

Ventura County ACS Area 2 Packet Training

INTRODUCTION TO PACKET RADIO AND OUTPOST for ACS/ ARES Area 2

Mike D'Amore

N6MDA – ACS802

Version 3.0 – 06/02/11

WHAT IS PACKET RADIO?

- A digital communications mode across a radio link
- An error free communications mode
 - Uses a protocol which has built-in error checking
 - Automatically acknowledges each transmitted packet of information
- Packet offers a error free message handling method
 - If the message gets there, it is correct!

Why use Packet Radio for ACS/ARES?

- Can provide printed copy of messages
 - Can store received messages as files
- Faster than voice communications
- Off-loads traffic from voice circuits, freeing voice channel for higher priority traffic

Software Based Message System

- Windows Operating System(98, 2000, XP, VISTA & Windows 7)
 - While other operating systems certainly work well on packet, Windows is most prevalent and good (free) ACS/ARES software has been developed for Windows OS
- Outpost Packet Message Manager
 - <http://www.outpostpm.org/>
 - Developed especially for ARES use by Jim Oberhofer, KN6PE, of Cupertino, CA ARES.

Hardware

- **COMPUTER-** Running current Outpost software
 - Preferable to have working serial port to run the TNC (can use a USB to serial adapter)
 - Laptop is most convenient, desktop is acceptable
 - Having a printer available is ideal
- Terminal Node Controller (TNC)
 - Kantronics KPC-3+ (\$200 MSRP)
- **VHF/UHF FM radio – Area 2 using Alinco radios**
 - Operate on 223.580 Mhz & 145.650 Mhz
- **12 Volt Power Supply**
- **Appropriate cables**(audio, serial, power)
 - Power connections preferably using Anderson power poles

Standard Operating Knowledge

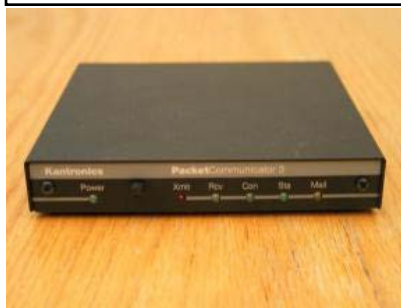
- All AREA 2 Packet Operators should:
 - Be trained on the basic operation of our Standard Packet Station
 - Be familiar with Outpost message handling
 - Have basic understanding of TNC packet commands and Outpost setup
 - Understand basic BBS setup commands
 - Understanding of connection Paths and use of Nodes

TYPICAL AREA 2 EOC PACKET STATION

A typical packet station would consist of:

- A terminal Node Controller, or TNC, for example, a Kantronics KPC-3+
 - DA / AD Conversion, Memory & Embedded Software
- Laptop computer
- 2 Meter or Dual Band mobile radio, capable of at least 5 watts
- Appropriate cables, power supply

Kantronics TNC
KPC3+ or KAM-XL



Windows PC



VHF FM Radio



HOW DOES THE STATION WORK?

- Typed info is converted to data packets, and transmitted as audio tones over the radio
- Received tones converted back to data at other end
- Two basic communications styles
 - Bulletin boards (BBS) –(most common style)
 - Messages are stored for others to pick up later
 - Station to station (Live Chat)
 - ie Keyboard to Keyboard conversation
 - Not used by Area 2 for ECOMM

BULLETIN BOARDS

- A BBS (Bulletin Board System) is essentially a mailbox
- BBS' generally are associated with a particular EOC
 - Use Connect names such as ECSS, HSPLR, CLUEOC...)
- Serve as central post office for all users at a EOC
- Not real time
 - Users have to check and collect messages

MESSAGE TYPES

- There are 3 message types in packet radio
 - **Private** Message
 - command is “SP” (**S**end **P**ivate)
 - **Bulletin** Message
 - command is “SB” (**S**end **B**ulletin)
 - **NTS** (National Traffic System) message
 - command is “ST” (**S**end **T**raffic)

MESSAGES (Continued)

- Regardless of Message Type, the message consists of:
 - BBS to which it is being sent
 - Who is it being addressed to (To:)
 - Subject: enter a subject on the subject line
 - Body of message: typed in
 - To finish; type on the next line, “//EX”

LIST MESSAGES

- “L” Command: (List)
 - LM to list only messages to you. (List Mine)
 - LT to list only NTS messages (List Traffic)
 - BBS responds with a list of available messages, giving message number & subject
 - LB to list only bulletins (List Bulletins)

