

Optimizing Cordless Bar Code Scanning for Business Deployments

Socket Connect!Agent™, ActivePairing™ and Error Proof Protocol™, and how they improve the ease of use and reliability of cordless bar code scanning

There are many benefits of cordless bar code scanning — increased efficiency, improved safety, and better ergonomics, just to name a few. Successfully combining bar code scanning and *Bluetooth*® wireless technology, however, is no easy task, and a product that poorly integrates the two can lead to a nightmare of support problems, customer complaints, and workers refusing to adopt the technology.

Recognizing the unique challenges and risks of wireless data collection, Socket Mobile is committed to making its cordless bar code scanners truly reliable, simple to use, and easy to implement. Since offering its first cordless bar code scanner in 2004, the company has leveraged its expertise in both Auto ID and *Bluetooth* to optimize its wireless data collection products for business deployments, resulting in the exclusive offerings of Connect!Agent, ActivePairing, and Error Proof Protocol.

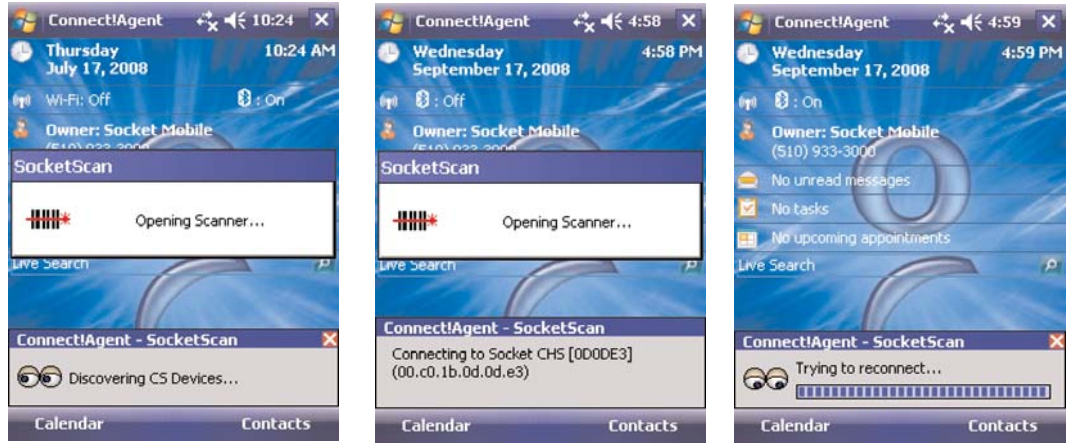


Connect!Agent Software

Although mainstream consumers are widely adopting *Bluetooth* in cars, mobile phones, headsets, and other electronics, the technology continues to be difficult to use in many non-consumer devices. Especially troublesome are the processes of configuring connections and connecting devices, which typically involve multiple steps and a myriad of options confusing to the average user.

Connect!Agent software automates Bluetooth configuration and connection, saving users the time and effort of six steps.

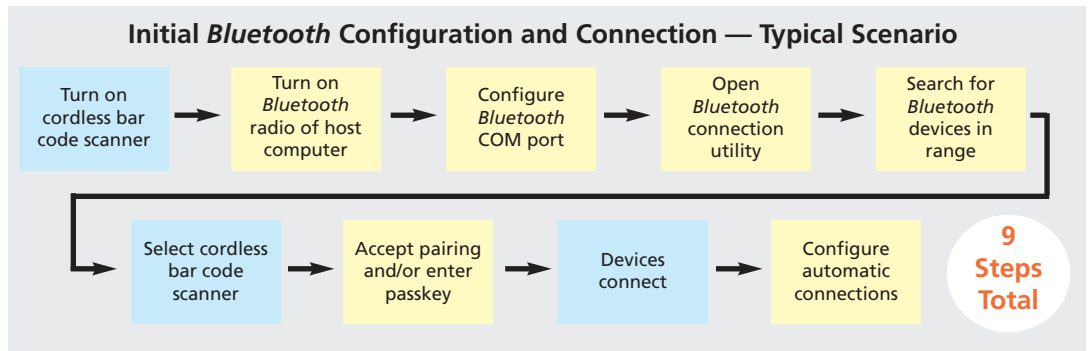
Connect!Agent software takes the difficulty out of *Bluetooth* software setup and configuration. It runs in the background, requires almost no user interaction, and handles all of the configuring and connecting automatically. As illustrated in diagrams on the next page, during initial *Bluetooth* configuration and connection, Connect!Agent software saves users the time and effort of six steps, eliminates the opportunity for incorrect configurations, and dramatically reduces the learning curve required for connecting a cordless bar code scanner to a host computer.



