



# ML507 QuickStart

**May 2010**

# Overview

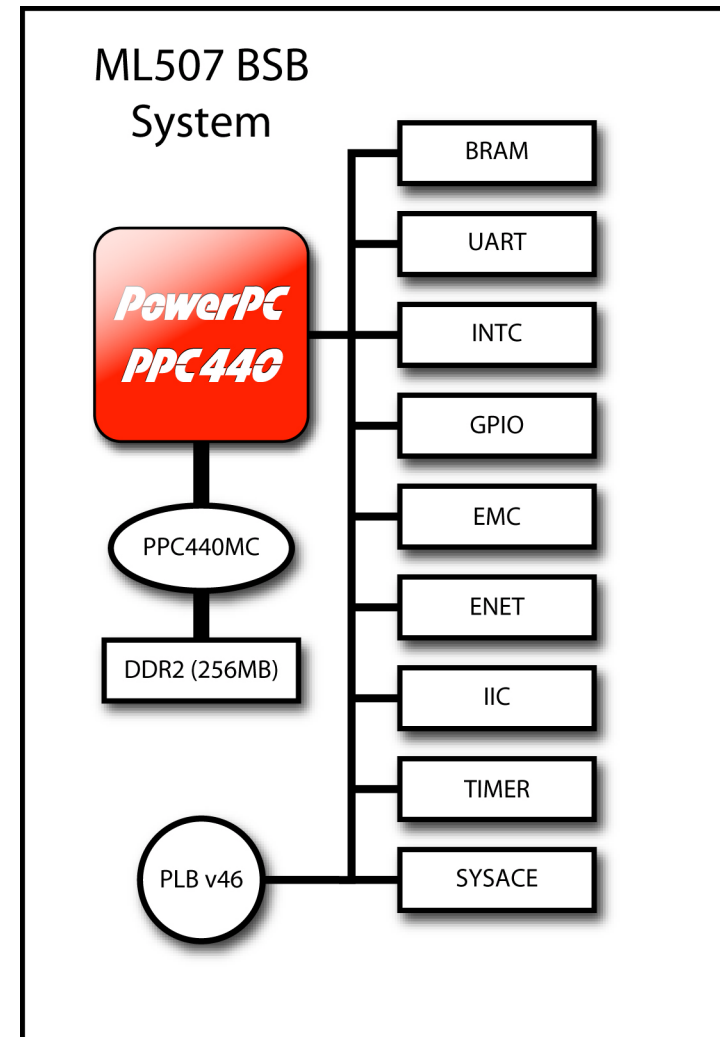
- **ML507 Setup**
- **Bootload**
- **Applications**
  - Slideshow
  - Web Server
  - Simon
  - Board Diagnostics
  - USB Keyboard
  - My ACE
  - Ringtone
- **References**

**Note:** This presentation applies to the ML507

# ML507 BSB Hardware

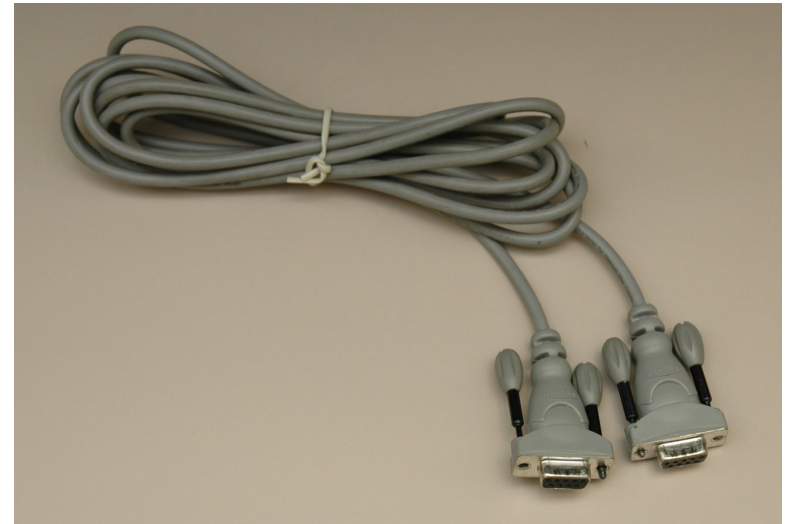
## ■ The ML507 PPC440 design hardware includes:

- PPC440MC DDR2 Interface
- External Memory Controller (EMC)
  - ZBT SRAM
- BRAM
- Networking
- UART
- Interrupt Controller
- System ACE CF Interface
- GPIO (IIC, LEDs and LCD)
- PLB Arbiter



# ML507 Setup

- **Connect the Xilinx Platform Cable USB to the ML507 board**
- **Connect the RS232 null modem cable to the ML507 board**



# Hardware Setup

- The ML507 uses a DVI video interface
- Connect a DVI monitor

or

- Use a DVI/VGA adapter to connect a VGA monitor
  - <http://www.belkin.com>



# Hardware Setup

- **USB Keyboard**

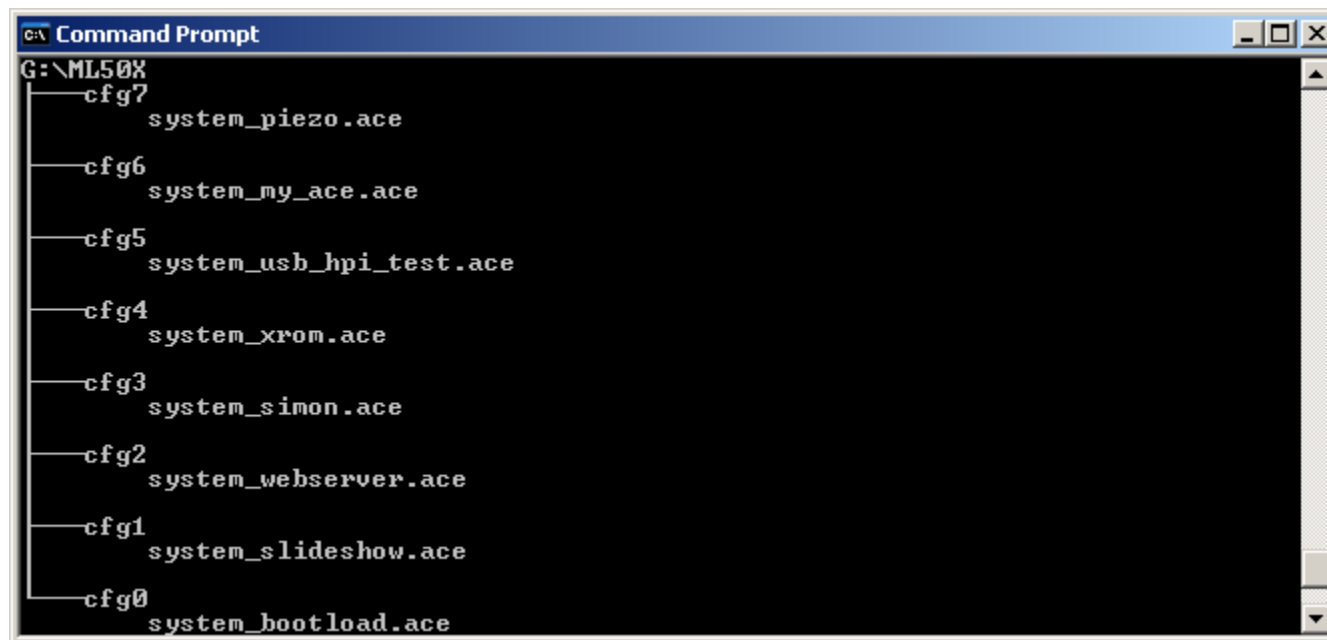
- [www.dell.com](http://www.dell.com)



