

***USING THE ZELLO VOICE
TRAFFIC AND OPERATIONS
NETS***



A training course for REACT Teams and members

This is the third course of a three course sequence the use of REACT's training and operations nets in major emergencies and disasters. This text addresses the use of Zello, a push-to-talk voice system that operates over the Internet in much the same way as a regular radio frequency operates, while allowing all REACT members to communicate, regardless of the license or equipment status.

Author: Walter G. Green III

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REACT International, Inc.

P.O. Box 21064, Glendale CA 91221

e-mail: Training@REACTintl.org

(866) 732-2899 / Toll Free (US Only)

(301) 316-2900 / International

(800) 608-9755 / Fax

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INTRODUCTORY NOTE

This course is not a complete coverage of all of the features of the Zello application. It focuses on one version, that for personal computers, and on the features of that version needed to operate as a member of REACT operations and training nets conducted on Zello. Zello provides detailed instructions and help for iOS and Android smart phones, but significantly less information is available for use of personal computers, and a number of capabilities found on smart phones appear to be absent on the personal computer application. That being said, use of Zello on a personal computer significantly expands the capability of base radio stations.

I. WHAT IS ZELLO?

Zello (<http://zello.com>) is a computer application which provides a push-to-talk capability for mobile devices and personal computers that are connected to the Internet. It is available worldwide anywhere there is a WiFi signal or the ability to connect to an internet service provider. Zello mimics the performance of a radio channel, allowing multiple users to connect with each other.

There are two versions of Zello, a free service for the general public and a commercial service for businesses or other users who require a more capable system. During the 2017 hurricanes Zello was used by informal emergent volunteer groups to coordinate unofficial disaster response efforts. In the aftermath Zello has grown to over 120,000,000 subscribers, with a virtually worldwide population.

The Zello application is downloadable to work on the following device operating systems: Android, Blackberry Phone, iOS including iPhone and iPad, Windows Phone 8.0 and later, all through Google Play or the App Store, and on personal computers by direct download from the Zello website.. There are differences in how the application looks and the functionality available in each system.

The following description of Zello is based on the application as installed on a typical desktop computer running Windows 10. Other users should access the extensive help library at <https://support.zello.com/hc/en-us> for specific instructions and controls for their device.

II. REQUIRED EQUIPMENT

To use Zello you need a device that can host the Zello application and that can connect to the Internet, either directly or through a WiFi connection. That means you have three basic choices:

- A desk top, lap top, or tablet computer.
- A network radio.
- A smart cellular telephone.

You may not be familiar with network radios. There are several models of hand-held, and at least one mobile (or base with a power supply), versions of these devices. They are configured to look and essentially work like a radio, but their connection is to the Internet through either direct cell-phone (using a Sim Card and a cellphone account), contact to a cell-phone which is serving as a portable WiFi hotspot, or access to a public WiFi network. Note that network radios may not work with all cell phone services, so before purchasing one it is a good idea to make sure that your service and the network radio are compatible.

The next requirement is Internet access. Your home or office Internet service, WiFi, or cell phone normally gives you that access. If Internet service is interrupted by disaster impacts or an internet service provider failure, Zello is unavailable, and you lose this communications tool. On the positive side, the Internet is a very large and quite robust system, and disrupting use on anything but a local level requires either a very wide impact disaster or deliberate hostile or criminal activity.

The final requirement, if you intend to use Zello on a computer, is to have a good quality headset with microphone. Zello recommends a number of headsets that have been approved for use with their service – however, experience suggests that a good quality gaming headset will meet your needs. Make certain that the headset selected is compatible with the configuration of your computer – if you intend to use your headset with a USB port, your computer has to have sufficient USB ports for you to use one for your headset. If the computer is configured with a 2 plug system for output and input, then you will need a headset with two leads.

In general we do not recommend the use of headsets which depend on a dongle (a small plug in for a USB port). Although you are not tethered to the computer, when a dongle malfunctions, and they do, the result is either no connection even though

everything seems to be in place, or possibly loud interference when you try to transmit.

III. DOWNLOAD ZELLO AND INSTALL

To download the Zello application go to <http://www.zello.com>, click on the <FREE DOWNLOAD>, and follow the instructions for downloading, including establishment of a Zello account.

