

Introduction to UDI

<http://www.sco.com/forum1999/conference/developfast/f6>

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Agenda

- **What and who are Project UDI?**
- Why portable drivers?
- Is it real?
- Related Activities
- Q & A



What is UDI?

- **The Uniform Driver Interface**
 - Innovative new Device Driver Interface
 - OS-neutral and platform-neutral
- **Free and Open Specification**
 - Developed jointly by SCO and other Project UDI members
 - Downloadable from <http://www.sco.com/UDI>



Key Features

- **Enables 100% driver source portability**
 - Defines architecture, APIs and packaging format
 - Supports source and binary distributions
- **Provides uniformity across device types**
 - Defines common execution model, inter-module communication and system services
 - Communication tailored to each device model
- ***Co-exists with legacy driver support***



What is Project UDI?

- **Open industry group since 1993**
 - Platform and OS vendors
 - IHVs
 - Solutions providers
- **Broad e-mail reflector community**
 - Subscribe via
<http://www.sco.com/UDI/reflectors.html>



Who is Project UDI?



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The “Driver Problem”

(IHV Perspective)

- **IHV**s have huge matrix of drivers to develop/port
 - # Devices × OSes × OS versions × platforms
- **Finite development & support resources**
 - Must choose porting order (target prioritization)
 - Some OSes and/or platforms not supported
- **Driver porting not core business**



The “Driver Problem”

(Platform and OS Vendor Perspective)

- **Platform/OS vendors need IHV support**
 - Need broad device coverage to compete
 - Limited resources for driver development
 - Must leverage IHV partners
- **Dependent on IHV porting order**
 - Competitive advantage lost if too far down porting order
- **Driver porting not core business**



The “Driver Problem”

(Independent Timelines)

- **OS and platform evolution not under IHV control**
- **IHV device evolution not under OSV control**
- **Independent development**
- **Requires stable, well-defined interfaces**



The UDI Solution

- **One driver source for all UDI-compliant OSes**
 - UDI abstracts H/W and S/W environment
 - All driver interfaces completely specified
- **UDI moves up IHV porting order**
 - More bang for the buck for IHVs
- **UDI-compliant OSes get better coverage**



OSV Acceptance

- **Portability story not enough**
 - Must not be biased toward any OS or OSes
 - Must have good performance and scalability
 - Must support advanced features



UDI: Next-Generation Technology

- **Instance independence**
 - Hot plug/hot swap adapters and devices
- **Location independence**
 - Distributed environments and I/O processors
 - User-mode drivers, advanced driver debugging tools, and validation environments



UDI: Next-Generation Technology

(continued)

- **Single model for all device types**
 - “Mixed-model” FibreChannel*, USB*, etc.
- **Implicit MP synchronization**
 - No lock primitives
- **Support for field-installable 3rd-party extensions**
 - Adds new device models



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Informative Documents

- **Introductory Info**
 - UDI FAQ & Data Sheet
 - UDI Management & Technical Overviews
 - UDI Marketing Information
- **Tutorial Materials In Progress**
 - UDI Driver Writer's Guide
 - UDI Environment Implementer's Guide



Normative Documents

- **Five Independent Specifications**
 - UDI Core Specification
 - UDI Physical I/O Specification
 - UDI PCI Bus Binding Specification
 - UDI SCSI Driver Specification
 - UDI Network Driver Specifications
- **More to come...**



