# *WarBirds Manual*

18th November 1999

**Questions or Problems**

If you have difficulties with this game and cannot find the solution in this manual, please call our Technical Support Line at (919) 461-0948, 9 a.m. to midnight EST Monday through Friday and noon to 3 a.m. at the weekend, and a member of our support staff will assist you. We will be best able to help you if you are at your computer when you call.

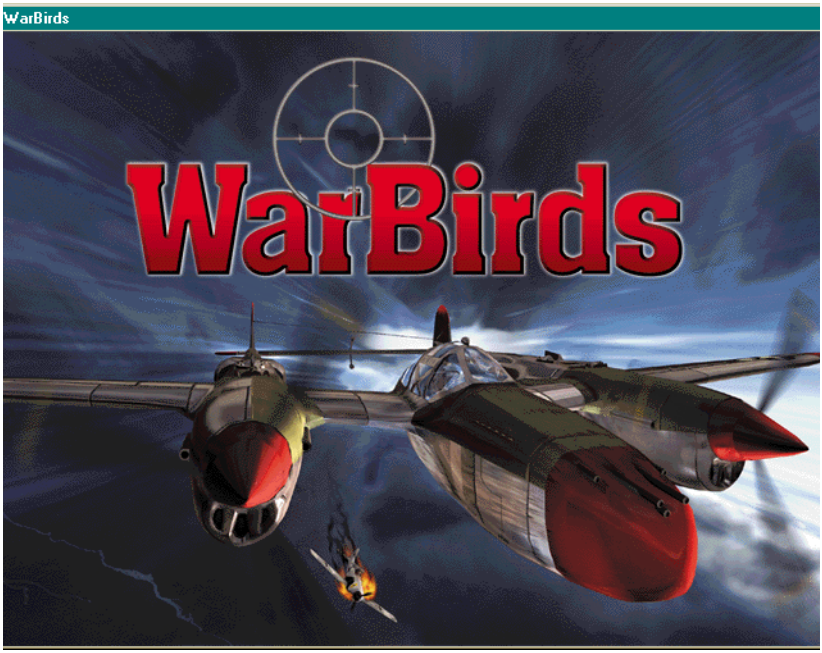
You can also obtain customer service online. We can be reached as follows:

Email: techsupport@iencentral.com

Web: http://www.iencentral.com/warbirds

# Contents

# Introduction




Welcome to *WarBirds*, a megaplayer gaming experience from iEN. When you install *WarBirds*, you are taking the first step in a “virtual career” that will see you progress from a fledgling pilot to an experienced combat veteran. Along the way, you will meet interesting people from every walk of life, make new friends (and possibly some archenemies), learn to find your way around the Internet, and probably have more fun than you thought was possible with your computer. Like any new environment, the *WarBirds* world may seem unfamiliar at first, but before you know it, you shall feel right at home.

The *WarBirds* world is divided into four nations engaged in a constant battle for territory. There are a limited number of airfields scattered around the terrain, any of which can be taken and held by any of the countries. The terrain currently consists of islands and ocean, but may change from time to time to provide variety. Historical scenarios recreating famous air battles complete with custom terrain are run online from time to time as well.

Do not expect to become bored playing *WarBirds*. Unlike simulations where you fight a computer controlled enemy, you can never become good enough to always win in *WarBirds*. When playing online, your opponents are living, thinking people whose skills are improving just as yours are. While computer controlled opponents typically have a few predetermined attack and defense strategies, you never know what a live opponent will do. You do not even know if the opponent you are facing is a rookie or a leading ace until the moment of truth….

The game constantly evolves, with new features being added on a regular basis, and the latest version is just a download away. Like any well-crafted game, *WarBirds* is easy to learn, but can take a lifetime to master.

You can choose to fly for any of the four countries, and you can switch among them whenever you like. Many *WarBirds* pilots eventually develop a loyalty to one particular country, but some are just as happy to play the field, flying for whichever country suits them at a particular time. Either way, the choice is yours.

You may receive an invitation to join a squadron, or you may decide to lead your own squadron, or you might prefer to remain a free agent. While some pilots enjoy the added depth of organized squad missions, they may not be for you. *WarBirds* can be as casual or intense an experience as you want it to be.

# Welcome to Online Flying

## It is Easy to Get Started

No phenomenon in the history of PC entertainment has grown faster or attracted more people in such a short space of time than online multiplayer gaming. The reasons for this explosion of interest are easy to explain:

- No matter how sophisticated a software program's AI (Artificial Intelligence) may be, human opponents are almost always more challenging, more devious, and more *fun* to compete against.
- Online play adds a beguiling element of socializing to what would otherwise be a solitary experience. It brings back that grand old beer-and-pretzels camaraderie that made board games so popular in the Sixties and role-playing adventures like *Dungeons & Dragons* so popular in the Seventies. To whatever extent you find personally comfortable, you can chat with and compete against people all over the world who share your gaming interests.
- No matter what hour of the day or night you have the urge to dogfight, there is always a place for you in one of the game's online arenas.

## There's a First Time for Everything

Let us assume you are one of the many computer gamers who have heard a lot about this multiplayer business, but have not yet taken the plunge. If all of your previous gaming experience has been solo play against the AI, you may well find the prospect of going online intimidating. It is only natural, if you have never done it before, for the process of going online to seem complicated and fraught with difficulty.

To be honest, that *used* to be at least partly true, back in the early days of multiplayer technology. To the uninitiated, online advocates spoke in arcane terms, and sometimes expressed disdain for those less enlightened than themselves. However, as more and more non-techie individuals have become

comfortable with the Internet, with email, with large commercial services and their user-friendly procedures, every aspect of online gaming has become simpler. It *had* to if the phenomenon were to attract a mass audience—which is, of course, how online game services make a profit.

We, here at iEN, understand any hesitations, but we are so convinced that you will *love* playing *WarBirds* online, that we are dedicated to making your initiation as easy and hassle free as possible.

## We Never Close

Always bear in mind that if at any time you need something explained or clarified, we are ready and eager to help. Our philosophy is simple—there is no such thing as a dumb question. Almost everybody needs advice from time to time, especially if you are a newbie (newcomer).

*WarBirds* is supported by a large, well-trained staff of expert support personnel. They are always glad to answer any questions you may have.

Help is available in several languages and from several sources.

- **iEN's Technical Support:** Dial (919) 461-0948. Are you uncertain how to load the game files? Are you not sure if you have enough hard drive space to store the game? Can you not get the sound effects to work properly? Do the colors on the monitor look like a Grateful Dead poster from the Sixties? Give these folks a call and tell them what is bothering you—the chances are they can straighten out the problem quickly and in language that does not mystify you.
- **iEN's Web Site:** Reach iEN's Web page at <http://www.iencentral.com/warbirds> by selecting *Web Page* from the Main menu. There is a lot of additional information accessible from there.
- **By Email:** Send email inquiries to <techsupport@iencentral.com>. It is very easy to send a question, and you usually receive an authoritative answer very quickly.
- **Documentation:** *WarBirds* has a detailed reference guide, laid out for easy access to whatever information you are looking for. Click *Help* whenever you are in the Tower to display the help documentation. Double-click on the pdf file to open it using Adobe Acrobat Reader.

*WarBirds* fans are an ever-growing community. Part of the fun you have when playing online derives from becoming a member of that community. Whether it is talking to an opponent or hatching tactical plans with a member of your own squadron, all fliers are comrades at heart.

# Getting Started

For all its rich texture and vast scope, *WarBirds* is not a very demanding piece of software. You do not need a red-hot Pentium, a ten-gigabyte hard drive, or a super-fast modem. The basic system requirements are quite modest.

## System Requirements

***Minimum Requirements***

- Microsoft Windows 95 or above with 100% compatible DirectX drivers.
- A Pentium 133 or faster (Pentium 200 if playing with a D3D compatible 3D accelerator card).
- 16 MB RAM (32MB for the accelerated graphics version)
- 55 MB free space on your hard drive (123 MB if using the highest graphic resolution—1024 x 768).
- A joystick (you can use a mouse to fly, but it is not recommended).
- A Windows compatible sound card and drivers.
- DirectX video card with 1 MB for 640 x 480 play, with 2MB if playing with a D3D compatible 3D accelerator card, and at least 3 MB for 1024 x 768 play with a D3D compatible 3D accelerator card.
- A modem with 19200 bauds. (Only necessary for network play.)
- An Internet connection and ISP account. (Only necessary for playing online.)

### *Recommended Requirements for Added Enhancement*

- For accelerated 3D graphics, we recommend Voodoo 1 and 2 chip sets. Riva 128 (Nvidia), Permedia 2 and Intel I-740 are also supported.
- A "virtual cockpit" rig. A fancy joystick with lots of programmable buttons, a throttle controller and foot pedals to control the rudder. This dramatically increases the illusion of being in a real cockpit.
- A hi-fi speaker system (or headset). Another aid to greater realism, especially if it has a subwoofer, so you can feel the engine's roar in the pit of your stomach.
- A "force feedback" joystick. The joystick senses the force and inertia of any move made, and transmits feelings of weight, torque, and G-force that simulate what you would feel at the controls of a real plane. Lots of players swear by them, but just as many swear *at* them.
- A Windows 95 or above configured microphone for voice communications using MEGAvoice.

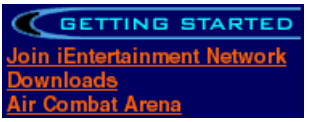
### *Macintosh System Requirement*

- PowerPC based Macintosh or compatible computer.
- Apple's MacOS version 7.5.3 or higher.
- 32 MB physical RAM.
- Monitor capable of displaying Thousands of Colors at 640 / 480.
- Mouse and keyboard.
- A flight control system consisting of a joystick, throttle, and rudder pedals is recommended.
- OpenTransport configuration of the Mac (network play only).
- An Internet connection and ISP account. (Only necessary for playing online).

# Installation

Before installing *WarBirds*, please close all other applications that may be running. After installation is complete, restart the computer so that all the new settings can take effect.

Download *WarBirds* from the iEN Web site.




1. Go to <http://www.iencentral.com/warbirds> and select the *Downloads* option in the Getting Started section.
2. Select *For Windows*, or *For the Mac*, as appropriate for your operating system.
3. Select either *x.x.x Min install* or *x.x.x Full Install*, where x.x.x is the version number. The *Min install* contains only essential files, but is smaller than the *Full Install*, and therefore takes less time to download. We advise that you download the full install.
4. The Save As... dialog box is displayed. Save the file onto your computer.
5. Locate the file, double-click on it, and then follow the instructions on the screen. All the components you need to play are installed, including DirectX.

If you only want to update *WarBirds*, select *x.x.x Update* in step 3.

Run *WarBirds* by selecting the *Start menu*, then *Programs*, then *iEntertainment Network*, then *WarBirds* and, finally, *WarBirds*.

If you have a *WarBirds* D3D compatible 3D-accelerator card, you can play with 3D acceleration by clicking on *WarBirds (Direct 3D)*.

The first time the game is launched, select a display driver from the list that is displayed. If you have a 2D or AGP card, select *Primary Display device*. If you have 3D on separate cards, select that 3D card.

**NOTE:** To run the game at a resolution of 1024 by 768, you need to also download the Hi Res Cockpit art from the WarBirds Web site, and then install it. Instead of steps 2 and 3 above, select *Cockpit Art Downloads* from the Downloads page, and then select *WarBirds 1024x768 Hi Res Art*. Continue with step 4.

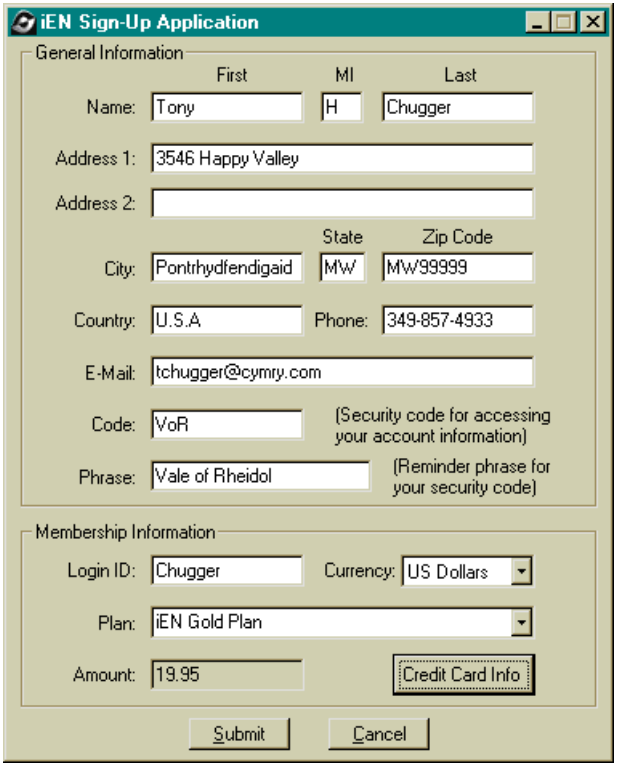
### *iLZ*

The iLZ kernel, which is the lobby where *WarBirds* players enter the online arenas to fly against others over the Internet, is installed along with the *WarBirds*. However, should you have problems running iLZ, download and install the latest version from <http://www.iencentral.com>. Select *Downloads* from the iEN Web site, and then select *Download* in the iLZ section. You should uninstall the old software before installing the new.

## Sign-Up for iEN

You need to have an account with iEN to fly online. Creating an account with iEN is easy. Hours are charged at the assigned monthly or hourly rates, listed on the iEN Web site at <http:\\www.iencentral.com>. Select *Join Now* and then *Price Plans* to view the current rates.

Select *Start*, then *Programs*, then *iEntertainment Network*, and then *iEN Sign-Up*. The Sign-Up Application screen is displayed.




Complete the form then click *Submit*. The form is electronically sent and approved within minutes, usually seconds.

The registration requests that you assign a *Login ID* and a *Password* to your account. Keep a note of these, as when you access a game online, you need to enter them.

### *Other Ways of Creating an Account*

**On the Web:** Go to <http://www.iencentral.com> by selecting *Web Page* from the Main menu, then select *Join Now,* and then select *Premium Account.*

**By Phone:** Open an account by calling iEN. Just dial (919) 461-0948.

### *Plans*

There are four possible plans to sign-up for when joining iEN, but only silver, gold and platinum give access to the *WarBirds* server.

**Free:** This plan lets you enjoy all the Web/Java based games (*Bingo, Blackjack, Video Slots, Video Poker* and *Roulette*), in addition to many titles such as *Empire Builder, Minion Hunter, Backgammon, Checkers, Chess,* IPX based games and many others.

**Silver:** $9.95 (£6.25) per month gives you access to all iEN's games, including unlimited access to the premium versions of the *Kingdom of Drakkar*, *WarBirds Air Combat* and *Dawn of Aces*. The hourly rate for *WarBirds* is $2.00 (£1.25), regardless of hours played. $9.95 (£6.25) is applied to your account as a credit toward hourly charged play of *WarBirds*.

**Gold:** $19.95 (£12.50) per month gives you access to all iEN games, including unlimited access to the premium versions of the *Kingdom of Drakkar*, *WarBirds Air Combat*, and ***Dawn of Aces***. The hourly rate for *WarBirds* is $1.75 (£1.10), regardless of hours played. $19.95 (£12.50) is applied to your account as a credit toward hourly charged play of *WarBirds*.

**Platinum:** $29.95 (£18.75) per month gives you access to all iEN games, including unlimited access to the premium versions of the *Kingdom of Drakkar, WarBirds Air Combat*, and *Dawn of Aces.* The hourly rate for *WarBirds* is $1.50 (£0.95), regardless of hours played. $29.95 (£18.75) is applied to your account as a credit toward hourly charged play of *WarBirds.*

**NOTE:** Prices are correct at the time of going to press but are subject to change.

### *AT&T WorldNet Service Customers*

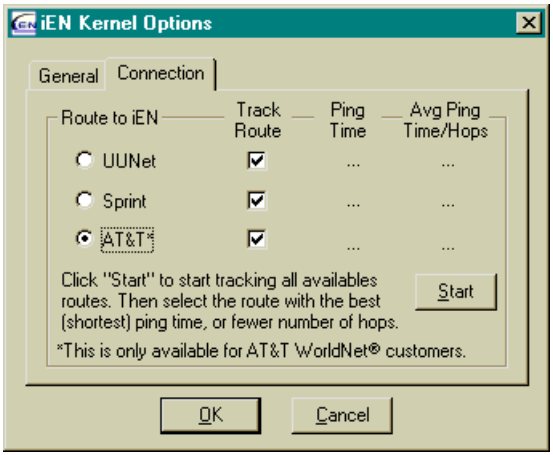
AT&T WorldNet Service customers receive a special deal when they sign-up for the Silver Premium Package.

**Silver Premium Package:** $4.95 per month. This gives access to all iEN's games, including unlimited access to the premium versions of the *Kingdom of Drakkar, WarBirds Air Combat*, and *Dawn of Aces*. The hourly rate for *WarBirds* is $2.00, regardless of hours played. $9.95 ($4.95 fee + $5.00 credit) is applied to your account as a credit toward hourly charged play of *WarBirds.*

## AT&T WorldNet Service

AT& T WorldNet Service customers have their own access to the servers. To establish a connection for *WarBirds*, you must ensure that the iEN Kernel has AT&T selected.

1. Initiate the iEN Kernel by selecting *Start*, *Programs*, *iEntertainment Network*, and then *iEN Log-In*.
2. Right-click on the iEN Kernel icon at the right of the Windows taskbar, next to the clock.
3. Select *Options* from the pop-up menu, and then the Connection tab. The Connection dialog box is displayed.
4. Make sure that AT&T is selected, and click *OK*.
5. Exit the Log In screen, and then start *WarBirds*.
6. Select *Setup* from the Main menu, and then select Network.
7. Check the AT&T option, and then click *Apply*.




**NOTE:** The AT&T connection option is available to all players, not just AT&T customers.

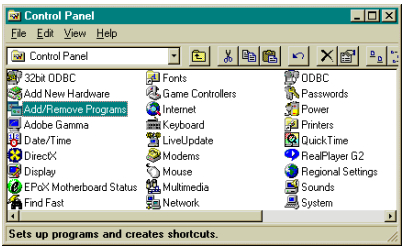
# Setting up a Windows Dialup Connection

To play multiplayer games via modem, your modem needs to be installed properly, and then configured to certain optional settings for optimum performance. If necessary, connect and configure your modem following the manufacturer's instructions or the Windows documentation.

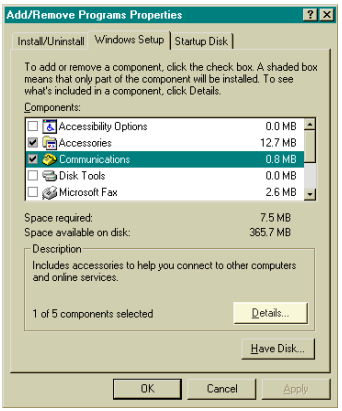
The following steps ensure that you are set up correctly, but check with your Internet Service Provider first, as these are generic settings and may not work with your ISP.