READ MESSAGES

- “R” Command: (Read Messages)
 - “RM” -read all messages to me
 - “R 123” -read message # 123 to me
 - Note every message has a unique number

KILL MESSAGES

- “K” Command:
 - Good practice to kill your messages off the BBS once you have read them
- Private messages are deleted from the TNC when read
- NTS messages may be “Accepted” by any operator who connects with the BBS
- Bulletin messages must be “Expired” by station who originally sent it

DIGIPEATING AND NODES

- Allows you to connect to stations you can't reach directly
- Using Nodes to connect to far away stations is preferable.
 - Makes more efficient use of channel
 - Packets are far more likely to make it
 - Fewer retries

NODES

- A Node is a “smart” digipeater
 - It knows how to reach other nodes and stations
 - It does point-to-point acknowledgements versus digipeaters that only acknowledge at end-of-chain
 - speeding up channel usage, reducing repeats
 - Can handle several connections at once
 - Usually installed in a prime location with good general coverage (Rasnow Peak)
 - Can let you reach stations on different frequencies
 - If it is a gateway equipped TNC such as the KAM-XL's at ECSS, AMGEN & the Los Robles Gateway
 - If it is a Dual TNC system such as the system on Rasnow Peak

OUTPOST

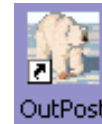
- Outpost was created for ARES purposes by Jim Oberhofer, KN6PE
- Outpost is the ACS packet client program of choice
 - **Handles all the Connect, Send, Read, Disconnects commands for you**
 - **It operates much like a standard email program**
 - **Easily creates Private, Bulletin & NTS messages**
 - **Can automatically sends & retrieves messages**
 - **Connects directly to BBS, or connects through digipeating or Nodes**

Obtaining OUTPOST

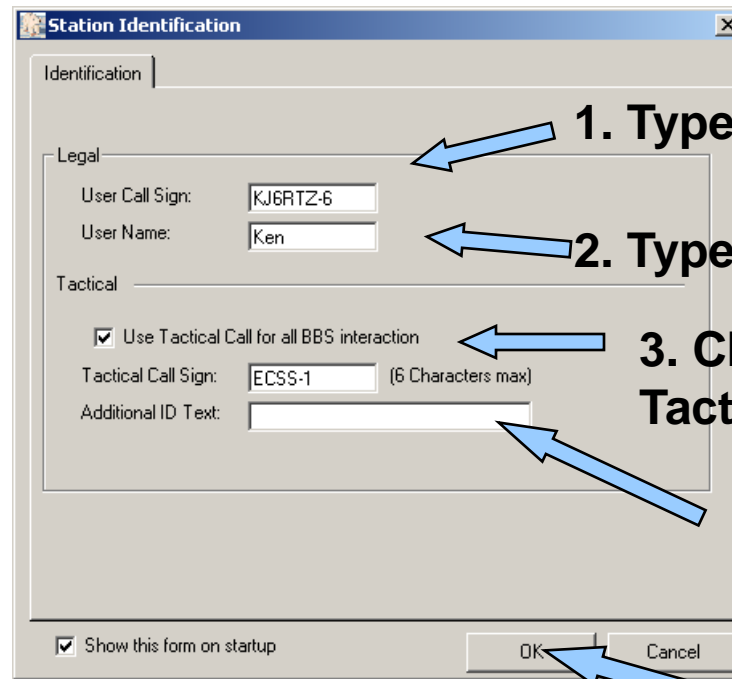
- Available for free download from:<http://www.outpostpm.org/>
 - Go to the Download page and download into a temporary folder
 - Go to the folder & double-click on opsetup2.5.0i21.exe (or whatever the current version is!)
 - Even if you do not have a TNC at present, it is good to just look at the various screens for familiarization

Setting up OUTPOST

- After installation, double-click on the Outpost icon:



- You will get the initial splash screen, followed by a Setup Screen:

A screenshot of the "Station Identification" dialog box. The dialog has a title bar with "Station Identification" and a close button. It contains two tabs: "Identification" (selected) and "Legal". Under the "Identification" tab, there are two sections: "Legal" and "Tactical". In the "Legal" section, there are two text input fields: "User Call Sign:" containing "KJ6RTZ-6" and "User Name:" containing "Ken". In the "Tactical" section, there is a checked checkbox labeled "Use Tactical Call for all BBS interaction", a "Tactical Call Sign:" field containing "ECSS-1" with "(6 Characters max)" to its right, and an empty "Additional ID Text:" field. At the bottom of the dialog, there is a checked checkbox labeled "Show this form on startup" and two buttons: "OK" and "Cancel".