**Note:** Presentation applies to the ML507

# Factory CompactFlash

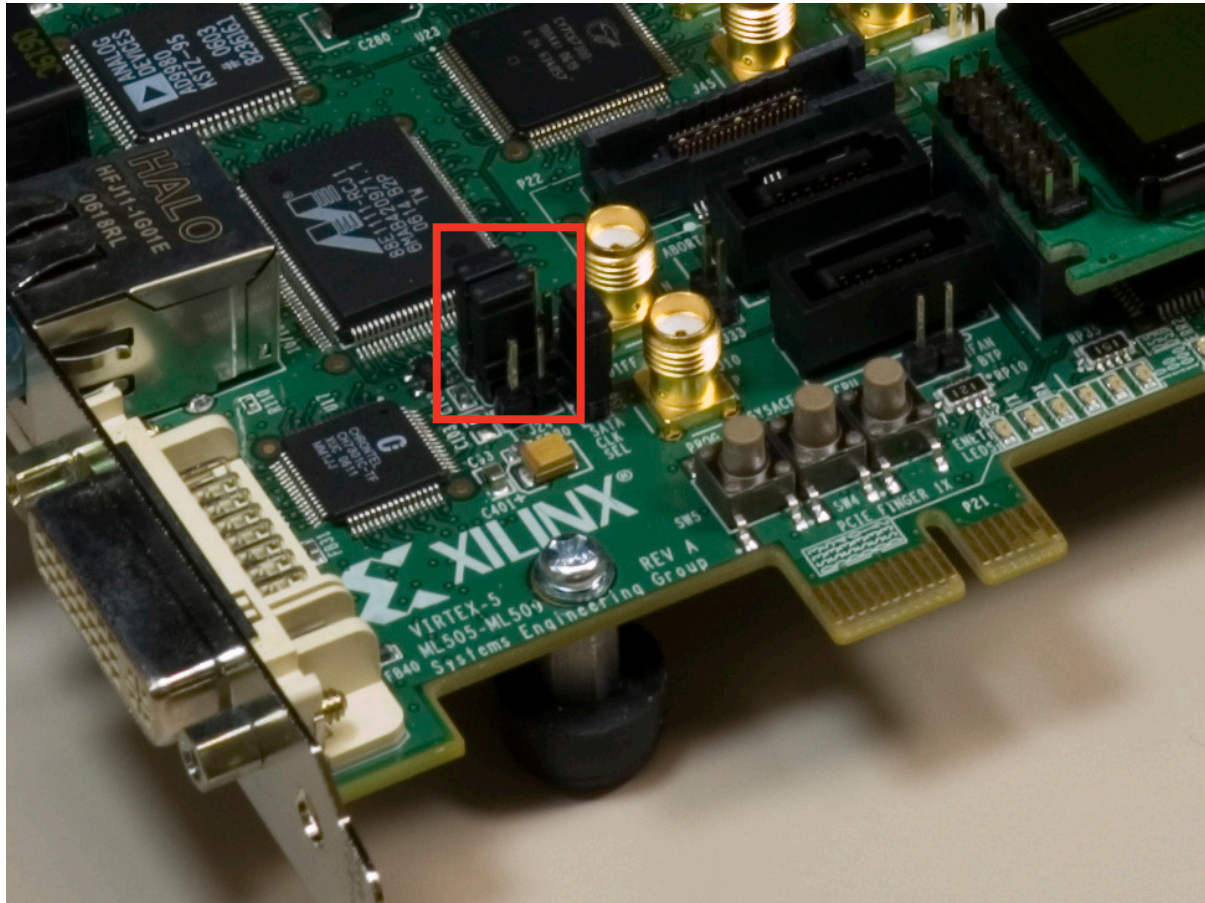
- The CompactFlash shipped with the ML507 board has the following ace files preloaded:



```
G:\ML50X
├── cfg7
│   └── system_piezo.ace
├── cfg6
│   └── system_my_ace.ace
├── cfg5
│   └── system_ush_hpi_test.ace
├── cfg4
│   └── system_xrom.ace
├── cfg3
│   └── system_simon.ace
├── cfg2
│   └── system_webserver.ace
├── cfg1
│   └── system_slideshow.ace
└── cfg0
    └── system_bootload.ace
```

# ML507 Setup

- **Set ML507 Jumpers for GMI**
  - Set both J22 and J23 to positions 1-2 (as shown)

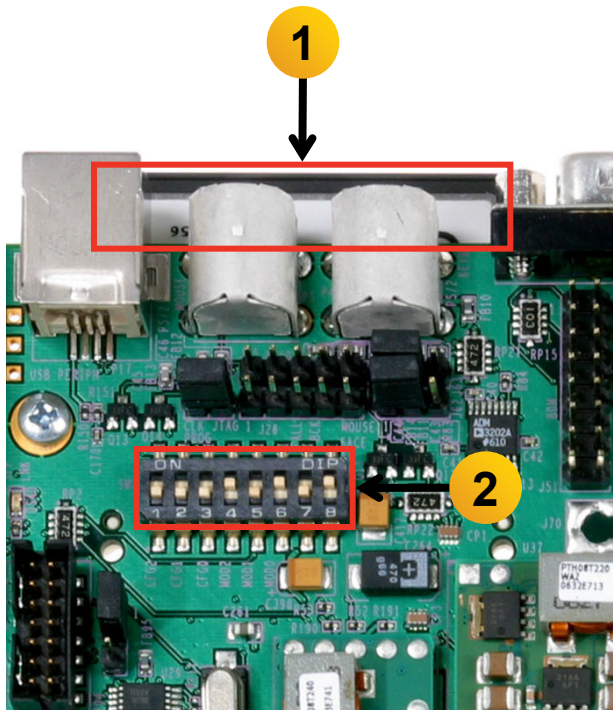


**Note:** Presentation applies to the ML507



# ML507 Setup

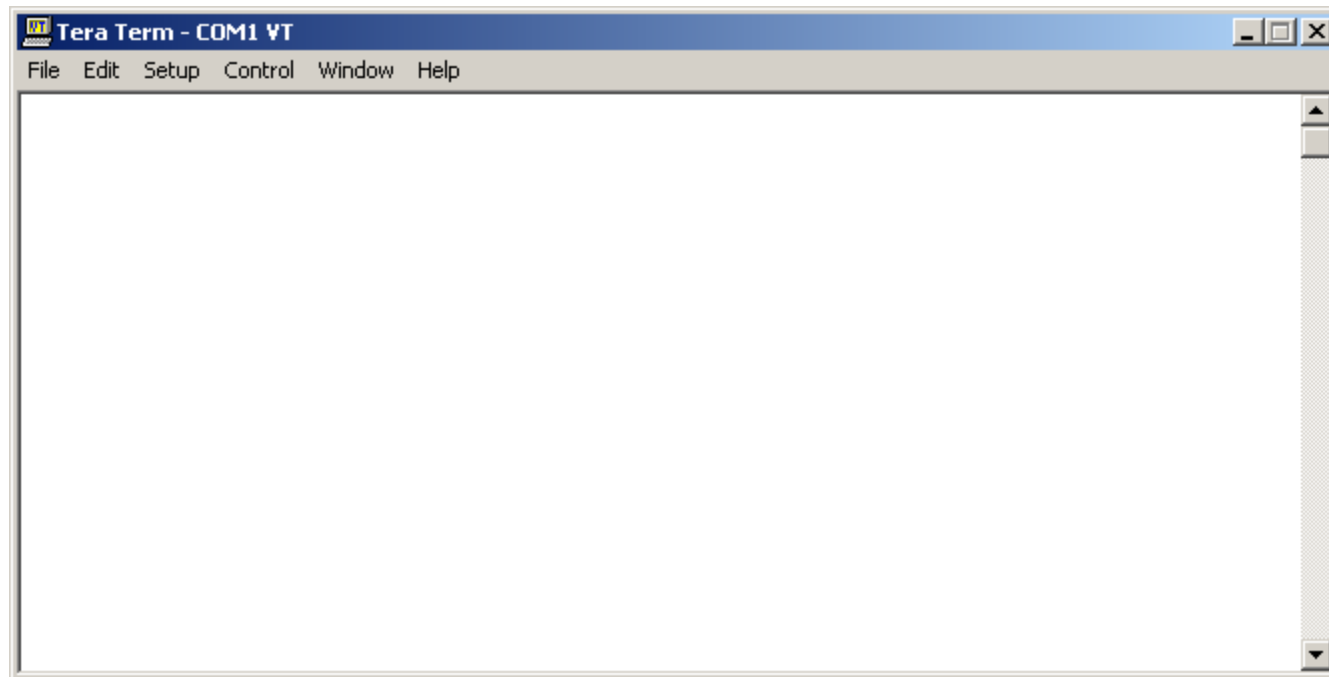
- Insert the Factory CompactFlash into the ML507 board (1)
- Set the Front DIP switches (SW3) to 00010101 (1 = ON) (2)
- Set the Rear DIP switches (SW6) to 11001010 (3)
- Power-up the ML507 board



**Note:** Presentation applies to the ML507

# ML507 Setup

- **Start the Terminal Program:**



# Additional Setup Details

- **Refer to [ml505\\_overview\\_setup.ppt](#) for details on:**

- Software Requirements
- ML505/506/507 Board Setup
- Equipment and Cables
- Software
- Network