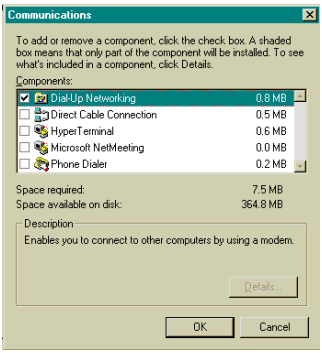
**1.** Verify that Dial-up Networking is installed.

**a.** Select the Windows *Start* menu, then select *Settings*, and then *Control Panel*, to open the Control Panel dialog box.




**b.** Double-click on *Add/remove Programs*. Select the *Windows Setup* tab, then highlight *Communications* and press *Details*.... The Communications dialog box is displayed.




**c.** Make sure that the *Dial-Up Networking* option has a check in the box to the left of it. If it has, go on to step 2.

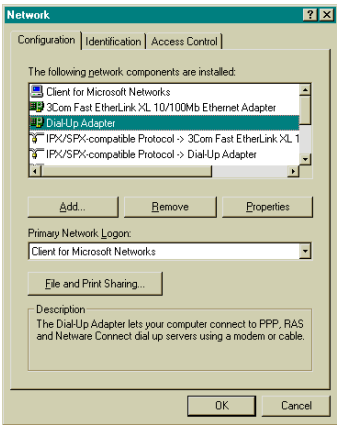
**d.** If it has not, check the box to the left of *Dial-Up Networking* and click *OK*.

**e.** Select *Have Disc*. You need the modem setup disc or discs for this step—select the appropriate drive, and then follow the onscreen instructions.

**f.** From the Add/Remove Programs dialog box, click *OK*. This takes you back to the Control Panel dialog box.

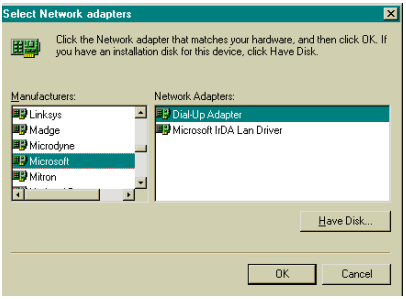
**2.** Verify that the Dial-Up Adapter and TCP/IP are installed.

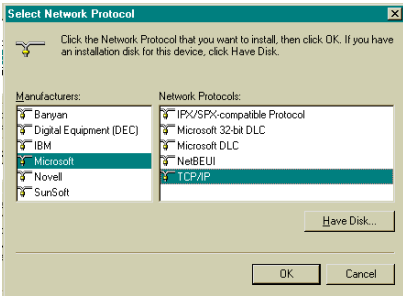
**a.** Go to the Control Panel dialog box and double-click *Network*. The Network dialog box is displayed.




**b.** Both *Dial-Up Adapter* and *TCP/IP* should be present under the Configuration tab. If they both are, then proceed to step 3.

**c.** **If Dial-Up Adapter is not present:** Select *Add...* and then double-click *Adapter*. The Select Network Adapters dialog box is displayed. Scroll down the Manufacturers list and select *Microsoft*. From the Network Adapters list, select *Dial-up Adapter* and click *OK*. Follow the onscreen instructions.




**d.** **If TCP/IP is not present:** Select *Add...* and double-click *Protocol*. The Select Network Protocol dialog box is displayed. Select *Microsoft* from the Manufacturers list. From the Network Protocols list select *TCP/IP*, and then click *OK*. Follow the onscreen instructions.

**e.** Now your Network dialog box should list both *Dial-Up Adapter* and *TCP/IP*.

**f.** Select *Dial-Up Adapter* and click *Properties...* Select *Bindings*, and make sure *TCP/IP* is checked. You are now ready to proceed to step 3.

**g.** When the System Settings Change dialog box appears, select *Yes* to restart the computer and allow the changes to occur.

**3.** Create the connection.

**a.** Double-click on the *My Computer* on the Windows desktop and then double-click *Dial-Up Networking.*

**b.** Double-click *Make New Connection*.

**c.** Type your Internet Service Provider's name in the *name for the computer you are dialing* field. Click *Configure*.

**d.** Under the General section, set the speed to the 19200 baud rate. Do *not* check *Only Connect at This Speed*. Your modem should have been automatically configured by Windows.

**e.** Under the Connection section, set the preferences to:

- Data Bits: 8
- Parity: none
- Stop bits: 1

**f.** Under the Options section, uncheck *Display Modem Status*.

**g.** Click *OK* and then click *Next>*. Enter the phone number that you use to dial in to your ISP. If you have call waiting add ***70,** (including the comma) to the beginning. This temporarily disables call waiting.

**h.** Click *Next>*, and then *Finish.* The new *Dial-Up* icon is created.

**i.** Right-click on this *Dial-Up* icon, and then select *Properties*. Click *Server Type*, and then set *Type of Dial-Up Server* to *PPP, Windows 95, Windows NT, 3.5, Internet*.

**j.** Under the Advanced Options section, only *Log on to Network* should be checked.

**k.** Under the Allowed Protocols section, only *TCP/IP* should be checked.

**l.** Contact your Internet Service Provider for the proper TCP/IP settings and DNS numbers.

**m.** Click *OK* to return to the Windows desktop, and you are now ready to connect.

**NOTE:** You should always contact your Internet Service Provider for settings specific to their service.

## Optimize your Connection

To get the best PPP connection to iEN, you need to change some of the default settings that Windows Dial-Up Networking selects. Windows sets up the Dial-Up connection's properties to optimize high speed file transfers and web browsing—applications which stress bandwidth and data transfer rate.

*WarBirds* communications does not require a huge bandwidth, but relies more upon quickness of response and lower data rates.

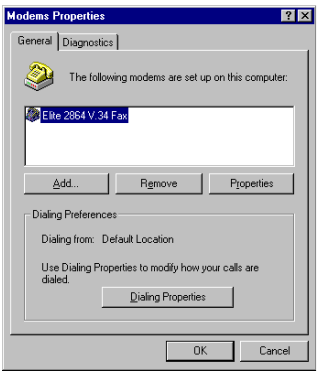
We recommend making a separate Dial-Up connection for *WarBirds* use, rather than adjusting the properties of your existing connection every time you want to play.

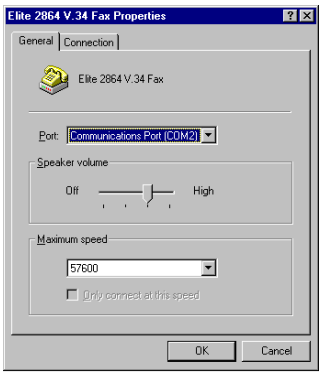
### *Create a New Dial-Up Connection*

1. Double-click on the *My Computer* on the Windows desktop and then double-click *Dial-Up Networking.*
2. Double-click *Make New Connection*.
3. Follow the prompts to create the connection, then once it's made, copy all of your TCP/IP settings to it from your existing Dial Up connection. For details see "Setting up a Windows Dialup Connection" on page 17.

### *Optimize the New Connection*

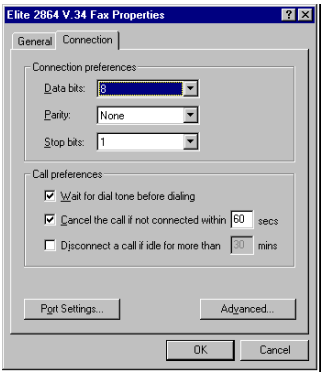
1. Open the Control Panel by clicking the Windows *Start* menu, then select *Settings*, and then *Control Panel.*
2. Double-click *Modems* to display the Modem Properties window.

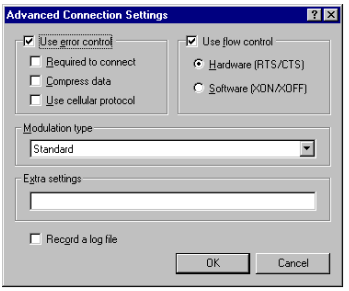



3. Select the modem whose settings you want to change.

4. Select *Properties*, the Properties window for the selected modem is displayed. Lower the maximum speed to 38400 or 19200—try it both ways as results can vary.
5. Next, select *Connection*, and then *Port Settings...* Make sure that *Use FIFO Buffers* is checked, then move both sliders one or two notches to the left from their default positions. Again, results may vary. iEN currently recommends setting both sliders to the one notch to the right from the left. Click *OK*.




6. Select *Advanced*.
7. Make sure that *Use flow control* is checked, and that *Hardware (RTS-CTS)* is selected.
8. Make sure that *Use error control* is *unchecked*. If the phone line quality is poor, your modem may not be able to establish a stable connection. If this happens, reinstate the *Use error control* check mark, but be sure to disable (remove the check mark for) *Compress Data*.
9. Select *OK* to return to the Properties window and apply the new settings, and then select *OK*.
10. Next, select *Server Types*. All three of the *Advanced Options* should be *unchecked*. TCP/IP should be the only *Allowed Protocol* checked. Select *TCP/IP settings*, and check that your DNS numbers are correct. (Check the existing settings or contact your Internet Service Provider.)
11. Make sure that *IP header compression* and *Default Gateway* are both checked. Click *OK* and then *OK* again. Your connection should be ready to go!

**NOTE:** If you still experience problems with these recommended settings, please contact iEN's tech support at (919) 461-0948, 9 am to midnight EST Monday through Friday, and noon to 3 am at the weekend, or via email to techsupport@iencentral.com

# Joystick Configuration

Configuring your joystick can be simple or complex. We assume that, at this point, all you want to do is jump into the fray as quickly as possible, so this is the quick procedure for joystick configuration.

### *Quick and Easy Joystick Configuration*

1. From the Windows desktop, click *Start.*
2. Highlight *Settings*, then click *Control Panel*.
3. Double-click on *Game Controllers*.
4. Your joystick is listed (assuming it is connected and the software that came with it has been loaded...), and highlighted.
5. Click *Properties.* If you have foot pedals that control the rudder, check the box next to that option; otherwise leave it blank.
6. Select *Test.* There is a box that represents the limits of your joystick's movements along the vertical and horizontal axes, and an indicator that symbolizes the stick itself. Move the stick around to test it.
7. If it is necessary to calibrate your joystick, select *Settings*. Click *Calibrate* and follow the onscreen instructions. When you are satisfied with the way your joystick moves the indicator around in the box, click *Finish*, to save the settings.

**NOTE:** Whenever you start a mission release all controls, and then press **F12** to center the joystick and ensure precise control.

### *Complex Joystick Configuration*

For most players, the Windows joystick configuration process is adequate. Your plane goes where you want it to, climbs or dives, or whatever. Some players, however, especially those who have played for a lot of hours, like to customize their joystick configuration to get the maximum out of it, especially if by doing so, they stand to gain a tactical advantage. Change the joystick settings using the Stick screen (see page 143), the Stick Force screen (see page 149), and the Joystick Mapper screen (see page 150).

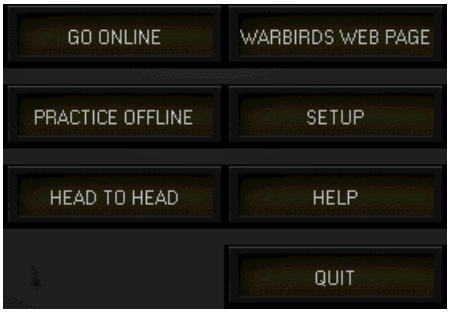
# Beginning a Game

Welcome to an amazing flight simulation set in WWII. You can fly one of the practice missions—there are up to three settings of difficulty in each one, so a newbie can practice shooting sitting ducks, and the experienced pilots can have a far greater challenge at Ace level—or experience the thrill of flying online against other players.

Learn to rely on your wits, flying ability, and gunnery skills. As it was during the WWII, there are no aids such as radar for spotting your foes, all that stands between you and destruction is a wing and a prayer.

To begin a game, from the Windows desktop select *Start*, then *Programs*, then *iEntertainment Network*, then *WarBirds*, and then choose to play the 2D version by selecting *WarBirds*, or the 3D version by selecting *WarBirds (Direct 3D)*.

Exit the rolling credits screen by pressing **Esc** or clicking. The Main menu is displayed.




*Main Menu*

# Going Online

To go online you need an Internet connection and an Internet service provider, such as AT&T Network Services (see page 15).

When you have shot down lots of drones (offline targets) and become proficient at taking off and landing, you are ready to engage in some real combat. If you have not already done so, create an account with iEN (see "Sign-Up for iEN" on page 14).

To fly online:

1. Start *WarBirds*.
2. Click *Go Online*. The iEN Log-In menu is displayed.
3. Enter your *Login ID* and *Password*, and then click *Log In*.

   If you have checked Save Password, you do not need to enter the password each time you login.
   If you have checked Auto-Login on this screen, login occurs automatically.


4. The iLZ lobby opens, with the Arenas for the game listed, as applicable.
5. View the current occupants of an Arena by selecting the plus button to the left of the Arena name.
6. To enter into the fray, double-click on the Arena name.
7. The first time you play online, you are asked to enter your six-character callsign—this is the label by which you are identified within the game. To change your callsign at a later date, contact iEN staff, see page 10.
8. From the Tower, select a plane, a country and an airfield see page 31.
9. Once you are airborne (and assuming there is not a dogfight going on directly over the air base), put the plane on autopilot (**X**) and press **F1** to consult the map. Locate the action and set a course for that general area. When you arrive there, scan the skies as a real pilot would, in order to spot both friend and foe.

**Remember:** Each plane you spot has a label identifying it and a range number telling you its distance away in hundreds of yards.

10. As soon as you join the fray, you start receiving messages from allied pilots, and a running commentary on the action from the Host. These messages are displayed in the Radio Bar. You might, for example, receive a warning that an enemy plane is "on your six" (take evasive action quickly), or a request for you to join an attack. To respond to radio messages, click the *Radio* button in the bottom right of the screen and type in your message (see "Radio Procedures and Protocols" on page 130).
11. From this point on, what happens is up to you. Fly as a loner, accept or decline missions, or attach yourself to the nearest bunch of friendlies and be prepared to help them out. In time, you start to recognize certain pilots' callsigns, and develop an online relationship with them. You may be invited to join a squadron. *WarBirds* is entirely open-ended—once you start flying, your actions are yours to determine.

**NOTE:** If you have loaded the GameHub software, it is possible that you will be taken to the GameHub center. If this happens, exit that application and when you reach step 2, right-click on the iEN Kernel icon on the Taskbar and select *Options*. Ensure that the iEN Launch Zone option is selected, then click *OK*, and then proceed to step 3.

**NOTE:** The iLZ and *WarBirds* software updates automatically if the version you are running is out of date. However, if you have problems running or downloading either iLZ or *WarBirds*, go to <http://www.iencentral.com> and download the software from the Download page.

### *A Note on Netiquette*

The vast majority of pilots you meet online are friendly and cooperative, and forgiving of your mistakes if you identify yourself as a newbie. Enemies tend to be chivalrous, even as they shoot you down in flames, but they may also taunt you (all in the spirit of good competitive fun). However, human nature being what it is you may sometimes encounter someone who gloats over your defeats, brags about their prowess, or broadcasts insulting remarks. If this pattern of ill-mannered behavior persists, the Host admonishes the offender, and the more civilized pilots shun them.

Finally, you do not have to worry about an enemy pilot joining and posing as a "friendly" and then suddenly turning on you. There is an ingenious safe-guard against such treachery—any attempts to fire on a friendly plane, are deflected back to the offender's aircraft, so they shoot themselves.

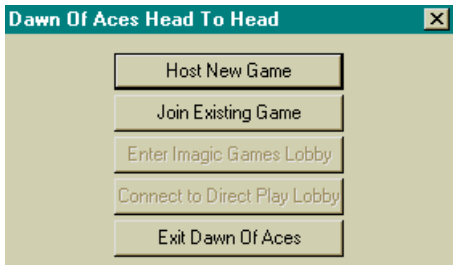
# Practice Offline

Practicing offline allows you to evaluate the various plane types in a variety of missions, with up to three levels of difficulty each. Choose whether to practice take off and landing, whether to become embroiled in a dogfight or to follow a formation and pick enemies off one by one.

Select *Practice Offline* from the Main menu to open the Mission screen in the Tower. See page 57 for full details of the offline options.

# Head to Head

Head to head play allows you to experience the thrill of pitting your wits against a human player without the crowds that you meet online. Head to head play also has the added bonus of costing nothing.




1. Select *Head to Head* from the Main menu, the Head to Head menu is displayed.
2. Choose whether to *Host New Game*, or if you have arranged to join another game, *Join Existing Game*.
3. The *Select Connection* dialog box is displayed. Select *TCP/IP* to play via an Internet connection. Select *Direct Play* to play using IPX, Modem, or a direct serial connection. Follow the onscreen instructions.
4. When all selections have been made, the socket opens and the Tower screen is displayed with the beacon lit, indicating a connection is open, if green or closed if red.
5. The host can change the game play setting by making selections from the H2H screen (see page 147). Both players should enter a callsign on this screen.

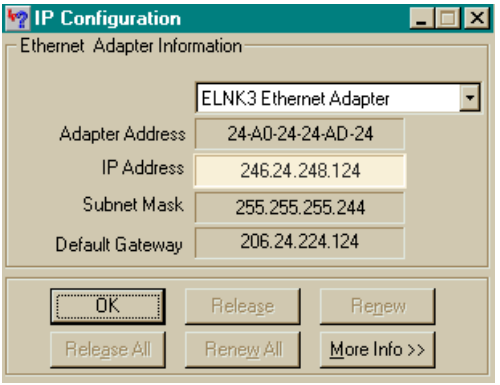
**NOTE:** Settings for easy flight and blackouts on the H2H screen override settings for the same parameters in the Flight screen.

## TCP/IP

For a TCP/IP session, the joining player needs to know the IP address of the hosting player.

**Determining Your IP Address:** The host needs to determine the IP address that their service provider has assigned.

1. From the Windows desktop, click on the Windows *Start* button and select *Run*.
2. Type **winipcfg** in the *Open:* field.
3. Press the **Enter** key, or click *OK*. The IP address is displayed as four numbers separated by periods.
4. Email the IP address to the other player (who should be waiting for this information).




**NOTE:** If there is no address displayed in the IP Configuration box, contact your Internet service provider to find out what it is.

## Direct Play

### *IPX*

Selecting IPX searches your LAN for a hosting machine to which it connects, or if there is no hosting machine, it creates a socket.

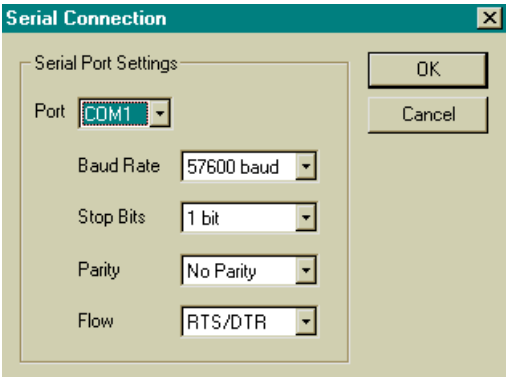
### *Modem*

Modem play requires the client to enter the phone number of the host to connect via modem. See also "Optimize your Connection" on page 20.

