Revolution SDK Extensions (RevoEX)

Network Development Environment Document

Version 1.0.2

The contents in this document are highly confidential and should be handled accordingly.

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Revision History

Version	Revision Date	Description
1.0.2	2007/08/08	Added an explanation of ncdconfigtool's error numbers.
1.0.1	2007/07/26	Revised methods for generating error codes.
1.0.0	2007/2/16	Initial Version.

1 Introduction

1.1 About This Document

This document conveys information about the software development environment when developing network-supporting titles for Wii.

To connect from an application to the Internet or use features such as WiiConnect24, a network connection must first be configured. These settings are established via the Wii Menu, and are structured so that they can be used from all applications. To begin with, we will briefly explain how the settings are made in the Wii Menu.

In the development system environment, there are cases where parts of the features provided by the Wii Menu (retail system) cannot be used and cases where special configurations must be set up for testing purposes (development system). This document touches upon the differences between the retail systems and development systems, and explains how to use any separately-required tools for these different cases.

Processes such as verifying error messages are typical during development. In order to perform these verifications as efficiently as possible, this document also contains information to generate actual errors wherever possible.

This document is written with the assumption that you have obtained the network development environment for Wii, known as Revolution SDK Extensions (RevoEX). The libraries, tools, and other software mentioned in this document are contained within the RevoEX package unless otherwise noted.

1.2 The Network Configuration Process on the Wii Console

In order to make all environments such as the network and WiiConnect24 usable from a Wii in the initial state, it is necessary to complete the following series of operations.

1. Configuration of the network connection
2. Network connection test
3. Wii system update over the network
4. Agreement to the terms of use (EULA)
5. Settings related to WiiConnect24

These operations can be carried out by opening up each item from the Wii System Settings screen of the Wii Menu, but normally they constitute a sequence that will progress in order if the network connection is configured first. (There are cases where the sequence may vary slightly depending on the version of the Wii Menu.)

In “1. Configuration of the network connection,” wired/wireless, access point, IP address, and other such settings are made. Details about these configuration items are explained in Chapter 2.

If the configuration of the network connection was changed, “2. Network connection test” is performed to verify whether or not the change was valid. In this test, an attempt is made to connect to a connection test server that has been set up by Nintendo. It also accesses the WiiConnect24 server at the same time, and creates a new account if an account has not already been created on the server. Succeeding in this connection test will allow the connection to actually be selected as a valid network configuration.

If the network connection test succeeds, “3. Wii system update over the network” can be performed immediately afterward. At this stage, a query is made to the server as to whether there are Wii Menu updates, firmware updates, or other updates. If there are such updates, processing is performed for downloading and applying them.

Next, “4. Agreement to the terms of use (EULA)” will be required. If you haven’t already agreed to the EULA, there will be restrictions on running each channel application using the network as well as restrictions on using WiiConnect24.

Finally, “6. Settings related to WiiConnect24” is required for using WiiConnect24. Because this is set to “ON” when the EULA is agreed to, it is only required if you are changing advanced settings. Moreover, in order to use the WiiConnect24 message mechanism to perform communications with other Wii consoles or general e-mail devices, the address book must be opened and the addressee’s Wii number or mail address must be registered in the Wii console’s friend roster beforehand. This procedure is explained in Chapter 4.

1.3 The Network Configuration Process on a Development System

By using the Wii Menu (version 2 or later), network configuration can also be performed on development systems with a similar sequence to that of a retail Wii console. The only step that cannot be performed in the sequence mentioned in the previous section is “3. Wii system update over the network.” Consequently, make sure you select “No” and close the dialog box if a dialog box appears saying “The connection test was successful. Would you like to update the Wii console?”

If the Wii Menu is installed, it takes time to launch an application each time, so installation of the Wii Menu may become a hindrance during the development stage. Assuming this to be the case, the following group of tools are provided in RevoEX for performing the same kind of configuration, and various configurations can be made using these tools without the Wii Menu installed.

- ncdconfigtool (basic network configuration tool)
- nwc24init (WiiConnect24-related configuration tool)
- FLViewer (Demo for editing the Wii console’s friend roster)

The methods for using the tools and the demo are explained individually in the following chapters. These tools can also be used when intentionally testing abnormal configurations for the purpose of verifying error handling.

