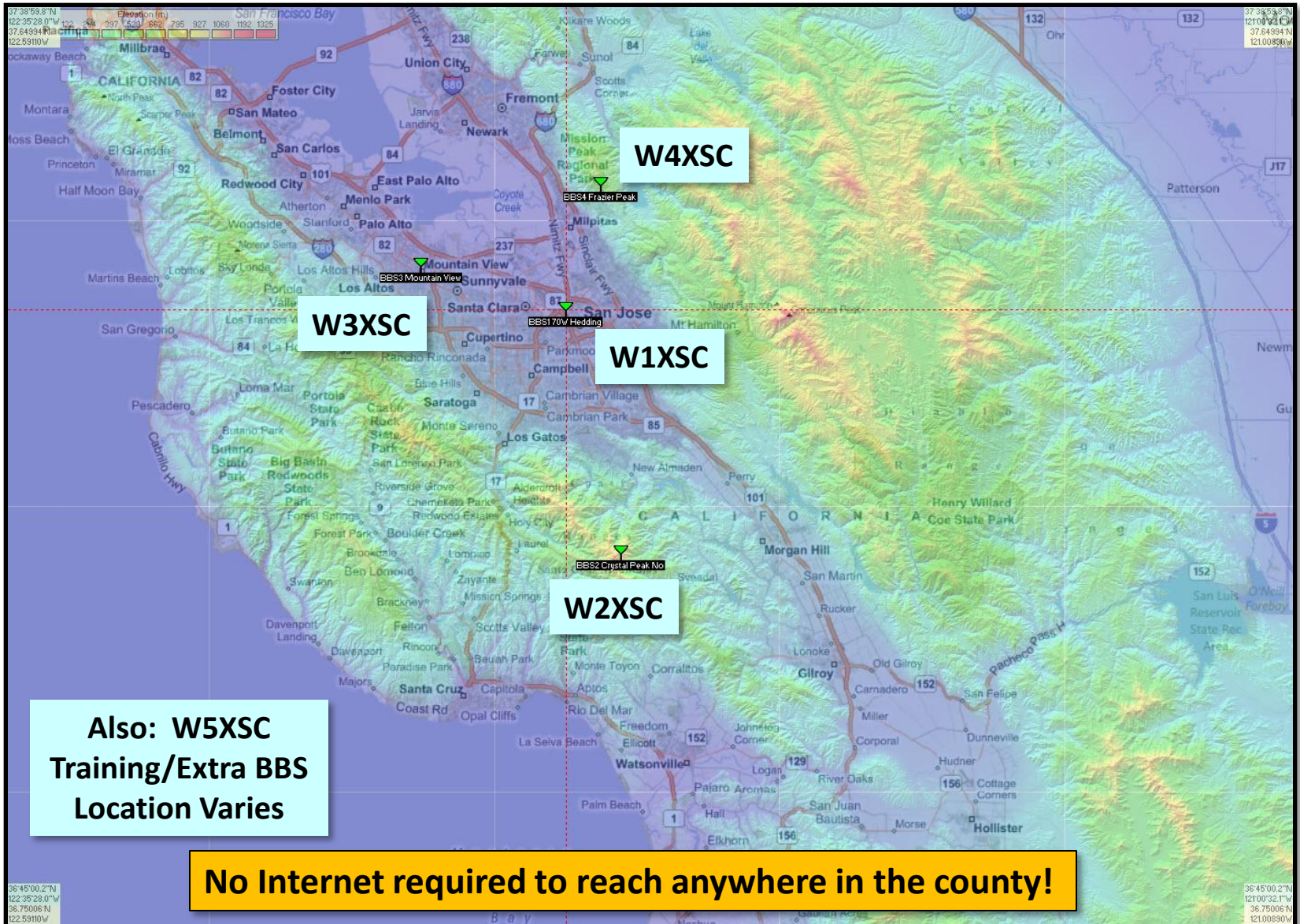
Some Common Packet Radio Usage Types

- Bulletin Board Systems (BBS)
  - Multiple mailboxes, distribution lists (like a corporate email system)
  - Bulletins (may be organized into topic areas for selective reading)
  - Store and forward – other person can pick up message later
  - May use nodes between BBSs or between users & BBS to extend reach
  - May be networked to other BBSs via RF (or Internet links)
  - May include gateway to Internet e-mail
  - Ideal for larger organizations, multi-user, formal message traffic

BBS1   BBS2   Internet E-mail

RF
or
Internet

Typical Packet Radio Station Components

Simplex   Simplex

BBS

City or County

Radio (HT, Mobile, Base)

Radio-specific Cable

TNC (Terminal Node Controller)

RS-232 Cable

PC Running Outpost and PacForms

Santa Clara County BBS Locations

W4XSC

W3XSC

W1XSC

W2XSC

Also: W5XSC
Training/Extra BBS
Location Varies

No Internet required to reach anywhere in the county!