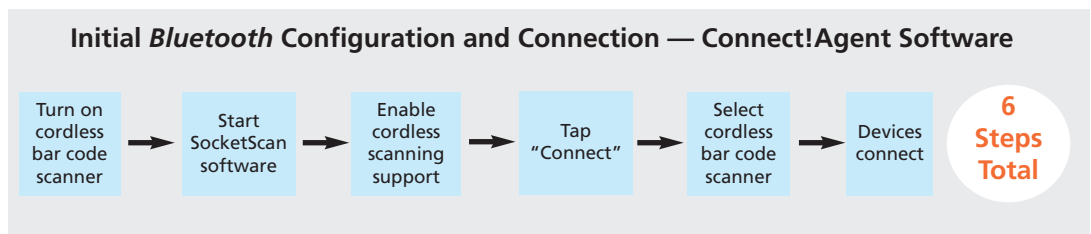
Connect!Agent software automatically connects, and if needed, reconnects the devices.

For most wireless bar code scanners, configuring and connecting to a host computer for the first time requires that a user know how to turn on a *Bluetooth* radio, configure an available *Bluetooth* outbound communications port, initiate a *Bluetooth* device search, select and pair devices, enter passkeys, and configure automatic connections. All of this can take several minutes, even for experienced users.

With Connect!Agent software, the user only needs to turn on the bar code scanner, start SocketScan keyboard wedge software, enable cordless scanner support, and tap "Connect." Connect!Agent software instantly turns on the *Bluetooth* radio and begins searching for Socket Cordless Hand Scanner (CHS) Series 7 or Cordless Ring Scanner (CRS) Series 9 devices in range. After the device search, the user chooses the correct CHS or CRS from the list, and Connect!Agent software automatically configures and connects the devices. To speed up future connections, Connect!Agent software saves the *Bluetooth* device address of the CHS or CRS as its "favorite" (default) device. To help with *Bluetooth* pairing, Connect!Agent also saves the PIN of the favorite device. This enables Connect!Agent to automatically



For most Bluetooth devices, setting up and completing a wireless connection takes nine steps. The yellow boxes are steps automatically performed by Connect!Agent. The user still needs to start a keyboard wedge mechanism separately.



With Connect!Agent software, setting up and completing a Bluetooth connection takes six steps. The process also starts the keyboard wedge software, SocketScan.

target and connect to the favorite device the next time the user taps "Connect." Likewise, if the connection gets dropped, such as when a user moves out of range, Connect!Agent software will automatically try to reconnect.

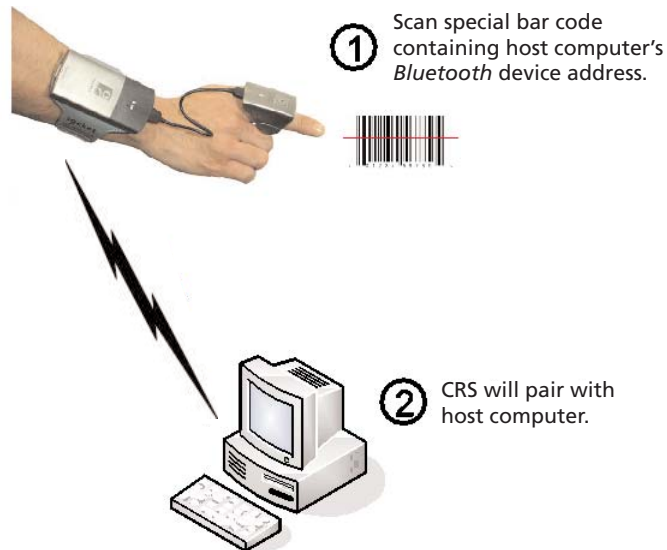
Connect!Agent software works closely in conjunction with SocketScan™ software, which provides a "keyboard wedge" to feed scanned data into any application as if it were typed on a keyboard. Connect!Agent software is currently available for Windows Mobile for use with the Socket Cordless Hand Scanner (CHS) Series 7 or Socket Cordless Ring Scanner (CRS) Series 9. It also comes pre-loaded on the Socket SoMo® 650 handheld computer, ready for deployment.

ActivePairing

While Connect!Agent is best if you need to consistently connect to the same computer, ActivePairing is ideal if you need to continually roam from system to system. With ActivePairing, users simply scan a special bar code to pair or unpair with a host computer. Each host computer is labeled with two customized bar codes: one to pair and one to unpair. Each contains the specific host computer's *Bluetooth* device address.

ActivePairing is ideal for applications such as voice picking, in which workers move throughout a warehouse and need to connect to computers at different workstations.

When most wireless bar code scanners connect to a computer, the host computer initiates the *Bluetooth* connection. This is true with Connect!Agent software as well as connections manually initiated with a *Bluetooth* software utility. With ActivePairing, however, the bar code scanner initiates the wireless connection to the host computer.



ActivePairing enables you to pair or unpair in seconds by scanning a special bar code.

ActivePairing is ideal for applications such as voice picking, in which workers move throughout a warehouse and need to connect to computers at different workstations. By making *Bluetooth* connections easy for even non-technical users, ActivePairing minimizes downtime and costly IT support problems in business deployments.