### *Direct Serial Link*

Serial connections require a serial cable connection between the host and guest machines.

When the Serial Connection screen is displayed, make the appropriate selections, and then select *OK*.




# Web Page

iEN has a *WarBirds* Web site. Select *WarBirds Web Page* from the Main menu, or select *Start*, *Programs*, *iEntertainment Network*, then *WarBirds*, and then *WarBirds Web Page.*

The Web site gives access to updates to the program, and links to additional information regarding the game.

Any special events or competitions are posted here and the Newsgroup provides an environment for sharing ideas, arranging times for playing and for bragging about your victories—if you think you can get away with it!

# Setup

Use the setup screens to set the game options by selecting *Setup*. For full details regarding the Setup screens see page 143. A few of the screens—Stick, Flight, Sound, H2H, and Colors—are also accessible from the Control Tower.

All the screens have *OK*, *Cancel* and *Apply* buttons at the bottom.

- *OK* saves any changes and returns the display to the Main menu.
- *Cancel* returns the settings to what they were when you opened the screen, or to when *Apply* was last selected.
- *Apply* saves the selections made.

# Help

Select *Help* from the Main menu to view the in-depth help file, which provides additional information regarding the game.

# Flight Preparation

## Control Tower

Whether you choose to fly online, offline or head to head, the first place you go is the Control Tower. This is the opening screen of any *WarBirds* session. Observe the buttons along the top of the screen. These access screens that allow you to set up a session, including which plane you are going to fly and for which country.


*Control Tower*

**Fly:** When you have chosen your flying preferences, it is time to hit the tarmac. Select *Fly* to jump into the cockpit and prepare for a magnificent fight (or to die like a dog—your choice).

**Select:** Click on *Select* to open the selection screens.

- Plane screen, see page 31.
- Field screen, see page 33.
- Squads screen (online only), see page 34.
- Gunner screen (online only), see page 35.
- Score screen (online only), see page 36.
- Game screen (offline only), see page 57.

**Setup:** Click on *Setup* to access the four setup screens that are available from the Control Tower.

- Stick screen, see page 101.
- Flight screen, see page 103.
- Sound screen, see page 104.
- H2H screen, see page 105.
- Colors screen, see page 106.

**Help:** Select to open the *WarBirds* help file.

**Quit:** Select to exit *WarBirds* and return to the Main menu.

### *Radio Bar Buttons*

**Radio:** Select *Radio* to open the Radio bar (see page 88).

**Voice:** Select to open the Voice Comms screen (see page 91).

**Exit Plane:** Select to return to the Control Tower. This is only possible when playing offline, or after you have landed when playing online.

**Key Help:** Open the Keyboard reference charts (see also page 97).

**Room:** Select to display a list of the pilots in the room with you when online. Certain communication channels allow only those in one particular room to hear each other. (See "Radio Procedures and Protocols" on page 88).

**Roster:** Select to display a list of all the pilots online, their callsigns, handles, and current locations.

**Page Trainer** (online only)**:** This button notifies an online trainer that you want assistance, and tunes Radio four to that trainer. Use **Alt** + **/** and then type in a message to speak to the trainer.

**NOTE:** You only need to press *Page Trainer* once. If you do not get an immediate response they are probably busy killing somebody. Wait a while to give them a chance to respond.

# Selection Screens

From the Control Tower, click *Select* to access the selection screens. This is where plane types and armaments can be studied, the takeoff field chosen, scores checked and groups joined together to form squadrons to go enemy hunting en masse, or even organize a crusade to capture enemy airfields.

When playing offline, there are several practice missions available (see "Missions" on page 57), and only three screens—*Plane*, *Field*, and *Game*—are available.

## Plane Screen

The Plane screen is where you select the plane and loadout for your next flight. From the Control Tower, click *Select* and then select *Plane*, if necessary. The Plane screen is displayed.


*Plane Screen*

**Fighter or Bomber:** On the left of the screen are two drop-down menus, below the animation. Select *Fighters* to view the Fighter list, *Bombers* to view the Bombers. Online, planes are available on a rolling stock list which lasts three weeks. At the start, only planes available early on in the war are available, with additions made as time passes. If a plane is not available its name is dimmed.

**Convergence:** The default convergence is 300 yards. This means that bullets from your guns and cannon converge at a range of 300 yards. Even though the actual range of a typical aircraft machine gun is 1,000 yards, it is extremely unlikely that you will hit a small, elusive target that far away. Somewhere between 150 and 400 yards is a more realistic range to engage an enemy, although some players prefer longer ranges, especially if they have trouble getting close to their targets.

**Fuel:** Enter the amount of fuel to be loaded in the space provided. It is not necessary to have a full tank of fuel. The normal load is between 35 and 40 percent as an aircraft handles better when lighter.

**Ordnance-Loadout:** The drop-down menu lists the bombs and rockets you may carry on the selected plane. An aircraft flies faster and is more maneuverable without the drag of bombs under its wings. The selected loadout is whatever you last selected.

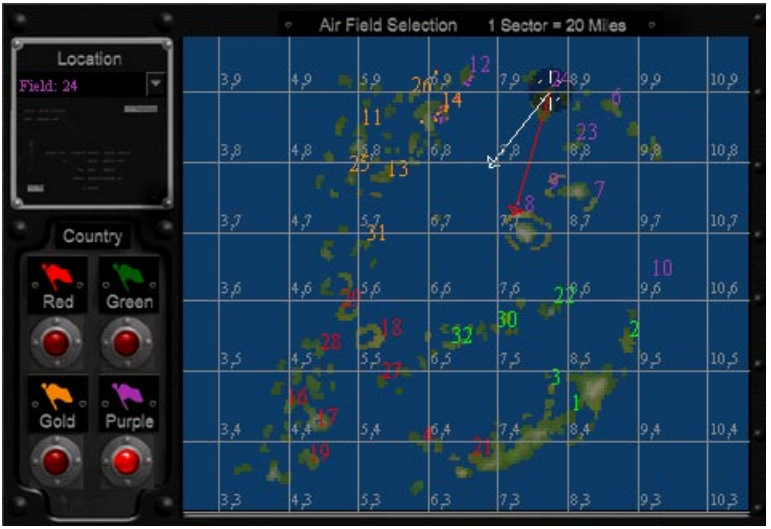
**Plane Description:** When a plane is selected in the Bomber or Fighter list, a brief summary is displayed. To read additional details about the plane, select *More Info*.

**NOTE:** Once a plane and field have been selected you are ready to fly. Select *Fly* from the Control Tower to go to the runway.

## Field Screen

The Field screen is where you select the country and starting airfield for your flight.

From the Control Tower, click *Select*, and then select *Field*. The Field screen is displayed, showing the mythical continent over which *WarBirds* campaigns are fought.




*Field Screen*

**Location:** In the Location scrolling list are all of the airfields you can start from, Briefing rooms, General rooms, and the HQ. Highlight one of the fields listed to takeoff from that airfield, or a room to meet with other pilots.

**Country:** There are four countries to fight for, each represented by a different color. Players often develop loyalty to a certain country after playing for a while. Select the color you want to be.

If you forget which country you are while in flight, look at the gun sight—the cross hairs are color of your country.

**Map:** The map has a "You Are Here" indicator, which moves as you select different airfields. Click on the map to select the airfield nearest to that point. There are two arrows superimposed over the terrain. The red arrow points toward the nearest group of enemy planes. The white arrow points toward the closest formation of friendlies.

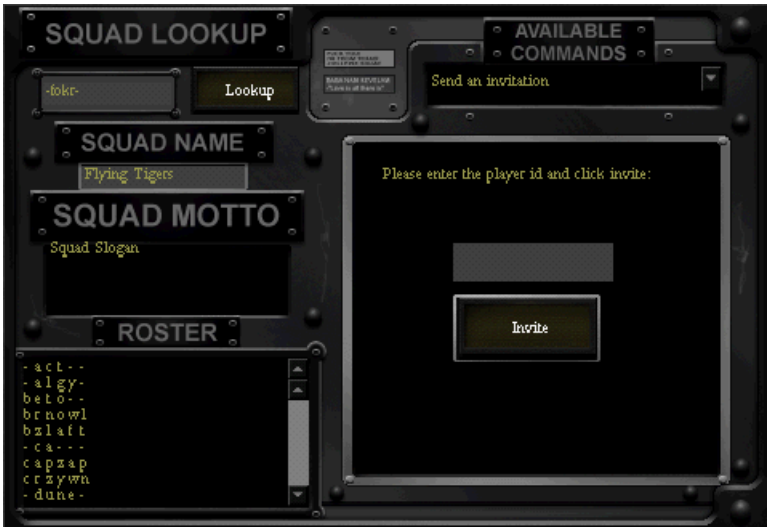
Planes already in flight are displayed as colored dots.

**NOTE:** Once a plane and field have been selected you are ready to fly. Select *Fly* from the Control Tower to go to the runway.

## Squads Screen

The Squads screen is where players form squadrons. Any player can form a Squadron, as long as at least one other player agrees to join them.

From the Control Tower, click *Select*, and then select *Squads*. The Squads screen is displayed.




*Squads Screen*

### *Forming a Squad*

1. Enter a name in the Squad Name field.
2. Enter a motto in the Squad Motto field.
3. Select *Send an Invitation* in the Available Commands list.
4. Type the handle of the player you want to invite in the Player ID field and then click *Invite*.
5. Repeat for each player to be invited.

When the invited player opens their Squads screen, they see the Squad Leader's handle displayed in the Outstanding Invitations list.

### *Accepting an Invitation*

To view any invitations you have been sent, select Outstanding Invitations in the Available Commands list. Highlight an invitation, and then select *Accept*. You are now part of that squad.

### *Roster*

To view the roster of a squad, enter the ID of the Squad Leader in the Squad Lookup field, and then select Lookup. Any players in the squad are listed, and the motto is displayed in the Squad Motto field.

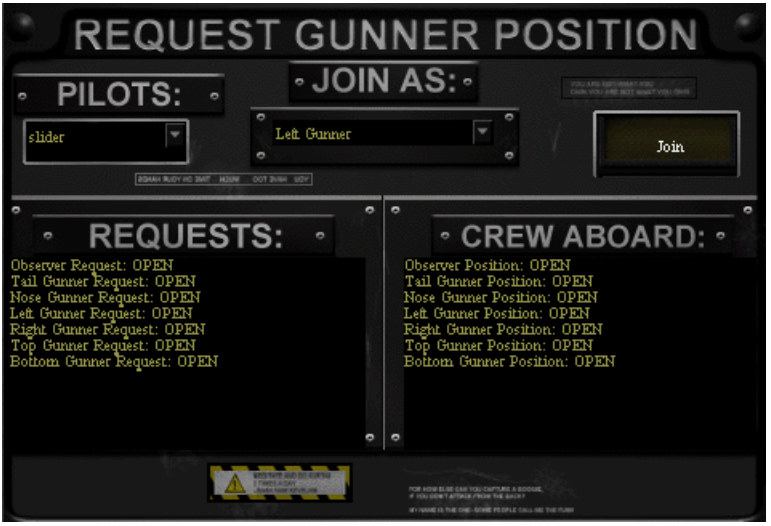
The host command <.squad xxxxxx> can also be used to access a squad's roster, where xxxxxx is the ID of the Squad Leader.

## Gunner Screen

The Gunner screen is where players can join as a gunner or observer, or accept gunner or observer requests from other players.

From the Control Tower, click *Select*, and then select *Gunner*. The Gunner screen is displayed.

The pilot and all gunners and observers must be at the same airfield to join and fly together. Any plane can have another player joining as an observer, but only the bombers with gunner positions can have players join as gunners.




*Gunner Screen*

**Pilots:** Select one of the players from the drop-down menu. Only those in the same room as you are listed, and are therefore eligible to join you as a gunner or observer.

**Join As:** Select one of the gunner positions or the observer from the drop-down menu. This is the position you are requesting to occupy.

**Join:** If you are requested to join a plane, highlight the position, and then select *Join*.

**Requests:** A list of the positions on the plane and who has requested to join.

**Crew Aboard:** A list of all the positions and the players occupying them, if applicable. If a player accepts your invitation, or if you accept a request, they are listed under *Crew Aboard*.

## Scores Screen

The Scores screen lets you view any player's score, ranking and any medals that have been awarded. Tours last three weeks and at the end of each tour, the scores are cleared.

From the Control Tower, click *Select*, and then select *Scores*. The Scores screen is displayed.


*Scores Screen*

There are several Commands available in the Choose Command drop-down list.

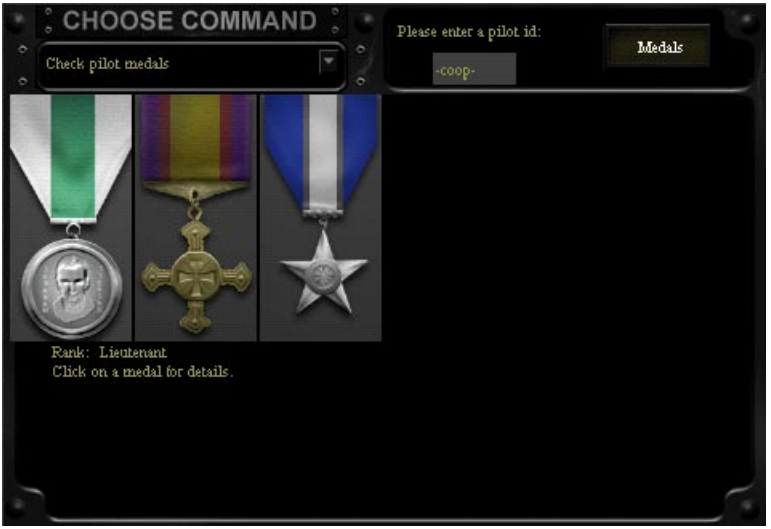
**Check Pilot Scores:** You can view your own, or any other pilot's score, as long as you know their ID (callsign). Enter an ID in the Pilot ID field, and then select *Scores*.

A detailed list of the pilot's statistics is displayed.

**Check Squad Scores:** View the score of a squad by entering the Squadron Leader's ID, and then selecting *Scores*.

Use the Squadron Ranking screens to view the names of the top ten squads.

**Check Pilot Medals:** View a list of the medals you have been awarded. To view another pilot's medals, enter their ID and then select *Medals*. Clicking on a medal displays details regarding the dates that the medal has been awarded—medals can be awarded multiple times.




*Medal Screen*

**Show Fighter Pilot Rankings:** View the top one hundred fighter pilots and their statistics.

**Show Bomber Pilot Rankings:** View the top one hundred bomber pilots and their statistics.

**Fighter Squadron Rankings:** View the top one hundred fighter squadrons and their statistics.

**Bomber Squadron Rankings:** View the top one hundred bomber squadrons and their statistics.

**Show Fighter Medal Milestones:** Each medal is awarded when a pilot has achieved particular goals.

**Show Bomber Medal Milestones:** Each bomber medal is awarded when a pilot has achieved particular goals.

**Set Your Handle:** The handle of a pilot is initially their 6 digit callsign followed by "set your handle", but this can be changed to a name up to 20 characters in length. Select *Set Your Handle*, then enter the new handle and select *Enter.*

When the roster list is accessed, it lists all the pilots currently online, their callsigns, handles, and locations.

### *Scoring*

The ranks and medals in *WarBirds* are generic and are not based on a specific country.

Squadron scoring includes both bomber and fighter scoring. Bails and ditches occurring in enemy territory result in capture.

Whenever you fly a plane that is listed as a bomber, it counts as a bomber sortie. Flying a fighter always counts as a fighter sortie, regardless of the weapons loadout. Any damage done to ground targets goes towards your bomber score regardless of whether you are flying a fighter or bomber. If you take a heavy fighter and drop bombs on an enemy installation and then shoot down several planes, the bombs count towards your bomber scores, but the planes count towards your fighter score. The sortie itself is recorded as a fighter sortie.

**Fighter Scoring:** Points are awarded based on kills, assists, and damage done to enemy planes. Those points are modified according to how your sortie ends. You are captured if you bail or ditch over enemy territory, and that influences the scoring system. If you land at the end of your sortie, you receive full credit. A successful ditch results in two-thirds credit. A successful bail results in half credit. Being captured results in one-third credit, and being killed nets you a quarter credit. Your point total for a sortie is then modified by your kill streak. The longer a kill streak becomes, the more points you are awarded. Streaks end when you are killed or captured. Bails and ditches over friendly territory do not end streaks.

**Bomber Scoring:** In *WarBirds* each object has its own point value for being destroyed. Attacking a worthless target is pointless. Other factors in bomber scoring are kills, assists, and base captures. The sortie end multipliers are identical to the fighter system, and bomber pilots also receive bonuses for a high streak of successful bombing missions.

### *Ranks and Medals*

*WarBirds* awards ranks and medals to pilots, based on individual scoring and milestones. Your rank, medals, and the milestones can be viewed from the Score screen.

Medals are awarded when the appropriate milestone is reached. Ranks are awarded based on your relative standing within the overall player base, and are awarded at the end of a tour only.

Only one rank can be gained each tour. Once you have gained a rank, you do not lose it, even if your standing falls below the level required to gain it.

## *Ranks*

| Title | Colonel | Lieutenant Colonel | Major | Captain | Lieutenant | Second Lieutenant | Warrant Officer | Flight Sergeant |
|---|---|---|---|---|---|---|---|---|
| Ranking | 1 | 5 | 20 | 50 | 100 | 500 | 2500 | Entry Level |

## *Fighter Medals*

| **Medal Name** | **Kill Streak** | **Kills per Tour** | **Career Kills** | **Kills per Sortie** |
|---|---|---|---|---|
| *Grand Star* | 150 | 1000 | 10000 | N/A |
| *Grand Cross* | 90 | 750 | 7500 | 12 |
| *Order of the Falcon* | 50 | 500 | 5000 | 10 |
| *Silver Star* | 20 | 250 | 2500 | 7 |
| *Air Combat Cross* | 10 | 100 | 1000 | 5 |
| *Air Combat Medal* | 5 | 5 | 100 | 3 |

## *Bomber Medals*

| **Medal Name** | **Bomber Streak** | **Objects Killed per Tour** | **Career Objects Killed** | **Career Fields Captured** |
|---|---|---|---|---|
| *Grand Star* | 90 | 2000 | 10000 | 1000 |
| *Grand Cross* | 60 | 1500 | 7500 | 500 |
| *Order of the Falcon* | 40 | 1000 | 5000 | 100 |
| *Silver Star* | 20 | 500 | 2500 | 50 |
| *Air Combat Cross* | 10 | 250 | 1000 | 10 |
| *Air Combat Medal* | 5 | 50 | 100 | 1 |

# Flying & Fighting

You may be in for a surprise when you first jump into the cockpit of an aircraft in *WarBirds*. All of the forces acting on the aircraft are modeled to provide an experience that is much closer to flying an actual aircraft than you might expect. While most pilots of full-scale aircraft feel right at home in the virtual skies of *WarBirds*, the rest of us can expect to go through a brief period of acclimation. While a thorough explanation of the physics of flight is beyond the scope of this manual, a few easily understood concepts should make the transition from ordinary flight sims to *WarBirds* as painless as possible.