Downloading installs a Zello icon on your desktop – this is the operational access to Zello.

Open the Zello icon installed on your desk top by clicking on it. Zello will bring up a white control panel. Click on the <Status> pulldown, and select <Edit My Profile>. The key item on the profile to edit is the first one <Display Name>. This changes the name displayed in the control panel for other users and gives you an alias for REACT operations. Our standard for names (and for net check-ins, other than tactical call signs) is:

- For Traffic System stations - set your Traffic call sign in uppercase as your display name, for example REACT TRAFFIC 241,
- For other REACT Team stations – team name and unit number in upper and lower case. If you use an Amateur or GMRS call sign, Net Control has no idea where your station is located or what Team you represent.
- Amateur radio liaison stations – FCC call sign.

This system makes it easier for the Net Control Station to identify the function of each station on the net.

Two REACT committees, the Operations Committee and the Training Committee maintain three channels, using the standard naming convention suggested for disaster response:

- REACT/Traffic System – the channel for the REACT Traffic Net for medium to high speed voice transmission of formal written administrative and operational messages in radiogram or ICS 213 general message formats.

- REACT/Command Net – this channel is activated for coordination of emergency response activities by the REACT Operations Committee, REACT International headquarters, Regions, Councils, and Teams.
- REACT/Standby Net – this channel is activated as a staging channel in large disasters to maintain a list of stations available for assignment and to coordinate assignments of stations to other nets or specific functions.

These three nets are formal, directed nets, operated by a designated net control station, and conducted for maximum efficiency in disaster operations. There is no social component, and rag chewing or ratchet jawing are neither encouraged nor appreciated.

There are a wide variety of other channels operated using the REACT name. The most widely used is the REACT Members channel, which hosts a twice weekly Worldwide REACT International Zello Net. It is important to note that every channel with REACT in the name is not necessarily associated with REACT International - there are a lot of different things that call themselves REACT.

To access any of these nets you must select the appropriate Zello channel:

- Select the <Tools> pull down at the top of the control panel.
- Select <Add Channel>.
- This will display an Add Channel page with a box. Enter the name of the desired channel in the box. Type the channel name exactly, in our case without spaces on either side of the slash and <Enter>.
- You will next see a list of channels with similar names. Click to position the blue bar over the desired channel name and then click <Next> at the bottom of the box.
- Review the channel details to make sure this is the correct channel. The channels operated by the REACT Training and Operations Committees will be named using the disaster naming standard starting with REACT/ and will have a description similar to that given above.

- Click <Next> to install channel in your selections.

IV. TO TRANSMIT AND LISTEN

Because Zello works through the normal computer to user interface of your personal or laptop computer you need to go through an orderly process in starting Zello.

First, check the audio control on your computer display (the speaker symbol in the lower right of the computer screen) to make sure that it is in the on position. If an X is displayed over the speaker symbol, click on the symbol to open the volume control, and then click on the speaker symbol on the left side of the box that appears to remove the X. You will now be able to hear incoming transmissions.

Open the Zello icon installed on your desk top by clicking on it. Zello will bring up a white control panel.

On the control panel in lower left corner you will see a small circular icon with a down triangle beside it. Clicking on the <triangle> opens a list of icons. Click on the small circular green icon for <Headphones> or on the green checkmark for <Available> - select either one (depending on the make of your headphones you may actually hear through the headphones or hear the computer's regular speakers).

Click on the <REACT/Traffic System> bar (or the bar for the Command Net or Standby Net) – the bar color changes to blue and you are on the net channel.

To transmit, the mechanics are:

- On the lower portion of the control panel is a horizontal bar with two vertical green buttons and a lock symbol. Click on the left-hand button with your mouse to transmit. The button turns red and red waves appear in the selected channel bar to indicate that you are transmitting. Keep the button clicked while you are transmitting.
- Clicking on the right-hand button turns on voice activation. Our standard is to use push to talk, not voice activation in order to avoid accidental, unintentional transmissions.
- Release the left-hand button after the transmission is complete.

- When another station is transmitting, green waves will appear in the selected channel bar. Do not attempt to transmit over another station – it blocks the channel for both of you.