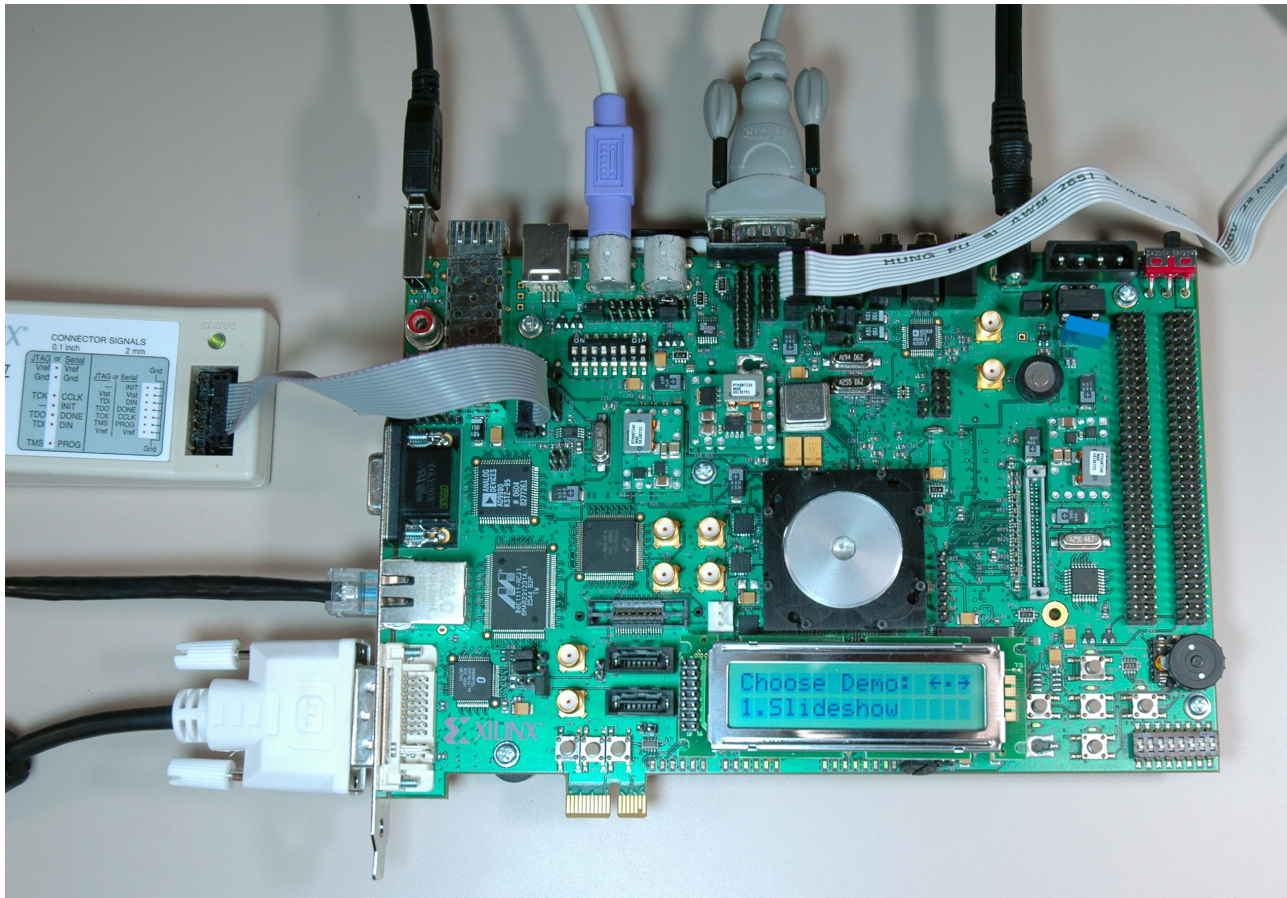
- **Terminal Programs**

- This presentation requires the 9600-8-N-1 Baud terminal setup



# Bootload

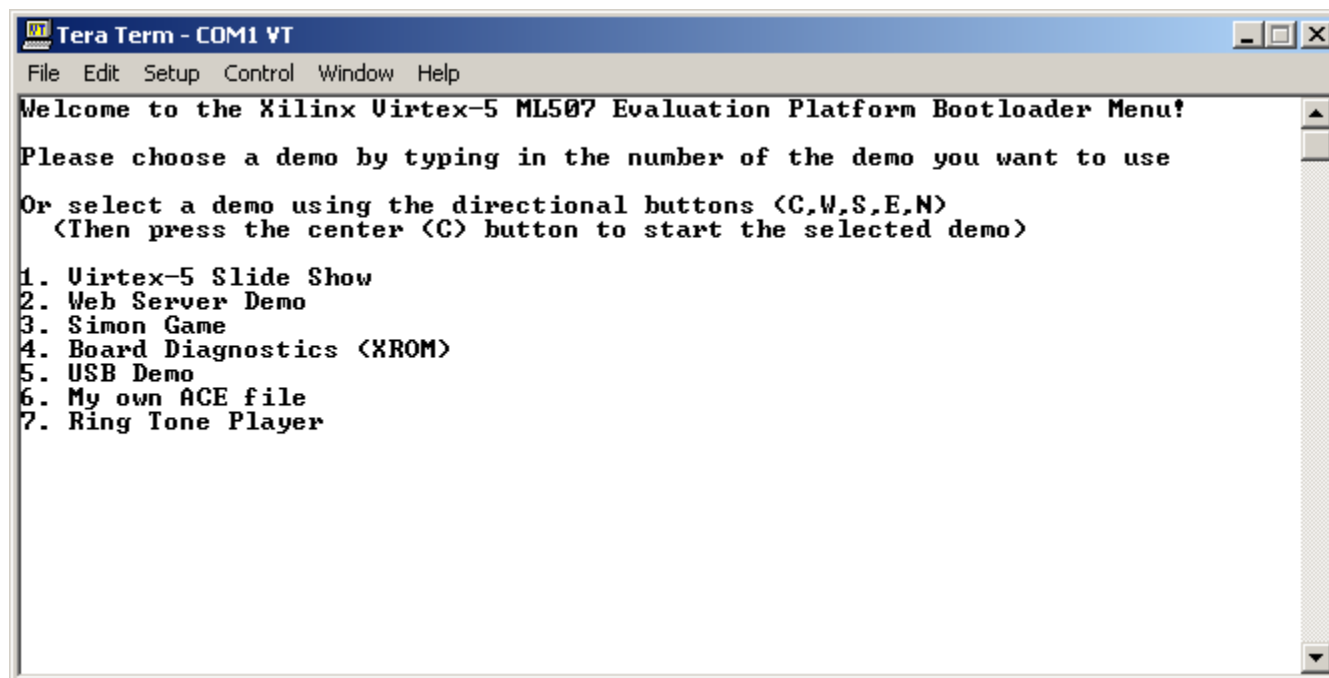
- The system\_bootload.ace loads:



**Note:** Presentation applies to the ML507

# Bootload

- The terminal window also reflects the bootload application
- Use the left/center/right buttons to choose an application or type a number in the terminal window
- After each demo, push the SysACE reset to return to bootload

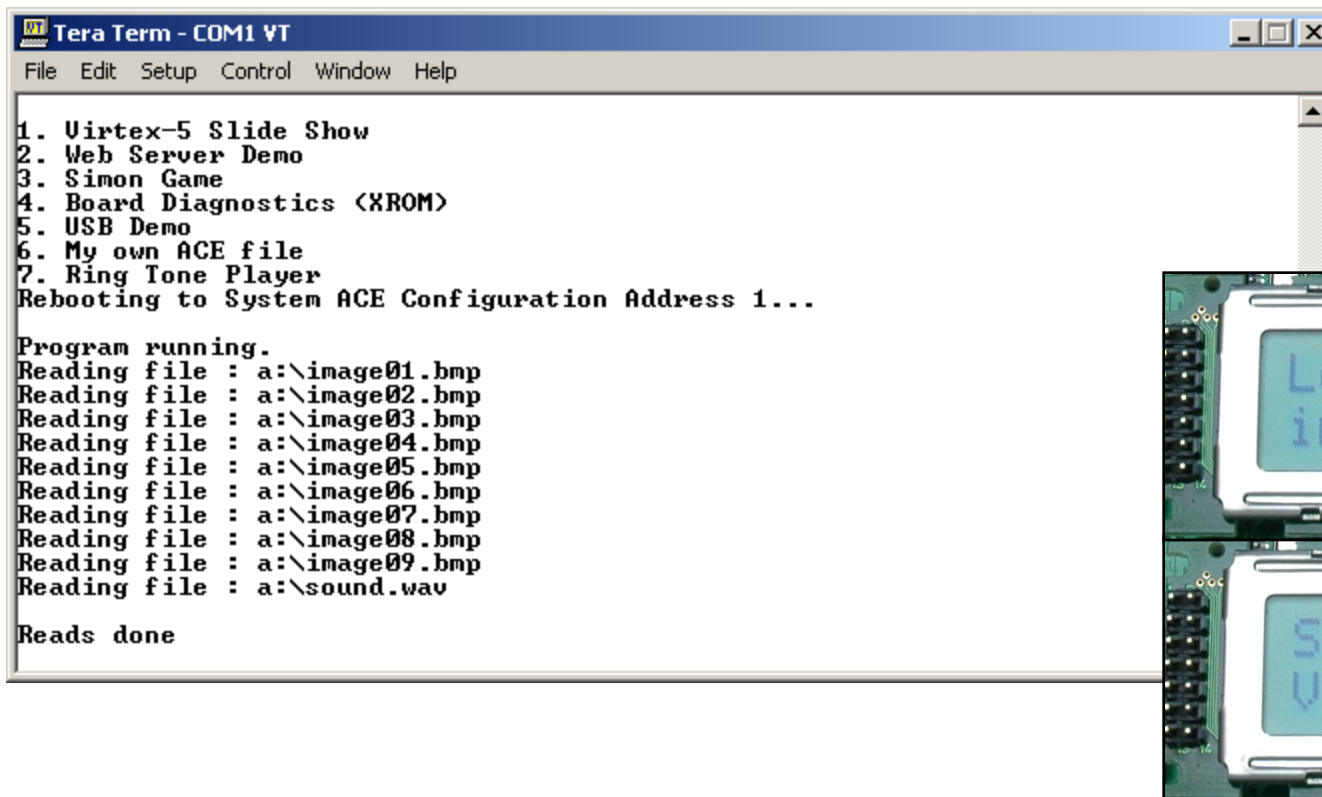


```
Tera Term - COM1 VT
File Edit Setup Control Window Help
Welcome to the Xilinx Virtex-5 ML507 Evaluation Platform Bootloader Menu!
Please choose a demo by typing in the number of the demo you want to use
Or select a demo using the directional buttons (C,W,S,E,N)
  (Then press the center (C) button to start the selected demo)
1. Virtex-5 Slide Show
2. Web Server Demo
3. Simon Game
4. Board Diagnostics (XROM)
5. USB Demo
6. My own ACE file
7. Ring Tone Player
```