2 Basic Network Configuration

2.1 Configuration Procedure Using the Wii Menu

Note: If performing network configuration on a development system using the Wii Menu, be sure to install version 2 or greater of the Wii Menu.

From the Wii Menu, select **Wii Options** > **Wii System Settings** > **Wii System Settings 2** > **Internet** > **Connection settings** in order, and select one of the three connection profiles.

2.1.1 Search for an Access Point and Connect.

1. Select **Wi-Fi Connection** > **Search for access point** to display a list of available access points.
2. Browse the SSIDs and select the access point to which you want to connect from the list.
3. Enter a key if a security option is set for the access point.
4. Save the configuration and continue by performing the connection test.

2.1.2 Connect Using the Nintendo Wi-Fi USB Connector

1. Select **Wi-Fi Connection** > **Nintendo Wi-Fi USB Connector** to begin registration with the PC.
2. Make sure that the Wii console nickname is displayed on the registration tool screen on the PC, and click **Allow connection** on the displayed menu.
3. Make sure that registration has completed on the Wii Menu and continue by performing the connection test on the Wii console.

2.1.3 Connect Using AOSS or Easy Wireless Start

1. Select **Wi-Fi Connection** > **AOSS** or **Easy Wireless Start**, and select the access point following the instructions displayed on the screen.
2. Press the “AOSS Button” or the “Easy Wireless Start Button” (SET switch) on the access point, holding the button until all corresponding LEDs are blinking (or lit).
3. Make sure that the configuration has completed in the Wii Menu and continue by performing the connection test on the Wii console.

2.1.4 Connect by Configuring Manually

1. Select **Wi-Fi Connection** > **Manual**.
2. Configure the **SSID**, **Security**, **IP Address**, **DNS**, and **Proxy** items.
3. Save the configuration and continue by performing the connection test.

2.1.5 Connect using the Wii LAN Adapter (Ethernet)

1. Select **Wired connection** and start the connection test.
2. If the connection test fails, select **Change settings** and configure the **IP Address**, **DNS**, and **Proxy** items.
3. Save the configuration and continue by performing the connection test.

2.1.6 Connection Test

When connection settings are either newly created or changed and saved, or when **Connection test** is selected during the connection configuration, a test will be performed to determine whether an Internet connection is possible with the given settings. The connection test must succeed in order to enable the connection settings. If the connection test fails, verify the settings and the network status. If the connection test is successful, a five-digit **support code** will be displayed, but this is not an error code but rather a numerical conversion of the properties of the communications environment during testing.

2.2 Configuration Procedure Using ncdconfigtool

For development systems where the Wii Menu has not been installed, using ncdconfigtool included in RevoEX makes it possible to perform network connection configuration in the same way as with the Wii Menu, with the exception of certain restrictions.

The restrictions of ncdconfigtool are as follows:

- “AOSS” is not supported.
- “Easy Wireless Start” is not supported.

The basic operating scheme of ncdconfigtool is as follows:

- During menu/item selection

Confirm	A Button
Cancel	B Button
Move to higher-level menu	B Button
Move cursor up	UP on the Control Stick or UP on the +Control Pad
Move cursor down	DOWN on the Control Stick or DOWN on the +Control Pad

- During text input

Enter	A Button when the Control Stick has been tilted and a character has been selected.
Backspace	B Button
Delete entire string	A Button + B Button pressed at the same time
Confirm	A Button without tilting the Control Stick
Cancel	B Button when the input string is blank
Next character palette	One clockwise rotation of the Control Stick or DOWN on the +Control Pad.
Previous character palette	One counter-clockwise rotation of the Control Stick or UP on the +Control Pad.

Because ncdconfigtool directly configures the elements of the NCDConfig structure of the RevoEX network configuration library (NCD), some aspects of the structure and detail will be different from the Wii Menu. The notable differences from the Wii Menu are as follows:

- **Validate** in ncdconfigtool does not perform the same operation as the **Connection test** of the Wii Menu. In order to use ncdconfigtool to put the system into the same state as when the **Connection test** of the Wii Menu is successful, you must select **Profile** and turn ON the **ValidationPassed** flag in the **Property** menu.
- In order to enable proxy settings, you must select **Profile** and turn ON the **UseProxy** flag in the **Property** menu, and you must also turn ON the **Enabled** flags in the **Proxy** > **HTTP** and **SSL** > **Property** menus.