1. Type your callsign here

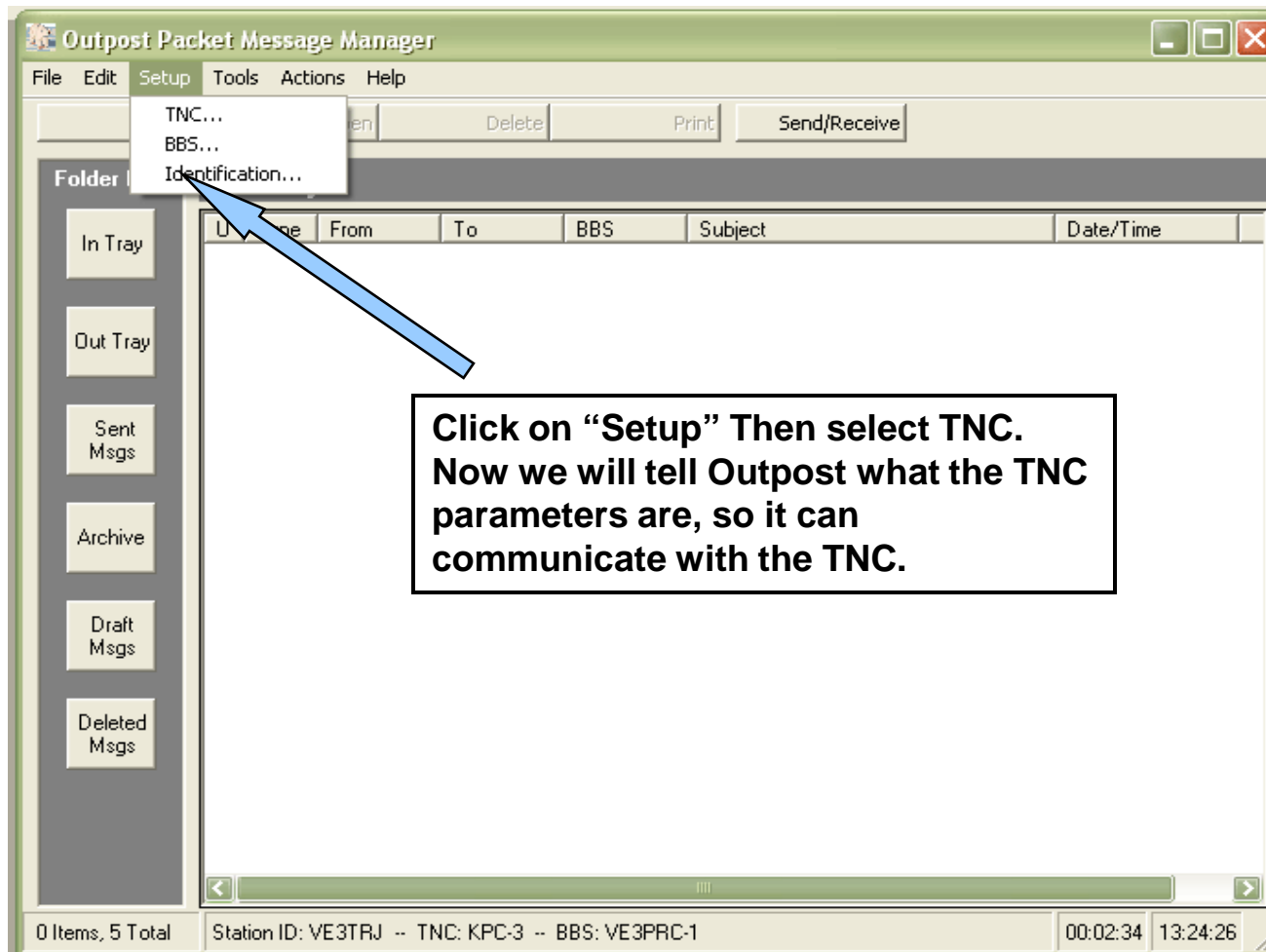
2. Type your name here

3. Check box and enter Tactical Call

4. Leave blank!

5. Click O.K.

Initial Setup



TNC Setup

The screenshot shows a dialog box titled "Define a new TNC" with a close button (X) in the top right corner. The dialog has several tabs: "Interface Type", "TNC Prompts", "TNC Commands", "TNC Comm Port", "AGWPE", and "Telnet". The "Interface Type" tab is selected. Below the tabs, there is a section "Choose a Device Name" containing a "Device Name" text box with "KPC-3" entered, a "Description" text box with "Standard KPC-3" entered, and a "Device Type" section with three radio buttons: "TNC" (selected), "AGW Packet Engine", and "Telnet". To the right of the "Device Name" and "Description" fields are "New" and "Delete" buttons. At the bottom of the dialog are "OK", "Cancel", and "Apply" buttons. Five blue arrows point from numbered instructions to specific elements in the dialog: 1. to the "Interface Type" tab, 2. to the "Device Name" text box, 3. to the "Description" text box, 4. to the "TNC" radio button, and 5.* to the "TNC Comm Port" tab.

