

Power Management for Windows 8

Introduction

This three-day course is intended for software development and validation engineers that want to learn more about the power management technologies incorporated into the Windows 8 operating system. At course completion, learners should have an understanding of all the components that participate in the power management of devices on Windows 8

Course Objectives

At course completion, students should have the following knowledge and skills:

- What power management features are incorporated into Windows 8
- What power management features are required for Windows 8
- Device power states
- How are power requests handled by drivers
- How does connected standby work
- How does the power management framework work
- Understanding wake events

Prerequisites

Before taking this course, students should complete the **Windows 8 Device Driver Course Completion** course

- Operating system concepts such as
 - Memory management
 - Resource management
 - Reentrancy
 - File system management
- Debugging concepts and some techniques
- Preferable: Experience with Windows programming (C, C++, etc.)

Course Structure

This course is a lectured seminar with some hands-on debugging exercises. Lectures include numerous demonstrations.

Course Outline

Power Management for Windows 8

- Power Management in Windows 8
- Power Management & the Portable Market
- History of Windows & Power Management
- S0 and D0 States
- What's wrong with the simple model
- Improvements to power management in Windows 8

Improvements to power management in Windows 8

- System power requirements
- Device power requirements

- HCK Testing for power

Power Policies

- What is a power policy
- Setting power policies
- Power schemes
- Administrator power policies
- Power Engine Plugin

Handling Power Requests

- Power IRP's
- Power requests and KMDF
- D0Entry & D0Exit Events
- Typical power event handlers

Device Power Capabilities

- Types of device power states
- Power transition times
- Announcing device power capabilities
- Latency announcements
- Wait Wake

Power-Performance States

- Trading power for performance
- The Px states
- Specifying Power-Performance state capability

Connected Standby

- What is Connected Standby
- What users expect:
 - Playing music
 - Downloading continuation
 - Live tiles content updates
 - Printing
 - Receiving calls
 - Receiving messages
 - Receiving email
 - Sharing content
 - Synchronizing content
- Hardware support for CS
- Driver support for CS

Power Management Framework

- What is PoFx
- Device-level vs. Component-level

- Fx Statesv
- PO_FX_DEVICE struct
- PO_FX_COMPONENT struct
- PO_FX_COMPONENT_IDLE_STATE struct

Handling Wake Events

- Typical Wake Events
- Timed wakes
- Hardware support for wake