Turning **Easy Mode** OFF makes it possible to perform more detailed configuration than from the Wii Menu, but it is not required to change these items during normal development.

The configuration items of each menu are as follows:

- TOP Menu

READ CONFIG	Loads profiles (all three) from Wii system memory.
WRITE CONFIG	Writes the configured profiles (all three) to Wii system memory.
Easy Mode	Switches between displaying and hiding detailed settings. There is no need to use it for normal development.
Select Profile	Selects and enables the profile to be used.
Edit Profile	Edits a profile. Changes to the > Profile Menu.
NWC24 Permission	Configures the sending/receiving of messages in WiiConnect24, and enables/disables the downloading of data.
Link Timeout	Configures the duration of the link timeout with the server.
misc	Performs configuration for enabling/disabling stretching to a widescreen format, and configures the importing/exporting of settings to/from SD Cards.

- Profile Menu

Validate	Verifies the connection using the current profile. The connection items verified in Validate: ・(Obtain an IP address using DHCP) ・Ping the Default Gateway ・Ping the Primary DNS Server ・Verify connection to conntest.nintendowifi.net:80 *conntest.nintendowifi.net is the Nintendo Wi-Fi Connection server
Clear Profile	Clears the current profile.
Property	Configures the connection interface, method of obtaining the IP address, and whether or not to use a proxy.
IP	Performs IP address configuration.
Proxy	Performs proxy configuration. Changes to the > Proxy (HTTP/SSL) Menu.
NetIF	Performs wireless network configuration for wireless connections. This item does not appear for wired connections. Changes to the > NetIF (Wireless) Menu.
ID Adjust	Configures MTU, TCP Timeout, and DHCP Retrans.

  - Property

IsWired	If checked, the Wii LAN adapter (Ethernet) will be used to make a wired connection.
UseDHCP	If checked, the system's own IP address will be automatically obtained using DHCP.
UseDHCP-DNS	If checked, the IP address of the DNS server will be automatically obtained using DHCP.
UseProxy	If checked, the proxy will be enabled. * "Enabled" must also be set at the same time in ProxyMenu > Property.

  - IP

IPAddress	Sets the IP address used by the Wii console.
Netmask	Sets the subnet mask.
Gateway	Sets the IP address of the default gateway.
DNS1	Sets the IP address of the primary DNS server.
DNS2	Sets the IP address of the secondary DNS server.

If an error number (-3) is output when `WRITE_CONFIG` or Validate from the Edit Profile is executed, there may be a problem with the Profile settings. Confirm that each setting has been performed properly. For information on other error numbers, refer to "NCD API Error Values" in the *Revolution SDK Extension Function Reference* manual.

- Proxy (HTTP/SSL) Menu

Property	Enables or disables the proxy and basic authentication.
Server	Sets the proxy server's address.
Port	Sets the proxy server's port.
Username	Sets the user name for basic authentication.
Password	Sets the password for basic authentication.

  - Property

Enabled	If checked, enables proxy settings. * UseProxy must also be set at the same time in ProfileMenu > Property.
BasicAuth	If checked, basic authentication will be used during proxy connections.

- NetIF (Wireless) Menu

Scan	Scans for available wireless access points in the area.
Config Method	Selects the wireless configuration method. *Only “Manual” or “USB-AP” can be set.
Config	Enters the required items in the selected configuration method. Changes to > ConfigMenu
Rate Set	Sets the transmission rate that can be used.
Retry Limit	Sets the upper limit for retrying sends.

- ConfigMenu (during manual configuration)

SSID	Sets the SSID of the wireless network to connect to.
Privacy Mode	Sets the encryption method of the wireless network to connect to.
Privacy Key	Sets the WEP key or WPA pass phrase of the wireless network to connect to. *Only if Privacy Mode is not set to None.
Privacy Key(HEX)	Sets the WEP key of the wireless network to connect to in hexadecimal format. *Only if Privacy Mode is WEP.
Key Index	Sets the index of the WEP key of the wireless network to connect to. *Only if Privacy Mode is WEP.

  - Privacy Mode

None
WEP (RC4 40bit)
WEP (RC4 104bit)
WPA-PSK (TKIP)
WPA-PSK (AES)
WPA2-PSK (AES)

- ConfigMenu (during USB-AP configuration)

Start	Starts registering a connection with the USB-AP.
Cancel	Cancels the registration of a connection with the USB-AP.
Nickname	Sets the nickname used for the USB-AP connection. *Only ASCII is supported. The nickname is the last 6 digits of the Wii’s MAC address if a nickname is not entered.
Nickname(HEX)	Sets the nickname used for the USB-AP connection in hexadecimal format. *The character encoding is UTF-16BE.

