



TRAINING IN REAL-TIME  
EMBEDDED DEVELOPMENT

# Course MSDN-2540 : Developing Embedded Solutions for Microsoft Windows CE .NET

## Course Description:

This four day course teaches the fundamentals of Microsoft Windows CE .NET. It is part of the Microsoft Official Curriculum (MOC) and is delivered by a Microsoft Certified Trainer (MCT).

The course is delivered in partnership with Microsoft Gold Certified Partner F1 Computing Systems.

## Course Objectives:

The goal of this course is to provide developers and system integrators the solid foundation they need to develop high-quality embedded solutions using Microsoft Windows CE .NET.

## Delegates will learn:

After completing the course, students will be able to:

- Create an advanced build of Windows CE image
- Describe the concepts of advanced debugging
- Describe the Windows CE kernel features
- Provide an overview of driver development in Windows CE .NET
- Describe the networking and communications technologies used in Windows CE .NET
- Learn about the shell options included in Windows CE .NET
- Describe the application development environment for building a Windows CE .NET operating system image

## Pre-Requisites

Some knowledge of embedded platforms is helpful but not necessary.

## Who Should Attend:

This course is intended for system integrators and system administrators who are responsible for building and configuring the Microsoft Windows CE .NET platform.

## Duration:

Four days



## Course Materials:

- Delegate Handbook

## Related Courses:

- MSDN-2530 Introduction to Windows CE .NET
- RTOS-201 Fundamentals of Real-Time Operating Systems
- MSDN-2450N Building Embedded Solutions using Windows CE 5.0

## Course Workshop:

PC based labs accompany this course.

## Course Outline:

### Module 1: Advanced Building of a Windows CE Image

- Directory Structure of Platform Builder
- The Windows CE .NET Build Process
- Building in the Integrated Development Environment
- Modifying Configuration Files
- Creating a Component
- Modifying CEC Files using the CEC Editor
- Adding a BSP
- Export Wizard

### Module 2: Advanced Debugging

- Using Breakpoints
- The Real World: Debugging Process
- Using Remote Tools
- IDE Debug Commands
- Debug Zones
- Additional Debugging Techniques
- eXDI (Extended Debug Interface)

### Module 3: Configuring and Building with Platform Builder

- Definition of Real Time
- Windows CE Kernel Features
- Handling Processes, Threads, and Fibers
- Protecting Applications
- Synchronization Objects
- Memory Model
- Structured Exception Handling
- Optimising a Windows CE Device

### Module 4: Understanding Device Drivers

- Windows CE Architecture
- Driver Source
- Driver Resource Management
- Resource Manager
- Device Driver Interrupt Handling and the IST Model
- Device Driver Memory Management
- New DMA Routines
- Driver Loading Mechanism
- Service Manager (Service.Exe)
- Device Notification Mechanism for Applications
- Device Power Management
- Common Driver Architectures
- Native Device Drivers
- Stream Interface Drivers
- USB
- NDIS
- FSD
- Emulation Support

### Module 5: Networking and Communications

- Web Technologies
- Lab: Enabling a Web Server
- Networking Options
- Lab: Implementing Microsoft Message Queuing
- Component Services
- Networking Security
- Real-Time Communications
- Multimedia Communications

### Module 6: Implementing a Shell

- What Is a Shell?
- Shell Options
- Components of a Custom Shell
- Required Shell Functionality
- Installing Your Custom Shell
- Customizing the Windows CE .NET User Interface

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