Maximizing the value of legacy applications with mobility and best-in-class Terminal Emulation (TE)

EXECUTIVE SUMMARY

Frequently, some of the first applications that an enterprise needs to mobilize are legacy applications — host-based applications that enable many everyday critical business functions. Terminal emulators are the crucial tool required to extend these server-based applications to a mobile device — but all terminal emulators are not created equally. This technical brief discusses the role of terminal emulation in enterprise mobility solutions, what to look for in a terminal emulator, and how Motorola has developed a solution that is helping companies mobilize host applications quickly, easily — and in record time.

The challenge: mobilizing legacy applications

Businesses across virtually all industry sectors are leveraging mobility to move computing power off the desktop and into the hands of workers. With a mobile computer in-hand, workers have the real-time information required to streamline business processes and improve business agility, response times and overall productivity.

While new tools allow the creation of business applications designed to run on mobile computers and maximize mobile computer functionality, nearly every enterprise in virtually every industry has an existing investment in critical mainframe-resident applications that are typically accessed via 'dumb' desktop terminals. The backbone of many business processes, these applications are often a first step in a mobility strategy — the first tier of applications extended to a mobile computer. As a result, terminal emulation becomes a critical requirement for today's mobility solutions. Terminal emulators allow enterprises to protect this existing technology investment by enabling the extension of these host applications to mobile computers — thick client devices that offer a wealth of processing power instead of thin client terminals — without the time and cost associated with modifying the original application.

The issue: choosing the right terminal emulator

In order to maximize the value of a mobility solution, the terminal emulator needs to address the unique needs associated with mobility — such as security, the ability to accommodate different types of data input and the management of the connection between the mainframe and a device in constant motion. For example, an enterprise that deploys mobile computers with bar code scanning and RFID technology can only realize maximum worker productivity if the terminal emulator accepts data from the scan of a bar code or an RFID tag — instead of through the keyboard.

While the basic functionality of a terminal emulator is simplistic in nature, all terminal emulators are not created equal. The optimum solution is a standards-based terminal emulator that delivers the features and security you need today, can evolve as your mobility solution evolves, and is easy to deploy and integrate into your technology environment.

The solution: best-in-class terminal emulation

Motorola helps address these issues through a partnership with Wavelink, which enables the integration of one of the best-in-class terminal emulation clients into Motorola mobile computers*. Through this partnership, Motorola mobile computers offer a distinct business advantage —terminal emulation is no longer an add-on solution, but a built in feature, a part of Motorola mobile computers. And with the Wavelink Terminal Emulation (TE) client on board, customers enjoy the peace of mind that comes with well-proven time tested technology — there are over two million worldwide users.
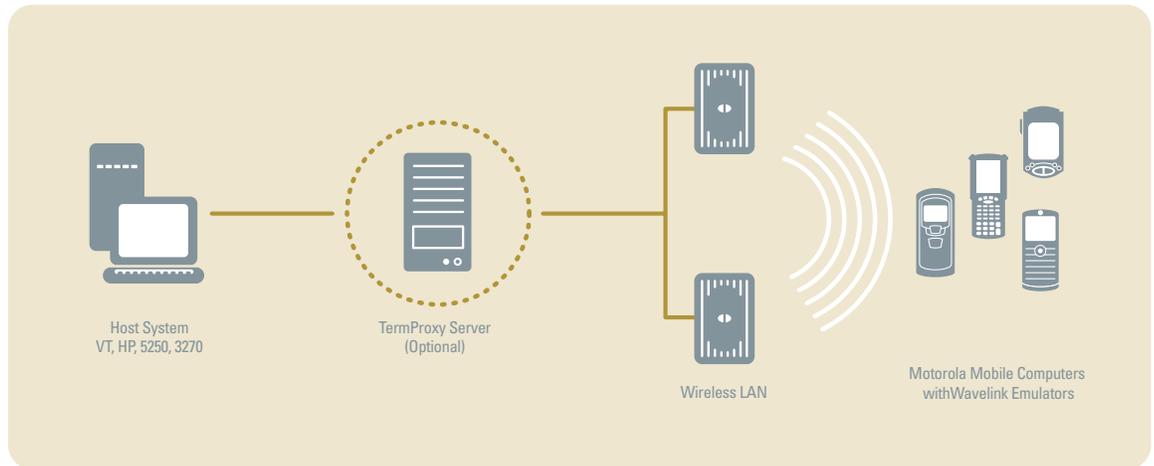
The architecture

The first generation of terminal emulators was designed to accommodate the lack of processing power on early mobile computers. Known as server-side emulation, the terminal emulation software was installed on a server that resided in between the host system and the handheld devices. The server handled the bulk of the processing required between the host and mobile device. But the need for this server also created a major vulnerability — the server was a single point of failure. If the server failed, mobile access to the host applications failed as well, and all users experienced downtime — a very expensive incident for the enterprise.