WHY USE PACKET RADIO?

It's FAST!

- Yes, that's right, FAST!
- WAY faster than voice!
- Voice
  - Speak the message, phonetics, copying (legibly), multiple recipient fills, logging, duplicating
- Packet
  - Type it in, press send, walk away
  - Messages are transferred faster than the operator can type them
  - Multiple recipients all get the exact same message
  - Can be received with no operator intervention at all
- Real world results:
  - At a recent Santa Clara County drill, the county EOC processed over 80 messages in about 1.5 hours. All were received, numbered, acknowledged, logged, printed in triplicate, and perfectly legible, with zero errors in either the messages or the ICS 309 Communications log. All managed by just one person (and some software). No waiting and no backlog.

It's ACCURATE!

- 100% accurate!
- Checksum in each packet must match
- Voice:
  - Transmission errors, reception errors, transcription errors, legibility problems, duplication errors
  - Fatigue, stress due to high volume, complexity of messages adds to probability of error
- Packet
  - Data out equals data in, all day, all night, all week long
  - Long, complex, technical, high volume makes no difference
- Real world results
  - Zero errors, ever, when using packet

It's DEPLOYABLE

- Where, when will you need to deploy?
  - Hint: it probably won't have power, phone, Internet
- VHF and UHF are well suited for field deployments
  - Don't need special/extra radios, antennas
  - Transmit over long distances using just an HT
  - Much more tolerant of line-of-site issues than higher frequencies
- Easy to extend with nodes and digipeaters
- Real world results:
  - An HT is sufficient to connect from most places in Santa Clara County
  - In more difficult locations, use a roll-up J-pole antenna and mast
  - Each city can reach at least two of our BBSs
  - Surrounding counties can reach at least one of our BBSs

It's EASY

- Hardware
  - Just about any modern amateur radio can be used for packet
    - Several even have built-in TNCs
  - Hardware TNCs are readily available (software TNCs, too)
  - Pre-built cables are available at reasonable prices, or make your own
  - Connections are straight forward (radio to TNC, TNC to computer)
- Software
  - If you can use e-mail, you can use Outpost
    - Other tools are also available, but Outpost is VERY simple to use!
  - If you can fill in a form on the web, you can use PacFORMS
  - The combined solution uses skills we all exercise every day
- Procedures
  - Outpost can automate many (numbering, acks, logging, …)
  - Simple user interface helps ensure operator readiness

Overview
Outpost Packet Message Manager

What is Outpost?

- A Windows-based packet messaging client

- Supports ARES, RACES, and other amateur radio emergency response teams and their need to pass digital traffic

- Helps automate the packet message handling environment

- Manages all message-handling between you and the BBS

- Lets you read, delete, create, reply to, or forward messages back to the BBS

Overview
Outpost Packet Message Manager

Why use Outpost?

1. **Leverages the existing packet hardware, network, and BBS infrastructure**

   - Uses your existing TNC and packet radio equipment
   - Compatible with many existing BBSs and TNC PBBSs
   - Only your packet client (end-user program) changes

2. **Hides the complexity of the packet operating environment**

   - Similar look and feel to contemporary email programs
   - Shorter learning curve for packet operations
   - Allows users to… "*focus on the message, not the medium*"

3. **Implements most local emergency management policies for digital communications**

4. **Still under active development based on user requests and on-going alignment with the Outpost mission**

Overview

Outpost Packet Message Manager

Feature highlights

- **Message support**
  - Private, NTS, and Bulletin messages
  - Text formatting in a free-form message window
  - NTS Message Maker with ARL message support
  - On-line report builder
  - Address Book
- **Send/Receive Session (connection) control**
  - Serial, AGWPE, and Telnet interfacing with over 20 PBBS and BBSs
  - Controls connecting, sending messages to and retrieving messages from the BBS
- **Configurations and Setups**
  - BBS, TNC, and Interface configurations
  - message type and retrieval options
  - supports 3 ways for automatically initiating send/receive sessions

Now, Lets go LIVE!

- The slides that follow are designed to be a check-list to follow when you sit down to operate an unknown (to you) packet station that is already set up.

- Follow along with the slides as you are shown the Live Outpost program.

- NOTE: It is recommended that you install Outpost on your home computer even if you do not have the TNC/Radio setup to use it. You can familiarize yourself with the setup and controls and even fill out forms to test the system.

STARTING OUTPOST

- Click on the *Outpost SCC* icon on the desktop to open Outpost

- Enter your **User Call Sign** and **User Name** (User name is information only)

- **Tactical Call Sign**

  - If your location is assigned a Tactical Call Sign, then you need to know what that tactical call sign is and enter it here.

  - Check the **Use Tactical Call for all BBS Interaction** check box. Note: This is YOUR (the sender) Tactical call sign, NOT the tactical call sign of the receiver.