# Slideshow

- Type 1, to launch the slideshow application in Configuration 1
- The slideshow loads the presentation into memory then presents it

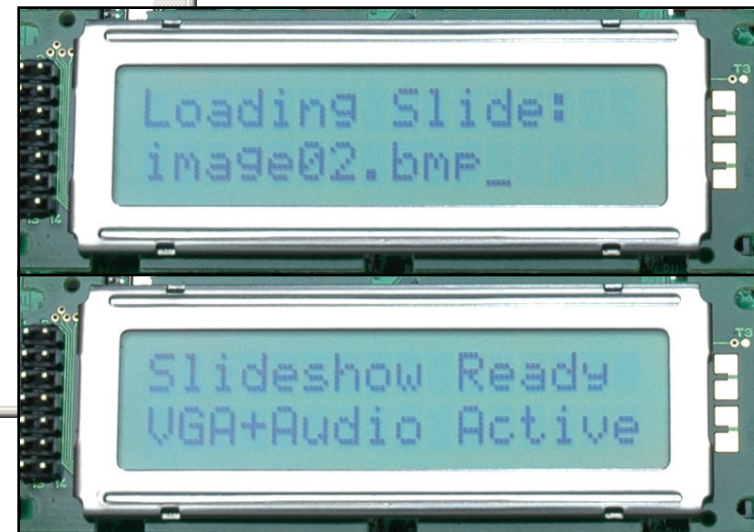


```
Tera Term - COM1 VT
File Edit Setup Control Window Help

1. Virtex-5 Slide Show
2. Web Server Demo
3. Simon Game
4. Board Diagnostics <XROM>
5. USB Demo
6. My own ACE file
7. Ring Tone Player
Rebooting to System ACE Configuration Address 1...

Program running.
Reading file : a:\image01.bmp
Reading file : a:\image02.bmp
Reading file : a:\image03.bmp
Reading file : a:\image04.bmp
Reading file : a:\image05.bmp
Reading file : a:\image06.bmp
Reading file : a:\image07.bmp
Reading file : a:\image08.bmp
Reading file : a:\image09.bmp
Reading file : a:\sound.wav

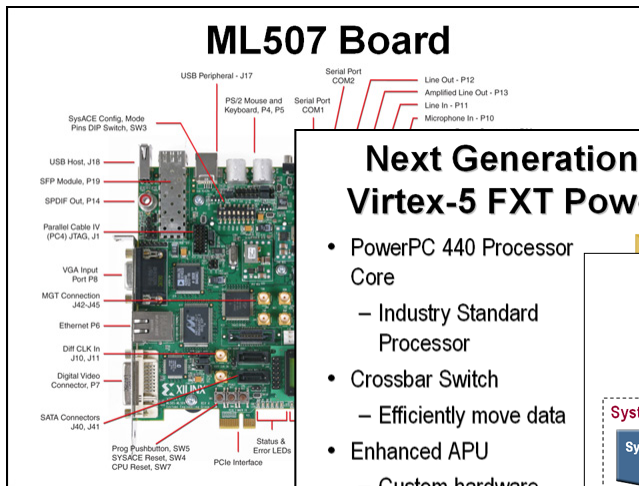
Reads done
```



**Note:** Presentation applies to the ML507

# Slideshow

- The slideshow app will present a series of slides on the Monitor:



## Next Generation of Flexibility: Virtex-5 FXT PowerPC440 Block

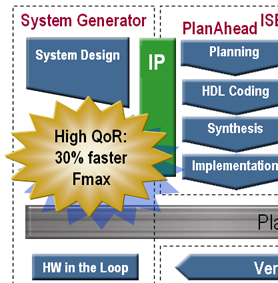
- PowerPC 440 Processor Core
  - Industry Standard Processor
- Crossbar Switch
  - Efficiently move data
- Enhanced APU
  - Custom hardware acceleration

*More than just a bet*

## Platform Design Tools Deliver Greater Design Productivity

Third Party EDA Software

### DSP



## Virtex-5 FPGAs Provide the Right Mix of Memories

- Distributed LUT RAM
  - Fast, localized memories
  - Built-in shift register
  - Great for small FIFOs
- 550 MHz block RAM / FIFO
  - Bigger on-chip memories
  - Built-in FIFO and ECC logic
  - Great for mid-sized FIFOs/buffers
- External memory interfacing
  - Fast connection to popular standards
  - Memory controller cores
  - Ideal for large memory requirements

**LOW-POWER TRANSCIVERS**  
Ultimate Connectivity . . .

Low-Power Transceivers  
100 Mbps – 3.2 Gbps, < 100 mW

Built-in PCIe<sup>TM</sup> Interface  
PCI EXPRESS

Built-in Ethernet MAC

**VIRTEX<sup>5</sup>**

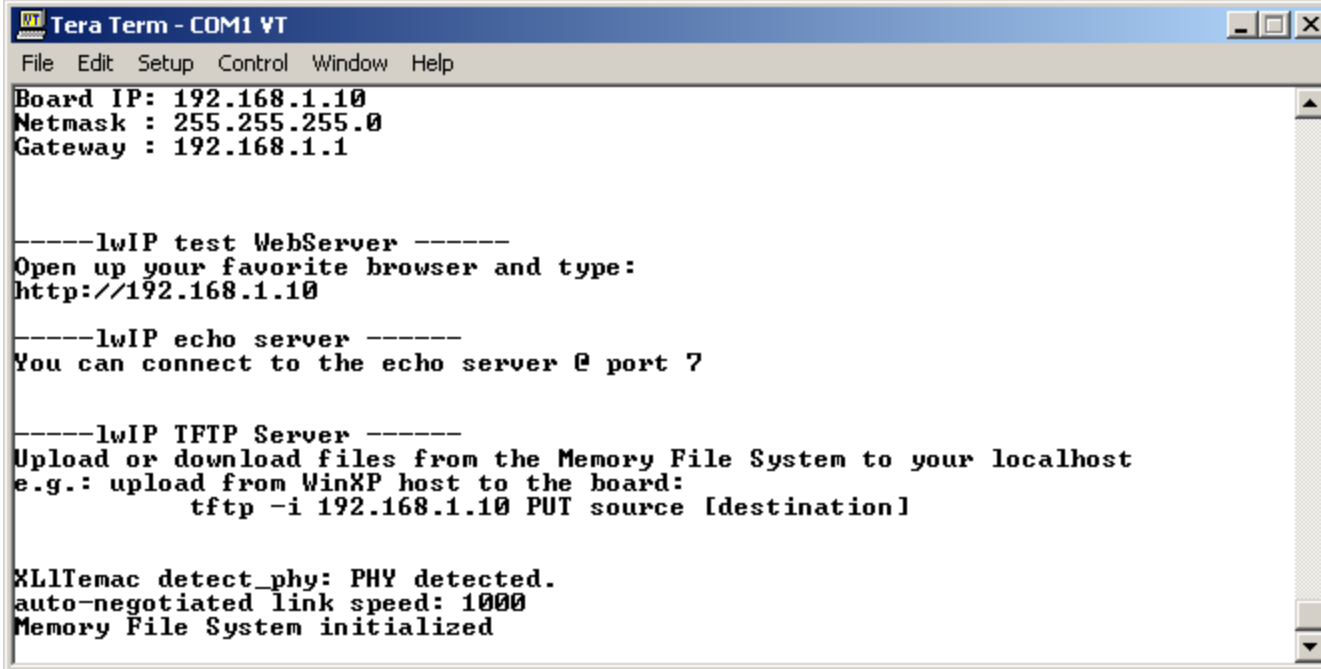
Reduce serial I/O power, cost and complexity with the world's first 65nm FPGAs.

