

Windows CE



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PowerNet CE Theory of Operation

Introduction

The following describes the general theory of operation for PowerNet CE products. This information can be useful for engineering, support and administrative personnel.

General Information

- PowerNet CE is designed to be persistent, to survive, and to reinstall itself after power loss and after warm and cold terminal reboots.
- It does this by inserting the application "CeStartUp.exe" in the standard CE startup folder "\Windows\Startup\".
- TwinClient manager will set up the terminal to use whatever method the terminal manufacturer has provided to "reinstall" applications.

As an example, in Symbol CE devices, the terminal looks for "*.cpy" files in a particular directory and will use these to copy files where directed. TwinClient manager installs a "TwinClient.cpy" file to insure that the application "CEStartp.exe" gets re-installed.

TwinClient.cpy contents

```
\Application\TwinClient\CEStartup.exe > \Windows\StartUp\CEStartup.exe
```

- The TwinClient manager uses Active Sync (if available on the device) to initially load the device.
- The TwinClient manager will download and use the MS registration application entitled "regsrvc.exe". (The application "CeStartup.exe" uses this to register the dll's.)
- The loader (either Active Sync or AirLoader) saves to permanent flash memory (if available).
- The program files will be copied from permanent Flash to RAM and will run out of RAM for improved speed.
- PowerNet for CE makes minimal use of the Windows registry and recovers from cold boots and power losses.

Operation

1. (CEStartUp.exe) On restart, this application is executed and:
 - a. Copies PowerNet files from Flash to RAM.
 - b. Reads "tnconfig.txt" to find out if TwinClient is set up to autostart.
 - c. If TwinClient is set up to autostart, it invokes "TwinClient.exe" then exits.

2. (TwinClient.exe) This application:
 - a. Does an Airload if configured and stores the updated files in Flash.
 - b. Invokes "CeStartUp.exe" to copy updated files from Flash to RAM ("Updating Files" message).
 - c. If the copying of the updated files fails, typically because they are in use, it will display the message "Terminal must be Rebooted".
 - d. Reads "tnconfig.txt" to determine which emulation program to run. Based on this it will run either:
 - TAPCEVT.exe (VT100, VT220 and HP700)
 - TAPCE32.exe (TN3270)
 - TAPCE52.exe (TN5250)
 - e. TwinClient runs the emulator as a "Child" process, and after exiting the emulation, control will return to "TwinClient.exe". It does this to provide a "Looping function" if TwinClient is set to autostart. If it's set to autostart, then "twinclient.exe" will invoke the emulator again.

3. (TAPCEVT.exe TAPCE32.exe TAPCE52.exe). One of these programs will be invoked by "TwinClient.exe" based on the emulation configured in the "tnconfig.txt" file. The emulator uses these files and DLL's at runtime:
 - tnvt.cf (main configuration file)
 - tnconfig.txt (terminal specific options)
 - TAPConsole.dll (display window, keyboard input)
 - InputModule.dll (pop up keyboard)
 - xxxTERM.dll (manufacturer specific terminal keyboard DLL)
 - xxxSCAN.dll (manufacturer specific scan module)
 - CommonRF.dll (radio connection status and mac address)

Modules and Support Files

CeStartUp.exe
TwinClient.exe
TAPCEVT.exe TAPCE32.exe TAPCE52.exe
CommonRF.dll

xxxScan.dll
xxxTapConsole.dll
xxxTerm.dll
InputModule.dll
CommonRF.dll
CELoadConfig.exe
SetPNTC.exe

tnvt.cf
tnconfig.cf
TwinClient.Ink
AirLoaderSetup.Ink
beep.wav
autoexec.txt
TwinClient.cpy
flashpath.txt
autorun.dat

Twin Client Options in Windows CE Environment

Introduction

The following describes Twin Client options in a Windows CE environment.

Problem Description

Twin Client has an option to turn on keyclicks that does not function in a Windows CE environment. This is due to the fact that the keyclicks are controlled by Windows CE directly and there is no API under CE for turning key clicks on and off.

The same situation exists for power down and backlight timers.

Resolution

Keyclicks may be turned on in Settings / Sounds & Reminders from within the Windows CE OS.

Power down may be a function of the display settings under Windows CE, as may be the backlight.

Flash Loading TwinClient on CE Devices

By default, the generic version of TwinClient loads into RAM. This is not permanent, and will get lost on a cold boot or battery loss. Below are the instructions on how to change this, so it will load to a flash disk, if present.

Note: You may also need to follow this procedure if you run into problems with any of the non-generic versions of TwinClient for CE if you find the load is not permanent. This could be caused if the name(s) of the flash drive we have embedded in our config file is different from what the terminal actually has.

There is a control file titled rfiles.txt that you'll find in the PowerNet/TwinClient/Terminal directory. Find this section of the file:

```
[WindowsCE;CE4_ARMV4I;*;*]  
  
TERMSUB=~CE4_ARMV4I  
TERMSIZES=VARIABLE  
DNCMD=send %s  
UPCMD=recv %s  
ce=true  
PRINTERS=FILE:terminal\WindowsCE\printers.txt  
TAPConsole.dll
```

Note: For non-generic releases find the section that applies to your device.

Change the line in blue from true (which means use RAM disk) to the path of the flash disk. See the examples below.

```
ce=\FlashDisk\TwinClient  
ce=\Application\TwinClient  
ce=\IPSM\TwinClient
```

Then reload TwinClient the normal way. The process CEstartup will be set to run on reboot, and it will copy from Flash to RAM. This will make the load AND configuration permanent, and it will survive complete battery loss. The load process, through Active Sync, will also set the registry values.

About This Document

This document is based on the following Technical Documents in our Lotus Notes database that have been made obsolete: T1236, T1239, and A1078.

Please let us know about any errors in this document at:

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