3 Settings Related to WiiConnect24

3.1 Configuration Procedure Using the Wii Menu

When using the Wii Menu, the WiiConnect24 configuration file is automatically created, so it is not necessary to initialize it. The settings required to operate WiiConnect24 are as follows.

3.1.1 Network Configuration

A valid network configuration must be created in advance using the procedure listed earlier in this document.

3.1.2 Agreement to the Terms of Use

Select **Wii Options** > **Wii System Settings** > **Wii System Settings 2** > **Internet** > **Terms of Use** from the Wii Menu, and agree to the terms of use.

3.1.3 Enable WiiConnect24

Select **Wii Options** > **Wii System Settings** > **Wii System Settings 2** > **WiiConnect24** > **ON/OFF** from the Wii Menu, and select **ON**.

3.1.4 Disable Parental Controls

Select **Wii Options** > **Wii System Settings** > **Wii System Settings 2** > **Parental Controls** from the Wii Menu, and select the Do not use **Parental Controls** setting.

3.2 Configuration Procedure Using nwc24init

For development systems on which the Wii Menu has not been installed, using the nwc24init tool that is included in RevoEX makes it possible to initialize and edit the WiiConnect24 configuration, as well as to send and receive messages instantaneously for testing purposes.

The basic method for operating nwc24init is as follows:

Confirm	A Button
Move cursor	UP/DOWN on the Control Stick or UP/DOWN on the +Control Pad
Switch menu	LEFT/RIGHT on the Control Stick or LEFT/RIGHT on the +Control Pad

The items on the menu are described below.

- NWC24

  - Initialize

    Initializes the WiiConnect24 configuration file and generates a Wii number. Only the checked items are initialized among the items in the table below. The items are initialized whether checked or not if the files do not exist or are corrupted.

Name	Description
Config	Configuration data like the Wii number.
MsgBox	Message box
Flist	Friend roster
DLTask	Download task

  - Register

    Registers a Wii number with the server. Wii number generation and network configuration must have been performed.

  - Receive Mails

    Checks for messages on the server, and immediately performs reception of any messages (placing them into the inbox).

  - Send Mails

    Performs sending from the outbox to the server immediately.

- SC

  Performs system configuration relating to WiiConnect24. Originally, this configuration is done from the Wii Menu, but may be changed directly for development and debugging purposes. Table 3-1 has a description of each item. For normal development that uses WiiConnect24, we recommend that you use the settings shown in the “Normal Configuration” column.

Table 3-1 SC Item Descriptions

Name	Description	Normal Configuration
WCFlags	These flags are used to enable/disable WiiConnect24.	ON
EULA	This flag indicates whether the user has agreed to the terms of use regarding the network. Normally, the WiiConnect24 service will not be available if the user doesn’t agree to this.	ON
ParentalControl	This flag enables/disables the system Parental Controls.	OFF
NetContentRestrictions	This flag enables/disables communication limitations for WiiConnect24 messages. It is valid only when Parental Controls are enabled.	OFF
IdleMode	This flag specifies whether or not to use WiiConnect24 in standby mode.	Arbitrary
IdleModeLED	This is the setting for lighting the Wii console slot illumination with WiiConnect24. Either OFF, DARK, or BRIGHT can be selected.	Arbitrary

  - Flush

    If this is executed after any setting has been changed, that setting will be written to the Wii console.

Note: By using this SC Configuration Menu, it is possible to perform combinations of settings that cannot exist given the system configuration sequence. Operation is not guaranteed if only WCFlags are turned ON without also turning on EULA. Moreover, if ParentalControl is turned on in the environment where the Wii Menu has been installed other restrictions related to Parental Controls will also become enabled at the same time, so the application may not run depending on the situation. Please be fully aware of this.

- NCD

  In this menu, permissions for the following items can be set among the network settings related to WiiConnect24. If the Wii Menu has been installed, this configuration is done automatically based on the settings of the SC menu above. If proceeding without installing the Wii Menu, they must all be set to be allowed and then written to the Wii console in advance. If they are not allowed, the WiiConnect24's automatic scheduler cannot run the corresponding processes in Table 3-2.

