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Contents

Server Management Using the Wireless iPAQ Pocket PC and Remote Insight Lights-Out Edition

Abstract: This paper provides an overview of the functionality of the Compaq Remote Insight Lights-Out Edition (RILOE) board and non-Compaq tools that enable anywhere, anytime management of Compaq *ProLiant*™ servers from wireless Compaq *iPAQ*™ Pocket PC devices.

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Remote Management from Handheld Devices

In today's business climate, IT administrators are overburdened with the task of managing distributed and complex IT environments and do not always have an around-the-clock staff of experts to attend to common server problems. Attended (in-front-of-the-server) operations have become expensive, time-consuming, and inflexible. The timeliness of issue notification and problem resolution is of increasing importance. If a server failure occurs, IT administrators want the ability to gain access to the server instantly and effectively and diagnose common server problems from anywhere at anytime. High availability has become important to IT administrators and IT service management.

Given the challenges of managing an IT infrastructure, IT departments have been adopting wireless networking at an increasing rate. Wireless connectivity from handheld devices provides IT managers with instant access to and control of their networks. With changes in the marketplace, wireless connectivity costs are decreasing, with many of the wireless options now becoming available in broadband. As IT departments are starting to justify the investment in wireless connectivity, more IT administrators are obtaining remote devices that can provide alerts and browser connection capabilities.

Compaq's Insight Management tools, such as the Remote Insight Lights-Out Edition (RILOE), provide IT managers with full virtual presence to their servers located in remote sites and data centers, using any standard browser from a Windows client or a Pocket PC device. IT managers are thus able to control their IT infrastructure from any location, increasing their effectiveness to respond to any downtime events. RILOE, in conjunction with other non-Compaq management tools, can provide a rich suite of features for IT managers to improve the timeliness of issue notification and response, thereby reducing the total cost of ownership.

Compaq Tools

RILOE Functionality Using iPAQ

RILOE provides support (as a technology preview only) for wireless and dial-up access from the Compaq iPAQ H3800 Series Pocket PC handheld devices. RILOE provides a special user-interface when connecting from the iPAQ Pocket PC.

Features on the handheld interface include:

- Remote Insight Summary
- Status
- Virtual Power Button
- Reboot Server
- Virtual Floppy Status
- Integrated Management Log
- Remote Insight Event Log
- SSL Encryption–40-bit and 128-bit options

The previous suite of features enabled the IT manager to perform the following operations through a secure remote connection from wirelessly connected iPAQ device:

- Controlling the power switch of the remote host server, including rebooting and switching the remote server on or off.
- Viewing server status information for ascertaining the current state of the server.
- Viewing the Integrated Management Log and Remote Insight Event Log to diagnose the server failure.
- Changing the Virtual Floppy status to boot the server using a floppy image already resident in the memory of the RILOE board.

For security reasons, the Pocket Access feature of the RILOE is turned off by default in the factory. An administrator can enable or disable the iPAQ browser interface in **Global Settings** from a desktop browser. If access has been disabled, the iPAQ user is notified through the Web page. Any time an authorized user logs in to the RILOE from a Pocket PC, an event is logged in the Remote Insight Event Log indicating that a handheld user has logged in.

For configuration and usage of the RILOE Pocket PC interface, refer to the RILOE user guide available at

www.compaq.com/lights-out

Alerting and Paging Using Compaq Insight Manager 7

Compaq ProLiant servers support pre-failure notification with the Insight Management Agents and Compaq Insight Manager 7. Alerts generated by the SNMP agents, such as the one displayed in Figure 1, can be collected by Compaq Insight Manager 7 and automatically forwarded to a pager or an email client accessible on a wireless-connected iPAQ handheld device. This technology enables IT administrators to receive advanced notification about server problems at any time. IT administrators can then use RILOE and other non-Compaq tools to resolve server problems.