Wavelink's Terminal Emulation offers the robust next-generation architecture required to protect productivity, throughput and customer service levels in today's enterprises. Today's mobile computers offer robust platforms that provide the processing speed, memory and storage required to support client side processing (see Diagram 1).

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* The Terminal Emulation client is both pre-licensed and pre-loaded on the following Win CE devices: MC90XX-G, MC30XX-G, VC50XX and the WT4090. On the Windows Mobile versions of these Motorola mobile computers, the Terminal Emulation client is pre-licensed only, and must be downloaded from the Motorola website. In addition, the Terminal Emulation client is available for purchase for other Motorola mobile computers that are not already bundled with the Terminal Emulation client. And licenses for Terminal Emulation add-on modules can be purchased for most Motorola mobile computers.

Diagram 1: Client-side Terminal Emulation

Host System
VT, HP, 5250, 3270

TermProxy Server
(Optional)

Wireless LAN

Motorola Mobile Computers
withWavelink Emulators

The TE client resides directly on the mobile device, eliminating the need for an intermediary server. The single point of failure inherent in server-side emulation is eliminated. Since processing occurs at the mobile device level, the failure is completely isolated — only the user of that device is affected.

Optional TermProxy Server for challenging environments

Motorola's mobile computers and wireless LAN infrastructure work hand-in-hand to deliver many Motorola-unique features that provide a desktop-like seamless wireless connection to legacy and other enterprise applications. For example, Load Balancing and Pre-emptive Roaming work together to ensure that users roam to the next access port or access point before the wireless connection erodes. Other features minimize the need for mobile computers to process extraneous network traffic to preserve battery power for a full shift.

In environments (such as government security applications) where users absolutely must maintain application connectivity or where RF coverage is poor, Wavelink offers TermProxy, free server software that provides session persistence in the most demanding environments. The optional TermProxy server software maintains the session even if the device goes to sleep or the connection is momentarily lost, allowing users to continue working without repeating the log-in process and re-launching the application.

Terminal emulation with a difference

The Terminal Emulation solution provides the rich features and functionality required to maximize the investment in legacy applications as well as Motorola mobile computers, including:

Security

When it comes to mobility, security is a major issue. Terminal Emulation offers two proven security mechanisms built on industry standard security protocols to ensure secure wireless communications for terminal emulation sessions: SSL and SSH. SSL (Secure Sockets Layer) enables authentication of the server and provides secure communications over the Internet, enabling users inside or outside the enterprise to securely access legacy applications. SSH (Secure Shell) enables authentication of both server and client: the server must provide identification to the client, and vice versa, providing a higher level of security.

Both options are no-cost plug-ins that can be downloaded at any time from Wavelink's website. The modular architecture allows companies to deploy the right level of security as needed to support:

• PCI compliance for secure handling of credit card information for retailers and more

• HIPAA compliance for secure management of sensitive patient medical data
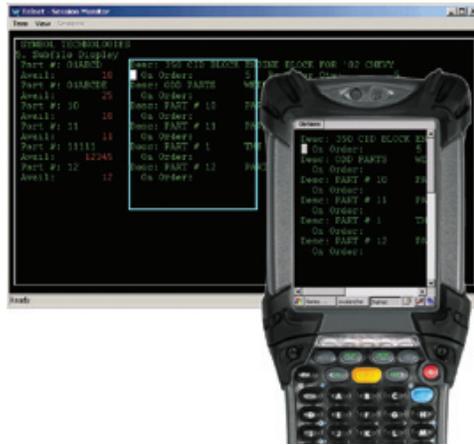
With TE, the display on the mobile device becomes a window into the actual host-based application screen. Users can easily scroll as needed to view other areas of the screen. There is no need to modify the legacy host-based application to fit the smaller screen sizes of the various devices you may be utilizing in your enterprise today — or tomorrow.

