



IPPort Control (TM) Version 1.11

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Description

The IPPort Control facilitates TCP/IP communications by providing an easy interface to Winsock functions. It allows a client application to communicate with a server using stream sockets.

This minor release includes internal enhancements as well a new functionality.

File Name

IPPORT.VBX

Object Type

IPPort

Remarks

IPPort needs a Winsock 1.1 compliant TCP/IP subsystem. WINSOCK.DLL must be available in the system path before the control can be loaded. The Winsock version supported must be at least 1.1.

Our main goal in designing IPPort was ease of use. The control has a minimum of properties, and four events: [Connected](#), [DataIn](#), [Disconnected](#), [ReadyToSend](#). The events are relatively self-explanatory. The connection is attempted by setting the [Connected](#) property to **True**, and then waiting for the [Connected](#) event. The destination is defined by setting the [Port](#) property and either the [HostName](#) or the [HostAddress](#) property. Data is sent by assigning the data string to the [DataToSend](#) property.

To disconnect, you just set the [Connected](#) property to **False**. The [Linger](#) controls how the connection is terminated.

The operation of the control is almost completely asynchronous. All the calls except the ones that deal with host name and address resolution, operate through Windows messages (no blocking calls). The gain in performance is considerable when compared to using blocking calls. The only drawback is what some people perceive as "unnatural" programming, but if you were brave enough to come to this sentence, you will be doing fine.

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AcceptDataPREF_AcceptData
ActivePREF_Active
BytesSentPREF_BytesSent
ConnectedPREF_Connected
DataInPREF_DataIn
DataToSendPREF_DataToSend
EOLPREF_EOL
HostPREF_Host
HostAddressPREF_HostAddress
HostNamePREF_HostName
InBufferSizePREF_InBufferSize
LingerPREF_Linger
ListeningPREF_Listening
LocalHostPREF_LocalHost
LocalHostNamePREF_LocalHostName
LocalPortPREF_LocalPort
NullsToSendPREF_NullsToSend
OutBufferSizePREF_OutBufferSize
PortPREF_Port
RemoteHostPREF_RemoteHost
RemotePortPREF_RemotePort
WinsockInfoPREF_WinsockInfo
ActionPREF_Action
EncodedDataPREF_EncodedData
DecodedDataPREF_DecodedData
FileNamePREF_FileName
FileCntPREF_FileCnt
FileCntPREF_FileCnt
FormatPREF_Format
IntellicodePREF_Intellicode
MaxFileSizePREF_MaxFileSize
OverwritePREF_Overwrite
ProgressStepPREF_ProgressStep

DecodingUREF_ENCODING
EncodingUREF_ENCODING
UUDecodingUREF_UU_ENCODING
UUEncodingUREF_UU_ENCODING
Base64 DecodingUREF_BASE64_ENCODING
Base64 EncodingUREF_BASE64_ENCODING
Quoted Printable DecodingUREF_QP_ENCODING
Quoted Printable EncodingUREF_QP_ENCODING

ConnectedEREF_Connected
ConnectionRequestEREF_ConnectionRequest
DataInEREF_DataIn
DisconnectedEREF_Disconnected
ReadyToSendEREF_ReadyToSend
ProgressEREF_Progress

EncodeFREF_Encode
DecodeFREF_Decode

True

False
Boolean (Integer)
Integer
Long
String
"" (*empty string*)

".uue", ".b16", or ".q_p"

Error CodesERROR_CODES
Exported FunctionsEXPORTED_FUNCTIONS

IPPort

IPPORT.VBX

ippportcontrol

1.1

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\$25

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Comments:

Properties

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* <u>Connected</u>	* <u>LocalHostName</u>
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AcceptData Property

Description

Setting the property to **False** temporarily disables data reception (and the DataIn event) from the specified *ConnectionID*. Setting the property to **True** reenables data reception.

Usage

```
[form.][i>portcontrol.AcceptData[ = value]
```

Default Value

True

Remarks

Use the **AcceptData** property with caution. If data reception is disabled for too long, the other side might abort the connection.

This property is not available in design mode.

Data Type

Boolean (Integer)

BytesSent Property

Description

Shows the number of bytes sent after the last assignment to the DataToSend property.

Usage

*[form.][i]portcontrol.***BytesSent**

Default Value

0

Remarks

BytesSent shows how many bytes were sent after the last assignment to DataToSend. Check the DataToSend property for more information.

This property is read-only and not available in design mode.

Data Type

Integer

Connected Property

Description

This property is used to create and close connections, as well as show the current status of the control (connected or not).