  - You do NOT have to check the Tactical call check box if you are the only operator at your station. An individual can send a message to either another individual or a Tactical call sign.

  - The Additional ID Text is only informational

STARTING OUTPOST (Continued)

- **Tactical Call Sign** (Continued)

    - The Message ID is 3 characters that becomes part of the Message Subject line

    - If Using a Tactical call sign, put the last 3 characters in the Tactical ID box. If not, use the last 3 characters of your call sign or your initials.

    - Click OK

- **PC Time Check**

    - After clicking OK, the **Outpost Packet Message Manager** window will pop up with a PC Time Check dialog box in front of it.

    - If the Date and Time are OK, click on **Close**. If not, click on **Update** and fix the date and time.

OUTPOST PACKET MESSAGE MANAGER

- **Setup** – On the horizontal File menu at the top

  - **TNC** – Click on the TNC choice and view the menu. Common TNC choice are listed.

  - Most commonly used TNC choices are SCCO_AGW, SCCO_KPC3+, or SCCO_Kenwood_710 (built in TNC). More than likely, the TNC for the packet setup you are using is already selected.

  - **TNC Comm Port –** Usually automatically selected, but in this tab, you can select the comm port if there is more than one choice. Usually only one will work.

  - Click the Send/Receive button to test the Comm port setup. If Outpost talks to the TNC, it will be obvious. If not, a dialog box will display a message that the comm port is not set correctly.

OUTPOST PACKET MESSAGE MANAGER

Setup – (Continued)

- **BBS**

  - When you select BBS in the Setup menu, you should be at the **BBS Name** tab. The BBS Name dropdown menu lists the available BBSs in Santa Clara County. In Mountain View, W3XSC-1 is primary. Our secondary BBS is W1XSC-1.

  - BBS Type items are usually automatically selected.

  - The only other tab that might be used is the BBS Path tab. The first radio button is automatically set.   If you need to use a digipeater you would click that radio button and list the digipeater names separated by commas.

OUTPOST PACKET MESSAGE MANAGER

Tools Menu – There are 3 important items

- **Send/Receive**

  - **Automation** Tab – First radio button is usually selected

  - **Retrieving** Tab – the first, third & fifth check boxes should be checked

  - **Receiving** Tab - The first check box can be checked and a sound can be selected to play when message is received.

  - **Printing** Tab – The third checkbox is automatically selected.

OUTPOST PACKET MESSAGE MANAGER

Tools Menu – (continued)

- **Message Settings**

  - **New Messages** Tab – The first radio button is usually checked

  - The second checkbox, **Message Destination,** should be checked, and the default tactical (or personal) call sign that you usually send messages to should be entered

  - **Msg. Numbering** Tab - Message numbers are automatically assigned to messages, including PacFORMS forms. This tab sets up how the message number looks on the Subject line of the message. Also, the second and third check boxes should be checked.

  - **Replies/Forwards** Tab - the first radio button and the check box are usually checked**.**

  - **Tracking** Tab - the third check box is usually checked.

  - **Adv (Advanced) Tab** - these are controls for how PacFORMS works with Outpost. The check box should be checked. The second radio button in each of the next 2 sections should be checked.

OUTPOST PACKET MESSAGE MANAGER

Tools Menu – (continued)

- **Report Settings**

    - **Variables** Tab - There are several text boxes that can be filled in as needed.. The first field is the **Next Message Number** that can be set to any number you want.

    - **ICS 309** Tab - Provides a means of setting up the form for printing an ICS 309 report of the messages.

- **Interactive Packet -** A means of connecting to the BBS for interactive communication

    - Usually select **Serial / Comm Port –** In the text area type C W3XSC-1 or the name of the BBS to which you wish to connect.

OUTPOST PACKET MESSAGE MANAGER

Forms Menu

- This menu is a list of forms that can be used to send messages on specific web forms used in Santa Clara county. These forms are called **PacFORMS**.

- Most of these PacFORMS are mimics of paper forms.

- Click on the selected form and it will be launched in your default browser.

- There are two sets of forms: The Public version and the Private version.

- The Public version includes the first 3 forms listed. The Private version includes all forms listed, but are only available to the ARES/RACES city & county EOCs, ECs, AECs and Hospitals for the Hospital Net.

- In addition to the PacFORMS, the first listing is the **ICS 309 Communications Log** which brings up a window that is used to print a 309 log of the messages sent and received.

- The last item is a form for the ICS 213 Generic Message form which would be used to send messages to a party outside of the county.

OUTPOST PACKET MESSAGE MANAGER

Demonstrations - sending simple messages and PacFORMS

Questions and Discussion

More Packet information including the latest Santa Clara County combined Outpost and PacFORMS installer can be found at **http://www.scc-aes-races.org** and click on the **Packet** link.