## Takeoff and Landing

Once you have made all the game selections you want (see "Beginning a Game" on page 23) and selected an aircraft, a country and an airfield (see "Flight Preparation" on page 29), it is time to hit the tarmac.

### Taking Off

1. From the Control Tower click *Fly*. If you are practicing offline, select the Open Arena mission.
2. You are seated in the cockpit at the end of the runway. Release all controls and press **F12** to center the joystick.
3. Ensure that the throttle setting is on zero, and then press **E** to start your engine.
4. Use = or a throttle control to rev up the engine to about 25 percent of its full power—this gives enough power to taxi, but not so much that you might lose control.
5. If the aircraft starts yawing (veering to one side or the other), press **A** to steer left, or **D** to steer right. If you have rudder pedals or a 3D joystick you can use them instead.

Use the rudders sparingly, otherwise you are likely to end up spinning helplessly on the tarmac. A gentle nudge is sufficient. Yawing is caused by engine torque, which pulls most planes to the left.

6. When you are lined up on the runway and ready to go, increase engine power to full by pressing **=** or **0,** or by moving the throttle control as high as it can go.
7. The aircraft starts rolling down the tarmac, picking up speed. When the airspeed indicator shows 100 mph or more, ease back on the joystick to lift off.
8. Once airborne, press **G** to raise the landing gear. If you forget to do this the aircraft flies with the grace and maneuverability of a barn. You can also damage the gear if you fly too hard with it down.
9. Move the joystick as gently as possible until you have gained some airspeed and altitude, otherwise your flight is likely to be a short one.
10. Center the rudder by pressing **S**, and when heading in the right direction and at the preferred altitude press **X** to engage the autotrim, which keeps the plane flying straight and level (see page 72).

## Landing

When you have flown around for a while and are out of bullets or low on fuel, it is time to head for home. Landing is considered the most difficult aspect of flying, and rightly so. The key to a good landing is setting up a good approach. If you are offline and do not want to practice a realistic landing press *Exit Plane.*

1. Find your airfield on the Map (**F1**) and line up with the runway while you are still three to five miles away, at an altitude of between 1000 and 1500 feet.
2. Throttle back until your airspeed is about 120 mph. More than that is too fast for a safe landing, any less and you may fall out of the sky before reaching the runway.
3. Press **G** to lower the landing gear.
4. Press **Shift** + **Q** to lower your flaps fully.
5. Approach the runway in a shallow descent, using the throttle (**-** and **=**) and joystick to control your speed and rate of descent. Ideally, you should pass over the beginning of the runway at an altitude of less than 75 feet, and at a speed of just under 100 mph.
6. Just before touchdown, gently pull back on the joystick, raising the nose just enough for you to see the horizon below your gun sight.

7. When the tires hit the tarmac, press the **Spacebar** to engage the wheel brakes. The brakes may cause the nose to fall forward. If that happens, release the brakes momentarily or pull back gently on the joystick.
8. Once the plane has stopped, click *Exit Plane* to return to the Control Tower.

Do not be discouraged if you find landing difficult at first, it does become easier with practice...promise!

# Cockpit Controls

There are several aircraft available in *WarBirds*, each of which has a unique cockpit layout. The same instruments are present in each cockpit, with a few exceptions. The example shown below is the P-38L. When trying out a new aircraft for the first time, try performing various maneuvers and observe which instrument changes. For example, you can engage the flaps by pressing **Q** before you even fire up the engines. Finding the gear indicator by pressing **G** while still on the ground is not to be recommended, however, as it generally damages the aircraft when it collapses to the runway.

The units used on the altimeter depend on the aircraft. A craft of German manufacture has metric units whereas one of English manufacture has imperial units. However, the units can be set to English or metric in the Flight screen (see page 103). When this is changed the cockpit art itself does not change, so the display still states “meters” even when the dial is indicating the height in feet.


*P-38L Cockpit*
*with customized Gun Sights*

### *Gun Sight*

The gun sight is a standard fixed gun sight, without any computing abilities. The center of the sight represents the theoretical line that your gun rounds pass through when your aircraft is under a 1 G load at the convergence range you have selected. The color of the cross hairs indicates your country allegiance.

The HUD (green dashes) indicates the ground horizontal.


### *Fuel Gauge*

The fuel gauge indicates the percentage of fuel remaining, with F being 100 percent and E being 0 percent. When fuel reaches a critically low level, a red low fuel light illuminates.

The amount of fuel you have at the start of a flight is selected in the Plane screen, see page 31.

### *Flaps & Gear Indicator*

**Flaps:** The indicator for the flaps varies considerably between aircraft. It can be a lever, a dial or a ladder gauge.

**Gear Indicator:** The gear indicator indicates when the gear is down. Flying with the gear down causes a lot of drag and is detrimental to the maneuverability of the aircraft.


### *Accelerometer*

The accelerometer measures the G-Force on the plane. In normal straight and level flight 1 G is the normal force of gravity. When doing a 5 G turn the plane and pilot experience 5 times the force of gravity—a 200 lb man would seem to weigh 1000 lbs.

Positive Gs indicate a pull towards the bottom of the plane, negative to the top.

**NOTE:** Most WWII aircraft were not fitted the G-meters. They are included here to compensate for the lack of physical feedback.


### *Vertical Speed Indicator*

The vertical speed indicator displays the current rate of climb or descent. The units are either in thousands of feet per minute or in kilometers per minute, depending on the aircraft.


### *Altimeter*

The altimeter displays the altitude above mean sea level (not the height above the ground). The small hand indicates thousands of units, the long hand hundreds of units, the red mark tens of thousands of units.

### *Artificial Horizon & Slip Indicator*

**Artificial Horizon:** The artificial horizon is an instrument used to determine aircraft attitude, particularly in low visibility conditions. The moving line indicates the horizon, and the fixed line represents the aircraft.

The tick marks along the top indicate the bank angle. Each represents 30 degrees of bank.

**Slip Indicator:** The slot and ball at the bottom is the slip indicator. This shows whether the craft is in coordinated flight or not. When an aircraft is coordinated, the nose is aligned with the aircraft flight path. When the ball is outside the turn (on the opposite side from the direction of the turn), the aircraft is said to be in a skid. When the ball is inside the turn, the plane is said to be in a slip. In either case, the plane may be brought into coordinated flight by "stepping on the ball," that is applying rudder in the direction of the ball until it is centered again. In general, an aircraft turns most efficiently when it is in coordinated flight, but there are tactical reasons why a pilot may want to fly uncoordinated.


### *Compass*

This is a tape style of compass. The cardinal directions are indicated with the appropriate letter. The large tick marks indicate tens of degrees and the small ones five degrees. Every 30 degrees is indicated by a number (3 is 30 degrees, 6 is 60 degrees, and so on).

### *Indicator Lights*

There are three indicators present on every aircraft.


**Auto:** When the autopilot is engaged this light is lit (see page 72).

**Brake:** The wheel brakes are engaged to slow down the aircraft after landing, and are activated by holding down the **Spacebar**. When lit the brakes are engaged.


**Beacon:** The beacon indicates that you are still connected to the iEN server, or to the network when playing head to head.


**Bomb Bay Light:** Aircraft with a bomb bay usually have a light in the cockpit to indicate the position of the doors. Green is doors open, red or unlit is doors closed.


### *Ordnance & Gun Counter*

The ordnance counter indicates the ammunition for the secondary weapons on the aircraft. Press **Backspace** to change the selected weapon. For machine guns and cannons smaller than 37 mm, the counter indicates the percentage of rounds remaining.

The gun counter displays the number of bursts available for the primary guns only. When an aircraft has automatic gunners (“Otto”), each position displays its own gun counter.


### *Air Speed Indicator*

The airspeed indicator displays the aircraft's indicated airspeed. The indicated airspeed is not the same as true airspeed, as the indicated airspeed for the same true airspeed reduces with altitude.


### *Tachometer*

The tachometer reflects the power setting of the engines. Idle indicates the engine is at flight idle, and 100 indicates 100 percent of power is selected. Most aircraft can exceed 100 percent power by using War Emergency Power (WEP). The effectiveness of WEP varies from aircraft to aircraft, and between altitudes. Each has a limited supply of WEP and use of WEP tends to overheat the engine. The engine cools more efficiently when overheated if the throttle is set below the yellow line.


### *Engine Oil & Temperature Gauges*

The oil and temperature gauges indicate how healthy your aircraft's engines are feeling.

**Oil Pressure:** The oil lubricates and cools the engine. If the engine is damaged by enemy fire, or if you fly in a negative G state for too long, the temperature rises until the engine seizes and stops. If the oil pressure drops due to negative Gs, return to a positive G to restore pressure.

**Temperature:** When overheated, a red warning lamp illuminates to warn of the dangerous condition. The engine should cool at its most efficient rate when the throttle is set below the yellow line.

# Finding & Attacking Targets

The Map is used to find the nearest action in the air. Each sector on the Map is 20 miles across. Use the zoom keys, **[** and **]** to zoom in and out.


1. In combat sessions, you often need to refer to the map to locate the action. Put the aircraft on autopilot by pressing **X** on the keyboard. The aircraft flies straight and level until either **X** is pressed again or you take over the controls once more. Now press **F1** to access the map. Engaging the autopilot before looking at the map ensures that no sudden changes in direction, or nosedives into the ground occur.
2. There are two arrows superimposed over the terrain. The red arrow points toward the nearest group of enemy planes. The white arrow points toward the closest formation of friendlies. These arrows do not point out the location of individual planes—once you follow them to the general area of combat, you have to scan the skies like a real pilot would to spot both friend and foe.
3. When a target comes into view, it is labeled with either a callsign or the plane type. The number beneath the label tells you how far away the target is in hundreds of yards. If your guns are set to converge at 500 yards, that is the range you want to be close to. Remember to lead the target, so your bullets reach the place where the target will be. If you fire straight at the target (except at very close range), your tracers pass harmlessly behind it.

**4.** When the target is in your sights at 500 yards or less, lead it just a bit...now hit the trigger button on your joystick and watch your tracers converge. The target flashes. A hit! Good, isn't it?

### Autopilot Settings

**Autotrim mode:** Press **X** to engage the autopilot. The plane now flies straight and level until **X** is pressed again or until you take over the controls once more.

**Speed mode:** Press **Shift** + **X** to put the autopilot in speed mode. The autopilot attempts to maintain the speed of the plane, by climbing or descending, as necessary.

**Angle mode:** Press **Ctrl** + **X** to instruct the autopilot to maintain the climb or descent angle of the plane at the moment it was engaged. If necessary, the plane descends to gain the speed to maintain an angle of ascent.

Be careful if your plane is descending when you engage Angle mode, or you could crash.

## Views

Since enemy planes have a nasty way of diving on you out of the sun, sneaking up on your six (directly behind you), and seemingly popping up out of nowhere, it is a good idea to look in all directions at regular intervals. To do this, use the View keys.

Press **4** and **6** on the numeric keypad to look left and right. Press **2** to look behind you. Press **5** to look straight up. Pressing different combinations of keys, and using **7**, **9**, **1** and **3** gives the 45 degree views. For example, if you press **5** and **1**, the view is like taking a quick glance up over your left shoulder. Try out different key combinations to become familiar with looking around. Ideally, it needs to be intuitive as this can mean the difference between victory and defeat.

**NOTE:** If you have a joystick with hat switches you can use them to look around.

Use the **F2** to toggle the icons labeling the other planes:

- *Arena Default*—Shows the distance in hundreds of yards, and the pilot's callsign if friendly, the plane type if an enemy.
- *Plane Type*—Shows the distance and plane type.
- *Range Only*—Shows only the distance.
- *Off*—Shows no icon at all.

# Structural Limits

There are two effects on the structural limits of the airframes, overspeed and structural failure.

## Overspeeding

When the plane dives too steeply and travels too quickly, it loses parts when the heavy vibration or wind force tears them off. At these speeds, you may be experiencing blackouts, compression, or shuddering. In fact, those effects become a problem before you reach overspeed.

To avoid overspeeding the plane, when you begin to feel the plane compressing (not responding to the controls due to the force of the wind limiting movement of the control surfaces), or shuddering violently, ease back your throttle and gently pull out of the dive. Some planes are able to dive faster than others are. A little practice gives you a good idea where the limits are.

## Overstressing

Structural failure occurs when pulling too many Gs overstresses the aircraft. It is heavily dependent on fuel load, ammo load, the altitude, and the plane type. There is a warning sound, like metal straining and bending, which lets you know the airframe is being overstressed. When you hear this, ease up on your controls and throttle to avoid losing important parts of your plane, such as the wings.

In the large bombers, overstressing limits are quickly reached, as the big birds are not built to withstand many Gs. In most of the fighters, you have to reach blackout, shuddering, and compression effects long before you start ripping parts off the plane.

A bit of practice lets you know how hard you can push the aircraft.

Each plane also has a gauge indicating how many Gs you are pulling (or pushing). Blackouts occur at +6 to +7 Gs, redouts occur at -3 to -4 Gs. The planes are generally tougher than you are in this regard. If you can still see, chances are your airframe is not in danger.

# Spin Recovery

To put it simply, spins occur when one wing stalls and pulls the plane into a spin towards the stalled wing. Normally, this is because you pulled or pushed the nose too hard at slow speeds. When it happens, you feel the plane begin to "mush." If you continue pulling or pushing too hard, the plane rolls and the nose drops. If you ease up or let go of the controls, the plane recovers very quickly.

However, if you continue pulling or pushing too hard, a fully fledged spin can develop. You see the airspeed drop and stabilize below stall speed, and the plane rotates quickly along the yaw axis. Once you reach this point, you are unable to escape until the speed is above stall speed. Follow these steps until you see the airspeed begin to climb again, and the rotation slow down:

1. Full rudder in the direction opposite the spin. (This is confusing if in an inverted spin, but try to do it correctly.)
2. Push (or pull, if inverted) the nose towards the ground to build speed.
3. If at full throttle, ease off. If the engine is at idle, ease power on. (Some planes never recover at idle.) If you have lost the engine, skip to step 6.
4. Push (or pull) the stick back and forth to develop a rhythmic swing of the nose up and down until it is pointed towards the ground, and you can keep it that way.
5. Anything else you can think of.
6. Bail out.
7. Try not to reach step 8 before step 6.
8. When you are too low to bail out successfully, adopt the last ditch panic procedure of entirely futile yanking of controls and crying.
9. Crash.

As a general rule, spins are a lot more dangerous the lower you are, since there is not as much time to recover. With this in mind, it is a good idea to fly a little less aggressively at very low altitudes.

Also, be careful not to go into a secondary spin. This occurs when the plane recovers from the first spin then enters a second one in the other direction because of the extreme position of the controls used to recover from the first. To avoid this, when you feel the plane reaching the point of recovery, ease up and be ready to neutralize the controls.

You often find that when the plane recovers, it is inverted. Do not panic, gently fly it out and roll to right it. Yanking the controls just after recovering from a spin is a certain recipe for a secondary spin.

**NOTE:** Being inverted or spinning for too long starves the engine of oil and causes it to seize.

# Hitting the Silk (Bailing)

Some pilots need a way to escape certain death at enemy hands. For those folks, there is always the parachute.

Should you want to try it out—just for testing purposes, of course—here is how. Press the **Enter** key three times in a row when in flight. The canopy of the cockpit opens and you are in free fall.

To open the chute, press **Enter** three times in a row again. Be forewarned—the chute falls very slowly and there is no way out of it until you land, so opening at high altitudes is not recommended unless you have a lot of time on your hands and love the view.

The chute opens automatically at 500 feet.

# Engine Management

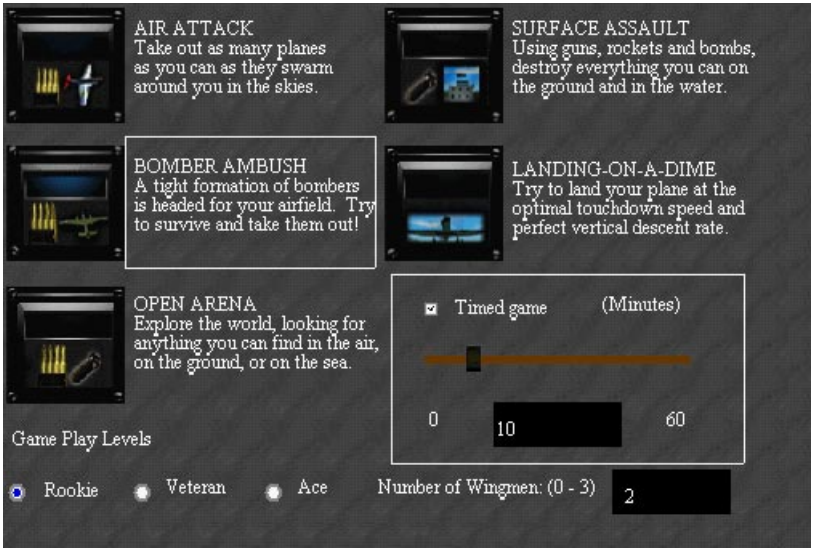
In *WarBirds*, oil pressure and coolant temperature have an effect on the engine. Each engine has a dial in the cockpit, with oil pressure on the left and the coolant temperature on the right. Your engine's coolant temperature rises if the oil pressure falls into the red area of the gauge for too long. Once the coolant temperature needle goes into the red on the temperature gauge, the engine may seize. Some planes take longer than others to reach this state.

Your engine's temperature can also become too high if you use the WEP (War Emergency Power, **F10**) for too long. If this happens, the WEP shuts off and cannot be used until the engine has sufficiently cooled.

There are two things that can make the oil pressure drop. One is damage to the oil system caused by enemy fire. The other is flying inverted for too long. If the oil system is hit, head for the nearest airfield or prepare to ditch. If you have to fly inverted keep an eye on the oil pressure gauge.

# Practice Offline

When you select *Practice Offline* from the Startup menu, you are taken to the Control Tower with Game screen selected.




*Game Screen*

There are five simple missions available for practice: *Air Attack*, *Bomber Ambush*, *Open Arena*, *Surface Assault*, and *Landing-on-a-Dime.* There is also an option for flying the missions with a time limit.

There are up to three levels of difficulty for each mission. Generally, when you select a higher level of difficulty, your plane becomes easier to shoot down, the enemy's becomes harder to shoot down and the enemy becomes more cunning. Up to three wing men can be chosen to accompany you.

To fly a mission, select the one you want, then choose your aircraft from the Plane screen, and choose the airfield from the Field screen, then click *Fly* from the Control Tower (see "Flying & Fighting" on page 41).

While in flight, your score is displayed in the top right corner of the screen which lets you know how you are doing. In some planes the cockpit art obscures the score display. If you cannot read the score, change the view so that the cockpit frame does not block the display.

# Timed Games

There is an option of setting a timer for your missions. Point and click in the white box next to *Timed game*, and pick a time length between 1 and 60 minutes. You can use the slider bar, or type the time in the box.

Mission countdown time is shown under the score counter in the top right corner of the screen, in minutes:seconds. When only ten seconds are left, a message is displayed to warn you.

Becoming good at missions within a time limit helps you play successfully online. Online, if you find a single enemy plane ripe for attack, you need to shoot them down quickly, because you do not know how soon their friends may show up to help them out.