With a unique combination of up to 24 low-power transceivers, and built-in PCIe<sup>TM</sup> and Ethernet MAC blocks, Virtex-5 LXRT FPGAs get your system running fast. Whether you are an expert or just starting out, only Xilinx delivers this complete solution to simplify high-speed serial design.

Note: Presentation applies to the ML507

# Web Server

- **Type 2, to launch the web server application in Configuration 2**
  - Note: You may need to turn off your browser's proxy and specify a direct connection to the Internet in your browser options



```
Tera Term - COM1 VT
File Edit Setup Control Window Help
Board IP: 192.168.1.10
Netmask : 255.255.255.0
Gateway : 192.168.1.1

-----lwIP test WebServer -----
Open up your favorite browser and type:
http://192.168.1.10

-----lwIP echo server -----
You can connect to the echo server @ port 7

-----lwIP TFTP Server -----
Upload or download files from the Memory File System to your localhost
e.g.: upload from WinXP host to the board:
      tftp -i 192.168.1.10 PUT source [destination]

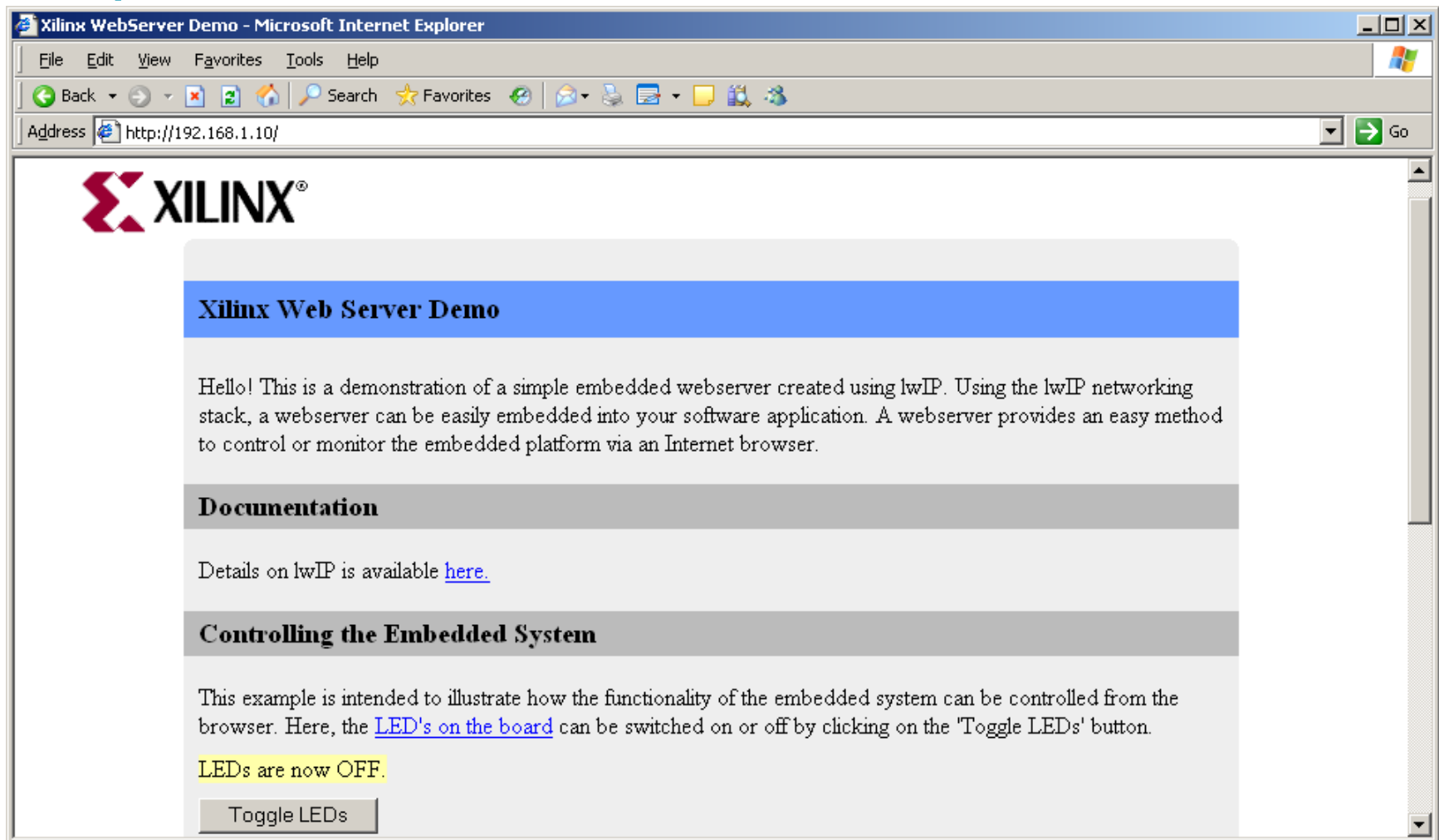
XLlTmac detect_phy: PHY detected.
auto-negotiated link speed: 1000
Memory File System initialized
```

**Note:** Host IP is 192.168.1.1, subnet mask is 255.255.255.0



# Web Server

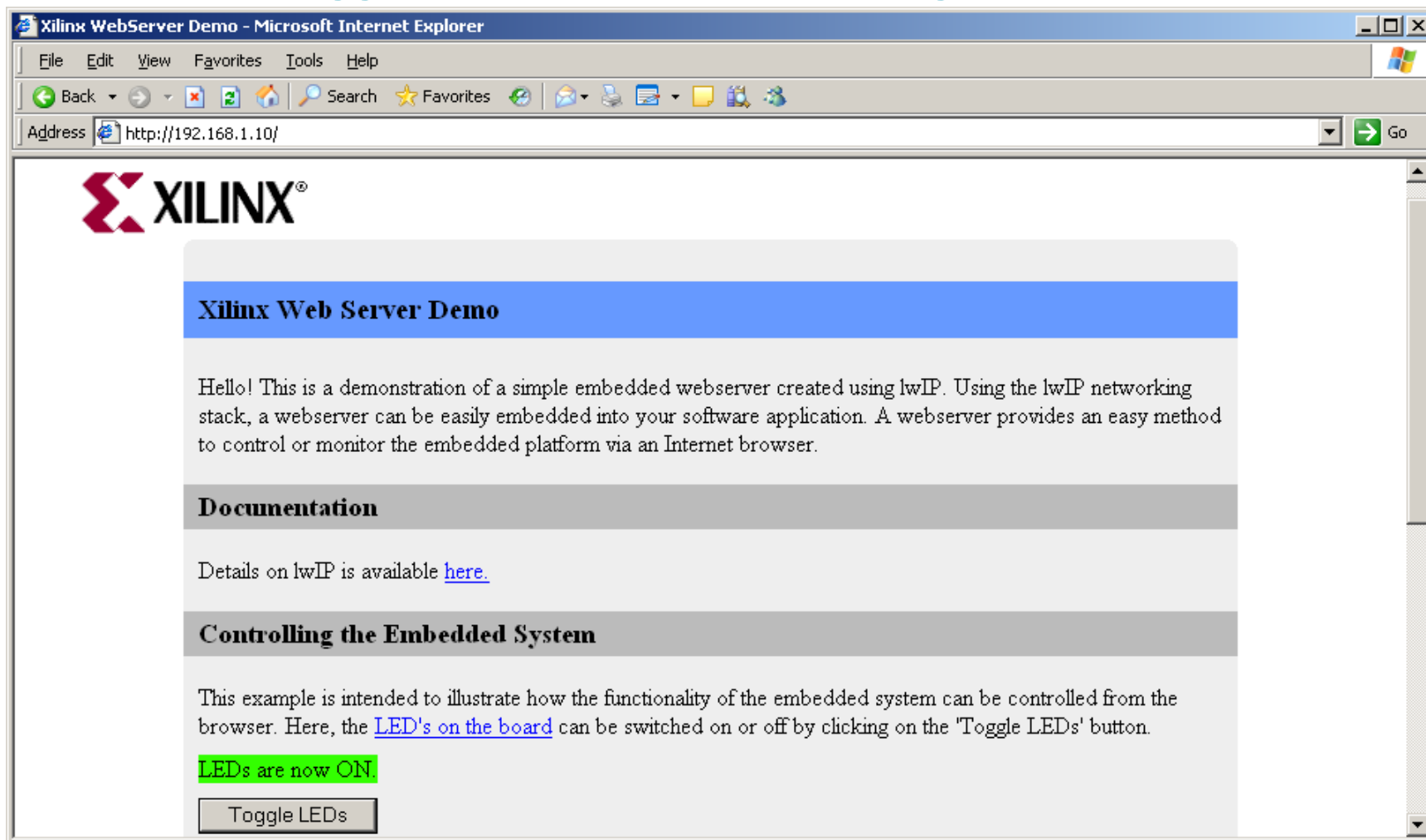
- Open a web browser to address 192.168.1.10