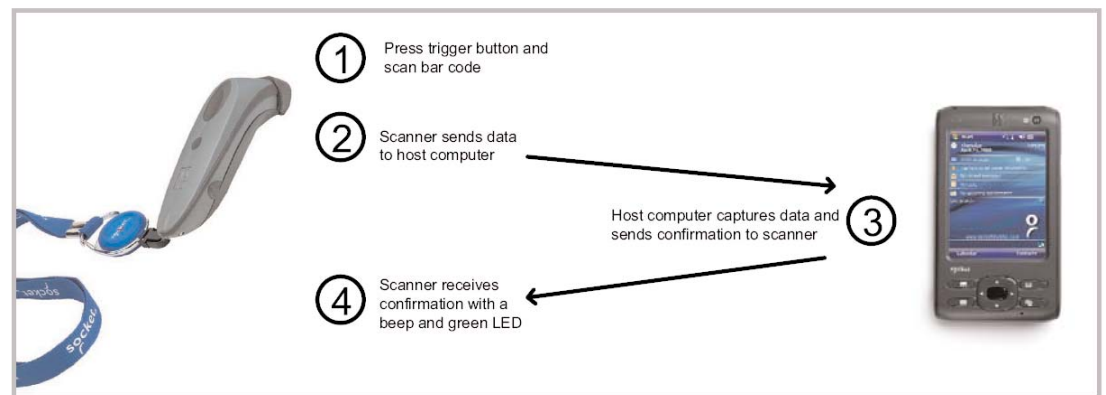
The most likely source of errors in any cordless scanning system is not the scanning and decoding process, but in the wireless transmission of the data to the host computer.

ActivePairing is currently available for Windows Mobile, Windows XP and Windows Vista for use with the CHS or CRS. For computers running Windows XP SP2 that don't have *Bluetooth* built in, Socket offers Scanning Companion, a USB *Bluetooth* adapter that comes with ActivePairing bar code labels for easy deployment out of the box.

Error Proof Protocol

While Connect!Agent and ActivePairing technology simplify the process of connecting a cordless bar code scanner to a host computer, Error Proof Protocol provides peace of mind that the host computer successfully receives the scanned data. It reduces the risk of data loss over the air with a real-time, two-way verification process.

The most likely source of errors in any cordless scanning system is not in the scanning and decoding process, but in the wireless transmission of the data to the host computer. As a security measure, some bar code scanners in the market feature on-board memory to catch scanned data when the connection to the host computer is lost. These solutions, however, typically fail to notify users when the wireless connection is broken, and users do not know where, in their sequence of data on the host computer, to later insert information saved on the bar code scanner. As a result, the whole batch of data would need to be rescanned. Error Proof Protocol circumvents the need for on-board memory by immediately notifying users when the cordless connection is lost, so that users know to stop scanning. With Connect!Agent software or ActivePairing technology, reconnecting is fast and easy, so workers can get back up and running again.



Error Proof Protocol confirms that the host computer receives scanned data.

Most cordless bar code scanners only beep to confirm that a bar code is read. This is because they were originally designed for workstation-based applications like point-of-sale (POS) where users work within a relatively small area and can easily hear a beep from the host computer or POS system confirming receipt of scanned data. The CHS Series 7 and CRS Series 9, however, feature a Class 1 *Bluetooth* radio with a range of up to 100 m (300 ft). They are better suited for more mobile data collection applications where users might need to roam within a greater area. As a result, Socket developed Error Proof Protocol so that users could still have peace of mind that scanned data reached the host computer even while working in a noisy environment 50 m, 60 m or further from the host system, well out of earshot. The green LED on the CHS or CRS functions in the same way, signalling the host computer's receipt of data. End users simply need to listen for the verifying beep or look for the green LED before scanning a new item.

The entire process of Error Proof Protocol occurs almost instantaneously. However, users familiar with bar code scanning may notice a slight delay between the scanning of a bar code and the beep and green LED confirming completed transmission of the data. In most instances, this delay is less than 300 milliseconds, depending on the *Bluetooth* stack, distance and any obstructions between the scanner and host computer.

With Error Proof Protocol, the CHS and CRS are the only cordless bar code scanners in the market that minimize the risk of data loss by actively notifying users when scanned data fails to transmit to the host computer. Error Proof Protocol can even be modified to provide a beep and green LED after validating data against a database of acceptable values. Over time, the technology has enabled successful deployments of the CHS and CRS worldwide. For example, when the United States Army trialed the CHS at two field locations for an inventory application, they found that the product provided 100% accuracy in data collection in all of their tests.

Conclusion

The purpose of bar code scanning is to increase the speed and accuracy of collecting data. The purpose of adding wireless radios to bar code scanners is to further improve upon the technology by increasing its speed, safety, ergonomics, and mobility. However, combining wireless technology with bar code scanning introduces an element of difficulty as well as the risk of data loss should the wireless connection get dropped. Socket Connect!Agent, ActivePairing and Error Proof Protocol effectively mitigate these challenges by providing ease of use and reliability in cordless bar code scanning deployments.



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