# Options for Offline Play

From the Control Tower choose *Setup*, and click *Flight*. Look at the Offline Play Only section. Point and click in any of the white boxes beside an option to turn it on (check), or off (empty).

If the selected mission predefines a setting, it cannot be changed. For example entering a starting altitude of 0 when flying *Air Attack* does not start you on the runway, because the mission starts you in the melee.

For details regarding the offline Flight selections see page 103.

## Offline Missions Compared to the Online Game

The offline missions are great for practicing the basics of *WarBirds*, but the actual online game is quite a different world. You can ambush the bomber formation over and over and over offline, and become proficient at hitting the planes and avoiding the gunners, but until you go online and see a bomber formation, possibly escorted by a few fighters, you have not experienced the true excitement of *WarBirds*. Online, the bombers and fighters are not drones that fly in circles or a straight line. Every plane in the air is piloted by a real person playing the game, and whereas your self-determined mission in the game might be to shoot them down, their mission is to shoot you down, and they are certainly not going to give you an easy time!

# Missions

## Air Attack

In this mission, there are many aircraft swirling around you, trying to shoot you down. Try to stay with the target as it maneuvers to attack you.

Practice your situational awareness by continuously scanning the sky around you. Know where the nearest drones are, and learn to predict where they will be a few seconds later. In an online furball (that is the technical term for a lot of planes fighting in a small area), you need to be aware of the location of any and all nearby friendlies and enemies. Do not become so focused on your target that an enemy can pull up behind you without your knowing. When you see this happen take defensive action, keep an eye on both the enemy behind you, and the target you are having to break off from. After you shake off the enemy, go back and attack the original target. Practicing this helps immensely when playing online.

Fly above the mass of planes, or just above one particular plane, and learn to work out the direction of travel and altitude of a target. Taking a few moments to make this determination improves your chances of making a successful attack. Online, diving down onto an enemy plane when you do not know its direction and probable intentions, may put you at a disadvantage. If a plane is coming towards you when you attack, you will probably end up in a head-on confrontation where your target is approaching and shooting directly at you. It is no fun to have a 20 mm shell come through your cockpit windshield, not to mention those destructive collisions. Dead pilots cannot brag.

Drones are damaged in a similar way to that which occurs in the online game. The major difference is that a drone can still fly with several control surfaces, such as ailerons, elevators, or rudders, shot off, whereas online, a plane may start to go down with this damage because the pilot cannot stay in control without these pieces. A drone explodes if you shoot off a critical part of a plane, such as a wing. Online, the planes do not usually explode, but start spinning and spiraling, diving to the ground. The pilot normally bails out.

When a drone explodes, it reappears elsewhere in the sky, so you need not worry about running out of targets. Unless you chose *Unlimited Ammo* in *Setup*, eventually you have to return to the Control Tower to replace your plane with one that is fully loaded. Even with unlimited ammo, you can run out of fuel.

## Bomber Ambush

At the beginning of this mission, you receive a message over the radio alerting you of an incoming flight of enemy bombers. The type of bomber is randomly selected. Try to intercept and shoot them down. Sounds simple doesn't it? The flight of bombers flies straight and level at about 5,000 feet, and they are big and easy targets to hit. However, there is at least one gunner aboard manning a 50 caliber machine gun. They shoot at your plane, and leave it in pieces if they can. The actual tactics used in World War II were to attack a bomber formation head on. A fighter would then fire at, and pass by the bombers quickly, giving the defending gunners only a few seconds to fire.

These bombers take damage just like the *Air Attack* drones, and continue to fly until blown up. You will discover that bombers are tough to shoot down. Online, bombers give *WarBirds* another strategic element on top of the basic dogfight. Although a formation of bombers is a tough nut to crack, you may often see a lone bomber flying a mission, with or without a fighter escort. As you can see from flying the *Bomber Ambush* mission, hunting bombers is no walk in the park.

## Open Arena

This is the mission for basic flight and reconnaissance practice. There is not much going on in this arena, just a single drone plane circling each airfield, and lots of empty terrain to explore. Use this area to test fly new planes and new maneuvers. Learn the flight characteristics of many different types of planes, this knowledge can help you in an online dogfight.

When you first play *WarBirds*, you are likely to become attached to one particular type of aircraft. Online, however, the Main Arena operates under a Tour of Duty schedule, known as the Rolling Plane Set (RPS), which mimics the plane set rotation of World War II. A Tour of Duty is three weeks long, wherein the plane set rolls from early war, through mid war, to late war, and then to all planes available. Look at the Plane screen, by selecting *Select* then *Plane* from the Control Tower, to see the dates that a selected plane was available to war pilots. Note the dates for your favorite planes. If you only fly late war aircraft, it is advisable to find an early warplane as well, so you are lethal in all stages of the RPS. Use the Open Arena to assess the aircraft.

## Surface Assault

When you pick an aircraft for this mission, be sure to choose your ordnance according to the targets you want to hit. Pick heavy bombs for hard targets, lighter bombs or rockets for softer targets, and torpedoes for ship targets. The larger bombs have a wider blast radius, so a near miss may still damage the target.

If you decide to fly a bomber, you have a bombsight to assist you. If you pick a fighter with a bomb load, you need to practice dive-bombing.

Once you have mastered hitting the target with explosive weapons, try doing it while being shot at. Fly to a nearby enemy field (that is a field of a different color than you—your gun sight shows your country color), and attack it. If you are using a low-level bomber or a fighter-bomber, you will probably see lots of yellow and red tracers zipping up at you as you attack. If you are in a high altitude bomber, like the B17, you can fly above the range of most ground fire. However, antiaircraft artillery may still be able to reach you. Fortunately, not all airfields have these guns, but expect it over major targets, including the carrier group.

Carpet bombing (dropping several bombs in one run) can be fun, but try to be precise with your drops. It takes more than one run to hit every target at a base, so you need to turn around and make a second, third, and maybe even a fourth pass, to totally destroy all the targets.

Online, bombing is the first step in capturing an enemy air base. When your country wants to expand its borders and pick up new real estate, it needs bombers to do the heavy work. Bombers do the raids, fighters provide cover, paratroopers are dropped, and your country gains a new airfield.

## Landing-on-a-Dime

For beginners, takeoff and landing are difficult missions and here you can practice these procedures. In this mission, you need to takeoff and climb over 200 feet, and wait for the radio message that tells you to land.

You are scored on your grace and skill at this maneuver. You may have heard the phrase “any landing you can walk away from is a good landing.” Well, in this Air Force, that is just not true. The mechanics in this outfit do not like having to repair aircraft that some jock dropped out of the sky. The razzing you receive at the unit mess hall is not pretty, so try not to smash your engine, break your landing gear, or snap off a wing when you land—your tour of duty will be much easier.

Having said the above, sooner or later, you need to practice ditching. It is not uncommon online to have your landing gear damaged or your engine knocked out by enemy fire. Use this mission to practice the art of dead stick landing, and gear-up landing.

Fly up to some random altitude, and then press **E** to shut off your engine. Resist the urge to turn it back on, and try to coax your aircraft down to the airstrip. Using only altitude and maneuver, control your speed and make a safe landing.

Next, takeoff and turn around for a landing, but this time do not lower your gear. Done properly, your plane just slides in on its belly with minimal damage, and no explosion. For extra difficulty, try a gear-up landing with no engine. At some point online, you may have to do it, unless you want to be a wimp and just bail out. If you think the mechanics give you a hard time over bringing them a damaged aircraft, think what your commanding officer may say when you come back with no aircraft at all!

Try ditching somewhere other than on a paved runway. Learn what terrain is easiest to land on, including water. You never know when you may be forced down far away from a friendly base.

# Debriefing After a Mission

When you finish a mission, by exiting your plane, crashing, or running out of time, you return to the Control Tower where your score is displayed for that mission. You can choose whether to continue that mission, change the mission, or look at the points table.


*Score Details*

If you want to fly the same mission again, click *Continue*, and then click *Fly* from the Control Tower. If you want to fly a different mission, click *Select New Game* and choose what you want from the *Game* menu. If you want to see the Points Table, click *Display Points Table*. This table shows you how your points are awarded.

## Scoring

The score box, shown at the top right corner of your screen when you are flying, keeps track of the targets you have destroyed, the number of hits you have made, and your overall score. If you are using the timer, the time remaining is given just under the score box.

You are awarded points for simply hitting a target, but the weapon you hit with determines how many points. For instance, hitting a plane with your guns is not that hard (once you have practiced, anyway), so you only receive ten points for that. But if you hit a plane with a bomb (highly unlikely) you receive 1500 points. Hitting a ground target with your guns nets only two points, and only 100 points with a bomb.

You are awarded points for destroying a target:

- 1000 for a plane
- 150 for a ship
- 100 for a building

These points are cumulative with the hit points. That is, if you hit a plane 10 times with your guns to destroy it, you get 1100 points (10 points x 10 hits = 100 points + 1000 points for destruction = 1100 total points).

Actually, you do not receive exactly 1100 points because every round of ammo you use is deducted from your score:

- -0.1 per bullet
- -25 per rocket
- -25 per bomb

So if you fired 20 rounds to score those 10 hits (a great percentage for offline, and astounding for online), you have a penalty of -2 points, and an actual total of 1098 points. Fortunately, this is kept track of for you, we just thought you might like to know how it all worked.

Above and beyond the score modifiers, you have 10 points deducted every time you are hit by enemy fire. You also get 500 points for landing successfully (2500 points if you land on a carrier). You have 250 points deducted if you damage your plane on landing. Remember those mechanics?

In Bomber Ambush, because of the difficulty of destroying bombers, the penalties for taking hits and expending bullets are greatly reduced.

In the Open Arena and Surface Assault debriefing screens, hit percentages for bombs and missiles may sometimes register 100 percent even when they did not all hit. This is because it is possible (and common) to hit multiple targets with a single weapon. Doing so increases your hit percentage (although it can never go above 100 percent).

# Carrier Operations

In addition to its airfields, each *WarBirds* country has a small AI-controlled fleet—a carrier group, comprising of a single carrier, two cruisers and four destroyers. Ships cannot be captured, except in the historical Mediterranean scenario. If you lose all your land bases, you lose a campaign, even if your navy remains intact.

The Carrier group, however, is still a powerful asset—a moving air base whose planes can add considerable punch to any operation. Sinking an enemy ship is a major achievement—not only do you feel proud of yourself, but if the Carrier is close to your own airfields, it prevents any attacks coming from it.

Bombs can sink ships, but the attempt usually expends a lot of ordnance, since the ships are all armored and can throw up a wall of flak.

When a Carrier is sunk, the surviving vessels regroup and head for their country's home port, where the sunken carrier is regenerated. Once restored to full strength, the fleet resumes active operations. If an escort ship is sunk, it waits at the port until the Carrier is sunk and joins the fleet at the port.

### *Carrier Takeoffs*

Flying from the deck of an aircraft Carrier is one of the most demanding skills a pilot can acquire. Landing on one is even hairier—the deck is only 800 feet long and only a portion of that can be used for takeoffs or landings.

There is only a small margin for error. Takeoffs are similar to takeoffs from land runways, but with some additional risks. Engine torque—the force generated by the propeller that causes a sideways pull— can easily hurl you over the side if you lose control for an instant. Your plane also needs full climbing power to become airborne once it clears the deck.

### *Carrier Landings*

Airmen sometimes describe carrier landings as controlled crashes, because they are such delicate maneuvers. Firstly, you need to make a slow, level, approach, with just enough power to avoid a stall. If you sense that your approach is not going well, do not be brave and try to save it, just throttle up, and climb gently away, circle around, and try again.

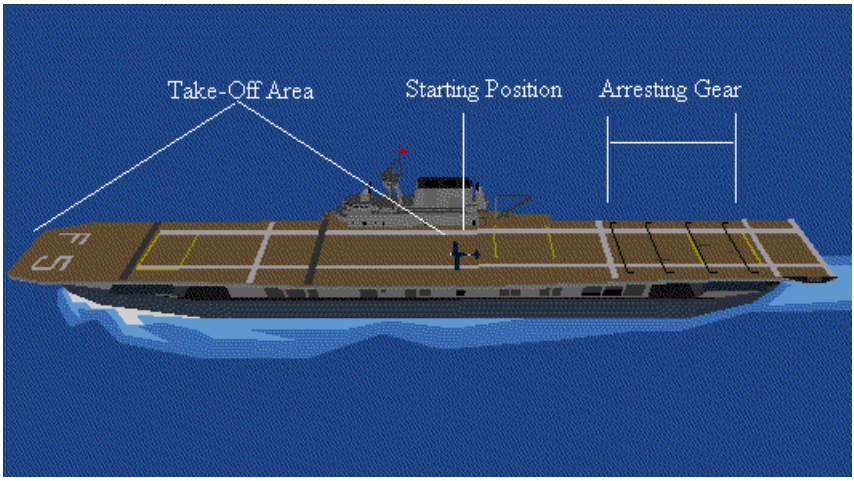
Carrier aircraft do not have the luxury of taxiing to a gentle stop—there is not enough room. Instead, they come to a bone-cracking halt by means of a gizmo called the arresting gear. There is a tail hook that extends down from the airplane's tail, and if everything goes right, it catches on one of the thick cables strung across the aft part of a Carrier's deck.

A successful Carrier landing goes like this:

1. Approach the ship at a fairly steep angle, and line up with the deck.
2. Just before your wheels touch down, flare the nose up and chop the throttle all the way down.

**NOTE:** The ship is moving, and what may initially seem like a good approach might be too short to compensate for the fact that the landing area is moving away from you. Short approaches are the single most common cause of crash-landings.

Carrier-based flying is much tougher than ground-based flying. However, most veteran online players eventually strive to master it, just because it is so exhilarating when you succeed!




*Carrier Vessel*

# Torpedo Attacks

The torpedo is the weapon of choice when trying to sink a ship. Bombs only damage the superstructure, so you have to pound a ship to bits to sink it. However, torpedoes strike at the hull below the water line, and a single well-placed “fish” can inflict a mortal wound on a ship.

You can only arm planes with torpedoes if their real-life counterparts were capable of carrying them. An American TBF-1C Avenger and a Japanese B5N2 “Kate” could carry one such torpedo, while the German Ju-88 A-4 could haul two of them. Just select *Torpedo* from the *Ordnance-Loadout* drop-down menu on the Plane screen (see page 31). Access the Plane screen from the Control Tower by clicking *Select*, then *Plane*.

Executing a successful torpedo attack is much trickier than simply dropping a tight pattern of bombs. In order to hit a ship, the plane executing the drop needs to fly steady, low, and slow—below 200 feet and at about 200 mph. This naturally makes it a vulnerable target, since every gun in the enemy fleet has a nice steady shot.

When there are enemy CAPs (Combat Air Patrols) on the scene, a torpedo plane makes an inviting, almost defenseless target, as it is only able to make the minimum of evasive maneuvers during its attack run.

The angle of attack is crucial. Ideally, a torpedo plane should approach at a right angle as this gives the biggest target, but then the ship’s speed becomes an issue. A head-on or stern attack renders the torpedo plane slightly less vulnerable, but also decreases its chance of scoring a direct hit. Whatever the circumstances, there is always a chance that the ship may execute a hard starboard turn just as your tin fish is streaking in.

# Customizing Your Gun Sights

Some pilots believe that mastering tricky deflection shots gives them an edge in combat, and customizing your gun sight can improve accuracy with this.

It also allows you to add range marks to your sight's horizontal bars. If you set those marks for, say, 200 yards, and you close on an enemy plane until its wingspan fills the distance between those marks on your sight, you know you are about 200 yards away. This is important in some special events, where enemy planes are displayed—for maximum realism—with limited range data on the screen. Some players also use this process to establish torpedo range marks on the outer edge of their screen, and use them as the default sighting device whenever they plan to fly a mission against enemy ships.

You can specify a custom sight for each type of aircraft you plan to fly, or change the default to what you want, otherwise, the game defaults to the standard cross hair reticule.

Custom gun sights are defined as text files which are named with the same convention used to identify each plane's art files, using a *.gst extension (for gun sight). Thus, a file labeled P381.gst identifies a customized P-38 gun sight in a graphic resolution of 640, while a file labeled P383.gst identifies a customized P-38 sight in 1024 resolution.

By placing the files labeled P381.gst or P383.gst in the *WarBirds* directory, you are creating custom gun sights at resolutions of 640 and 1024, respectively. All planes that do not have custom gun sight files attached to them use the default—the ordinary cross hair reticule.

To customize the default gun sight, save the files as defgst1.gst and defgst3.gst for resolutions of 640 and 1024, respectively.

### *Definition of File Syntax*

The gun sight file is an ordinary text file. The first line of data in a Gun sight file specifies the total number of line segments to be defined. Each line of numbers thereafter defines a segment along the X and Y coordinates, with (0,0) being the center of your screen.

**NOTE:** You cannot define line segments of zero length. If you want to define a single pixel dot, you must define a segment one unit in length. For example, to make a reticule consisting of one pixel dot centered in the sight, define the line as (0,0,0,1) or (0,0,1,0).

The first line in your gun sight file specifies the number of line-segment definitions in that file. For example, if you customize a gun sight to add those extra 200 yard range marks we spoke of. The first line of numbers specifies that the reticule is composed of six line-segments, the next four lines define the cross hairs, and the last two lines define the small vertical tic-marks.

This particular gun sight file would look like this:

6

4, 0, 18, 0

-17, 0, -3, 0

0, 4, 0, 18

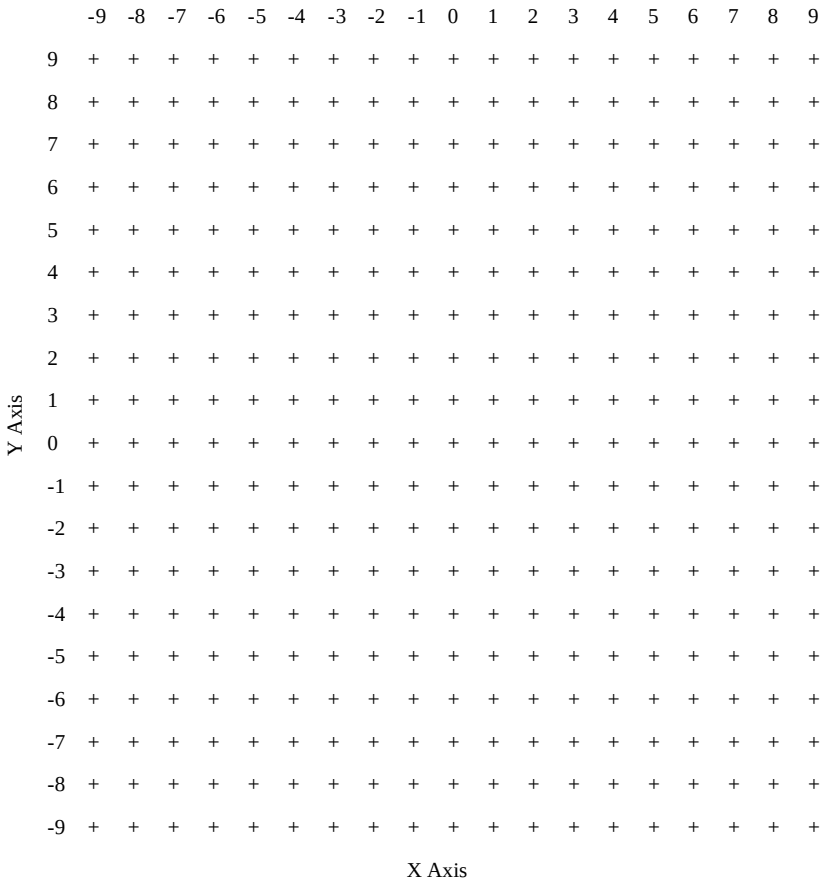
0, -17, 0, -3

12, 2, 12, -1

-12, 2, -12, -1

To see this reticule in action, copy these lines into a text file, and save it as defgst1.gst or defgst3.gst, depending on the graphic resolution you are running, then move the file into the *WarBirds* directory.