Usage

`[form.][ipportcontrol.]Connected[= value]`

Default Value

False

Remarks

Connected is an action property. Use it to create and close connections. Setting **Connected** to **True** initiates a connection attempt. If successful, after the connection is achieved, the value of the property changes to **True** and the Connected event is fired.

How and when the connection is closed is controlled by the Linger property. Please refer to its description for more information.

The **Connected** property is not available in design mode.

Data Type

Boolean (Integer)

DataToSend Property

Description

DataToSend is an action property. Assigning a Visual Basic string to this property makes the control send the string to the remote host (note that a Visual Basic string can contain control as well as NULL characters).

Usage

```
[form.][ipportcontrol.]DataToSend(ConnectionID)[ = value]
```

Default Value

"" (*empty string*)

Remarks

If you are sending data to the remote host faster than it can process it, or faster than the network bandwidth allows, the outgoing queue might fill up. When this happens, **DataToSend** fails with error 25036: "[10035] Operation would block" (WSAEWOULDBLOCK). The BytesSent property shows how many bytes were sent (if any). You can trap the error, and then try to send the data again. If 0 bytes were sent, then you can wait for the ReadyToSend event before attempting to send data again. (However, please note that ReadyToSend is not fired when part of the data are successfully sent).

This property is write-only and not available in design mode.

Data Type

String

EOL Property

Description

Used to break the incoming data stream into chunks separated by the string assigned to **EOL**. For more information, see the description of the [DataIn](#) event.

Usage

```
[form.][[ipportcontrol.]EOL[ = value]
```

Default Value

"" (*empty string*)

Remarks

The **EOL** property is especially useful with ASCII files. Setting it to **Chr\$(10)** (*newline*) enables splitting of an incoming ASCII text stream into lines. In this case, one event is fired for each line received (as well as in packet boundaries). The **Chr\$(10)** characters are discarded.

EOL is a Visual Basic String. In particular, this means that it can be more than one character long, and it can contain NULL (0) characters as well.

The **EOL** property is shared among incoming connections.

Data Type

String

HostAddress Property

Description

Specifies the IP number of the remote host in Internet dotted format.

Usage

[*form.*][*ipportcontrol.*]**HostAddress**[= *value*]

Default Value

0.0.0.0

Remarks

The **HostAddress** property is an action property, but in this case the *action* is deferred until the HostName property is queried (read). When this happens, a DNS operation is initiated, trying to find the corresponding domain name for the address. After the DNS call finishes, the host name can be found in the HostName property.

HostAddress cannot be changed once connected. You need to close the current connection before attempting to set a new address, or an error will be fired.

Data Type

String

HostName Property

Description

Specifies the domain name of the remote host.

Usage

`[form.][[ipportcontrol.]HostName[= value]`

Default Value

"" (*empty string*)

Remarks

The **HostName** property is an action property. When set, a DNS operation is initiated, trying to find the corresponding IP number for the domain name (**HostName**). After the DNS call finishes, the IP number can be found in the HostAddress property.

HostName cannot be changed once connected. You need to close the current connection before attempting to set a new address, or an error will be fired.

Data Type

String

InBufferSize Property

Description

Specifies the size (in bytes) of the receiving queue in the underlying TCP/IP provider.

Usage

```
[form.][ipportcontrol.]InBufferSize[ = value]
```

Default Value

2048

Remarks

This is the size of an internal queue in the TCP/IP provider. You can increase or decrease its size depending on the amount of data that you will be receiving. Increasing **InBufferSize** can provide drastic improvements in performance in some cases.

Some TCP/IP implementations do not support variable buffer sizes. If that is the case, when a new connection is accepted, **InBufferSize** reverts back to its allowable size. The same happens if you attempt to make it too large or too small.

Data Type

Integer

Linger Property

Description

This property controls how a connection is closed. The default is **True**. In this case the connection is closed only after all the data is sent. Setting it to **False** forces an abrupt (hard) disconnection. Any data that were in the sending queue might be lost.

Usage

```
[form.][[ipportcontrol.]Linger[ = value]
```

Default Value

True

Remarks

The **Linger** property is shared among connections. It's value controls how the next connection will be closed.

The default behaviour (which is also the default mode for Winsock stream sockets) might result in an indefinite delay in closing the connection. Even though IPPort returns control immediately, Winsock might indefinitely hold system resources until all pending data are sent (even after your application closes). This means that valuable system resources might be wasted.

Setting **Linger** to **False** forces an immediate disconnection. If you know that the other side has received all the data you had sent (by a client acknowledgment, for example), setting **Linger** to **False** might be the appropriate course of action.

Data Type

Boolean (Integer)

LocalHostName Property

Description

Specifies the domain name of the local host.