Table 3-2 Processes Needing WiiConnect24's Automatic Scheduler

Name	Description
SendMail	Send message
ReceiveMail	Receive message
Download	Download

  - Read Config
    Reads the network configuration from the Wii console.

  - Write Config
    Writes the network configuration to the Wii console.

4 Registration in the Wii Console Friend Roster

4.1 Registration Procedure Using the Wii Menu

Run the **Wii Message Board** from the Wii Menu, and select **Create Message** > **Address Book** > **Register** in order. At this time, the following error messages will be displayed if the various settings are not configured.

- If the network settings have not yet been configured:

Internet settings must be configured in order to register a friend.

- If the WiiConnect24 setting is turned OFF:

The WiiConnect24 setting is not currently enabled. Please check the settings in Wii Options.

If these settings have been performed correctly, the friend type (Wii/Other) selection screen will be displayed. From there, enter the friend type, the Wii number (or e-mail address), and the nickname, and perform registration in the Address Book (i.e., the Wii console friend roster). When registration has completed, the following message will be displayed:

Registration has completed. In order to exchange messages, you and your friend must register each other, and your internet settings must be configured.

As stated above, both parties must perform the aforementioned registration procedure in order for messages to be exchanged between one Wii and another. However, verification that both parties have registered each other in their address books is done via a mail that is automatically sent during registration. Consequently, between several minutes to several hours may pass between the time that the registration procedure is performed and the time that the friend relationship is established. When “Other” is selected as the friend type for friends, the friend relationship is established by replying to the message that is automatically sent during registration.

In addition, friends for whom a friend relationship has not yet been established are displayed in the Address Book in light grey, and are displayed in dark grey once the friend relationship is established.

4.2 Registration Procedure Using FLViewer

By using FLViewer from the NWC24 sample demos, it is possible to both verify and edit the content of the current Wii console friend roster and to register new entries to the friend roster.

The Wii Remote is used to operate FLViewer. It does not support the Nintendo GameCube™ Controller or any other controllers.

The method of operation is displayed in the lower right-hand corner of the screen, but the basic operations are listed in Table 4-1.

Table 4-1 Basic FLViewer Controls

Control	Function
+Control Pad	Select
A Button	Confirm
B Button	Cancel
+ Button	Register to the Wii console friend roster / Confirm nicknames and e-mail addresses

In order to register a new friend in the Wii console friend roster, select an unregistered space from the list on the left of the screen (one where the nickname column reads "----------"), and press the A Button.

Next, enter the information for the friend you wish to register.

The friend information being entered will be displayed at the upper right-hand corner of the screen; select an item with the A Button and enter a value.

The items that can be entered for friend information are listed in Table 4-2.

Table 4-2 Friend Information Entry Items

Item	Description
Type	This is the type of friend. Select either "Wii" or "Public (non-Wii)."
Status	This is the status of the establishment of a friend relationship. Either "Pending" or "Established" can be selected, but "Pending" is forcibly set during registration.
FDID	This is a reserved region. There are plans to use this in the future to link with Wii console features; a 16-digit numerical value can be entered.
Name	This is the friend's nickname. LEFT and RIGHT on the +Control Pad select the type of character, UP and DOWN on the +Control Pad select the character to enter, and the A Button enters the selected character. Confirm the nickname by either entering 10 characters or pressing the + Button.
Address	This is the friend's address. For Wii Friends, enter the Wii Number; for "Public" Friends, enter the e-mail address. The method of entering the e-mail address is the same as that for the nickname. Confirm the address by either entering 255 characters or pressing the + Button.

When you have finished entering the friend information, press the + Button to perform registration in the Wii console friend roster. When the registration has completed, the nickname of the registered friend will be displayed on the list which is on the left side of the screen.

As is the case with the registration method using the Wii Menu, in order to exchange messages with registered friends, both parties must perform the registration procedure for each other and establish a friend relationship.

If “Wii” is selected as the friend type, a message will automatically be sent, and the friendship relationship will be established, as is the case when using the Wii Menu.

However, if “Public” is selected as the friend type, no message will be sent during registration, unlike the case when using the Wii Menu.