5.*

1. Select Interface Type

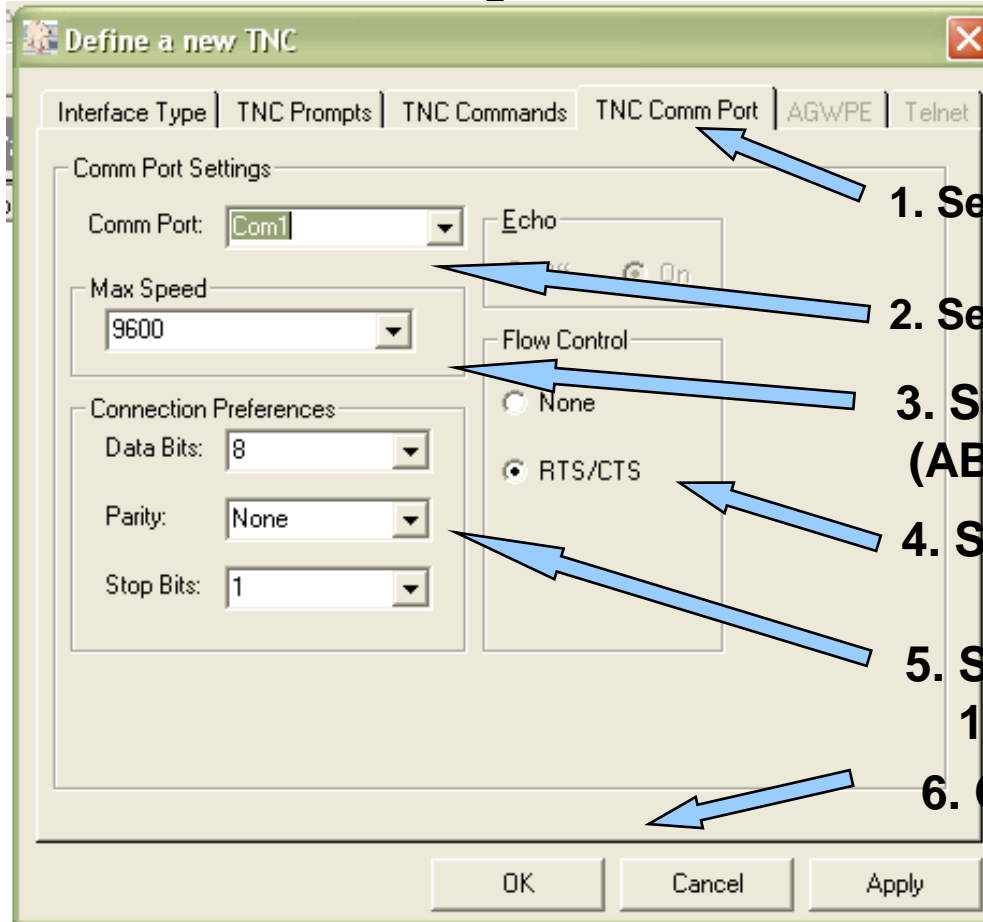
2. Select TNC

3. Type in KPC-3 (or whatever your TNC is)

4. Type in a description

5. Then click on TNC Comm Port*

Comm Port Setup



1. Select TNC Comm Port

2. Select your comm port for the TNC

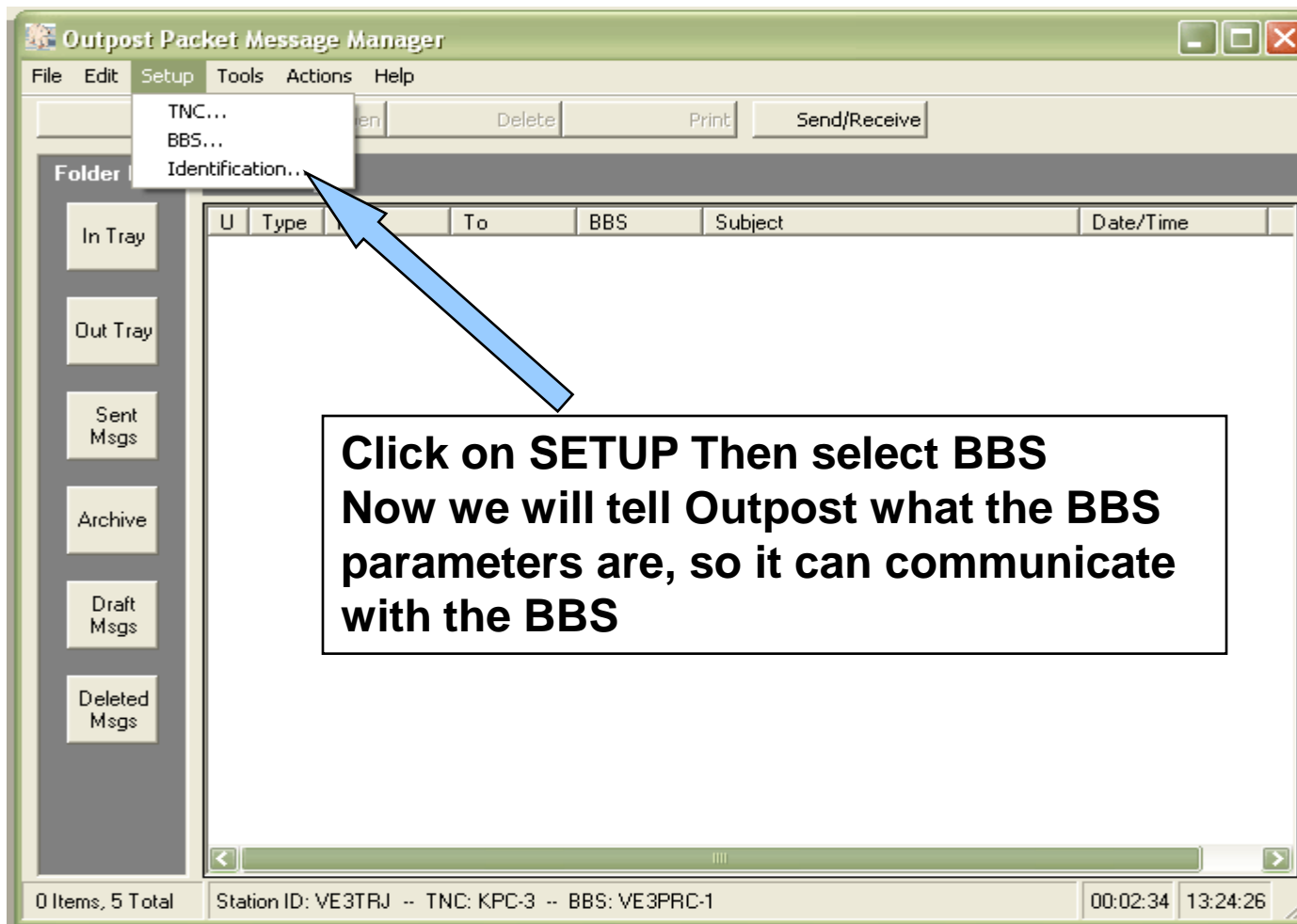
3. Select your “TNC to Computer” (ABAUD) speed

4. Select RTS/CTS

5. Select 8 bits, no parity, 1 stop bit

6. Click OK

BBS Setup



Simple BBS Setup

The screenshot shows a dialog box titled "Select a BBS" with four tabs: "BBS Name", "BBS Prompts", "BBS Commands", and "BBS Path". The "BBS Name" tab is active. The dialog contains the following fields and options:

- BBS Name:** A dropdown menu with the text "ECSS THRU LOS ROBLES GATEWAY".
- Connect Name:** A text field containing "ECSS".
- Description:** An empty text area.
- BBS Type:** Two radio buttons: "Let Outpost determine the BBS and set up the prompts" (selected) and "User defines the BBS prompts".
- Non-Identifying BBSs:** Two radio buttons: "AA4RE BBS" and "AA4RE BBS with Tactical Call Customization".
- TNC Name:** A text field containing "KPC-3".

Buttons on the right side include "New", "Copy", and "Paste". Buttons at the bottom include "OK", "Apply", and "Cancel".