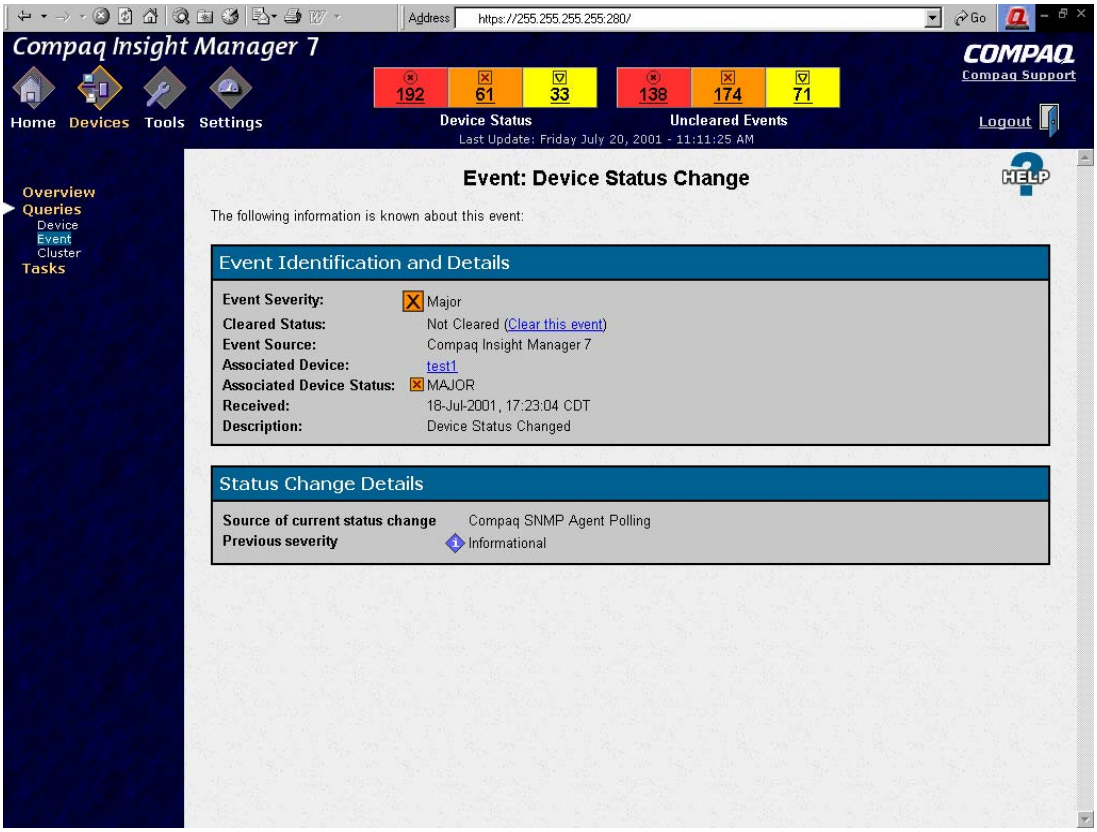

Figure 1: SNMP alert

Non-Compaq Tools

The following is an overview of non-Compaq tools that can be combined with the RILOE to provide enhanced functionality for managing servers from wireless handheld devices.

Microsoft Terminal Services

Microsoft Windows 2000 Terminal Services offers an administrator the ability to deliver the Windows 2000 server console, as well as the latest Windows-based applications, to virtually any client, including those that cannot run Windows.

Note: Access to non-Windows-based platforms requires additional third party software, such as Citrix MetaFrame.

The application execution takes place on the server, and only the keyboard, mouse, and display information are transmitted over the network. Windows Terminal Services also utilizes the latest in security by encrypting information transmitted over the Internet with up to 128-bit encryption.