The grid you are using to find the (X,Y) coordinates that you want to use for the lines that define your gun sight looks like this:




**NOTE:** 9 or -9 is not the limit of how far you can draw a line from (0,0). The actual limit is determined by your screen resolution setting. For example, with a resolution setting of 640 x 480, you could go up to 240 pixels, or down to -240 pixels, as you move away from (0,0).

Let us illustrate this by looking at the default gun sight that comes with every plane in the game. Think of each coordinate as a pixel address where the lines begin and end:

4

0, 5, 0, 18

0, -5, 0, -18

-18, 0, -5, 0

5, 0, 18, 0

Line by line, the data breaks down as follows:

- 4 Number of lines of coordinates which need to be read.
- 0, 5, 0, 18 Coordinates in (X,Y) where (0,5) are the starting coordinates and (0,18) are the ending coordinates of the top line.
- 0, -5, 0, -18 Coordinates in (X,Y) where (0,-5) are the starting coordinates and (0,-18) are the ending coordinates of the bottom line.
- -18, 0, -5, 0 Coordinates in (X,Y) where (18,0) are the starting coordinates and (-5, 0) are the ending coordinates of the left line.
- 5, 0, 18, 0 Coordinates in (X,Y) where (5,0) are the starting coordinates and (18,0) are the ending coordinates of the right line.

You can take this process as far as you want, even out to the edge of the screen to create some of those customized torpedo-aiming marks.

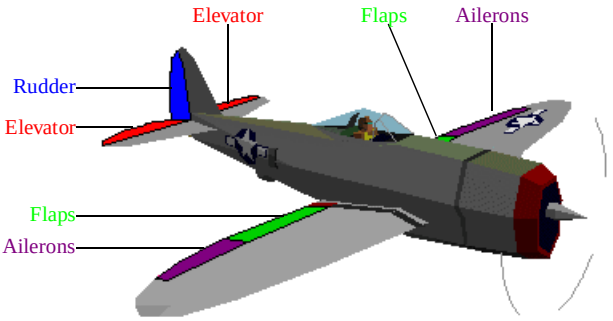
Check out the *WarBirds* Enhancements page, accessible from the *WarBirds* Web page for some previously setup customized gun sights.

# Maneuvering

## Control Surfaces

There are three dimensions within which the aircraft moves, and there is a simple control to change the direction of movement in each of those three dimensions:

- Ailerons control Roll
- Rudder controls Yaw
- Elevators control Pitch




*Control Surfaces*

### *Roll*

The ailerons, located on the outer part of the trailing edge of the wings, control the roll or bank of the airplane. The two ailerons (one on each wing) work in opposite directions to each other. When the left one is raised, the right one is lowered. The side to side movement of the joystick controls the roll or bank of the aircraft.

### *Pitch*

The pitch is the up or down angle of the aircraft, controlled by the elevator. It is located on the trailing edge of the horizontal tail assembly and is controlled by the forward and backward movement of the joystick. Pulling the joystick back moves the elevator up, causing the nose of the aircraft to point up. Pushing the joystick forward moves the elevator down, pitching the nose down.

### *Yaw*

On the trailing edge of the vertical stabilizer on the tail is the rudder. This controls the yaw, or the left and right turning movement of the aircraft. On a real aircraft the foot pedals control this. For those who do not have pedals, the rudder can be manipulated using **A** (left), **S** (center), and **D** (right), or a 3D joystick.

### *Flaps*

The flaps are located on the inside of the trailing edge of the wings, inboard of the ailerons. When this set of control surfaces is lowered the cross-sectional shape (airfoil) of the wing changes. Lowering the flaps creates a greater surface area, increasing lift and drag. Flaps are most commonly used for landing.

## Trim

As a plane flies at a particular altitude, weight, and speed, it flies straight and level with the stick perfectly centered. As speed increases the nose tends to rise, and the plane tends to yaw and roll to the right. As speed decreases the nose tends to lower, and the plane tends to yaw and roll to the left.

To control a plane at a wide range of speeds, there are trim tabs that are adjusted to allow the plane to fly straight and level for many different sets of conditions. When a plane is “in trim” it is trimmed for straight and level flight with the joystick centered at that airspeed and condition. When a plane is “out of trim” its joystick center is far from the center of its travel, which means that input is needed to make the plane fly straight and level.

This creates two problems. Firstly, since the joystick center is not the same as the physical force center it makes flying straight and level tricky, making small, gentle adjustments all but impossible. Movements tend to be jerky and really inaccurate, which causes problems when lining up guns on enemy planes. Gunnery is much easier and smoother when the plane is in trim.

Secondly, if the center of force is too far from the joystick center, you simply run out of stick. If you have to have the stick 3/4 of the way back to maintain

level flight there is only 1/4 of normal movement remaining to be used for maneuvering. In this instance, you would barely be able to maneuver at all.

The solution is to trim the plane for a speed close to that at which you are fighting. In *WarBirds*, the following keys adjust the plane's trim:

Nose down elevator trim . . . . . I

Nose up elevator trim . . . . . K

Left rudder trim . . . . . J

Right rudder trim . . . . . L

Left roll trim . . . . . M

Right roll trim . . . . . ,

## Autotrim

To take the tedium out of making constant adjustments to the trim manually, there are the autotrim keys. When autotrim is engaged, it takes a few moments for the plane to get in trim. The plane can be left flying on autotrim, or you can take over the controls once again, simply by moving the joystick.

Ideally, the plane should be trimmed for the speed it will be fighting at, so that the joystick is centered when you really need it to be. Take the type of plane being flown into consideration when deciding on the best speed to have the plane in trim.

There are three autotrim modes:

**Autotrim mode:** Press **X** to engage the autotrim. The aircraft now flies straight and level until **X** is pressed again or you take over the controls.

**Speed mode:** Press **Shift** + **X** to instruct the autotrim to maintain a specific airspeed. Set the speed you want to maintain by typing </.speed xxx>. Depending on your throttle setting, the aircraft may climb or descend—experimenting with these settings allows you to achieve the preferred climb rate. Most of the aircraft in *WarBirds* attain optimal climb rates at speeds between 140 and 180 mph.

**Angle mode:** Press **Ctrl** + **X** to instruct the autotrim to maintain the climb or descent angle of the aircraft at the moment it was engaged. Be careful if your aircraft is descending when you engage Angle mode, or you could crash.

# Maneuvers

## Barrel Roll

The Barrel Roll is a complete roll, revolving once around the fuselage.

To perform a Barrel roll, move the joystick to the right or left and hold it there until the plane is upright once again. Straighten out and press **X** to return to straight and level flight.

## Break Turn

The Break turn is the standard evasion against attack from astern. You turn as hard as possible in the direction of the attacker, to increase deflection quickly, and make your plane harder to hit. It is best to execute a break turn when level or lower than the attacker. Never break above your opponent, as you lose speed and your size as a target increases.

To perform a Break turn, move the joystick to the right or left, and then pull back on the joystick to tighten the turn. Straighten out and press **X** to return to straight and level flight.

## Chandelle

The Chandelle, in very simple terms, is a climbing turn. The turn can range from 90 to 180 degrees. It is a low-G move, and aims to conserve as much energy as possible. The Chandelle allows you to remain near the fight, and to keep visibility on the fight or target as you look down and back over the wing, while gaining altitude.

To perform the Chandelle, move the joystick to the right or left, then pull the stick back gently to climb while you are turning. Once you have finished the turn, you are at a higher altitude, and on a different heading. Center the stick and return to straight and level flight by pressing **X**.

## Immelmann Turn

The Immelmann turn is a simple yet very effective maneuver under the proper tactical circumstances. The name is derived from its inventor, Max Immelmann, a WWI German Ace who devised the method. In reality, the version most people are familiar with today from air shows is not the one that Max Immelmann found so successful.

To perform the air show version, from flying level with good energy, pull back on the joystick, bringing the aircraft into a steep climb. Maintain the climb until the aircraft passes through the vertical and completes a half loop.

At the top of the loop, the plane is inverted. Roll it back to the upright position. It is now at a higher altitude and is travelling in the opposite direction.

This air show version can be flown in different ways. If your opponent has enough energy to follow you into the loop, there is a moment of inertia where your speed is low, and you are a sitting target. The reversal can be aggressive, limiting the altitude gain in exchange for maintaining additional speed after completion, or it can be very gradual, with completion at a higher than normal altitude, but with the aircraft at near stall speed.

Max Immelmann's actual combat Immelmann is also known as a version of "Boom and Zoom" (BnZ). He would make a high energy pass at his opponent, pulling up into an efficient vertical climb until he was sure he was out of the range of his enemy. Then he would use a rudder reversal to drop back down from a position of advantage and repeat his attack.

## Loop

The Loop is a full 360 degree rotation in pitch, in other words a vertical circle.

Perform the Loop by pulling back on the joystick and maintain back pressure as the aircraft climbs, inverts, dives and then returns to level flight, with the wings level at all times. At the top of the loop, the torque effect from the engine begins to corkscrew the aircraft counterclockwise. Add right rudder and roll to counter the torque effects. When completed, center the joystick and press **X** to recover straight and level flight.

## Scissors

The Scissors is a series of turns designed to force an attacker on your six to give up their angle advantage.

This is a very aggressive move. If you try to use it, it is important that you think aggressively. You are trying to force an overshoot—a total reversal, putting you on the attacker's six.

The steps to perform the Scissors are fairly simple, but it takes practice. The following steps assume that the attacker is on your six and at a range of 6 or 7. It they are further away, use short turns to bring them in, but do not let them get a good tracking shot at you.

It is important to fly this fight entirely in the rear view, switching from rear to top/rear, always keeping the attacker in sight, so that you can react quickly.

**1.** Begin with a fairly hard turn, held long enough that they have to roll and turn to keep you in their sights.

2. Once they enter the turn, roll your aircraft in the opposite direction, and then turn hard that way, keeping the nose low to conserve energy.
3. When you see their wings start to roll in answer to your turn, quickly roll back in the opposite direction, and turn that way with the nose low.
4. The attacker tries to follow, and again when they start to turn, you turn back the other way.
5. Usually, after two or three turns, they have lost their angle advantage, and are starting to wonder what has happened. This is the critical point of the fight.
6. When they are more in the top view than in the rear view, they have lost their angle, and now is your chance to attack them.

- You have got to be aggressive to do this move successfully, and be fast on the reversals.
- Try to practice this by letting someone get on your six and then shake them. Do this again and again, until you have a mental image of where they should be when you reverse. Find the right moment to make the turns for each plane you fly.
- The first left or right break is held longer than the rest—that is the one that hooks the attacker. The rest are short and fast, dictated by how long it takes the opponent to react and reverse.

## Skid

The Skid is a lateral slide with a gradual loss of altitude, and is commonly used as a defensive maneuver to throw off an attacker's aim. It can be performed without incurring a large increase in speed or change of direction, while trading in only a small amount of altitude.

Perform a Skid by dipping one wing and then applying opposite rudder. The aircraft skids in the direction of the dipped wing.

While in this maneuver, the aircraft sinks and loses altitude. Because your actual direction of travel is different to the direction that the aircraft is heading, it throws off the attacker’s gunnery. However, it does not take long for an attacker to adjust their aim, so do not hold the maneuver for too long.

## Split-Ess

The Split-Ess is a half roll, followed by a half loop, to return to straight and level flight. It is primarily a defensive move, unless you are attacking with considerable altitude and are meeting the target nose to nose—you would then let them pass beneath you, and then perform the Split-Ess to arrive at their six.

To perform the Split-Ess, roll the plane until it is inverted and in level flight, and then pull back on the joystick. Maintain back pressure as the plane dives and then returns to normal flight.

- Practice the Split-Ess over a runway, so that you can check your heading visually.
- A variation is to perform an additional roll when you pass the 90 degree mark of the half loop. A roll effected while you are pointed straight down is a very effective escape maneuver.

## Wing Over

The Wing Over is a common maneuver for altitude and position recovery after a diving attack—especially after a diving attack on a ground target.

To perform the Wing Over, pull back on the joystick to enter a climb. Close to the top of the maneuver, the aircraft should be just above its stall speed (but not stalling), apply full rudder to yaw the plane over until the nose is pointing down in the opposite direction of the original climb. Try to ensure it does not roll over onto its back when in the yaw motion. Once the nose is pointed down, center the rudder, and enter back into a dive.

- A tricky maneuver that is handy after a diving attack, setting you up for a second run.
- A very common maneuver with the “Boom and Zoom” (BnZ) flyers, especially with the fast planes.
- Performed by an experienced flyer, this maneuver can surprise a pursuer by quickly reversing on them.
- If you have a distance lead in a chase, use this to convert from a defensive posture to an offensive one. The trick is not to be shot up when reversing.

# Capturing Enemy Airfields

Whenever one country loses all of its airfields, the war is over. Victory goes to the side that controls the most airfields. This is not easy to do. Capturing an enemy field requires smooth teamwork and split-second timing. If you surprise the enemy and quickly suppress their defenses, a capture can be a quick and clean affair. On the other hand, if the enemy is waiting for you with a CAP (Combat Air Patrol) shielding the field, and lots of antiaircraft guns manned and ready, it can be a costly action indeed.

There are three phases to a successful capture operation: the attack, the capture and the defense.

## The Attack

The side which initiated the attack needs to destroy all the important enemy ground assets. These include hangars, flak gun emplacements, and any enemy aircraft caught on the ground. Speed and accuracy are essential because damaged facilities are repaired quickly. This means you may have to destroy them all over again, with a diminished supply of bombs and rockets.

Hangars and other buildings are considered destroyed if their roofs are blown off. It is not necessary to destroy the walls, although if you do so it increases the time it takes to repair those structures.

**Ordnance-Loadout:** Ordnance or loadout is the number of bombs and rockets your aircraft can carry. If you are playing online, your aircraft can only carry the amount of ordnance its historical counterpart could haul.

Destroying a hangar or other ground structure usually requires a direct hit with a bomb or a full salvo of rockets. It is possible to do the job with massed gunfire, but it takes a lot of time and effort and your chances of success are low. As a rule of thumb, a rocket does about half the damage of a 100 lb bomb. The amount of ordnance required to knock out a specific target depends on the weight of the bomb, the range and angle it is dropped from, and the accuracy of the bombardier. Bombs have a blast radius, so it is not always necessary to make a direct hit, but closer is always better.

**Flak:** When you approach an enemy airfield, you should notice colored streaks appearing in the sky around your plane. These are tracers being fired at you by the antiaircraft crews defending the base. This is flak, the German word for antiaircraft artillery.

There are four types of flak in *WarBirds*, based on the four most common antiaircraft guns of the World War II era. Each type of weapon has a different color tracer, so you know exactly which weapons are being fired at you:

- *Yellow tracers*—50 caliber and 20 mm
- *Red tracers*—40 mm
- *Nasty looking puffs of smoke*—88s

The heavier the weapon the greater its range, so you usually see the 88s first, and then the tracers from the lighter guns.

**Flak Suppression:** Antiaircraft emplacements are easy to knock out. A single bomb, rocket, or a well-aimed machine gun burst usually does the job. However, they are very small targets and unlike hangars, they shoot back. To capture an enemy field, you need to knock out all the emplacements.

# The Capture

Capturing an enemy base is no simple task. Once the flak is suppressed, it is time to bring in the paratroopers to storm the airfield and capture the base. Using the Ju52 troop transport, the attacking country can deploy paratroopers near or over the airfield to begin the ground attack.

Troops are deployed like bombs, by opening the bomb bay doors and dropping them out of the aircraft. Press **B** to jettison each paratrooper. The aircraft must be at least 300 feet off the ground for the troops to land successfully. Once on the ground, the troops storm the control tower. If enough troops make it into the tower, they destroy it, completing the capture. Provide support for your troops on the ground, as the enemy will be trying to stop the ground attack.

# Putting up CAP (Combat Air Patrol)

Taking possession of an enemy airfield usually causes a reaction on the part of the opposing country. It is not unlike jabbing a stick into a hornet's nest. Planes from any surviving enemy airfields swarm in your direction and attempt to recapture their lost asset.

Therefore, as soon as you capture a base put up an orbiting umbrella of friendly aircraft. This aerial screen is your CAP (Combat Air Patrol), and the stronger it is, the better your chances are of keeping control of the base you have just taken.

# The Zen of Bombing

While solo combat is the most glamorous form of online flying, a lot of *WarBirds* players enjoy an occasional bombing mission. Some even make a specialty of bombing.

Bomber missions are especially gratifying when you are flying online with a group of friends or with people whose callsigns you have come to know and respect. One player—usually an experienced one, since bombers are more difficult to get airborne than fighters are—selects a bomber. They control takeoff, navigation, and act as bombardier when the time comes.

This pilot's friends then choose which defensive gun positions they want to crew on the mission. If there are not enough people to man all the available machine guns, open slots remain.

To join the mission, offer your services by typing your callsign and selecting one of the open slots in the drop-down menu. The chances are you will be accepted. If you are not, do not take it personally—the pilot is the commander, after all, and he or she may be waiting for someone in particular to show up.

### *Setting Up a Bombing Mission*

Choose the bomber you want to fly from the Plane screen (See page 31). Select your bomb load using the Ordnance-Loadout drop-down menu on the same screen in *WarBirds*.

Some pilots and bombardiers prefer to manually drop each bomb by pressing **B** when they are over the target. Others claim better accuracy and increased damage by dropping their bombs in timed salvos, so that the explosives land in a ripple pattern. This is termed "pickle mode" because the World War II bomb-release device supposedly resembled a pickle.

Customize a drop pattern using the host commands:

<.salvo XX> where XX is the number of bombs in each salvo.

<.delay XXX> where XXX stands for the delay, in milliseconds, between the release of each bomb in the salvo (50 to 1000 milliseconds).

**NOTE:** Enter "pickle mode" by pressing **F9** while in flight to enable your salvo settings. You can enter new settings while flying to the target.

### *Executing a Bomb Run*

You are flying in pilot mode, and your gunners, you hope, are keeping enemy interceptors at bay. Observe the situation around you by using the numpad keys.

If you are flying an uncrewed bomber, press **Alt** + **V** to toggle the external view of the bomber. Use the various view keys to check out the environment, just as you would in any other mission.