In order to establish a friend relationship with a Public Friend, that friend must send an e-mail to the Wii after the Wii-using friend has registered the Public Friend in the Wii console friend roster (the content of this e-mail is inconsequential). The e-mail address for the friend is “w” + “Wii Number” + “@wii.com.” For example, the Wii e-mail address for Wii number 1234567890123456 is w1234567890123456@wii.com.

5 Testing With the Wiiconnect24 Operating Environment

5.1 Verifying Operation with Other Application Messages Mixed In

Because the WiiConnect24 message boxes (inbox and outbox) are shared by all applications, there are messages from other applications mixed in. Care must be taken for the applications that use the WiiConnect24 message feature so that mistakenly loading messages intended for other such applications will not result in a malfunction.

The “Wii Message Board” and the “Mii Channel” contained in the Wii Menu both have a feature for sending and receiving WiiConnect24 messages. These features can be used to create the state where the message boxes contain messages intended for applications other than yours when verifying the operation.

6 Verifying Error Messages

6.1 When Using SOStartup

The error values returned by the `SOStartup` function and the resulting error codes after these values have been converted with the `NETGetStartupErrorCode` function are listed in Table 6-1.

Table 6-1 SOStartup Error Codes

Wired/ Wireless	SOStartup function	NETGetStartupErrorCode function	Error Code
Both	SO_EFATAL	NET_ECODE_STARTUP_FAILED	50100
Both	SO_ENOENT	NET_ECODE_NO_ENABLED_CONFIG	50200
Both	SO_EINVAL	NET_ECODE_INVALID_CONFIG	50300
Wired	SO_ENXIO	NET_ECODE_DEVICE_NOT_EXISTS	504xx
Wireless	SO_ERR_LINK_UP_TIMEOUT	NET_ECODE_AP_NOT_FOUND	510xx
Wired	SO_ERR_LINK_UP_TIMEOUT	NET_ECODE_WIRED_LINK_UP_FAILED	514xx
Wireless	SO_ERR_LINK_DOWN	NET_ECODE_WIRELESS_LINK_UP_FAILED	513xx
Wired	SO_ERR_LINK_DOWN	NET_ECODE_WIRED_LINK_UP_FAILED	514xx
Wireless	SO_ENOLINK	NET_ECODE_WIRELESS_LINK_UP_FAILED	513xx
Wired	SO_ENOLINK	NET_ECODE_WIRED_LINK_UP_FAILED	514xx
Wireless	SO_ETIMEDOUT	NET_ECODE_WIRELESS_LINK_UP_FAILED	513xx
Wired	SO_ETIMEDOUT	NET_ECODE_WIRED_LINK_UP_FAILED	514xx
Wireless	SO_ENETRESET	NET_ECODE_WIRELESS_LINK_UP_FAILED	513xx
Wired	SO_ENETRESET	NET_ECODE_WIRED_LINK_UP_FAILED	514xx
Both	SO_ERR_DHCP_TIMEOUT	NET_ECODE_DHCP_FAILED	520xx
Both	SO_ERR_DHCP_EXPIRED	NET_ECODE_DHCP_FAILED	520xx
Both	SO_ERR_DHCP_NAK	NET_ECODE_DHCP_FAILED	520xx
Both	SO_ERR_ADDR_COLLISION	NET_ECODE_ADDR_COLLISION	527xx
Both	All other errors	NET_ECODE_STARTUP_FAILED	50100

Table 6-2 describes representative methods for causing the various error codes at will.

Table 6-2 Error Code Causes

Code	Description
50100	This will occur when the hardware or firmware is defective. It is not possible to deliberately cause this error code.
50200	Use either the Wii Menu or NCDConfigTool and delete all the connection targets.
50300	This will occur when the network configuration file in Wii system memory is corrupted. It is not possible to deliberately cause this error code.
504xx	This will occur when the firmware is defective. It is not possible to deliberately cause this error code.
510xx	This will occur if a wireless connection target is enabled and power is cut to the AP used in the connection's configuration.
513xx	This will occur if a wireless connection target is enabled and the WEP or WPA encryption keys of the AP are changed.
514xx	This will occur if a wired connection target is enabled and either the Wii LAN adapter (Ethernet) or the LAN cable is disconnected.
520xx	This will occur if using a connection target with obtaining IP address automatically enabled and a connection is attempted to a LAN that doesn't have a DHCP server.
527xx	This will occur if using a connection target with obtaining IP address automatically disabled and a connection is attempted after configuring an IP address that is already in use on the LAN.