Extensibility

Terminal Emulation offers a modular architecture that provides rich investment protection for your mainframe applications. As technology evolves, Wavelink continues to develop additional purchasable modules that enable Terminal Emulation to take full advantage of the latest mobile device features and functionality. For example, one module allows the integration of voice into legacy applications, allowing manufacturers and distributors to quickly, easily and cost-effectively deploy voice-picking to reduce errors. The enterprise is able to more fully utilize the features on the Motorola mobile device, and easily integrate those features into the existing application environment — without requiring the high cost and business disruptions associated with the development of new applications and processes.

Keyboard creator

A virtual keyboard further expands Terminal Emulation extensibility. The ability to create a custom soft keyboard includes control over the number, size and location of the keys. The ability to import graphics provides support for any language as well as the creation of unique buttons for specific applications. For example, images of the Arabic or Chinese characters can be imported and placed on the soft keys, enabling internationalization of any application. In addition, the ability to place large pictures of specific products on keys can allow quality assurance workers inspecting product to indicate areas of concern or damage.

Multiple session support

In the event your enterprise has multiple host applications, this feature allows users to run multiple concurrent sessions. The ability to run multiple host-side applications in different windows improves productivity. No matter what application a user may need, it is instantly available — no need to spend time logging on and off to move between applications.

Session persistence

As the pioneer of server session persistence technology, Wavelink offers proven solutions you can count on for demanding environments and applications. In use around the world for over fifteen years, Wavelink offers the expertise needed to enable mainframe application access in challenging RF environments or for sensitive applications where constant connectivity is critical.

Internationalization

The ability to deploy language profiles allows the conversion of a common textual string into a different language, enabling the localization of various messages in the Terminal Emulation client. Double-byte language support — a no cost plug-in — is easy to load and configure, and ensures support regardless of the size of the language character set.

Application automation

A data identifier feature helps simplify and error proof data entry. The ability to read and recognize the data identifiers in the header information in a

bar code can enable the automatic identification and subsequent placement of that data in the right field — all in one step. For example, when a bar code is scanned, if the header contains a 'P' to indicate that the scanned data is a part number, the data can be automatically placed in the part number field. The operator cannot accidentally place the data in the wrong field, reducing data entry errors. Since the terminal emulation software is able to automatically identify the type of information and place it in the appropriate field in the record, worker productivity is improved —the worker does not need to select the field prior to scanning, effectively reducing the number of steps involved in data entry.

Troubleshooting support

Robust emulation session monitoring features allow administrators and help desk personnel to easily and remotely troubleshoot and resolve application-related user issues. Administrators can:

- View the exact portion of the screen that is currently displayed on the user's mobile computer by launching a duplicate application session.

- Lock the user out and take control of the terminal emulation session.

- Track the data moving between the host and device to help troubleshoot a sluggish host session or to provide additional data for the support team.

- View a variety of session statistics, such as battery status, scans per user, scans per minute and user session activity. Armed with this information, administrators have the data required to determine if the issue might be related to the device instead of the application. For example, a low battery could be contributing to a loss of wireless connection.

Depth of configuration options

One of the major strengths of TE is the vast array of options that provide the flexibility to: enrich the functionality of the host application; take full advantage of the Motorola mobile computer capabilities; and simplify the application interface for users.

- Bar code scanning. The ability to activate or deactivate the scanner preserves battery power on the mobile computer. The ability to control and select the various aspects of specific bar codes improves scanner performance, enabling workers to capture bar codes more rapidly, with greater ease — and greater accuracy.

- RFID support. The ability to accept RFID tag data allows the continued use of the legacy host application, while also allowing the enterprise to deploy the latest in automated data capture technology.

- Data manipulation: The ability to manipulate information that is captured automatically (for example through bar code scanning or the reading of an RFID tag) ensures compatibility with the legacy application. For example, your host application may only accept a 10-digit bar code. Due to the proliferation of the UPC code, however, some of your suppliers have now appended the six digit UPC data to the original ten-digit bar code. The ability to strip off the last six unexpected digits ensures that the scanned data will be compatible with the target field in the legacy application. As a result, all throughout the supply chain, the enterprise and suppliers can improve the data collection process as desired — yet you are still assured of compatibility with your legacy host application.

