ENJOY A SECURE HD HOME NETWORK.

TI's Interface Products Make It Easy.
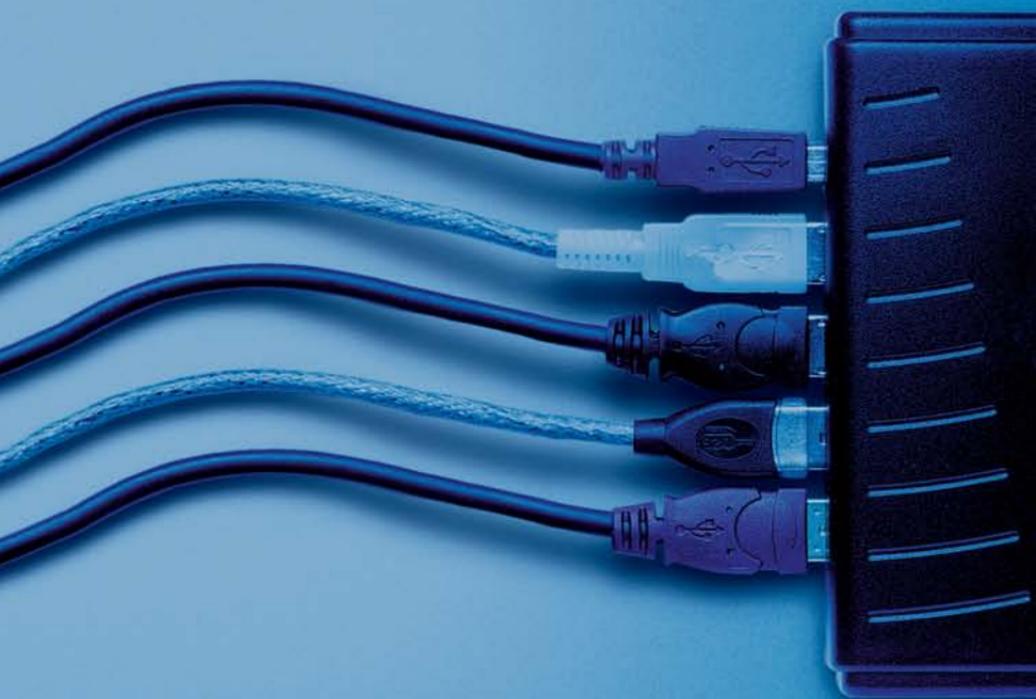
Interface products from Texas Instruments (TI) make High-Definition (HD) home networks a reality. TI's leadership in 1394 (FireWire®) technology enables users to simply plug-in devices to set-up their home network—quickly and securely. And by using the cross-industry standard HANA 1394-enabled node, all devices can be added seamlessly to an HD network.

With Five Company (5C) Digital Transmission Content Protection (DTCP), besides making new devices easy to install, audio, video and data streams are protected from security breaches. HD content also is guaranteed to stream to intended sources with 1394's native-streaming (real-time) protocol.

The average home will soon have three TVs, with one being an HDTV. Thus, HD content and corresponding HD-streams will face increased demands. Such demands will include running simultaneous streams to watch, record and perform "trick" play capabilities – such as fast-forward and rewind. These advanced HD services will require more than 200-Mbps bandwidth to support multiple audio, video and data streams.

Traditionally, four primary content-delivery wires could be found in a home: coaxial, CAT3/5/6, power line and fiber. One popular networking approach uses 1394 over Category 5 cable (called CAT5 or UTP5) and coaxial cable. Using TI's 1394 to support the network, devices in any room can be controlled by the same remote through on-screen menus which eliminates the need for multiple wires running throughout the home.

Possible Features of a Multiple-Stream HD Home Network:*

- Entire network operates at 400 Mbps.
- Multiple HD audio/video streams can be sent in any direction over a single home network.
- All streams can be selected through any HDTV display device on the network.
- All streams can be encrypted with 1394-5C encryption.
- Guaranteed quality-of-service (QoS) ensures no video or audio break-up.
- Many FireWire-enabled devices can be connected on a single home network.
- 1394 transported over CAT5e cable at 100 meters.
- 1394 transported over coaxial cable at 60 meters.

* Home network design will depend on network, configuration and equipment options available.