Usage

`[form.][ipportcontrol.]LocalHostName`

Default Value

"" (*empty string*)

Remarks

This property is read-only.

Data Type

String

LocalPort Property

Description

Specifies the IP port of the local host.

Usage

[*form.*][*ipportcontrol.*]**LocalPort**[= *value*]

Default Value

0

Remarks

The **LocalPort** property must be set before a connection is attempted. It instructs the control to *bind* to a specific port (or communication endpoint) in the local machine.

Setting it to **0** (default) enables Winsock to choose a port at random. The chosen port will be shown by the **LocalPort** property after the connection is made.

LocalPort cannot be changed once a connection is made. Any attempt to set the **LocalPort** property when a connection is active will generate an error.

The **LocalPort** property is useful when trying to connect to services that require a trusted port in the client side. An example is the remote shell (rsh) service in UNIX systems.

Data Type

Integer

OutBufferSize Property

Description

Specifies the size (in bytes) of the outgoing queue in the underlying TCP/IP provider.

Usage

`[form.][ipportcontrol.]OutBufferSize[= value]`

Default Value

2048

Remarks

This is the size of an internal queue in the TCP/IP provider. You can increase or decrease its size depending on the amount of data that you will be receiving. Increasing **OutBufferSize** can provide drastic improvements in performance in some cases.

Some TCP/IP implementations do not support variable buffer sizes. If that is the case, when a new connection is accepted, **OutBufferSize** reverts back to its allowable size. The same happens if you attempt to make it too large or too small.

Data Type

Integer

Port Property

Description

Specifies the IP port of the remote host.

Usage

[form.][ipportcontrol.]RemotePort[= value]

Default Value

0

Remarks

The **Port** property must be set before a connection is attempted. The port number cannot be changed once a connection is made. Any attempt to set the **Port** property when a connection is active will generate an error.

Data Type

Integer

WinsockInfo Property

Description

Provides information about the underlying TCP/IP (Winsock) provider.

Usage

`[form.][ipportcontrol.]WinsockInfo`

Default Value

"" (*empty string*)

Remarks

WinsockInfo returns a string up to 256 bytes long provided by the underlying Winsock subsystem.

If Winsock fails to initialize successfully, **WinsockInfo** contains the string "Not Initialized." followed by a description of the error condition.

The property is read-only.

Data Type

String

Events

*Connected

*DataIn

*Disconnected

*ReadyToSend

Connected Event

Description

Occurs when the connection to the remote host is created.

Syntax

Sub *ipportcontrol_Connected*(*StatusCode* **As Integer**, *Description* **As String**)

Remarks

If a connection is successfully created, *StatusCode* is **0**, and *Description* is "**OK**".

If the connection fails, *StatusCode* has the error code returned by Winsock. *Description* contains a description of this code. The value of *StatusCode* is obtained by adding 15001 to the corresponding Winsock error code.

Please refer to the [Error Codes](#) section for more information.

DataIn Event

Description

Occurs when data arrives from the remote host.

Syntax

Sub *ipportcontrol_ConnectionRequest*(*Text As String*, *EOL As Integer*)

Remarks

Trapping the **DataIn** event is your only chance to get the data coming from the other end of the connection. The incoming data are given in *Text*. *Text* is a Visual Basic string, and as such might be considered as a binary chunk of data with length **Len**(*Text*).

EOL indicates whether the EOL string was found on the end of *Text* or not. If the EOL string was found, then *EOL* is **True**.

If *Text* was obtained at the end of a segment of data received from Winsock, then *EOL* is **False**. Please note that this also means that more than one **DataIn** event with *EOL* set to **False** can be received during a connection.

If the EOL property is "" (empty), then *EOL* can be disregarded. For more information on *EOL*, please refer to the description of the EOL property.

Disconnected Event

Description

Occurs when the connection to the remote host is closed (broken).

Syntax

Sub *ipportcontrol_Disconnected*(*StatusCode* **As Integer**, *Description* **As String**)

Remarks

If the connection is broken normally, *StatusCode* is **0**, and *Description* is "OK".

If the connection is broken for any other reason, *StatusCode* has the error code returned by Winsock. *Description* contains a description of this code. The value of *StatusCode* is obtained by adding 15001 to the corresponding Winsock error code.

Please refer to the [Error Codes](#) section for more information.

ReadyToSend Event

Description

Indicates that the underlying TCP/IP subsystem is ready to accept data and send them to the remote host.

Syntax

```
Sub ipportcontrol_ReadyToSend()
```

Remarks

The **ReadyToSend** event is fired when the connection is ready to accept data again after a failed DataToSend.