1. Click on BBS Name, then click New
Type in a Friendly Name

2. Type in connect name of BBS

3. Type in a description

4. Let Outpost determine the prompts!

Path Setup

The screenshot shows a dialog box titled "Define a new BBS" with four tabs: "BBS Name", "BBS Prompts", "BBS Commands", and "BBS Path". The "BBS Path" tab is selected. Under the "Access method" section, there are three radio button options: "Direct to BBS" (which is selected), "Via digipeater(s):" (with an empty text field below it), and "KA-NODE/Netrom Access". A "Create/Update Path" button is located to the right of the radio buttons. At the bottom of the dialog are "OK", "Cancel", and "Apply" buttons. Three blue arrows point to the "BBS Path" tab, the "Direct to BBS" radio button, and the "OK" button.

1. Click on BBS Path

2. In this case, we are selecting "Direct to BBS" because we don't need to digipeat or use a node to get to our BBS

3. Then click on OK

BBS' you probably can connect to directly:

TOEOC - 223.580

HSPLR - 145.650

CLUEOC - 223.580

AMGBB - 223.580

Path Setup

Select a BBS

BBS Name | BBS Prompts | BBS Commands | **BBS Path**

BBS Name
BBS Name: **ST CO SHERIFF - RASNOW AND RAS220**

Connect Name: **ECSS**

Description: **ECSS via RASNOW and RAS 220**

BBS Type
 Let Outpost determine the BBS and set up the prompts
 User defines the BBS prompts

Non-Identifying BBSs
 AA4RE BBS
 AA4RE BBS with Tactical Call Customization

TNC Name
Set/Get TNC **KPC-3**

New
Copy
Delete

OK Apply Cancel

Click Path

Set Set-up Path with Nodes #1

Node Path Setup for EAST CO SHERIFF - RASNOW AND RAS220 [X]

Node Number: 1 / 2

Node Name:

Successful Connect Message:

From this node, set up how to get to the next node or BBS

Connect command:

Connect with node/BBS name:

Port number:

Unsuccessful Connect Message:

Next

Previous

Add

Delete

Move Up

Move Down

OK

Cancel

Set-up Path with Nodes #2

Node Path Setup for EAST CO SHERIFF - RASNOW AND RAS220

Node Number: 2 / 2

Node Name: RAS220

Successful Connect Message: Connected to RAS

From this node, set up how to get to the next node or BBS

Connect command: C

Connect with node/BBS name:

Port number: 0

Unsuccessful Connect Message: Failure with

Next

Previous

Add

Delete

Move Up

Move Down

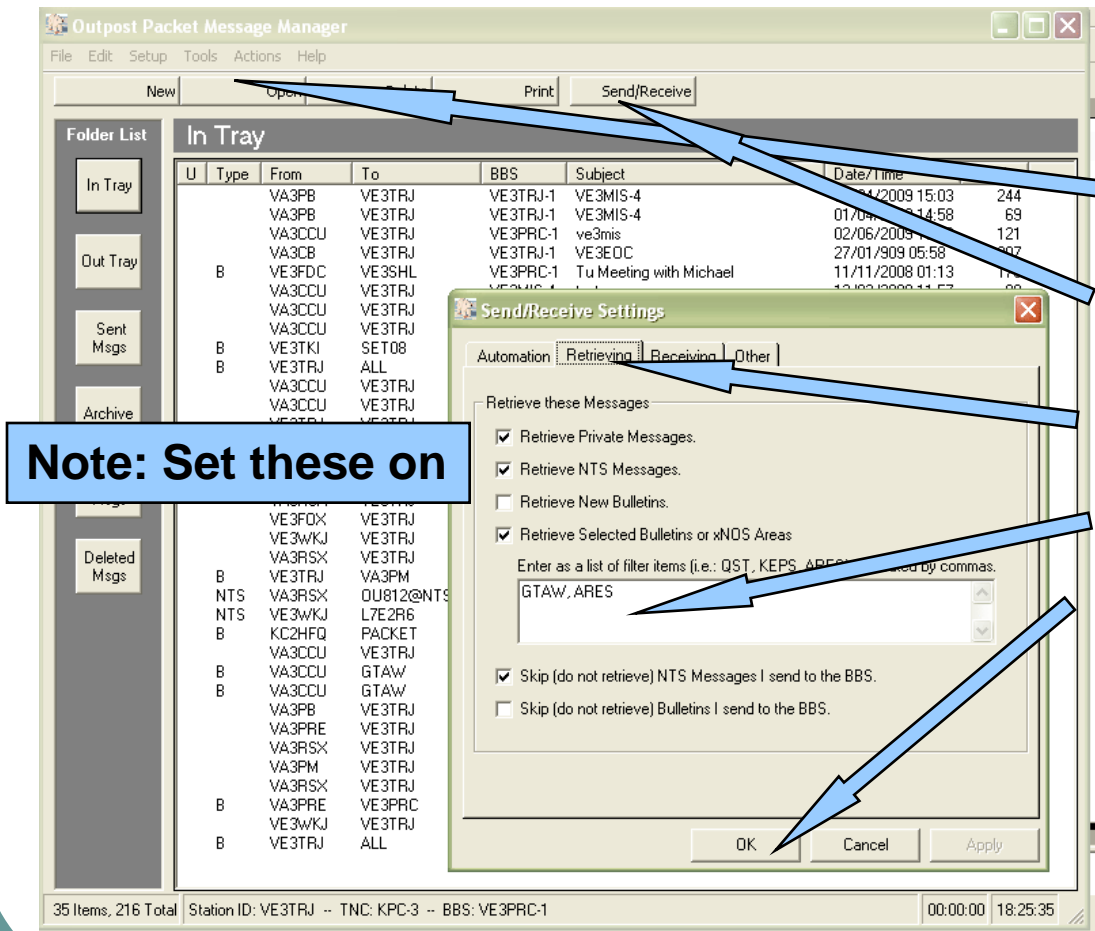
OK

Cancel

Send Receive Settings

- Here we tell Outpost to look for Private Messages, NTS Messages, and selected Bulletin Messages
 - If you don't check the type of messages you want to receive, you may not get messages meant for you!

Configuring “Selected Bulletins”



1. Click “Tools”

2. Click “Send Receive”

3. Click “Retrieving”

4. Enter your Bulletin Filters

5. Click OK

Suggested Filter Names:

KJ6RZ, KC6JSO, VCROC, CLUEOC

Using Outpost

- If you are familiar with any email program, Outpost will be very easy.
 - Outpost has In-box, Outbox, Sent, Archive folder like most email systems
 - Click “New Message” to start creating your message.

Creating & Sending a Message

The screenshot displays the 'Outpost Packet Message Manager' interface. On the left, a 'Folder List' shows 'In Tray' selected. The main window is titled 'In Tray' and contains a table of message entries. A 'Test Message - Packet Message' window is open, showing a message composition form. The form includes fields for 'Bbs', 'From', 'To', and 'Subject'. The 'To' field is populated with 'CLUEC1'. The message body contains the text: 'This is a test message to demonstrate the use of Outpost!', 'Mike- N6MDA - ACS802', and 'EOM'. A blue callout box with the number '1' points to the 'New' button in the menu bar. Another blue callout box with the numbers '2', '3', and '4' points to the 'To', 'Subject', and message body fields respectively.

U	Type	From	To	BBS
		N6MDA	N6MDA	AMGBB
		N6MDA	N6MDA	AMGBB
		N6MDA	N6MDA	AMGBB
NTS		N6MDA	CHKIN	VCROC
NTS		N6MDA	CHKIN	ECSS
NTS		N6MDA	HSPSJ	HSPSJ
NTS		NEVUY	93003	VCROC
NTS		NEVUY	XXXXX	HSPSJ
B		NEVUY	ALL	VCROC

1. Click NEW

2. Type Tactical Call of receiving station in To:
3. Subject
4. Message

Area 2 Packet Station Information

Area 2 Packet Information

7/13/2010

<u>Location</u>	<u>Call</u>	<u>PBBS</u>	<u>Node</u>	<u>Tactical</u>	<u>Operational</u>
East County Sheriff Station *	KJ6RZ-6	ECSS	ECSSN	ECSS1	24/7 on 2m and 220
Thousand Oaks EOC	KJ6RZ-7	TOEOC	TOEOCN	TOEOC1	24/7 on 220
Los Robles Hospital - Main	KJ6RZ-8	HSPLR	HSPLRN	HSPLR1	24/7 2 meters only
Los Robles Hospital - East	KJ6RZ-9	HSPLRE	HSLREN	HSLRE1	220
Calif. Lutheran Univ. EOC	KJ6RZ-10	CLUEOC	CLUN	CLUEC1	24/7 on 220
Los Robles Hosp Gateway (Node)	KJ6RZ-11	HSPLMG	HSPLMN	HSPLM1	24/7 on 2M and 220
This is not normally used as a PBBS					
Amgen EOC *	W6AMG	AMGBB	AMGND	AMG1EC	24/7 on 2M and 220

These facilities have KAM-XL TNC that can do a "X" cross band connect from 223.580 to 145.650Mhz *