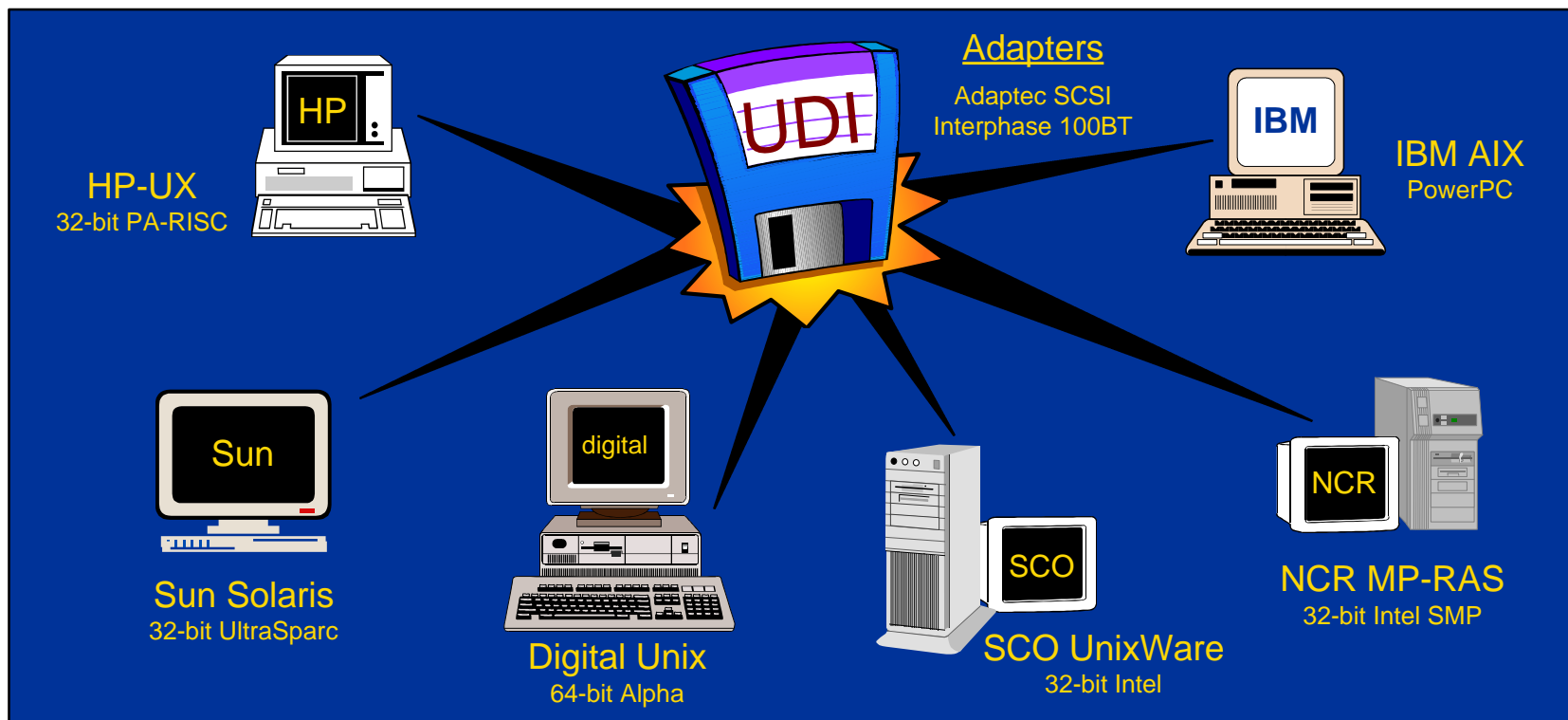
Specifications Now Available

- **UDI 1.0 specifications available now**
 - Downloadable from
<http://www.sco.com/UDI/specs.html>
 - Final proofreading draft (1.0rc3) available today
 - Final 1.0 specs scheduled for September 1st
- **Validated by prototype implementations and public review**



UDI In Action

- **First prototype completed end of 1997**
 - Single driver source, no #ifdefs, no modifications



Reference Implementation

- **Sample drivers & metalanguage libraries**
- **Sample OS implementations, including:**
 - Linux*, UnixWare*, HP-UX*, Tru64 UNIX*
 - Easily portable to other OSes
- **Jointly developed by Project UDI members**
- **1.0 reference source available early 4Q99**
 - Public domain source code



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Related Activities

- **Project UDI works with other groups on related specification efforts, based on UDI**
- **USB drivers**
 - OpenUSBDI spec defines USB Metalanguage
 - Developed/published by USB DWG
- **Compact PCI Hot Swap**
 - Developed/published by PICMG



Related Activities

(continued)

