



TRAINING IN REAL-TIME
EMBEDDED DEVELOPMENT

Course NDIS-501 : NDIS Network Driver Development

Course Description:

A five day course on the development of NDIS network device drivers. The course is presented in partnership with Windows device driver specialists, Datronic®. The course includes a workshop with hands on labs and practical samples.

NDIS - Network Driver Interface Specification

Overview:

This course supplies the basic knowledge for modifying existing NDIS network device drivers or writing completely new drivers.

Course Objectives:

- NDIS Network Device Driver Development for Windows XP, W2K3, Vista and Longhorn Server.
- A journey through the different NDIS layer covering Miniports, Protocol Drivers, Intermediate Drivers, the TDI Interface and Socket-Applications.

Delegates will learn:

Delegates gain a thorough knowledge of the windows network device driver architecture and the associated programming models. Miniports, protocol drivers, a short overview over the TDI interface and socket helper applications are covered. In addition to this delegates learn concepts and backgrounds of NDIS device driver development using the DDK and the NDIS libraries and lots of practical tips and tricks including the usage of NDIS WinDbg debugger extensions.

Pre-requisites:

- Attendance of course WDM-501: WDM Driver Development, or practical development experience
- Very good knowledge of C and/or C++
- Basic knowledge of Microsoft Visual Studio
- Basic knowledge of Windows system programming
- Basic knowledge of Windows system administration

Who Should Attend:

Windows device driver developers, who want to gain an understanding of the different layers of the Windows NDIS environment and the corresponding driver models, as well as the associated interfaces, from the miniport at the bottom, all the way through to the application at the top.

Duration:

Five days

Course Materials:

- Delegate Handbook

Related Courses:

- WDM-501 WDM Driver Development
- AWDM-501 Advanced WDM Driver Development
- WDF-501 WDF KMDF Driver Development
- MSDN-2450 Developing Embedded Solutions for Microsoft Windows CE .NET. (v4.2)
- MSDN-2450N Building Embedded Solutions using Windows CE 5.0
- MSDN-2545 Embedded Solutions for Windows XP Embedded
- MSDN-2530 Introduction to Microsoft Windows CE .NET

Course Outline:

Day 1:

- Overview
- Reference model ISO/OSI layers
- Windows networking architecture and programming models
- Connectionless, connection oriented, WAN
- NDIS Miniport Model
- Miniport interface to hardware or WDM driver underneath (lower edge)
- Miniport interface to protocol drivers (upper edge)
- Miniports upper edge functions MiniportXxx
- Network OIDs
- NDIS library functions for miniports
- NDIS Packet and buffer handling

Day 2:

- NDIS protocol drivers
- Protocol driver binding to underlying adapters
- Receiving and transmitting data in a protocol driver

Day 3:

- Supporting a protocol interface to user mode applications
- TDI upper edge interface for protocol drivers
- TDI IOCTLs for transport drivers
- TDI & Windows Socket applications
- Windows socket helper DLL

Day 4:

- TDI filter drivers for monitoring data (not packets)
- Kernel mode TDI client drivers
- NDIS intermediate drivers overview
- Bindings of NDIS intermediate drivers
- Filter intermediate drivers
- MUX intermediate drivers
- Intermediate driver installation and INF file entries

Day 5:

- Property sheets and device configuration
- Notify Objects
- Windows dialup networking overview
- Connection oriented NDIS overview

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