Terminal Services allows administrators to accomplish the following goals more easily and efficiently:

- Centrally deploying and managing Windows-based applications
- Allowing older desktop units to access current applications that might not meet the hardware requirements
- Remotely administering Windows 2000-based servers, such as directory maintenance, user management, virus scans, backups, and reboots

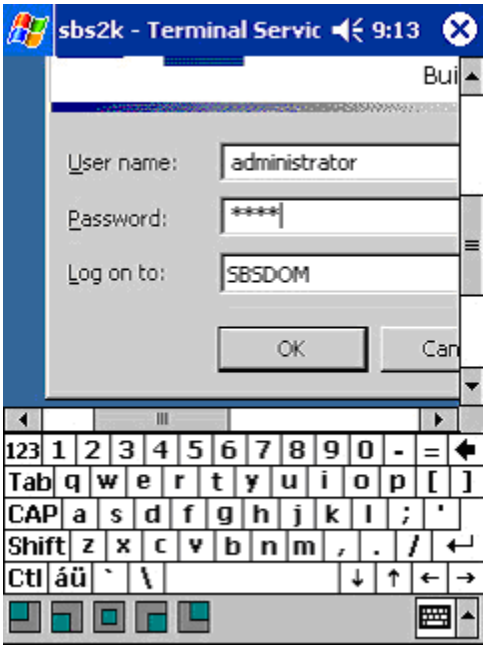

Figure 2: Accessing Terminal Services on an iPAQ Pocket PC

Terminal Services provides remote administration for the entire Windows 2000 Server family. System administrators now have a powerful method of remotely administering each member of the Windows 2000 Server family from any client device over a LAN, WAN, or dial-up connection.

All the data storage and processing occurs directly on the server, while administrators run applications or remotely manage the server from a Pocket PC. The Pocket PC 2002 version of Terminal Services Client can be downloaded at

www.microsoft.com/mobile/pocketpc/downloads/terminalservices/default.asp

VxUtil

VxUtil is a troubleshooting tool that further empowers the "mobile" IT administrator by providing networking utilities like "ping" and other Unix-like TCP/IP facilities. The suite of Internet utilities includes:

- DNS Lookup
- Finger
- Get HTML
- Info
- IP Subnet Calculator
- Password Generator
- Ping
- Ping Sweep
- Port Scanner
- Quote
- Time Service
- Trace Route
- Whois

VxUtil operates on Windows CE-based Pocket PCs and requires Windows CE 2.0 or later. VxUtil is freeware and can be downloaded at

www.cam.com/vxutil.html

Note: Compaq is only recommending VxUtil as a utility that may assist an administrator. It is not supported by Compaq.

Citrix Metaframe

Citrix MetaFrame allows an administrator to host applications and make any desired program available to any desktop, including those that cannot run Windows.

Citrix MetaFrame is an ideal wireless solution for application hosting since only the screen image is conveyed over the wireless network, thus providing a fast and responsive solution for even low-bandwidth networks.

More information on Citrix MetaFrame is available at

www.citrix.com

Infrastructure

The following sections discuss the products necessary to create a wireless infrastructure that can take advantage of the Pocket PC Access feature of the RILOE. The following diagram displays the basic infrastructure necessary for on- and off-campus access to the network and RILOE boards using an iPAQ Pocket PC.