- Visual user feedback: The ability to manage and control the display of device statistics on the mobile computer provides users with at-a-glance visual indicators. For example, screen icons can present real-time battery and RF signal strength — alternatively, a pop-up box can appear if battery strength reaches a certain level or RF signal degrades, ensuring that users are aware of the situation. Users can then take any necessary action to prevent downtime — for example, by changing the battery. In addition, awareness of degradation in signal strength might prevent a call to the help desk, reducing support calls, support desk staffing requirements and the cost of supporting your mobility solution.

- Keyboard mapping: The ability to map mobile computer keys to the same hot keys utilized on the 'dumb' terminal ensures a consistent application interface for the user, reducing the need and cost for training.

- Mapping keys to multiple key presses: A custom mode allows a single key to be pressed multiple times to obtain an alternative value (for example, the '1' key could be mapped to create an 'A' on a single key press, a 'B' on a double key press, and a 'C' on a triple key press). This feature provides the enterprise with greater device flexibility. Workers can enter whatever data is required by the legacy application — even on mobile computers with a limited keypad.

- Scripting/key macros: This feature enables the automation of common actions to streamline the end user experience. Administrators can write and record or import scripts in the active Terminal Emulation client session. Terminal Emulation can launch scripts through a wide variety of inputs, such as the selection of a menu item, a defined key combination, upon session connection, when a bar code is scanned, when the magnetic stripe on a card (such as credit, debit, loyalty or drivers license) is swiped or an RFID tag is captured. Some examples of this powerful feature in action include the ability to:

  - Present warehouse workers in receiving or picking with the right screen when the application is launched — eliminating the time required to navigate through a large volume of screens to begin working.

  - Modify the screen by moving information as needed to facilitate easier reading, improving worker productivity.

  - Incorporate voice functionality without any changes to the host application. The receipt of voice input can be directed to the proper field, allowing users to speak commands to launch applications, navigate through screens and make menu selections. The ability to direct voice prompts to be played at the appropriate time enables applications that can further streamline processes and improve productivity, such as voice picking. (Note: the incorporation of voice functionality requires the purchase of the add-on voice module.)

Summary: the Motorola advantage

Regardless of whether your enterprise is involved in retail, manufacturing, distribution, transportation & logistics, healthcare and more, you most likely have a substantial investment in legacy mainframe applications. When you choose Motorola mobility solutions, you enjoy enterprise-class Terminal Emulation as a feature on your Motorola mobile computers*, delivering a wide variety of strategic and tactical benefits:

True plug and play simplicity for legacy applications
Pre-loading and pre-licensing on select Motorola mobile computers* enables the use of legacy business applications, right out of the box. The need to search for, load and configure terminal emulation software — or rewrite core legacy business applications — is eliminated. (Note that TE client is available for all Motorola mobile computers. It is pre-licensed on select devices, and is available for licensing on all other Motorola mobile computers).

Failover support
The optional free Wavelink TermProxy server software enables enterprises to define backup servers to ensure user uptime. In mission critical applications, worker productivity is protected, even in the event of a server malfunction.

Industry standard security
The utilization of industry standard wireless security protocols ensures the security of wireless data transmissions between the mobile computer and the host server, while also contributing to the compliance of enterprise security requirements as well as government regulations such as PCI and HIPAA.

Easy migration to the latest mobile devices
The ability to instantly and cost-effectively enable legacy applications on the latest mobile computers allows enterprises to upgrade devices to realize the benefits of the latest in mobile technology — without disrupting day-to-day business operations.

Investment protection
Wavelink's proven and continued commitment to product evolution ensures support for emerging technologies, such as voice and RFID. The modular architecture of Terminal Emulation enables the easy expansion of functionality through simple available plug-ins. The result is a dynamic terminal emulation client that can keep pace with the continually evolving world of mobile technology.

With Motorola as your mobility provider, you can expect maximum value from your technology investments — and the best of both worlds: the ability to simultaneously expand the functionality of your existing investments as well as maximize the functionality of your Motorola mobile computers.

For more information on how Motorola can help you get the most out of your legacy applications and your Motorola mobile computers, please visit us on the web at www.motorola.com/TEclient or access our global directory at www.motorola.com/enterprise/contactus

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