

Socket To Me

By Bruce Gardner



In previous *BASIS International Advantage* articles highlighted the benefits of utilizing socket communications in BBx® and demonstrated how sockets facilitate communication between different processes on one computer or different hosts. This article takes socket communications one step further by exploring the latest cryptographic protocol available and how it provides secure communications over the Internet or on the corporate LAN.

Socket Review

A socket is an end point of a two-way communication link between two programs. The two programs can be running on the same system or on separate systems networked together.

Applications can use sockets to

- Facilitate the division of labor among specialized BBx programs or other computers on the network
- Incorporate functionality from another application - even if that other application is written in a different language, running on a remote system with a different OS

Of course, anytime data moves between computers, exposure on the network is a risk. First introduced in BBi® 4.0, [SSL \(Secure Socket Layer\)](#) greatly expands the range of socket communications by protecting data confidentiality with encryption.

Sockets in Action

In the "Pop Email Client" demo†, BASIS builds upon an older POP e-mail demo program by integrating SSL communications. The program, POP Email Client, retrieves e-mail information securely from Google's Gmail server on port 995 as shown in **Figure 1**.



Figure 1. Pop Email Client demo



As with all of the other LaunchDock demo programs, this program also demonstrates the utility of several BBJ controls: A status bar displays statistical and connection information, such as the number of unread messages on the server, and the amount of space the messages occupy on the server. A scrollable grid with resizable columns displays email header information such as the date the e-mail arrived and its sender and subject, as shown in **Figure 2**.

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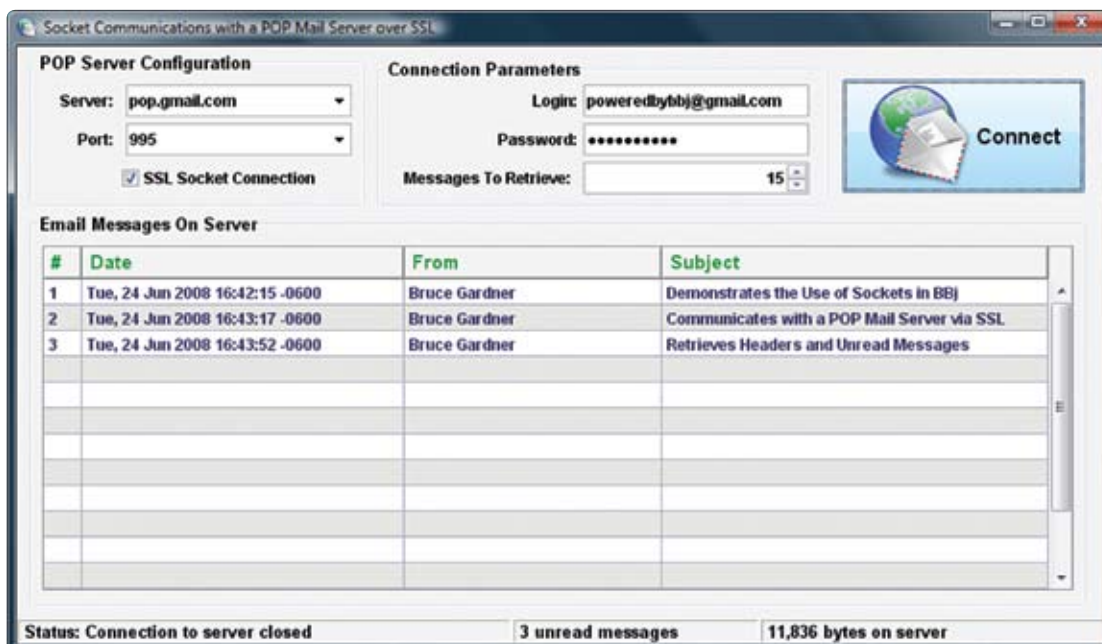
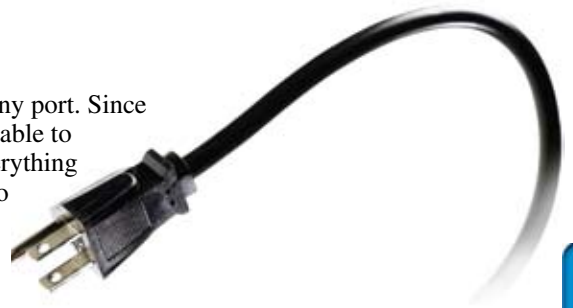


Figure 2. POP Email Client application: SSL-encrypted connection to Gmail server on port 995



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The POP Email Client program is configurable to connect to any server on any port. Since the SSL socket communication parameter is also optional, the application is able to connect to remote SSL-based mail servers, local non-secure servers, and everything in between. The code shown in **Figure 3** highlights the connection process to the remote mail server. The program evaluates whether the "SSL Socket Connection" checkbox is checked on line 205, and then conditionally opens up a port to the server using the appropriate TCP/IP - UDP 'N' alias.



```
203 REM Open a socket connection to the Mail Server
204 mode$ = "host=" + editServer!.getText() + ",port=" + str(editPort!.getText())
205 if (checkSSL!.isSelected()) then
206   open(tcpChan,mode=mode$,err=NO_SERVER_AVAILABLE)"N1"
207 else
208   open(tcpChan,mode=mode$,err=NO_SERVER_AVAILABLE)"N0"
209 endif
210
211 REM Set the status bar to let the user know we're connected$
212 statusBar!.setTextAt(0, " Status: Connected to mail server")
213 statusBar!.setTextAt(1, " ")
214 statusBar!.setTextAt(2, " ")
215
216 REM Communicate with the host
217 Repeat
218
219   REM Read in the next line of data from the host after clearing any error data
220   errorMessage$ = ""
221   input (tcpChan,err=ERR_READING_SOCKET) tcpData$
```


Figure 3. Excerpt of the "POP Email Client" demo that details the connection process

The program uses a config.bbx file with the following alias lines:

```
ALIAS N0 tcp "" NODELAY
ALIAS N1 ssl "" NODELAY
```

If the user specifies that the program connects to the mail server using secure sockets, the program will OPEN() the socket connection via the N1 alias, which indicates that it should employ SSL.

Summary

Sockets are the most flexible and popular form of interprocess communication developers use in applications today. Take a look at this program and see for yourself how easy it is to incorporate secure socket layer communications into your own applications. 



Download with BBj from www.basis.com/products/bbj/download.html and select †"Demos" in the Optional File section. After completing the installation, select **BBj > Demos > LaunchDock** from the BASIS folder to run the demo.