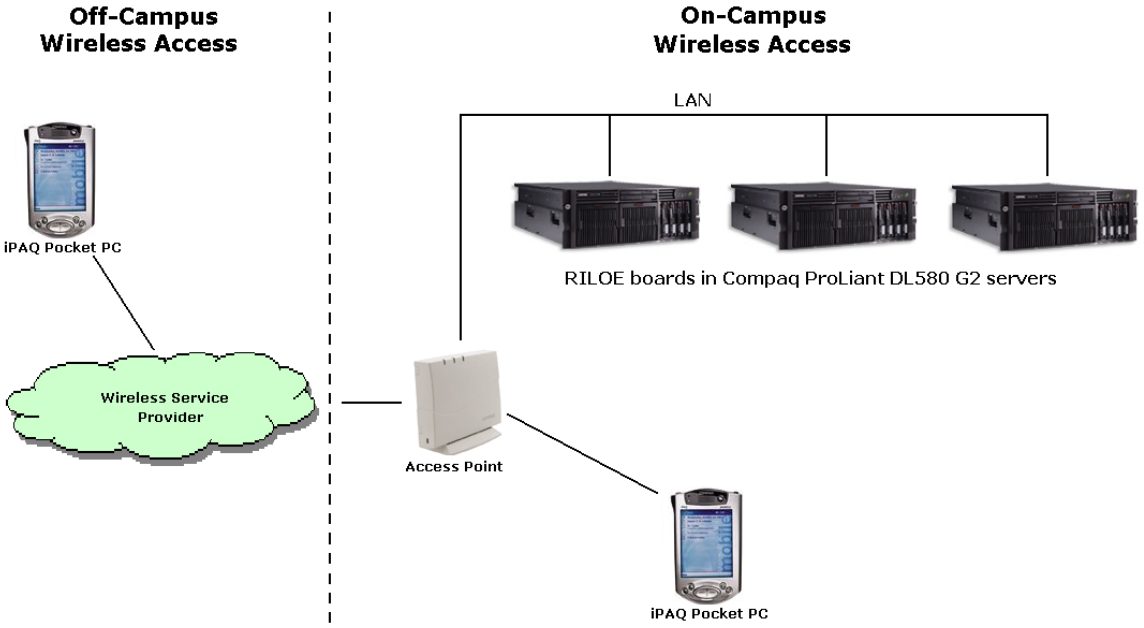

Figure 3: iPAQ access to the host servers

Compaq iPAQ Pocket PC

The Compaq iPAQ Pocket PC powered by Windows CE puts the power of the PC in the user's pocket. The Compaq iPAQ Pocket PC is a highly expandable and versatile Pocket PC device.

The Compaq iPAQ 3800 Series Pocket PC is the latest in the Compaq iPAQ series. The iPAQ 3800 series uses Microsoft Pocket PC 2002 can be used for wireless communications. It also comes equipped with as the following features:

- 206-MHz Intel StrongARM processor
- Base Memory up to 64 MB
- SD (Secure Digital) card slot
- Rechargeable battery that gives up to 14 hours of battery life
- Integrated Bluetooth to provide a wireless link to nearby Bluetooth devices (Bluetooth models only)
- Microsoft components on a Compaq CD-ROM, such as:
  - Microsoft ActiveSync 3.5 (Desktop device synchronization)
  - Connection Wizard
  - Microsoft Outlook 2002
  - Microsoft Internet Explorer 6.0 (for desktop-linking)

Wireless Communications

To be able to use wireless communications on- and off-campus, users must have the following items:

- Wireless LAN Card
- Access Point
- Mobile Service

Wireless LAN Card

The wireless LAN card is necessary for the iPAQ Pocket PC to access the wireless network. The Compaq WL110 wireless LAN card provides 802.11b-compliant high-speed wireless networking and secure access to network resources and the Internet.

Figure 4: Compaq WL110 wireless LAN (802.11b)

Access Point

Access points receive and transmit information, similarly to the LAN Card. The access point connects using an RJ-45 connection to the Ethernet and handles the ingoing and outgoing traffic to and from wireless LAN users.

Each hardware access point has up to 11-Mbps throughput. This capacity is adequate for the following usage levels:

- 50 nominal users who are mostly idle and check an occasional text-based email
- 25 mainstream users who process large amounts of email and download/upload moderately-sized files
- 10-20 power users who are constantly on the network and who download/upload large files

To increase capacity, more access points may be added, thus allowing users more opportunities to enter a network. It is important to note that networks are optimized when the access points are set to different channels.

Figure 5: Compaq WL310 wireless 802.11b access point

Wireless CDPD/CDMA Cards

For gaining access from off-campus, a CDPD PCMCIA card, such as the Sierra Wireless AirCard 300, is required to use the iPAQ Pocket PC.

Figure 6: Sierra Wireless AirCard 300

Compaq has partnered with GoAmerica, an airtime aggregator, to provide unlimited wireless access to the Internet using the Cellular Digital Packet Data (CDPD) protocol. Coverage information and further details about this service can be found at

www.compaq.com/products/wireless/wwan

The *iPAQNET Mobile Internet for Your Pocket PC User's Guide* is available at

www.compaq.com/support/techpubs/user_reference_guides/226862-001.html

Sprint PCS CDMA Mobility Solution

The Sprint PCS/Compaq wireless WAN solution uses the Code Division Multiple Access (CDMA) protocol. CDMA is a second-generation cellular network technology. Sprint PCS is probably the best-known CDMA provider. With this service, a call can be made directly into a RAS server, eliminating the need for a VPN client.