**Note:** Presentation applies to the ML507

# Web Server

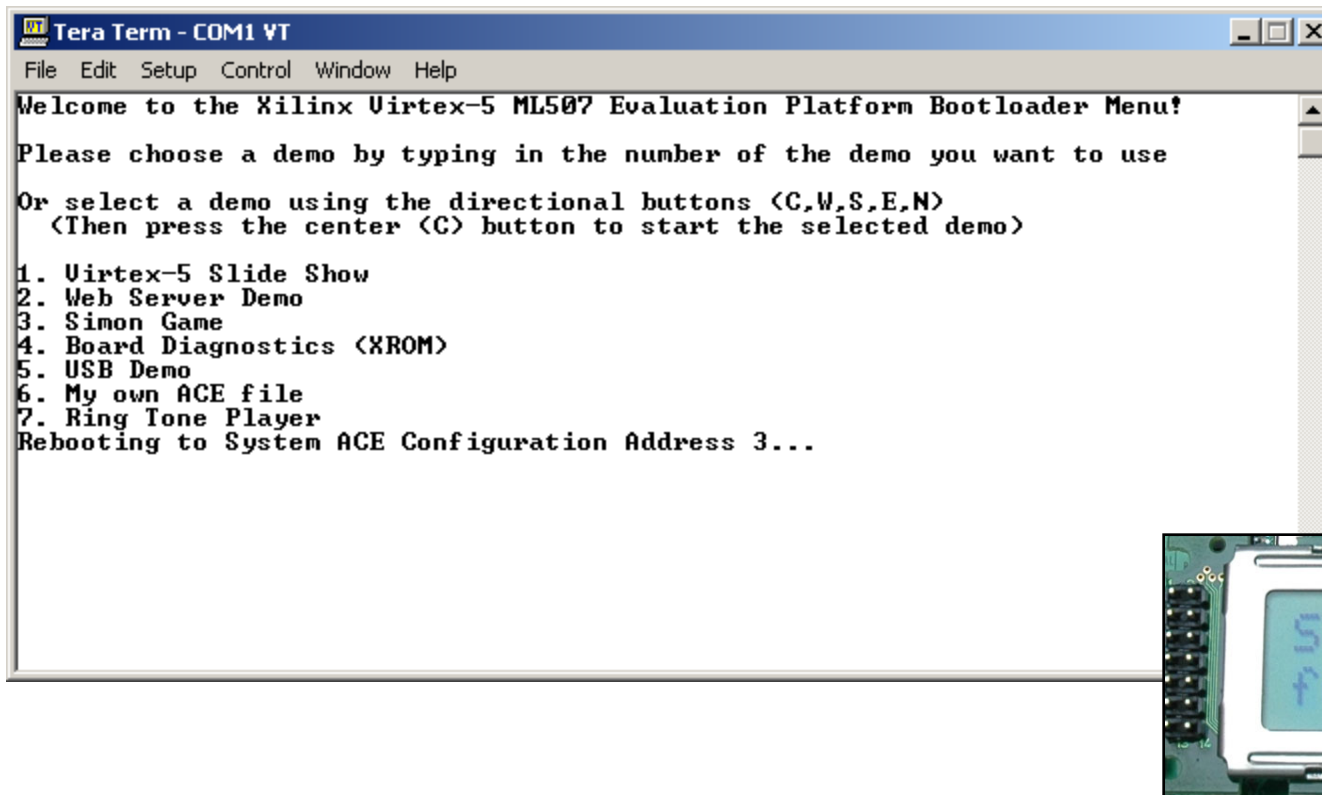
- Click the Toggle LEDs button; view change on ML507



**Note:** Presentation applies to the ML507

# Simon

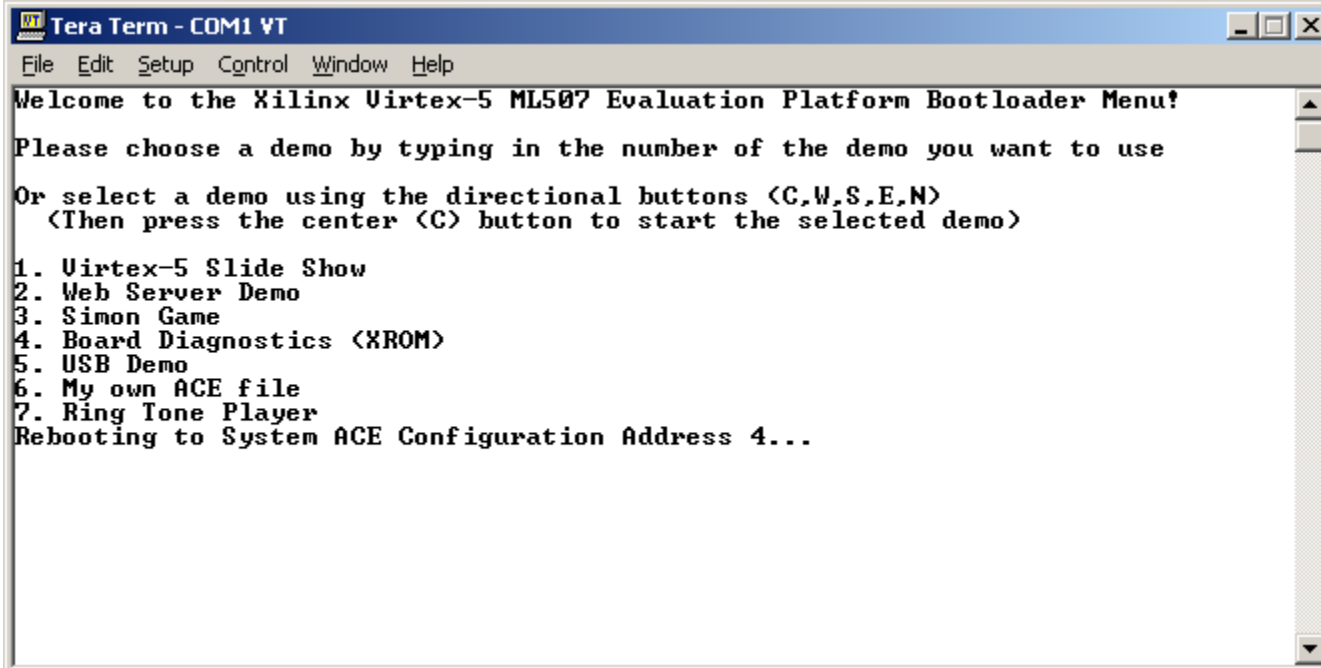
- Type 3, to launch the Simon application in Configuration 3