Other Nodes and EOC

Westlake Village City EOC	W6VO	WLVEOC	WLVN	WLVEC1	24/7 on 2M & 220
----------------------------------	------	--------	------	--------	------------------

Rasnow Peak 145.650 System	KJ6EUS-1	RASNOW	Cross-band capable system
-----------------------------------	----------	--------	---------------------------

Rasnow Peak 223.580 System	KJ6EUS-2	RAS220
-----------------------------------	----------	--------

Ventura County Packet Stations

Area's	Location	Call	PBBS	Node	Tactical	Frequency	Out - Post	Status
1	Simi Valley EOC	KI6OQ-4	SIMEOC	SIMND	SVEOC1	145.650	Yes	24/7
2	East County Sheriff Station	KJ6RZ-6	ECSS	ECSSN	ECSS1	145.650	Yes	24/7
2	East County Sheriff Station	KJ6RZ-6	ECSS	ECSSN	ECSS1	223.580	Yes	24/7
2	City of T.O EOC	KJ6RZ-7	TOEOC	TOEOCN	TOEOC1	223.580	Yes	24/7
2	CA Lutheran EOC	KJ6RZ-10	CLUEOC	CLUN	CLUEC1	223.580	Yes	24/7
2	Amgen EOC	W6AMG	AMGBB	AMGND	AMG1EC	145.650	Yes	24/7
2	Amgen EOC	W6AMG	AMGBB	AMGND	AMG1EC	223.580	Yes	24/7
3	Camarillo EOC	KI6DJO-9	CAMEOC	CAMND	CMEOC1	145.650		24/7
3	Liesure Village EOC	KE6SWL	LVEOC	LVND	LVEOC1	145.650		
4	Oxnard EOC	W6HWK-8	OXNEOC	OXNND	OXEOC1	145.650		
5	Ojai Valley EOC	N6FL-1	OJVEOC	OJVND	OJEOC1	145.650		
6	Ventura City EOC	N6WXC-9	VENEOC	VENND	VCEOC1	145.650		24/7
7	Santa Paula EOC		SPAEOC	SPAND	SPEOC1	145.650		
7	Filmore EOC	N6VUY-9	FILEOC	FILND	FIEOC1	145.650		24/7
7	Piru EOC		PIREOC	PIRND	PIEOC1	145.650		
8	Moorpark EOC	KQ6NO-9	MKPEOC	MPKND	MPEOC1	145.650	Yes	24/7
	Ventura County EOC	KE6NYT-9	VCROC	ROCND	VCROCI	145.650	Yes	24/7
	AREA HOSPITAL'S							
1	Simi Valley	KI6OQ-9	HSPSV	HSPSVN	HSPSV1	145.650		24/7
2	Los Robles - Main	KJ6RZ-8	HSPLR	HSPLRN	HSPLR1	145.650	Yes	24/7
2	Los Robles - East	KJ6RZ-9	HSPLRE	HSLREN	HSLRE1	223.580	Yes	
2	Los Robles Hospital Gateway	KJ6RZ-11	HSPLMG	HSPLMN	HSPLM1	145.650	No	24/7 Not for messages
2	Los Robles Hospital Gateway	KJ6RZ-11	HSPLMG	HSPLMN	HSPLM1	223.580	No	24/7 Not for messages
3	St. Johns Pleasant Valley	KN6LA-5	HSPPV	HSPPVN	HSPPV1	145.650	Yes	24/7
4	St. John Regional Medical Ctr	W6HWK-9	HSPSJ	HSPSJN	HSPSJ1	145.650		24/7
5	Ojai Valley	N6FL-2	HSPOJ	HSPOJN	HSPOJ1	145.650		Emergency only
6	Community Memorial	N6VUY-8	HSPCM	HSPCMN	HSPCM1	145.650	Yes	24/7
6	Ventura County Medical Ctr	K6NE-9	HSPCO	HSPCON	HSPCO1	145.650	Yes	24/7
7	Santa Paula		HSPSP	HSPSPN	HSPSP1	145.650		
	Other EOC's							
4	EMS EOC	KE6NYT-8	VCDOC		VCDOC1	145.650	Yes	
6	Red Cross Chapter House	N6PEP-9	REDCHP	REDND	REDEC1	145.650	Yes	24/7
6	Hospital Council	K6NE-8	HSCEOC	HSCND	HSPHC1	145.650	Yes	24/7

End of Presentation

Mike D'Amore –N6MDA

Thanks to GTA-West Regional Packet Group
For material used in this presentation!