Here's how 1394 can support five HD A/V streams:

- HD A/V from a video generator to 1394 HDTV
- HD A/V from another video generator to HANA 1394 set-top box (STB)
- HD A/V from 1394-enabled PC
- HD A/V from 1394 HD camcorder
- HD A/V from HANA 1394 personal video recorder (PVR)

TI's Digital Portfolio Makes Home Networking Easy

1394b for Home Networking

- TI's TSB41AB3 chipset enables high-speed audio, video and data connections (up to 400 Mbps) across longer cable lengths for home network applications.

- 1394b specifications deliver higher performance (up to 3.2 Gbps), over greater distances (up to 100 meters) using a variety of cable media to fit most any application. Cable varieties may include: shield-twisted pair (STP), CAT (5/6/7), plastic optical fiber (POF) and glass optical fiber (GOF). 1394b specification is being approved to transfer over coaxial cable.

- Texas Intruments offers the added capability that 1394b is backward-compatible to 1394a, which allows existing consumer electronics (CE) to easily connect to the home network.

Multiple-Stream, High-Definition Home Network.

Texas Instruments delivers the reliable, content-protected, easy-to-use, guaranteed quality-of-service network you desire.

Samsung Plasma

HANA Set-Top Box with 1394

QAM Modulator

LCD TV

Sencore-Video Stream Server

Sencore-Video Stream Server

HD Camcorder

HANA TV Node (Legacy TVs)

Samsung DLP

1394-PC with Streaming Video

HANA PVR

HANA TV Node (Legacy TVs)

Living Room

Bedroom

Study

Game Room

Media Room

Optima DLP

HANA TV Node (Legacy TVs)

Optima DLP

HANA TV Node (Legacy TVs)
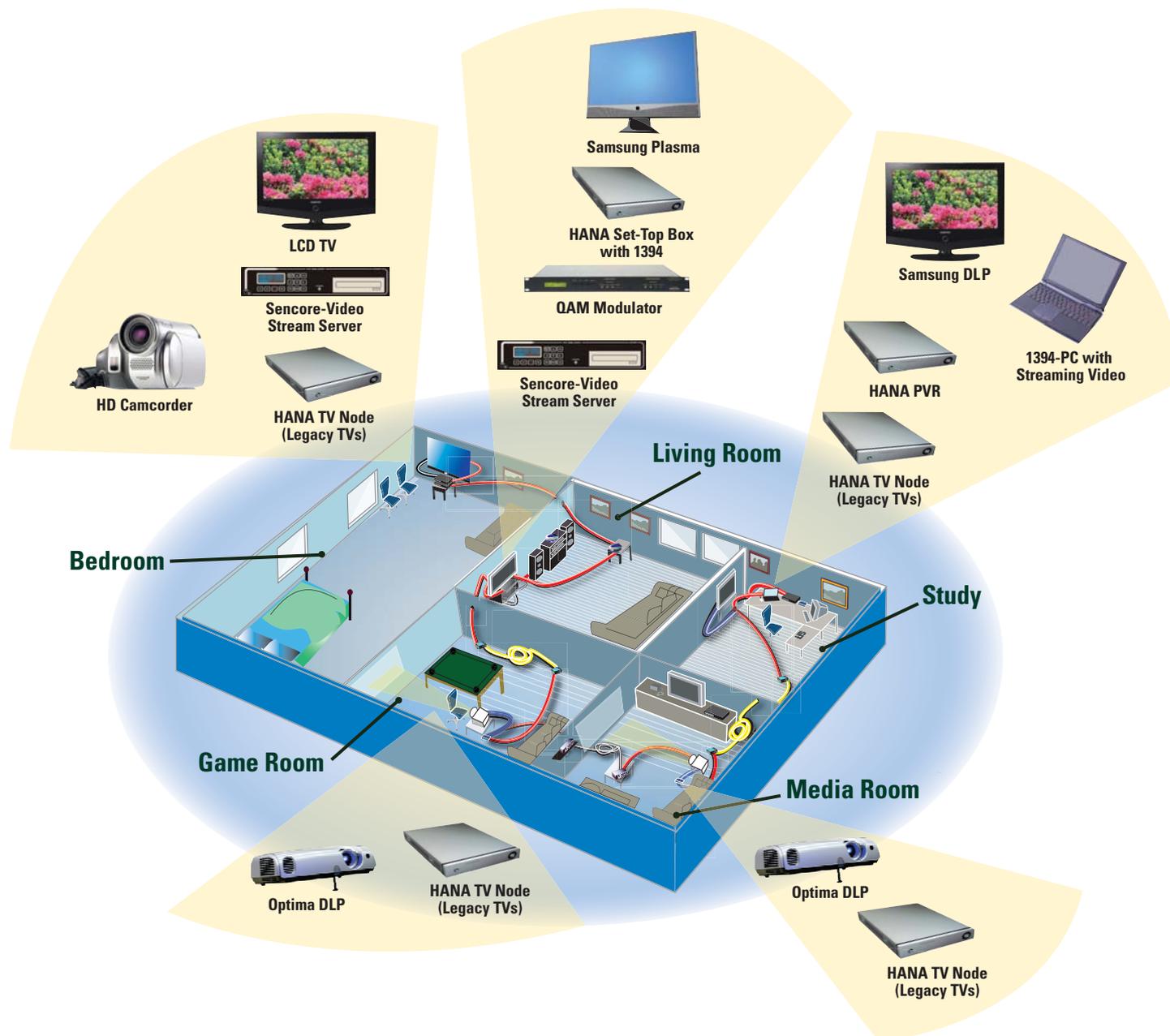
DLP®: Digital Light Processing; Technology originally developed in 1987 by Texas Instruments.
DVI: Digital Visual Interface
LCD: Liquid Crystal Display
HANA: High-Definition Audio-Video Network Alliance
Legacy TV: Analog TV
NIU: Network Interface Unit
PVR: Personal Video Recorder
QAM: Quadrature Amplitude Modulation