- **Graphics drivers**
 - General Graphics Interface re-basing onto UDI
 - Developed by GGI Project (www.ggi-project.org)
- **I₂O* and SCI Metalanguages in progress**
- **VI (Virtual Interface Architecture)**
 - Under consideration by VI Developers Forum
- **“HomeGate” residential gateways**
 - JTC1/SC25/WG1



Related Activities

(continued)

- **Real-time environments**
 - Newly-formed ANSI R1.1 Technical Committee
 - Developing recommendations for use of UDI in real-time operating systems
- **UDIG (UNIX Developer's Interface Guide for Intel Servers)**
 - IA32 & IA64 UDI ABIs



Developer Interface Guides

<http://www.sco.com/forum1999/conference/developfast/f6>

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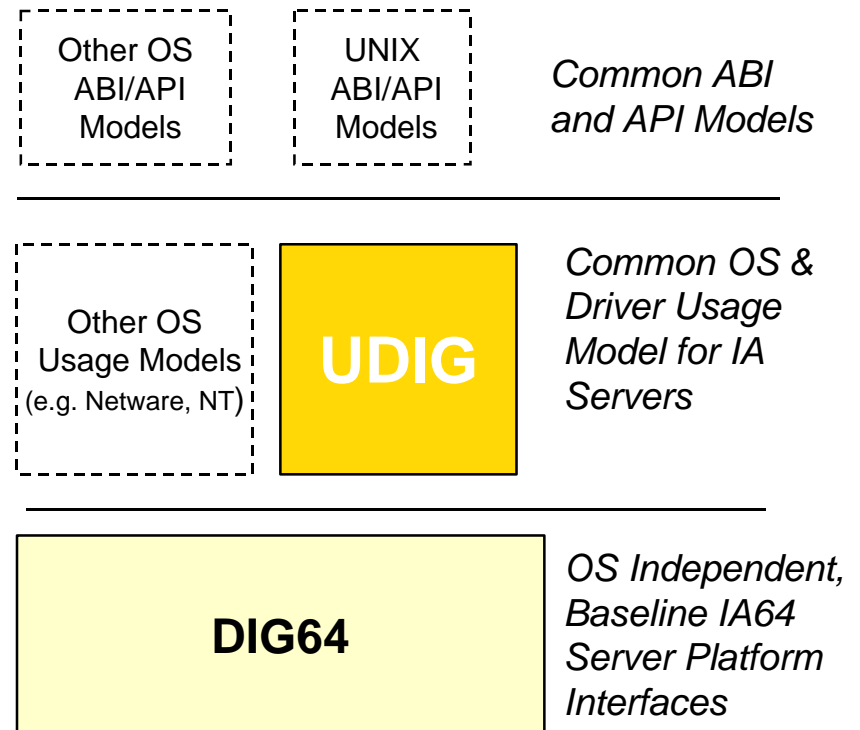
Developer Interface Guides

- **Problem:**

- Volume solutions, reliability, compatibility, performance traditionally evolve slowly with new architectures

- **Solution:**

- Define compatibility between layers to promote concurrent development of complete solution stacks



Accelerate Compatible IA-64 solutions



UDIG 1999 Deliverables

UDIG Chapters

Boot and Configuration Guidelines*

Device Driver Guidelines*

Technology Transition*

Performance Guidelines

RAS Guidelines

* Targeted for 1st release, 9/99 industry review



Device Driver Guidelines

Scope:

- Leverage off the work being done by the Uniform Driver Interface development organization, Project UDI.
- Provide additional implementation guides for OSVs beyond those provided for driver writers by Project UDI that will enable an OSV to create a UDI compliant environment.



Device Driver Guidelines

Specifications to be provided include:

- 1) **ABI bindings**
 - » This is the specification of the mapping between UDI abstract data types and their corresponding IA-32 and IA-64 bindings

- 2) **Profiles**
 - » This is the specification of which of the optional UDI metalanguages and bindings are required on IA-32 and IA-64 platforms



UDIG Timeline

Timeframe:

- **Draft implementation guides now under final working group review**
- **Look for notice of industry review in September 1999**



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UDI Information

Web page

<http://www.sco.com/UDI>

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