



NeST as a focused technology company had recognized the possibilities of emerging technologies and invested in them, thus providing it with a head start over competition

The software products conceived, designed & developed by NeST cover the entire range of 1394 spectrum right from device drivers to custom made applications.

PROJECTS

WDM Device Drivers for 1394

- Kernel-mode device drivers supporting IEEE 1394 upon Windows 98/2k platforms conforming to the WDM architecture of Microsoft.
- Portable and layered user mode API interfaces for various 1394 related protocols, abstracting all the intricacies of Microsoft 1394 DDI and PnP architecture.
- The kernel mode driver plus user mode API solutions currently offer support for:
 1. **IEEE 1394 core features:** including both isochronous and asynchronous modes of communications, plug n play notifications & device enumeration.
 2. **IEEE 1212 Config ROM:** for device-discovery and capability-publishing applications.
 3. **IEC 61883-x standards:** FCP, CMP, PCR (61883-1), real-time streaming of AV data formats like DV & MPEG2 TS (61883-2.4).

SKILLS

- C/C++
- COM/DCOM/CORBA
- WDM, Stream Class Drivers
- DirectShow
- UML/Real Time UML
- Win98, WinNT, Win2K
- VxWorks, WinCE, Proprietary RTOS
- Win2K DDK, SoftICE, Rational Rose, Tornado 2.0

AV/C Protocol Implementations for Embedded Platforms

- Protocol Implementation Layer comprising of IEC 61883-1 components (FCP, CMP & PCR) and AV/C General command set over a proprietary RTOS.
- A complete set of standards-conforming AV/C Plug-In Modules for handling various AV/C command-sets both at the target nodes and controller nodes. These include Tuner, VCR, Bulletin Board, Panel & Asynchronous Connections.
- Simulation Applications for various AV devices like DTV, DSTB, Remote Commander and DVCR over the Protocol Implementation Layer.
- 1394 protocol stack simulation over TCP/IP for providing a cost-effective testing solution.
- Data Driven Interaction based Devices using Asynchronous Streaming Protocol.

HAVi Middle-ware Solutions

- Complete implementation of HAVi Software Elements.
- Portable Design using standard frameworks for developing SEs & marshalling
- As many as six DCM/FCMs
- Simulation Applications for VCR, Camera & Virtual FCMs
- Test Suites covering the entire API range.

IEEE 1394 Wireless Bridge

- Implemented the wireless bridging concepts specified in IEEE 1394.1 for connecting independent 1394 networks.
- Asynchronous and Isochronous data transmission over wireless is demonstrated.



1394 DRIVERS

1394 API/Driver

- Exposes the kernel mode 1394 DDI to an efficient user mode interface.
- Hides PnP architecture of WDM and provides a portable interface based on 1394 GUIDs
- Supports both asynchronous and isochronous modes of operation.
- Uses DIRECT IO for isochronous mode for efficient transfer of data
- Handles multiple device objects, acting more or less like a bus driver.

Config ROM API/Driver

- Provides support for modifying a device's IEEE 1212 Config ROM

- Supports host adapters from multiple vendors including TI, RATOC and Adaptec.
- Supports OHCI & Non-OHCI interfaces.
- Provides a generic IEEE 1212 ROM parser & C++ ROM Builder class library.

IEC61883 API/Driver

- Implements the IEC61883 Digital Interface over WDM.
- Implements Plug Control Registers using 1394 pre-callback mechanism compliant with IEC61883-1 specification.
- Implements Real-time Digital Video & MPEG-2 streaming compliant to the IEC 61883-2,4 standards. Supports multiple simultaneous.

AV/C PROTOCOLS

Protocols

- 61883-1 (PCR, FCP and CMP) driver implemented to support pre-callbacks as well as post-callbacks for all LOCK, READ and WRITE transactions to the PCR address range

General AVC

- AV/C Digital Interface Command Set General Specification & Enhancements to the AV/C General Specification Tuner Sub unit
- AV/C Tuner Model & Command Set
- AV/C Tuner Broadcast System Specification-Digital Video Broadcast VCR Sub unit
- VCR Sub-unit spec
- Bulletin Board Sub unit
- AV/C Bulletin Board Sub unit General Specification
- AV/C Bulletin Board Type Specification – Resource Schedule Board. Asynchronous Streaming
- AV/C Compatible Asynchronous Serial bus Connections
- AV/C Commands for management of Asynchronous Serial Bus Connections Module was tested for low data rate applications including MIDI and the GUI data for Panel sub-unit implementation.
- DDI (Panel Sub unit)
- AV/C Panel Sub unit Model and Command Set The GUI data hierarchy was supported using a custom database implementation to ease the load off the application.

Simulation Apps

- DTV, DSTB, DVCR & Digital Camera Simulators. These support
 - AV/C protocols for the sub-units
 - Scheduling and resource reservations
 - Implements DDI (Panel)

Demo Apps

- MIDI Transfer Application using Asynchronous Streaming.
- Remote Controller Application using Data Driven Interaction.
- Application for complete 61883-1 CMP & PCR management using the APIs developed.

DV Streaming & Rendering

- DirectShow Filters for reading/writing to 1394 channels using the 61883 API
- DV file transfer application for PC to PC transfer with rendering
- DVCam Controller and Streaming Application
- Real-time DV capture from camcorder to HDD with simultaneous rendering.

For more information on NeST's service offerings, please contact:

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