Sela

WDM2

Windows XP/W2K3 Server WDM Device Driver Development - Advanced (Plug'n'Play, Power Management and WMI) O3-6176666





Windows XP/W2K3 Server WDM Device Driver Development - Advanced (Plug'n'Play, Power Management and WMI)

WDM2 - Version: 1



Description:

The students gain a thorough knowledge about the architecture of the Plug'n'Play and Power Management components of the Microsoft Windows operating systems and Windows Management Instrumentation. In addition to this they learn concepts and backgrounds of device driver development using the DDK and lots of practical tips and tricks.

Intended audience:

Windows driver developers who need a more comprehensive understanding of Plug'n'Play, a deeper insight into Power Management and a basic knowledge of Windows Management Instrumentation

Prerequisites:

Very good knowledge of the programming languages C and/or C++
Basic knowledge of Windows system programming and system administration
Knowledge of system and device driver development on other operating systems (e.g. Unix) is an advantage



Good knowledge of Microsoft development environments (Developer Studio)

Basic knowledge of driver and hardware related software development

Basic knowledge of Windows device driver development (Training course I) is absolutely necessary

Objectives:

Topics:

○ Overview

^⁰ Plug'n'Play Basics

<sup>
♀</sup> System Architecture and kernel mode components



- ^⁰ Setup API, class installers, class co-installers, device co-installers
- ^⁰ Layered drivers

- º Physical Device Object (PDO), Function Device Object (FDO) and Filter Device Object (FiDo)
- ^⁰ Plug'n'Play manager's device tree

^⁰ Plug'n'Play IRPs and - Plu'n'Play state transitions overview





□ IRP_MN_STOP_DEVICE and hardware resource reassignment

Plug'n'Play routines in WDM drivers

^⁰ Advanced Plug'n'Play

^o Multifunctional hardware

System bus extender (MF.SYS)



^⁰ Virtual devices

^⁰ Bus driver functionality and Plug'n'Play IRPs for bus drivers

PIRP_MN_QUERY_DEVICE_RELATIONS, IRP_MN_QUERY_ID, IRP_MN_QUERY_DEVICE_TEXT

^⁰ Direct call interfaces

º IRP_MN_QUERY_INTERFACE



System power states (S0-S5)

Oevice power states (D0-D3)

□ IRP_MN_QUERY_CAPABILITIES

^⁰ Power state transitions during driver operation

Device power policy owner



Handling of IRP_MJ_POWER

^⁰ System power IRPs and device driver power IRPs

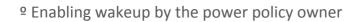
^⁰ IRP_MJ_POWER queues

^⁰ Idle detection

^⁰ Waking the system

DEVICE_CAPABILITIES and wake entries





º IRP_MN_WAIT_WAKE

^⁰ WMI architecture

□ IRP_MJ_SYSTEM_CONTROL and WMILIB

Object model and MOF resources

^⁰ WMI properties



^⁰ WMI events

⁹ WMI property and event consumer applications