Equally important are the procedural steps when you are ready to transmit:

- Listen to ensure that you are not transmitting over another station's transmissions. If you are instructed by the Net Control Station to start to pass a message, you are clear to start your message immediately.
- Use standard procedural words, the standard phonetic alphabet, standard numerals, and standard procedures for passing formal messages. Do not use public safety or other phonetic alphabets, coded messages, ten codes, Q signals, old style Good Buddy CB language, etc. We will be expected to operate in a disaster using the Incident Command System's standards for plain text, and we should conform to ICS standards at all times to ensure that we are able to do so when it matters most.
- On longer transmissions, such as formal messages, break regularly and pause for approximately 5 seconds to allow any station with emergency traffic to transmit.

V. TESTING

It is a best practice to test your system prior to starting to operate to ensure that everything is correctly configured. Zello includes an Echo test function that allows you to do this without transmitting on an active channel.

To test if voice transmission is working:

- Select your status as either <Available> or <Headphones>.
- Select the <echo> channel.
- Transmit – red waves indicate that you are transmitting.
- Listen – green waves indicate message retransmission by Zello – if your message being retransmitted transmission and reception is operational.

VI. STATUS AND HISTORY

Access to changing your status is through the small circular icon and down triangle in the lower left corner of the control panel. There are five listed statuses:

- <Busy> - an orange circle with a white bar - incoming messages are not played in real time, but are saved to history.
- <Away> - an orange circle with clock hands at 12 and 3 – there is no description of the Away function in Zello’s help material, but it appears to function in the same way as Busy. It does allow you to post a message of your choice that can be seen next to your status displayed to other users of the channel. To do so, click on <Tools> in the pulldown menu at the top of the control panel. Then click on <Change status message> and type the desired status message in the resulting box and hit <enter>.
- <Offline> - an empty green circle – your status display will change to Standby, and Zello will save new messages for up to a week in history, but after that will change to Offline and not accept new messages.
- <Available> - a green circle with a white check mark - all incoming messages play in real time and are saved in history.
- <Headphones> - a green circle with white headphones - there is no description of the Headphones function in Zello’s help material, but experience suggests that, depending on the make of headphones you are using, you may (or may not) actually hear through the headphones when this is selected.

To access history, click on the desired channel and then click on the <View> pulldown at the top of the control panel. Then click on <History>. This will reveal a list of transmissions with date and time. Clicking on any transmission will replay the content.

VII. CHANNEL MANAGEMENT

There is one significant issue in transmission. When you transmit, your transmission is heard simultaneously on all active channels (with the exception of the Echo test) to which you are connected. This can be resolved by clicking on the channels you

are not currently using to highlight the channel in blue and then right clicking on <disconnect>. The same applies to transmissions on a channel bleeding over to the channel you are currently using. Reconnecting is done by highlighting the channel, right clicking on it, and then clicking on <connect>.

It appears that right click to bring up the menu and then click on <mute> will mute the channel if you do not want to disconnect and then have to reconnect to use the channel. To remove the mute, click on the red circle with a crossed-out speaker displayed in the channel box.

To see who is currently signed-in to the channel, click on the channel to highlight it, right click on the channel to bring up the menu, and then click on <Show online users>. All users who are currently connected to the channel are listed. Note that this does not necessarily mean they are operating on the channel – they may be in standby, busy, away, or offline status (see the Status and History section below).

Users can be managed by the channel owner by right clicking on the user's block to bring up a menu of actions.

VIII. CLOSING STATION

Closing your Zello station is easy, but there are a number of actions and choices that you can take:

- Transmit (CALL SIGN) closing station, and then wait 5-10 seconds for any station that was listening, and that needs to contact you, to do so.
- Click the Headphone or Available status button to the appropriate status:
 - <Busy> if you are going to be off the channel for a relatively short period of time. The period of time should be based on the situation. For example, in a Standby Net, an hour's Busy is reasonable. In a Traffic Net, Busy should be reserved for brief periods such as the amount of time to leave the net to pass a message to another net or to the addressee if they are immediately available.
 - <Away> if you are going to be off the channel for a longer period of time. Consider clicking on <Tools> and then <Change status message>

to leave a short explanation. For example, if you are in a Standby Net for a developing disaster, a revised status of Away with a message “will return at 1700PST” provides Net Control with basic planning data as to when you could be available for an assignment.

- <Offline> if you are going to be absent for days or your estimated return to operations on the channel is unknown.