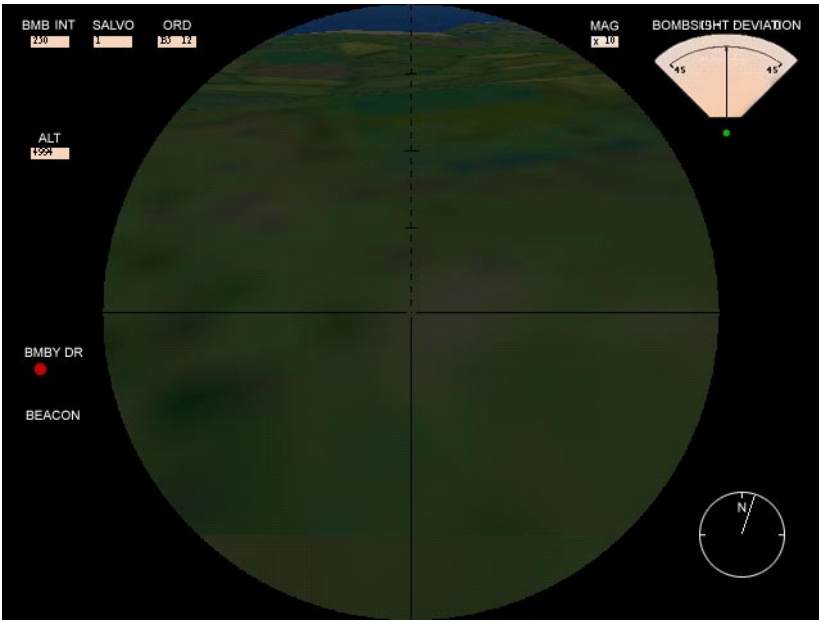
Put the plane on autopilot by pressing **X**, and open the map by pressing **F1**. Each sector on the *WarBirds* map is 20 miles across, representing 400 square miles. As soon as your bomber enters the sector where your target is located, make your approach turn—ideally at a distance of 10 to 15 miles.

Press **Y** to assume the bombardier's role. The Bombardier's view opens.

*WarBirds Bombadier's View*

The autopilot engages when you change to the Bombardier's view, allowing you to concentrate on your new task. However, you are still able to make gentle course corrections to center the bombsight's cross hairs on the target.

Now press the **numpad 2** to look through the bombsight. *WarBirds* bombsights simulate the famous Norden sights of World War II, and the bombardier's view is essentially the same no matter what kind of bomber you are flying.




*Norden Sight*

You see the aiming cross hairs, and a bombsight deviation needle in the upper-right portion of the display. You are on the right course when that needle centers and the green light is on, but you must hold a straight and level course for the needle to center. Any violent evasive maneuvers at this point compromise, if not ruin, your chances of a good drop. You are dependent on your gunners to buy time for you to complete the bomb run. If you need to increase the magnification of the bombsight view press **[** and **]** to decrease it.

Press **O** to open the bomb bay doors—this is rather important. When the needle is centered, the green light is on, and the target is squarely in the cross hairs, press **B** to release your bombs. Unless you have previously engaged "pickle mode" (by pressing **F9**) one bomb drops for each key press. If "pickle mode" is engaged, the bombs fall in salvos according to the settings established earlier.

### *Getting Home in One Piece*

After the bombs are dropped, the plane suddenly becomes lighter, faster, and more maneuverable. Press **Y** to return to the cockpit, if necessary. You may not be able to watch the bombs actually strike, but your tail gunner or waist gunners should be able to give you a radio report on the results. Channel 111 is the bomber intercom.

Find your way back to your home base and follow standard landing procedures.

# The Joys of Gunnery

Newcomers to *WarBirds* can learn a lot about the feel of the game by enlisting as a gunner. Your odds of survival are greater than in a solo mission because you can gain valuable skills in leading targets and deflection shots—that is figuring the angles between the trajectory of your bullets and the target's movement, so that the bullets intercept the plane.

### *How to Sign-On as a Gunner*

Click *Gunner* from the Select screen in the Control Tower. This is where you request a gunner position.


*Gunner Screen*

Not all planes have the same number or configuration of gun positions, but the full list is bottom, top, left, right, tail, nose, and observer. The observer's position is usually the same as the pilot's, in the cockpit.

Select a pilot from the drop-down menu. Any open positions on their aircraft are listed. If you see an open slot for a position that appeals to you, select that position from the Join As drop-down menu, and then select *Join*.

If the pilot accepts you, a message says so. If you see a message that you have been turned down, there is probably nothing personal going on—the pilot may simply be waiting for someone they know and expect to show up online, or they may wish to use "Otto" (the automatic gunners—*WarBirds* only).

Once you have been accepted in a gunner's slot, click *Radio* and type <.radio x 111>. This plugs you into the intercom system on Radio x.

**Jump:** A gunner can jump from their original slot to another one. This is useful if a bomber takes off short-handed and one waist gunner has to move from left to right, depending on the direction that the enemy threat is coming from. To jump to another gun, use appropriate key.

| | | | | | |
|---|---|---|---|---|---|
| 1 | Observer/Cockpit | 4 | Left | 7 | Bottom |
| 2 | Tail | 5 | Right | | |
| 3 | Nose | 6 | Top | | |

### *Controlling your Chosen Gun*

*Powered Turret*

Some gun positions are electric turrets that rotate using the plane's internal power system. Others are attached to flexible mounts, so that the gunner physically controls the aiming process. The joystick is the default tool for aiming and firing guns, but if you prefer to use a mouse, press **Alt** + **M** while in position. Mouse control is recommended for flexible guns, and joystick control for powered turrets.

Any vacant gun positions are controlled by "Otto," the automatic gunner. You can override this by using the jump command shown above, or your pilot may request that you switch positions if they feel the situation warrants such a move.

*Flexible Gun Mount*

# Communications

Chatting using the keyboard is the preferred method of communication in *WarBirds*, as everyone has access to it. English is the language employed by most pilots, but pilots from other countries are known to drop by and fly.

Take patience with these players, English is not their first language, and they are probably asking for help. Help them if you can, or ask others to do so.

There are voice communications in the game, but this is limited to up to three contacts per person. Few players have microphones, so if repeated requests for a voice channel with another player go ignored, assume they have no voice communication ability.

If a player you are trying to chat with does not reply immediately, assume that they are in the middle of combat and too busy to type.

It is possible to set up one of the Radio channels to communicate with one particular player. Open the radio and then type the callsign of the player into a tuning slot. When you send a message on this radio only that player receives it, and the message is displayed in bright white text, allowing you to have a private chat.

To chat to everyone, set Radio Two to channel 100. When flying most people use this channel to taunt the opposition—if they can spare the time.

Players in a Squad can chat to each other on channel 110, as this is the designated squad channel. Other squadrons do not hear your communications, nor players in your own country who are not in your squad.

Click on an aircraft in flight to tune Radio Four to the callsign of the pilot of that aircraft.

The designers, producers, programmers, but most of all the players who frequently play *WarBirds* have repeatedly expressed disapproval in the use of profanity.

A text filter and a player message blocker can be used.

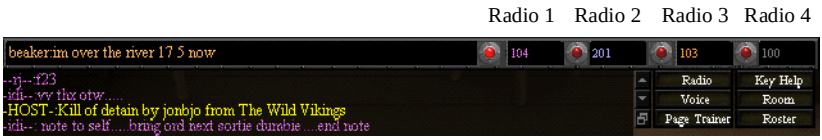
To employ the blocker, press a Radio key: /, **Shift** + /, **Control** + / or **Alt** + /, and then type <.ignore xxxxxx> where xxxxxx is the callsign of the pilot you are ignoring.

To reestablish communications with an ignored pilot, press a Radio key: /, **Shift** + /, **Control** + / or **Alt** + /, and then type <.listen xxxxxx> where xxxxxx is the handle of the pilot. Type <.listenall> to reestablish communications with all ignored pilots.

If you leave the game, all ignored players are defaulted to listen mode again. Any Radio channels you had access to in the previous game are retained in your next session.

# Radio Procedures and Protocols

The Radios provide the means to socialize with other players. There are also messages giving vital tactical information and situation updates.




*Radio Bar*

The up and down arrows next to the incoming messages display area allow you to scroll through recent messages. The Expand Window button below them toggles the display between 25 and 5 lines of incoming messages. Pressing **Tab** on the keyboard also toggles this display.

**F3** moves the radio bar from the bottom to the top of the screen, or vice versa.

To open the typing buffer to type and send a message, click *Radio* or press /, **Shift** + /, **Control** + / or **Alt** + /, depending on the channel to be opened.

## Radio Tuning


Tune a radio by clicking in the radio slot, and then typing the number. There are 106 different channels, any of which can be used. The channels serve different purposes and reach different ears, so depending on what you need to say and to whom, use the appropriate channel.

The host command <.radio X YYY>, where X is the radio and YYY is the channel, can also be used to tune the radio.

**Channel 100:** This is the common channel—every player can send and receive messages when tuned to channel 100. If you are in the Control Tower or a designated Headquarters screen, however, only players in that room receive your channel 100 transmissions.

To communicate with players in flight, use one of the squadron, country or private channels, as shown below:

| **Who Receives** | **Channel Number** | **Message Color** |
|---|---|---|
| Everybody | Channel 100 | Gray |
| Red | Channel 101 | Red |
| Green | Channel 102 | Green |
| Gold | Channel 103 | Gold |
| Purple | Channel 104 | Purple |
| Members of the same squadron | Squad Channel 110 | White |
| Crew members of the same plane | Intercom 111 | Dark Green |
| Individual players | Player callsign | Bright White |
| Individuals in a country who are tuned in | Channels 1-50 | Dull Yellow |
| Any individual who is tuned in | Channels 51-99 | Dull Yellow |
| Everyone | Messages from host | Yellow |
| Everyone | Messages from Game Managers | Blue |

**NOTE:** Only Radio One can be tuned to channels 1-99.

When you first enter the arena, Radio One is tuned to your country channel and Radio Two is tuned to everyone (100).

Your radios do not reset to the default tuning every time you enter an arena. Once you have tuned your radios, the settings are retained. The only exception is that Radio One defaults to your country channel whenever you enter the arena.

Click on an aircraft in flight to tune Radio Four to that pilot.

Enter the command <.radio> to display a summary of your currently tuned channels.

## Transmitting a Message

To quickly send a message on a particular radio channel, use the appropriate key to open that channel, then type your message and press **Enter**.

| *Radio* | *Key Press* | *Radio* | *Key Press* |
|---|---|---|---|
| One | **/** | Three | **Ctrl** + **/** |
| Two | **Shift** + **/** | Four | **Alt** + **/** |

**Example:** If you are flying for Red and you leave Radio One tuned to 101, and Radio Two to 100, in flight press **Shift** + **/** before typing the message to transmit to everyone, and press **/** to transmit to Red players only.

When in a squadron, tune Radio Three to 110, and communicate with other members of the squadron by pressing **Ctrl** + **/** before typing the message.

Right-click (or Ctrl + click for one-buttoned mouse Mac users) on a fellow countryman to send a "6" call to that pilot.

## Receiving Messages

You receive messages from other players if they are sent on a channel you can listen to. These are color coded according to the channel on which they are sent.

There is also an ignore command for filtering out those players who just seem to have a little too much to say. Type <.ignore xxxxxx> where xxxxxx is the callsign of the player in question, and radio messages from that player cease to be seen by you.

To cancel the ignore command, type <.listen xxxxxx>.

## Game Managers

Game Managers' names are always in capital letters, and always in blue. These personnel are on the development team, and are logged onto the server side of the game. Their presence is for testing and diagnosing problems within the game environment, and in some cases troublesome players.

They have absolute authority.

# Voice Communications

The only additional hardware required to use the voice communications is a microphone configured for use with Windows.

Access the Comm List by clicking on the Voice button in the radio bar.

## Using Voice Comms


Type the callsigns of the players you wish to talk to in the blank fields at the top of the window. Up to three may be entered.

- Click *Apply* to accept the current callsigns without closing the Voice window.
- Click *Cancel* to cancel any selections and close the Voice window.
- Click *OK* to accept the current callsigns and close the Voice window.

The bottom part of the window is used when another player requests voice communications with you. Their callsign is displayed in the box. Click *Accept* to accept or *Squelch* to decline.

Select *Manual* to stop the window opening each time someone requests voice communications with you. If someone requests voice communications while *Manual* is lit, the Voice indicator blinks and a message appears in the radio display.

Press and hold **Insert** on the keyboard to transmit.

Keep the following in mind when using voice communications:

- Speak clearly and in short sentences.
- Do not crowd the microphone. Experiment by tuning into yourself and listen to how you sound.
- Do not shout.
- When transmitting, first say who you are speaking to, then who you are, then your message and finally “Over” to let others know you have finished speaking.

# Radio Terms and the Phonetic Alphabet

## Radio Terms

| | |
|---|---|
| *Affirmative* | Acknowledged |
| *Angels* | Altitude in thousands of feet |
| *Bandit* | An enemy aircraft |
| *Bogey* | An unidentified aircraft |
| *Negative* | No. No way. |
| *Niner* | Phonetic pronunciation of nine. |
| *O'clock* | Position relative to your facing in increments of a clock face. |
| *Out* | End radio contact, or exiting the fight. |
| *Over* | End radio transmission. |
| *Roger* | Acknowledged |
| *Say again* | I did not understand, repeat your last transmission. |
| *Six* | An enemy is directly behind you, at 6 O'clock. |
| *Standby* | I'm busy. Wait a few minutes. |
| *Stepped on* | Transmission is interrupted by another. |
| *Unreadable* | I can't understand you. Say again or check your radio. |
| *Wilco* | Will comply. Yes. |

## Phonetic Alphabet

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *A* | Alpha | *H* | Hotel | *O* | Oscar | *V* | Victor |
| *B* | Bravo | *I* | India | *P* | Papa | *W* | Whiskey |
| *C* | Charlie | *J* | Juliet | *Q* | Quebec | *X* | X-ray |
| *D* | Delta | *K* | Kilo (kee-low) | *R* | Romeo | *Y* | Yankee |
| *E* | Echo | *L* | Lima (lee-ma) | *S* | Sierra | *Z* | Zulu |
| *F* | Foxtrot | *M* | Mike | *T* | Tango | | |
| *G* | Gulf | *N* | November | *U* | Uniform | | |

# Host Commands

All host commands are preceded by a "." (period). Some host commands can be issued in flight via the radio, others can only be issued when on the ground, in the Control Tower.

If the radio entry bar is not visible at the bottom of the screen, press / once to activate it before issuing a host command.

| | |
|---|---|
| .clear | Resets your score. |
| .conv xxx | Sets gun convergence distance. Replace xxx with preferred distance in yards. |
| .country [1-4] | Choose a country. |
| .delay xxx | Sets the delay in milliseconds between each bomb in the salvo (value range 50 to 1000 milliseconds). |
| .disband | Disbands the squadron (leaders only). |
| .e | Exit plane (must be on ground and stopped when online). |
| .exit | Leave the arena, or quit the program if offline (must be in tower). |
| .fields | Shows a listing of the available fields, their current ownership and status. |
| .fly | To the runway. |
| .fuel xxx | Sets fuel level for your plane. Replace xxx with percentage of load preferred. |
| .gaccept all | Accept all outstanding requests. |

| | |
|---|---|
| .gaccept xxxxxx | Accept an outstanding request from xxxxxx. |
| .gclear | Clear all previously accepted gunners from plane, or clear your crew position. |
| .greject xxxxxx | Reject a request from xxxxxx. |
| .gun xxxxxx [position] | Request a ride in the position specified with player xxxxxx. Gun positions are numbered as follows, when available: 1-Pilot, 2-Tail, 3-Nose, 4-Left waist, 5-Right waist, 6-Top, 7-Belly. |
| .handle xxxx | Change your handle to xxxx where xxxx can be up to 20 characters long. |
| .help | Shows a listing of available host commands. |
| .ignore | List all ignored players. |
| .ignore xxxxxx | Stop receiving messages from player xxxxxx. Up to 32 players can be ignored this way. |
| .invite xxxxxx | Invites player to join your squadron. Replace xxxxxx with player's callsign (squad leaders only). |
| .jsquad | Accepts a squadron invitation. |
| .jump [position] | Allows a gunner to move around from one position to another. Gun positions are numbered as follows: 1-Pilot, 2-Tail, 3-Nose, 4-Left waist, 5-Right waist, 6-Top, 7-Belly. |
| .listen all | Start receiving messages from all ignored players. |
| .listen xxxxxx | Start receiving messages from ignored player xxxxxx. |
| .move [f,b,g] XX | Move to the field, briefing room, or general room of your choice. You can only move to fields owned by your country. XX can be any valid field number, or 1 through 7 for general and briefing rooms. |
| .move hq | Move to headquarters. |
| .name xxxx | Name the squadron (squad leaders only). |

| | |
|---|---|
| .ord | Lists the available loadouts for the currently selected plane. |
| .ord [0-3] | Loads ordnance set 0, 1, 2, or 3. |
| .radio | Display currently tuned channels. |
| .radio X YYY | Tunes Radio X to channel YYY. |
| .rank | Displays the top 100 pilots (updated daily). |
| .remove xxxxxx | Removes a player from your squadron. Replace xxxxxx with player's callsign (squad leaders only). |
| .roster | Shows a listing of players currently online. |
| .salvo xx | Sets number of bombs to drop with each key press when in "pickle" mode. |
| .score xxxxxx | Shows a player's score. Replace xxxxxx with the player's callsign. |
| .slogan | Assigns or changes the squadron motto (squad leaders only). |
| .speed xxx | Sets the autotrim to speed xxx mph |
| .squad xxxxxx | Info about a squadron. |
| .status xxxxxx | Displays the status of the pilot and plane (open slots, filled slots and so on). |
| .withdraw | Withdraw from your squadron. |

# Keyboard Commands

When playing the game, use the Key Help button to open the key charts.