**Note:** Presentation applies to the ML507

# Board Diagnostics

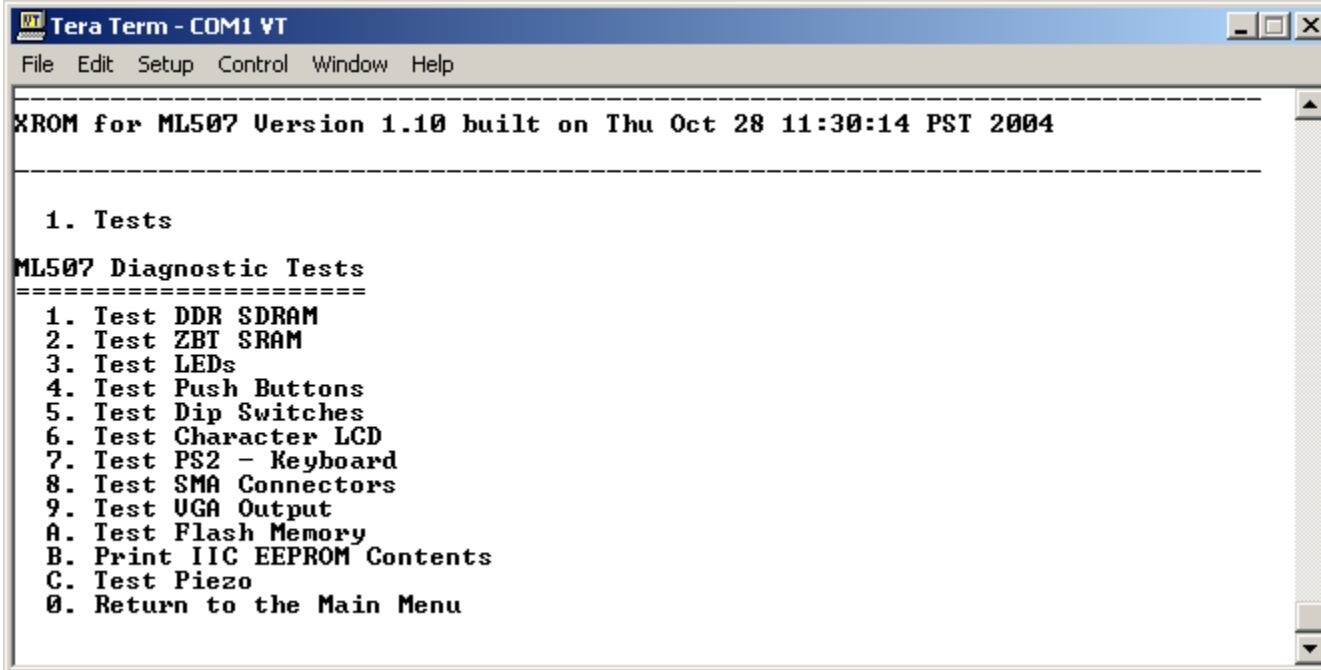
- Type 4, to launch the XROM application in Configuration 4



```
Tera Term - COM1 VT
File Edit Setup Control Window Help
Welcome to the Xilinx Virtex-5 ML507 Evaluation Platform Bootloader Menu!
Please choose a demo by typing in the number of the demo you want to use
Or select a demo using the directional buttons <C,W,S,E,N>
  <Then press the center <C> button to start the selected demo>
1. Virtex-5 Slide Show
2. Web Server Demo
3. Simon Game
4. Board Diagnostics <XROM>
5. USB Demo
6. My own ACE file
7. Ring Tone Player
Rebooting to System ACE Configuration Address 4...
```

# Board Diagnostics

- XROM includes a series of board test routines

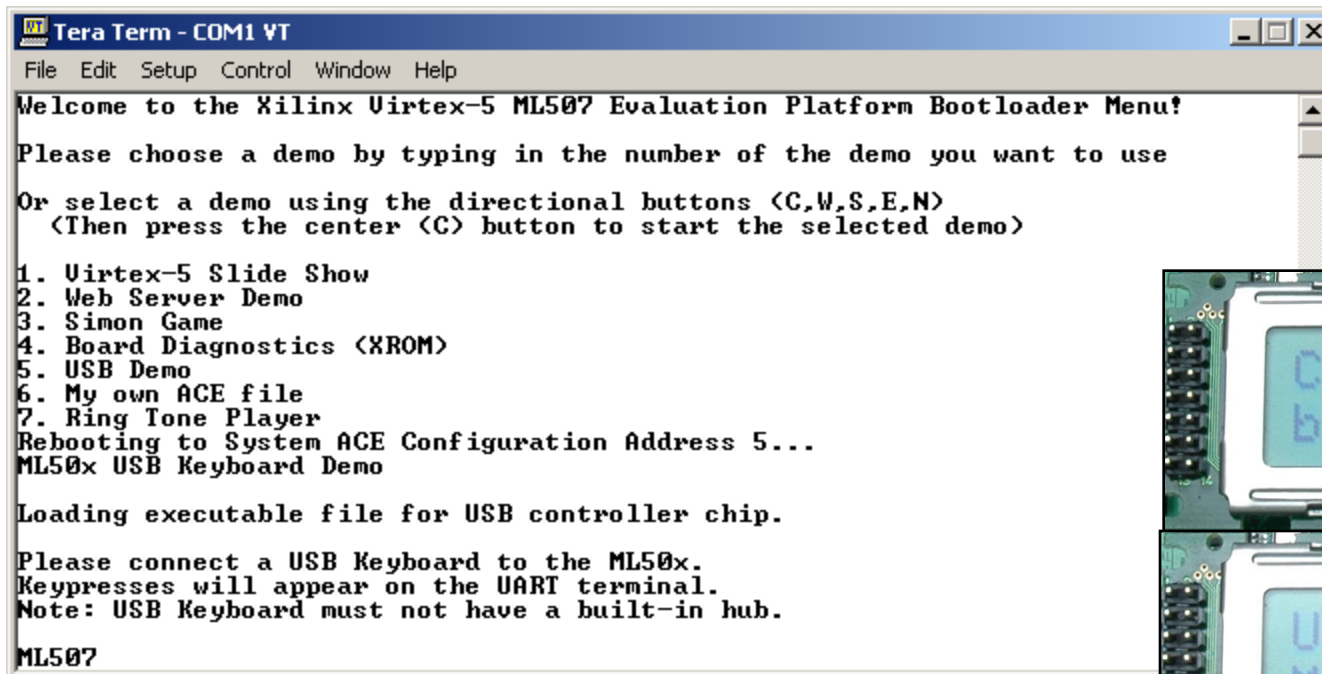


The screenshot shows a terminal window titled "Tera Term - COM1 VT" with a menu of diagnostic tests. The menu is displayed in a monospaced font. At the top, it says "XROM for ML507 Version 1.10 built on Thu Oct 28 11:30:14 PST 2004". Below this, there is a section "1. Tests" followed by "ML507 Diagnostic Tests". A list of tests follows, numbered 1 through 10, with the last option being "Return to the Main Menu".

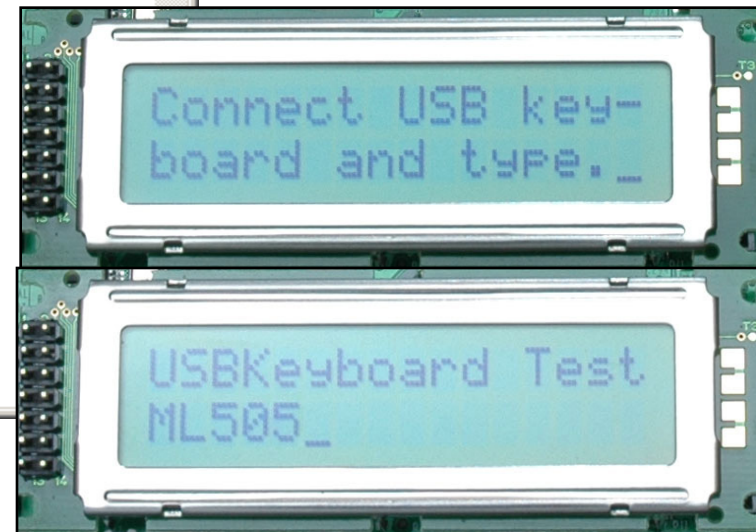
```
Tera Term - COM1 VT
File Edit Setup Control Window Help
-----
XROM for ML507 Version 1.10 built on Thu Oct 28 11:30:14 PST 2004
-----
1. Tests
ML507 Diagnostic Tests
=====
1. Test DDR SDRAM
2. Test ZBT SRAM
3. Test LEDs
4. Test Push Buttons
5. Test Dip Switches
6. Test Character LCD
7. Test PS2 - Keyboard
8. Test SMA Connectors
9. Test UGA Output
A. Test Flash Memory
B. Print IIC EEPROM Contents
C. Test Piezo
0. Return to the Main Menu
```

# USB Keyboard

- Type 5, to launch the USB Keyboard application in Configuration 5
  - Type **ML507** and view results:



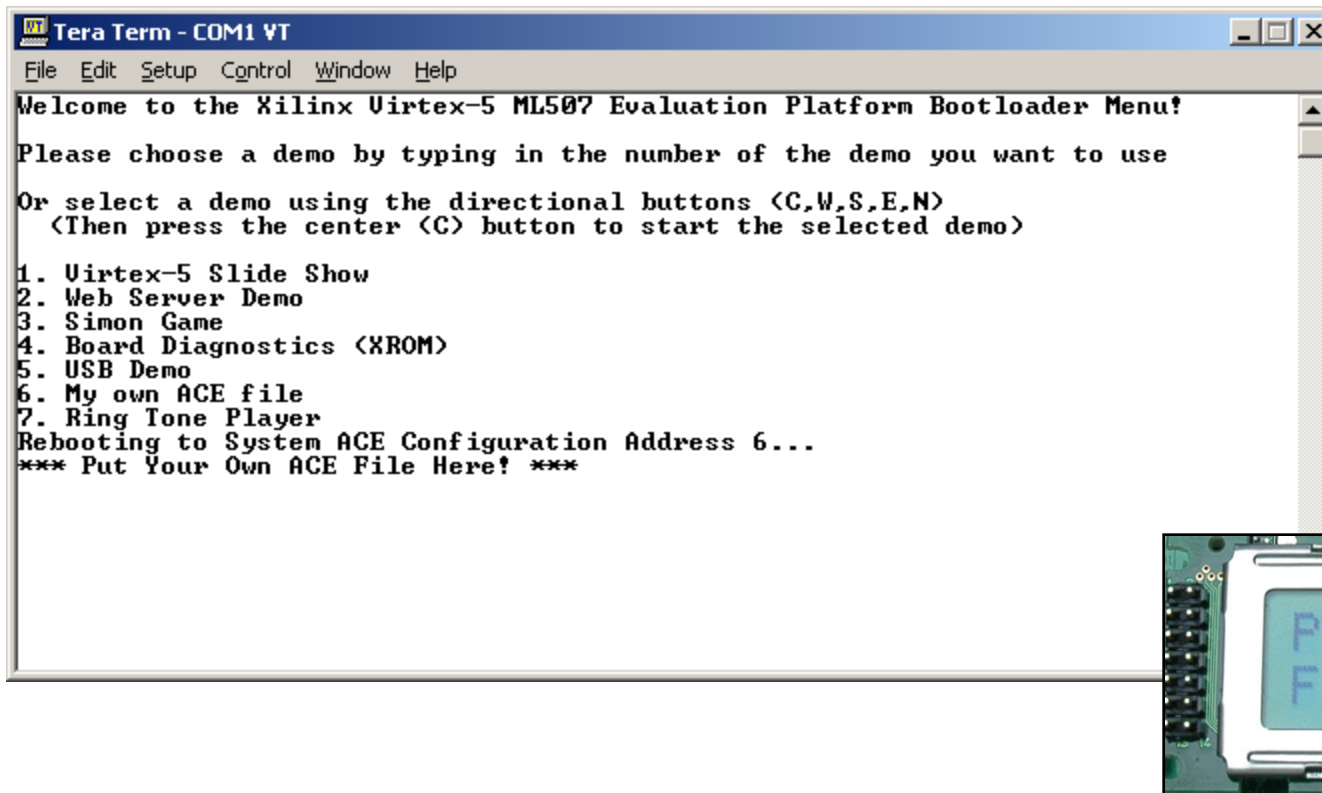
```
Tera Term - COM1 VT
File Edit Setup Control Window Help
Welcome to the Xilinx Virtex-5 ML507 Evaluation Platform Bootloader Menu!
Please choose a demo by typing in the number of the demo you want to use
Or select a demo using the directional buttons <C,W,S,E,N>
(Then press the center <C> button to start the selected demo)
1. Virtex-5 Slide Show
2. Web Server Demo
3. Simon Game
4. Board Diagnostics <XROM>
5. USB Demo
6. My own ACE file
7. Ring Tone Player
Rebooting to System ACE Configuration Address 5...
ML50x USB Keyboard Demo
Loading executable file for USB controller chip.
Please connect a USB Keyboard to the ML50x.
Keypresses will appear on the UART terminal.
Note: USB Keyboard must not have a built-in hub.
ML507
```



**Note:** Presentation applies to the ML507

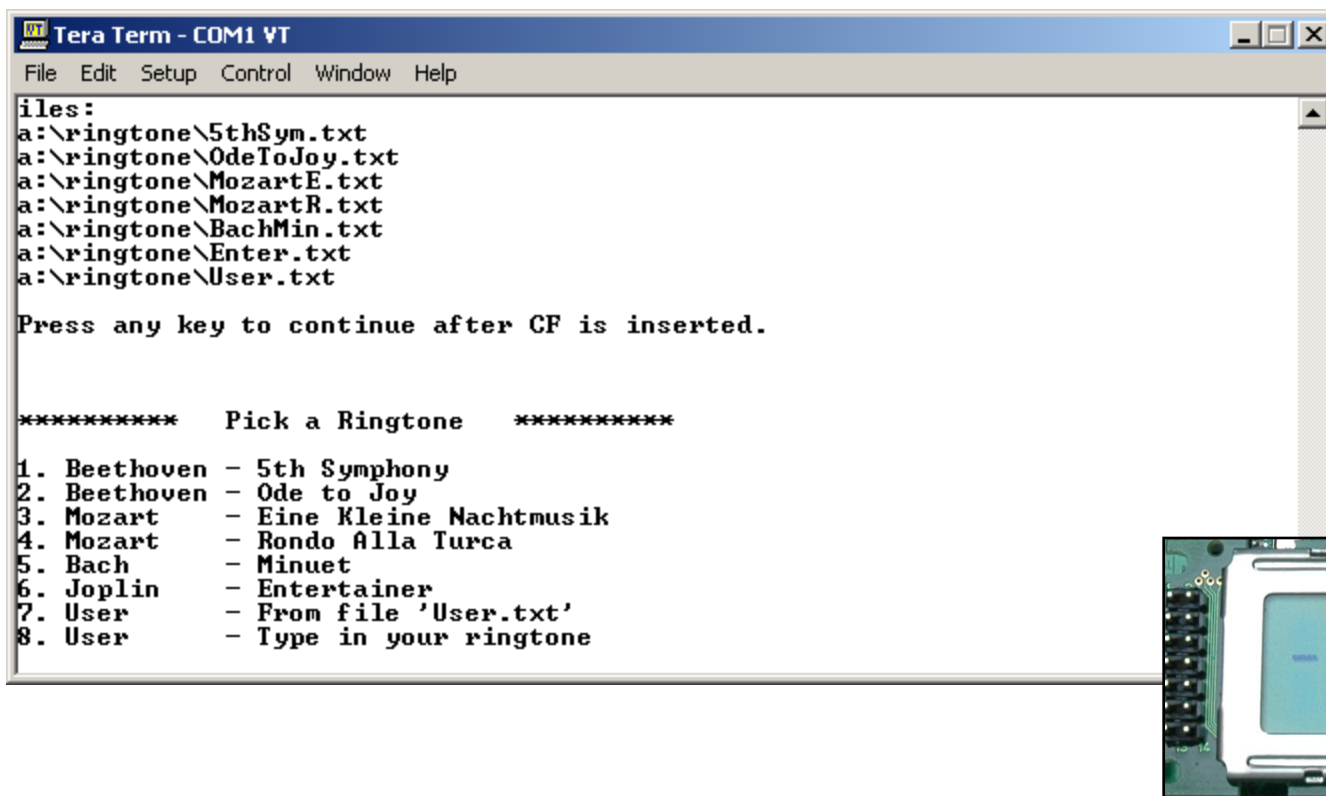
# My ACE

- Type 6, to launch the My ACE application in Configuration 6



# Ringtone

- Type 7, to launch the Ringtone application in Configuration 7
- Press any key then press 1-7 to play a simple melody





# References

# References

## ▪ Virtex-5

- Virtex-5 FPGA Family

<http://www.xilinx.com/products/virtex5/index.htm>

## ▪ Platform Studio

- Embedded Development Kit (EDK) Resources

<http://www.xilinx.com/tools/platform.htm>

- Embedded System Tools Reference Manual

[http://www.xilinx.com/support/documentation/sw\\_manuals/xilinx12\\_1/est\\_rm.pdf](http://www.xilinx.com/support/documentation/sw_manuals/xilinx12_1/est_rm.pdf)

- EDK Concepts, Tools, and Techniques

[http://www.xilinx.com/support/documentation/sw\\_manuals/xilinx12\\_1/edk\\_ctt.pdf](http://www.xilinx.com/support/documentation/sw_manuals/xilinx12_1/edk_ctt.pdf)

# Documentation

# Documentation

## ■ ML505/506/507 Documentation

- ML505 Overview

<http://www.xilinx.com/ml505>

- ML506 Overview

<http://www.xilinx.com/ml506>

- ML507 Overview

<http://www.xilinx.com/ml507>

- ML505/506/507 Evaluation Platform User Guide – UG347

[http://www.xilinx.com/support/documentation/boards\\_and\\_kits/ug347.pdf](http://www.xilinx.com/support/documentation/boards_and_kits/ug347.pdf)

- ML505/506/507 Getting Started Tutorial – UG348

[http://www.xilinx.com/support/documentation/boards\\_and\\_kits/ug348.pdf](http://www.xilinx.com/support/documentation/boards_and_kits/ug348.pdf)

- ML505/506/507 Reference Design User Guide – UG349

[http://www.xilinx.com/support/documentation/boards\\_and\\_kits/ug349.pdf](http://www.xilinx.com/support/documentation/boards_and_kits/ug349.pdf)