6.2 When Using WiiConnect24

The error values returned by the `NWC24Check` function, along with the corresponding error codes that can be obtained afterward using the `NWC24GetErrorCode` function, are listed in Table 6-3.

Table 6-3 NWC24Check Error Values

Result of NWC24Check	Description	Error code returned by NWC24GetErrorCode
NWC24_ERR_DISABLED	Disabled setting error	109107, 109139
NWC24_ERR_NETWORK	Network connection error	5xxxx (same as SOStartup), 10xxxx
NWC24_ERR_SERVER	Server error	11xxxx, 10xxxx
NWC24_ERR_FULL	Outbox full error	109106
NWC24_ERR_FATAL	All other fatal errors	10xxxx

Many types of error codes are defined in WiiConnect24, but most of them occur only rarely or do not normally occur. Because they are difficult to reproduce, it is not necessary to verify them all. Below we have described only those errors which are relatively easy to verify. It is recommended that you verify, at the very least, one error from each error category.

6.2.1 Disabled Settings Errors

The errors in Table 6-4 occur when the WiiConnect24 feature is not in a usable state in the Wii system settings. It is possible to reproduce these errors using the Wii Menu or nwc24init by overwriting the relevant parts of the items in Wii system settings.

Table 6-4 Disabled Settings Errors

Code	Description
109107	These errors occur when the sending and receiving of WiiConnect24 messages is restricted by Parental Controls. To reproduce it, either enable Parental Controls in Wii System Settings screen 2 of the Wii Menu and place a restriction on the sending and receiving of WiiConnect24 messages, or set both the ParentalControl and NetContentRestrictions flags to ON under the SC items of nwc24init. (This error code is limited to the applications using the message feature.)
109139	This error code occurs when WiiConnect24 is turned OFF. To reproduce it, either turn WiiConnect24 OFF in Wii System Settings screen 2 of the Wii Menu, or turn WCFlags OFF under the SC items of nwc24init.

6.2.2 Network Connection Errors

The errors in Table 6-5 occur when a problem arises with the WiiConnect24 Internet connection. Some of these are the same as the errors obtained with `SOStartup`.

Table 6-5 Network Connection Errors

Code	Description
05xxxx	The methods for causing these errors are the same those for SOStartup errors.
10x304	These errors occur when the domain could not be resolved during communication. One simple way of reproducing these errors is to set an incorrect address for either the default gateway or the DNS server. (If using the Wii Menu, an error will appear during the connection test phase that prevents configuration from being done, so this configuration should be performed using ncdconfigtool.)
10x305	These errors occur if the server could not be found.
10x313	These errors occur when a connection cannot be made to the proxy server. They can be reproduced by enabling proxy connections and setting an incorrect address, but a 10x305 error may result depending on the conditions of the connection.
109144	This error occurs when registration of the WiiConnect24 account with the server failed for some reason or other, thereby preventing the registration from completing. It can be reproduced by performing a re-initialization of config using nwc24init, and executing the application again after changing the Wii number without performing registration (Register).

The network connection related errors cannot be detected until WiiConnect24's automatic sending and receiving processing actually fails to connect. Therefore, these errors cannot be obtained if NWC24Check is called immediately after the application starts up. Due to the mechanism of the scheduler operation, in some cases several minutes may be required until they can be obtained.

6.2.3 Server Errors

The errors in Table 6-6 occur when a problem arises during communications with the server using WiiConnect24. An error emulation server is being prepared for verification purposes, but at present there is no way to deliberately generate these errors.

Table 6-6 Server Errors

Code	Description
1102xx	These errors occur due to errors related to authentication of the server account.
110321	This error occurs when an account has not yet been registered with the server.
1104xx	These errors occur due to internal system errors on the server side.
1105xx	
1106xx	

For the same reasons that applied to the network connection errors, some time is also required until server errors become detectable.

6.2.4 Outbox Full Error

This error occurs when the outbox becomes full. Verification of this error is not necessary for applications that do not send messages.

Table 6-7 Outbox Full Error

Code	Description
109106	This error occurs when no more messages can be created in the outbox. To reproduce it, register 127 messages while the WiiConnect24 scheduler is suspended.

6.3 When Using Nintendo Wi-Fi Connection

Refer to the *Nintendo Wi-Fi Connection Error Simulation Manual*, which has been distributed separately.

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