This service requires a CDMA PCMCIA card, such as the Sierra AirCard 510. The AirCard 510 uses CDMA. It also offers v.42bis compression and enhanced Internet connection using Bluekite compression software. With such compression software, the apparent data rate can be enhanced up to 56 Kbps. The standard uncompressed data rate of the AirCard 510 is 14.4 Kbps, which is a limitation of the current generation of CDMA networks in North America.

Figure 7: Sierra Wireless AirCard 510

For more information, connect to the following website:

www.sierrawireless.com/SupportDownload/faq_510nb.html

Additional information about the Sierra AirCard 510 can be found at:

www.sierrawireless.com/ProductsOrdering/510nb.html

The Sprint PCS CDMA card and wireless Web access must be ordered as part of the bundle to subscribe to the Sprint CDMA wireless Internet service. This is not unlimited access service. Access time is limited to the program purchased. Pricing and access time vary with the choice of service.

Mobile Service

A necessary component for off-campus wireless access to your network is a mobile service. The mobile service allows nationwide access to the Internet and the local network. Compaq offers several wireless WAN solutions for wireless connectivity.

Compaq iPAQnet Mobility Solutions for CDPD

Compaq iPAQnet Mobility Solutions provide access to the Internet and Internet email for Compaq wireless clients, such as the iPAQ Pocket PC. One such solution uses the CDPD protocol, which allows carriers to transmit data at speeds up to 19.2 Kbps. CDPD supports TCP/IP addressing schemes and provides flow and error control. In the United States, CDPD has the widest coverage and is available in virtually all major urban areas.

Security

The following sections discuss the different layers of security features available for remote management from handheld devices.

High Encryption Packet

The High Encryption Pack for Pocket PC provides 128-bit encryption, the highest level of protection possible using credit cards or making other financial or confidential transactions over the Internet. To download 128-bit encryption for Internet Explorer, visit:

www.microsoft.com/mobile/pocketpc/downloads/ssl128.asp

RILOE

The RILOE board is equipped with the following security features:

- Login accessibility only through a valid user ID and password.
- Support for up to 128-bit SSL encryption.
- Default access to the Pocket PC as disabled to restrict access. This setting can be changed only in the **Global Settings** screen and only by a user with administrator access.
- Customization of RILOE user accounts. A user cannot power on or power off a server without privileges that can only be provided by a user with administrator access.

LAN

The user's LAN provides an extra layer of security by being only accessible when logging in using a valid user ID and password.

VPN

In Pocket PC 2000, Microsoft has included support for connecting the Pocket PC to a virtual private network (VPN). With the Pocket PC VPN client, users can use ISP, Ethernet, or wireless network connections to log on to corporate networks and securely access email servers, intranets, and file shares. The VPN implementation supports 128-bit encryption and Windows NT challenge for password authentication.

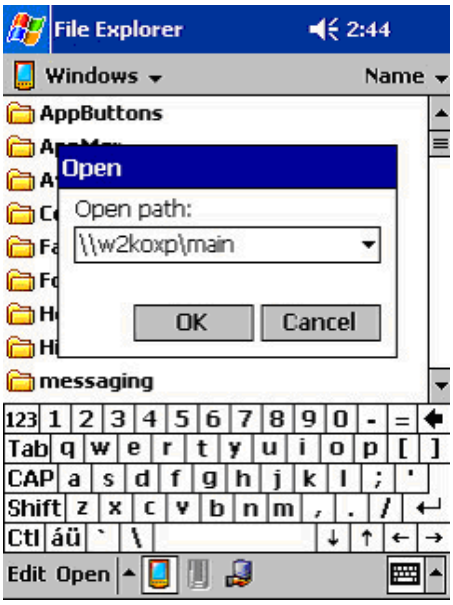

Figure 8: Using VPN from an iPAQ Pocket PC