The event is also fired immediately after a connection to the remote host is created.

Error Codes

The following is a list of the trappable errors fired by IPPort:

IPPort Internal Errors

- 20101 You cannot change the Port at this time. Close the connection first.
- 20102 You cannot change the HostName at this time. Close the connection first.
- 20103 You cannot change the HostAddress at this time. Close the connection first.
- 20105 Already connected. Close the current connection first in order to reconnect.
- 20106 Winsock error code outside normal range.
- 20107 You cannot change the LocalPort at this time. Close the connection first.

Winsock Errors

The error message descriptions show the corresponding Winsock error number. The corresponding Visual Basic error code can be obtained by adding 15001 to the number displayed in the message and vice-versa.

25005 (WSAEINTR)	[10004] Interrupted system call.
25010 (WSAEBADF)	[10009] Bad file number.
25014 (WSAEACCES)	[10013] Permission denied.
25015 (WSAEFAULT)	[10014] Bad address.
25023 (WSAEINVAL)	[10022] Invalid argument.
25025 (WSAEMFILE)	[10024] Too many open files.
25036 (WSAEWOULDBLOCK)	[10035] Operation would block.
25037 (WSAEINPROGRESS)	[10036] Operation now in progress.
25038 (WSAEALREADY)	[10037] Operation already in progress.
25039 (WSAENOTSOCK)	[10038] Socket operation on non-socket.
25040 (WSAEDESTADDRREQ)	[10039] Destination address required.
25041 (WSAEMSGSIZE)	[10040] Message too long.
25042 (WSAEPROTOYPE)	[10041] Protocol wrong type for socket.
25043 (WSAENOPROTOOPT)	[10042] Bad protocol option.
25044 (WSAEPROTONOSUPPORT)	[10043] Protocol not supported.
25045 (WSAESOCKTNOSUPPORT)	[10044] Socket type not supported.
25046 (WSAEOPNOTSUPP)	[10045] Operation not supported on socket.
25047 (WSAEPFNOSUPPORT)	[10046] Protocol family not supported.
25048 (WSAEAFNOSUPPORT)	[10047] Address family not supported by protocol family.
25049 (WSAEADDRINUSE)	[10048] Address already in use.
25050 (WSAEADDRNOTAVAIL)	[10049] Can't assign requested address.
25051 (WSAENETDOWN)	[10050] Network is down.
25052 (WSAENETUNREACH)	[10051] Network is unreachable.
25053 (WSAENETRESET)	[10052] Net dropped connection or reset.
25054 (WSAECONNABORTED)	[10053] Software caused connection abort.
25055 (WSAECONNRESET)	[10054] Connection reset by peer.
25056 (WSAENOBUFS)	[10055] No buffer space available.
25057 (WSAEISCONN)	[10056] Socket is already connected.
25058 (WSAENOTCONN)	[10057] Socket is not connected.
25059 (WSAESHUTDOWN)	[10058] Can't send after socket shutdown.
25060 (WSAETOOMANYREFS)	[10059] Too many references, can't splice.
25061 (WSAETIMEDOUT)	[10060] Connection timed out.

25062	(WSAECONNREFUSED)	[10061]	Connection refused.
25063	(WSAELOOP)	[10062]	Too many levels of symbolic links.
25064	(WSAENAMETOOLONG)	[10063]	File name too long.
25065	(WSAEHOSTDOWN)	[10064]	Host is down.
25066	(WSAEHOSTUNREACH)	[10065]	No Route to Host.
25067	(WSAENOTEMPTY)	[10066]	Directory not empty.
25068	(WSAEPROCLIM)	[10067]	Too many processes.
25069	(WSAEUSERS)	[10068]	Too many users.
25070	(WSAEDQUOT)	[10069]	Disc Quota Exceeded.
25071	(WSAESTALE)	[10070]	Stale NFS file handle.
25072	(WSAEREMOTE)	[10071]	Too many levels of remote in path.
25092	(WSASYSNOTREADY)	[10091]	Network SubSystem is unavailable.
25093	(WSAVERNOTSUPPORTED)	[10092]	WINSOCK DLL Version out of range.
25094	(WSANOTINITIALISED)	[10093]	Successful WSASTARTUP not yet performed.
25102	(WSAHOST_NOT_FOUND)	[11001]	Host not found.
25103	(WSATRY_AGAIN)	[11002]	Non-Authoritative Host not found (try again).
25104	(WSANO_RECOVERY)	[11003]	Non-Recoverable error.
25105	(WSANO_DATA)	[11004]	Valid name, no data record for requested name.