## Aircraft Controls

Center Joystick . . . . . F12

Left Rudder. . . . . A
Right Rudder . . . . . D
Center Rudder. . . . . S

Gear Up/Down . . . . . G
Wheel Brakes . . . . . Spacebar
Dive Brakes Toggle (if applicable). . . . . V

Flaps Down 1 Notch. . . . . Q
Flaps Full Down . . . . . Shift + Q
Flaps Up 1 Notch . . . . . .W
Flaps Full Up . . . . . .Shift + W

Autotrim Level . . . . . X
Autotrim Speed. . . . . Shift + X
Autotrim Angle. . . . . .Ctrl + X

Elevator Trim Up . . . . . K
Elevator Trim Down . . . . . .I

Rudder Trim Left . . . . . .J
Rudder Trim Right . . . . . L

Aileron Trim Right . . . . . ,
Aileron Trim Left . . . . . .M

Eject . . . . . .Enter Enter Enter (quickly)

Toggle Weapon . . . . . Backspace

## Engine Controls

Start/Kill Selected Engine . . . . . E
Select & Start all Engines . . . . . Shift + E

Select Engine 1 . . . . . Shift + 1
Select Engine 2 . . . . . Shift + 2
Select Engine 3 . . . . . Shift + 3
Select Engine 4 . . . . . Shift + 4

Kill/Start Engine 1. . . . . Alt + 1
Kill/Start Engine 2. . . . . Alt + 2
Kill/Start Engine 3. . . . . Alt + 3
Kill/Start Engine 4. . . . . Alt + 4

Throttle Up 5 Percent . . . . . =
Throttle Down 5 Percent . . . . . -
Full Throttle. . . . . 0 (zero)
Engine Idle . . . . . 1
War Emergency Power (WEP) . . . . . F10

## View Keys

Forward . . . . . Numpad 8
Left . . . . . Numpad 4
Right . . . . . Numpad 6
Back. . . . . Numpad 2

Up . . . . . Numpad 5

Forward/Right . . . . . Numpad 9 or 8 + 6
Forward/Left . . . . . Numpad 7 or 8 + 4
Forward/Up . . . . . Numpad 8 + 5
Right/Up . . . . . Numpad 6 + 5
Left/Up . . . . . Numpad 4 + 5
Right/Rear . . . . . Numpad 3 or 6 + 2
Left/Rear . . . . . Numpad 1 or 4 + 2
Rear/Up . . . . . Numpad 5 + 2

## Bombing Keys

Open/Close Bomb Bay . . . . . O
Drop Bombs . . . . . B
Pickle Toggle. . . . . F9

Bombardier . . . . . Y
Bombsight . . . . . Numpad 2
Bombsight Increase Magnification . . . . . [
Bombsight Decrease Magnification . . . . . ]

## Gunnery Keys

Fire Guns . . . . . F
Fire Secondary Gun . . . . . B

Jump to Observer Position . . . . . Space
Jump to Cockpit . . . . . 1
Jump to Tail Gun Position . . . . . 2
Jump to Nose Gun Position . . . . . 3
Jump to Left Gun Position . . . . . 4
Jump to Right Gun Position . . . . . 5
Jump to Top Gun Position . . . . . 6
Jump to Bottom Gun Position . . . . . 7
Toggle Otto (automatic gunner) . . . . . T

Toggle Lewis Gun Mode (SE5a only) . . . . . \

## Radio Key

Radio 1 . . . . . /
Radio 2 . . . . . Shift + /
Radio 3 . . . . . Ctrl + /
Radio 4 . . . . . Alt + /
Microphone on . . . . . Insert

## Interface Keys

External View Toggle (uncrewed bombers only) . . . . . Alt + V
Map View Toggle . . . . . F1

Zoom In (map/external view) . . . . . [
Zoom Out (map/external view) . . . . . ]

Icon Toggle . . . . . F2
View Range Cycle . . . . . Alt + R

Ground Clutter On or Off . . . . . F11
Show or Hide Aircraft Debris . . . . . Alt + N

Toggle Sky Texture (D3D only) . . . . . Alt + K
Toggle Horizon Texture (D3D only) . . . . . Alt + H

Expand or Shrink Text Window . . . . . Tab
Move Text Window . . . . . F3

Take Screenshots . . . . . Alt + S

Show Frame Rate . . . . . Alt + P

Switch to Mouse Control . . . . . Alt + M

Key Help . . . . . F4

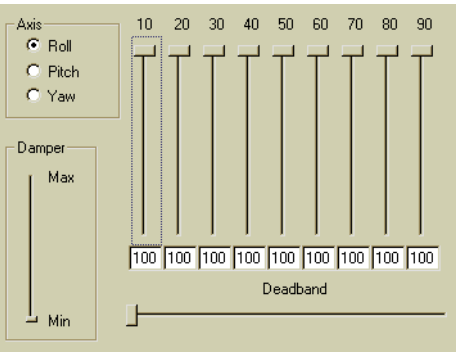
# Setup Screens

Use the setup screens to set the game options. When accessed from the Main menu, all the screens have *OK*, *Cancel* and *Apply* buttons at the bottom.

- *OK* saves any changes and returns the display to the Main menu.
- *Cancel* returns the settings to what they were when you opened the screen, or to when *Apply* was last selected.
- *Apply* saves the selections made.

## Stick Screen

Changing the selections on the Stick screen personalizes the response your plane makes to the movements it senses from your joystick. Some pilots swear this fine tuning gives them an edge in combat.




*Stick Screen*

1. From the Tower, click *Setup*.
2. Select *Stick.*
3. Select *Roll*, *Pitch* or *Yaw* then adjust the slider bars. This customizes the joystick control response of your planes to suit either your hardware or your personal flying style.

   The default values work well enough for most players, but with a bit of experimentation you may find settings you prefer.
4. Adjust the *Deadband* slider and the *Damper.*

A plane makes three basic movements in the air (other than straight-ahead, of course):

- *Roll*—The circular movement of your wing tips around your fuselage, caused by the ailerons, which are controlled by the side to side movement of the joystick.
- *Pitch*—The up or down movement of the nose caused by the elevator, which is controlled by the forward and backward movement of the joystick.
- *Yaw*—The left and right sideways movement of your nose caused by the rudder, which is controlled by rudder pedals, if you have them, and by the **A**, **S**, and **D** keys, or a 3D joystick.

Each of the sliding scalers represents a portion of joystick movement, and the slider settings control the response when the stick is moved that far through its range of travel. Thus, if you have the 50 slider set at 50, moving the joystick halfway from center gives you 50 percent, or a total response of 25 percent because your plane's control surface moves 25 percent of its total movement. By setting the 90 slider to 100, you obtain a full 90 percent response when the stick is moved that far from center. If you prefer, you can enter numerical values for the slider tunings by typing a percentage value in the small field at the bottom of each slider

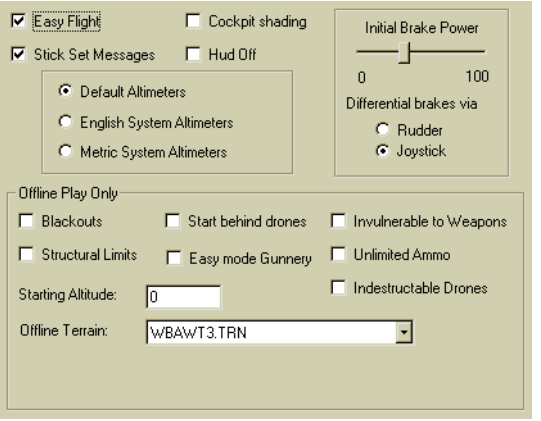
**Deadband:** Beneath the vertical sliders is a horizontal slider labeled *Deadband*. This controls the amount of dead space (no feedback to or from the joystick) when its pitch, roll, and yaw controls are in neutral—when you are exerting no pressure on the stick on any axis. Again, the default setting should work fine, but some sticks are especially sensitive in their neutral positions, and others do not center as precisely as you might wish. Increasing the deadband along any bothersome axis may correct this little problem.

**Damper:** The *Damper* setting mutes those occasional spikes of overeager response, when the joystick tells the plane to move a bit more abruptly than is advisable. The *Damper* setting takes those spikes and averages them out, giving a smoother ride with joysticks that seem to overreact.

Whether you use these advanced settings or the one-size-fits-all configuration provided through Windows, always remember to press **F12** before taking off to center your joystick according to the settings you have made.

# Flight Screen

The Flight screen lets you set basic flight options.




*Flight Screen*

**Easy Flight:** When checked, easy flight makes the plane easier to control and minimizes the differences between the handling characteristics of certain planes.

Easy flight is not enabled in all the arenas.

**Stick Set Messages:** When checked, and when you are using multiple stick sets, swapping stick sets generates a message notifying you of the change.

**Cockpit Shading:** When checked, the cockpit has more realistic lighting but the frame rate may drop.

**HUD Off:** When checked, the HUD (heads up display) is not shown when flying.

**Altimeters:** Select one of the three types of altimeter display:

- *Default*—The correct historical unit is used
- *English*—Imperial units are used (thousands of feet).
- *Metric*—Metric units are used (thousands of meters).

**Initial Brake Power:** Set the percentage of brake power that is used when the brakes are initially engaged.

**Differential Brakes via:** Select whether to have the differential brakes activated from the rudder or the joystick.

**Offline Play:** There are several options available when playing offline, which are set by the server when playing online.

- *Blackouts*—Select to experience blackouts and redouts when pulling so many Gs that the blood supply to the brain is affected.
- *Structural Limits*—Select to have the plane break up when being pushed beyond its limits.
- *Start Behind Drones*—Start in the air behind a sitting duck target.

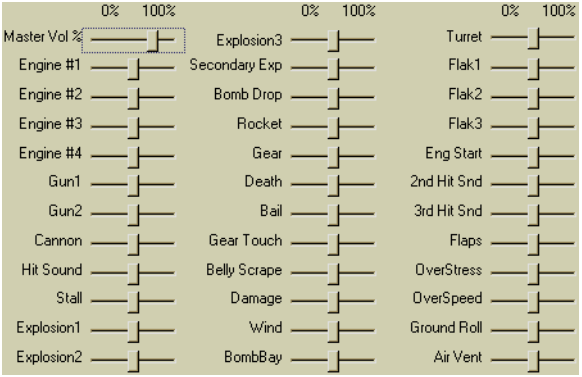
- *Invulnerable to Weapons*—If you find you are being shot down before you have a chance to fire at the drones, select this option.
- *Unlimited Ammo*—If you find that you constantly run out of ammo while practicing, select this option to be able to continue shooting down drones until either you are shot down, crash, or run out of fuel.
- *Indestructible Drones*—However many times you hit a target it keeps flying.
- *Starting Altitude*—Leave the altitude at zero if you want to takeoff. Enter a height if you want to begin in the air.
- *Offline Terrain*—Select the terrain to be flown over.
- *Easy Mode Gunnery*—The targets are easier to hit, and so are you.

**NOTE:** Certain offline missions override any settings made here. For example, if you select *Air Attack*, you always start in the air, even if the altitude is set at 0.

# Sound Screen

The Sound screen allows you to vary the volume of individual sounds. For example, if the sound of your engine is too loud and drowns out everything else it can be turned down.

Move a slider to the right to increase the volume and to the left to decrease it.

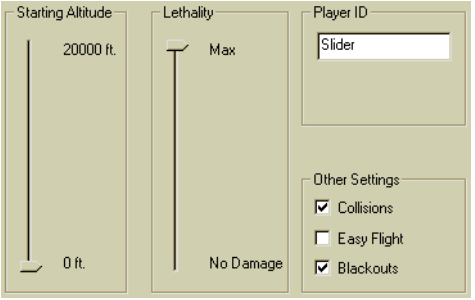



*Sound Screen*

# HTH Screen

The in-flight head to head options can be set on the Head to Head screen, and they only affect head to head sessions.

Setting Easy Flight and Blackouts here overrides the settings made in the Flight screen.




*HTH Screen*

*__Starting Altitude:__ Set the altitude at which both planes are to begin their flight. Setting this at zero means you both have to take off.

**Lethality:** Having weapons giving no damage allows a trainer to be shot at by the pilot in training without the session being stopped by the plane being shot down.

When dueling on a one to one basis each hit should count, so have the maximum damage level selected.

**Player ID:** Type in your six character callsign.

**Other Settings:**

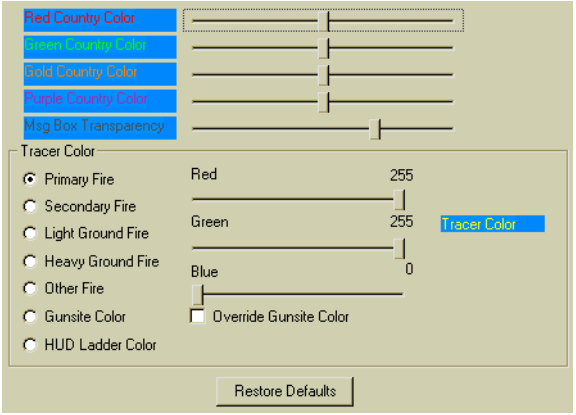
- **Collisions*—When checked planes may collide in midair.
- **Easy Flight*—Tones down the differences between the handling of planes and makes them easier to control.
- **Blackouts*—When checked, pilots experience redouts and blackouts due to the G-forces affecting the flow of blood to the brain.

*These settings can only be selected by the host player.

# Colors Screen

**Country Colors:** Use the color sliders to change the shade of the icons displayed while flying.

**Message Box Transparency** (3D only)**:** The message box transparency can also be changed by moving the *Msg Box Transparency* slider.




*Color Screen*

**Tracer Color:** Adjust the color of tracer fire by selecting one of the fire types on the left, and then adjusting the sliders, as preferred.

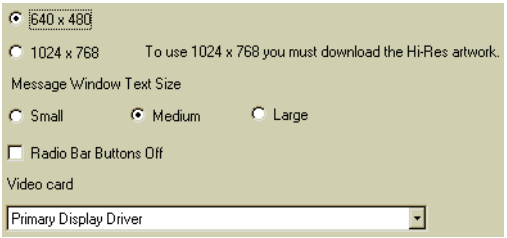
**Gunsite Color:** Select the gun sight color and then make adjustments, as preferred. To see the changes while flying, check the *Override Gunsite Color* box.

**HUD Ladder:** Select to change the HUD ladder color to the preferred color.

# Video Screen

Factors which affect the appearance of the game are set here.

**Screen Resolution:** Select whether to have the screen displayed as 640 by 480, or 1024 by 768.



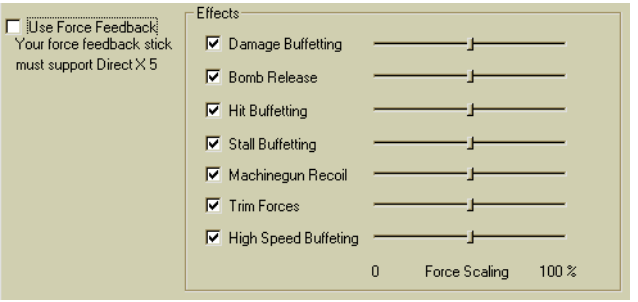

*Video Screen*

**Message Window Text Size:** Select whether to have the text in the message box displayed as *Small*, *Medium*, or *Large*.

**Radio Bar Buttons Off:** Select to have the buttons on the right of the Radio Bar turned off (see page 88).

**Video Card** (D3D version only)**:** Choose which video card you want to use in the game. Always make sure you have the latest drivers for your card.

# Stick Force Screen

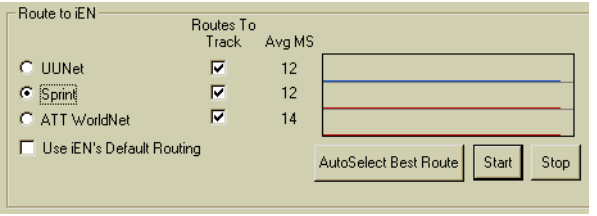



*Stick Force Screen*

For those with a force feedback joystick, which supports Direct X5, these settings can be customized to your personal preferences.

Check the box to use the force feedback abilities of the joystick and change the sliders to reflect how much feedback you want for a particular effect.

# Network Screen




*Network Screen*

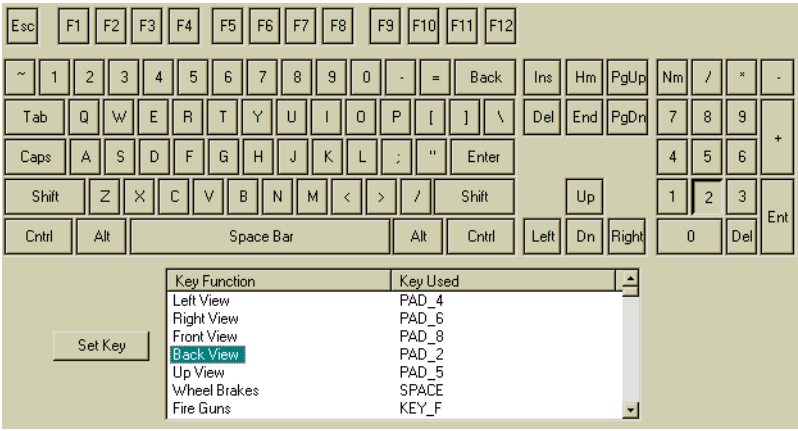
The network connection route to iEN can be set from this screen. Normally selecting *Use iEN's Default Routing* is adequate but if you are experiencing a bad connection try switching to one of the others. If this does not solve the problem, contact tech support on (919) 461-0948.

The tracking function records the ping rate for each connection service provider.

**NOTE:** If you can log onto iEN's site, but are unable to join an Arena, it is possible that your ISP is receiving, but not sending packets of information. Log on to your ISP using a different dial up number, if possible.

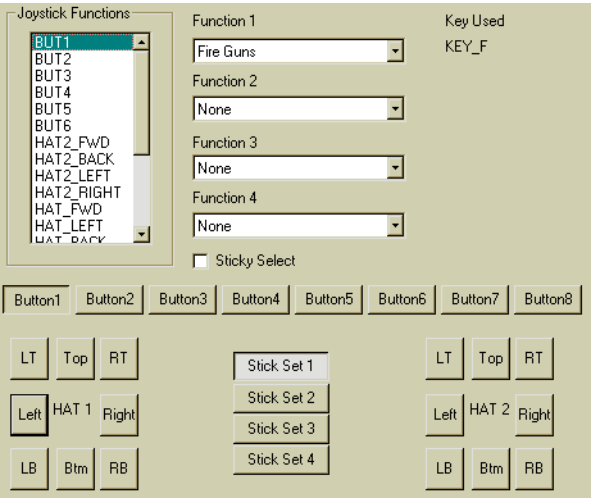
# Keyboard Settings Screen

The Keyboard settings have defaults which are also listed in "Keyboard Commands" on page 97. To change a setting, highlight the action in the Key Function list, and then select *Set Key.* Then either press the preferred key on the keyboard, or select the key on the screen with the cursor. Take care not to select the same key for two functions.




*Keyboard Settings Screen*

# Joystick Mapper Screen




*Joystick Mapper Screen*

Use this screen to customize which commands are sent by each button or hat on your joystick.

To set a function for the joystick, first ensure that your joystick sends button or hat presses. Press the fire button (trigger). *BUT1* highlights in the Joystick function list, Function1 lists *Fire Guns* and the key used is KEY_F. This means that the first function of this button on the joystick is to fire your guns.

Press each button on the joystick in turn, and then move the hat (if you have one). Each button or hat movement has its function and key press displayed, if there is one.

Change or add a function by selecting a control on the stick, and then choosing a function from the drop-down list.

Additional functions can be set to a particular stick button or hat position by selecting a function in the Function 2, Function 3, and Function 4 lists.

For multiple stick sets, select the next set with the stick set 1, 2, 3, or 4 button and select functions for the buttons and hats in that stick set. During the game the stick set is selected by using **F5** for set 1, **F6** for set 2, **F7** for set 3, and **F8** for set 4.

When all the changes or additions that you want to make have been done, click *Apply.*

**NOTE:** If the joystick was not set up correctly when added to your Game Controllers, you may not be able to use all the functions associated with it. For example, if Windows has not been told that there is a hat function associated with this controller, the hat controls will not work in any application.

# Credits

| | |
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| *Aircraft Data Supplied by* | FCI Associates |

| | |
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