1394 Cable   **CAT5e Cable**   **Coaxial Cable**   **DVI Cable**

Coaxial Repeater   **CAT5e Repeater**   **1394 Hub**
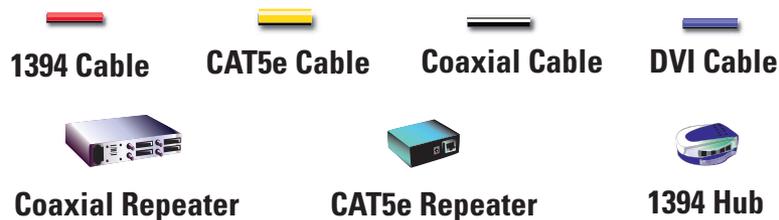
1394 for Consumer Electronics

- The TSB43Dx42 1394 device has a two-port integrated PHY and Link. This design allows a daisy-chain of CE equipment to form a cluster network with simple plug-and-play connectivity. This 1394 device supports three high-speed data interface (HSDI) ports for streaming MPEG 2/4 transport streams. DTCP 5C content protection is enabled with three ciphers and hardware authentication key exchange (AKE) acceleration to ensure that the CE cluster and network enables a trusted home network. The TSB43Dx42 supports IEC61883 for MPEG2, DSS, DV and audio as well as a dual PCI/68000 host interface (32-bit, 33-MHz PCI).

USB

- USB has simplified the lives of PC users by combining multiple existing interfaces into a single, easy-to-use connector.

- USB's plug-and-play capability ends the complex process of adding system peripherals.

- USB offers three speeds: low-speed (1.5 Mbps), full-speed (12 Mbps, or USB 1.1) and high-speed (480 Mbps, or USB 2.0). All three speeds offer both asynchronous and native streaming data transmission over a simple and inexpensive four-wire cable. This design meets the requirements of many peripherals including: keyboard, mouse, printer and others.

- TI's TUSB3410 and TUSB6250 are popular devices for USB-serial and USB-ATA/ATAPI bridging.

PCI Express®

- PCI Express (PCIe) combines the best features of PCI with more than 10 years of industry experience. The result: a robust, scalable, flexible, cost-effective Input/Output (I/O) interconnect that should serve the industry well into the next decade.

- The architecture of PCIe is based on industry standards for high-performance, general purpose, serial I/O interconnect for use in enterprise, desktop, mobile, communications and embedded platforms.

- PCIe is PCI-compatible by using the established PCI software programming models. TI's XIO2000 and XIO2200 are popular devices for PCI-PCIe and PCIe-1394 bridging.

TI and HANA Make HD Home Networking Simple

Why TI makes it simple:

- Texas Instruments is a trusted industry leader.

- TI has a history in 1394 service development and delivery.

- TI's expertise in high-speed, mixed-signal circuits, system-on-a-chip integration and advanced product development ensure that you receive the silicon, support, tools, software and technical documentation to design and deliver profitable products to market faster.

- With its industry experience and background, TI provides one of the broadest portfolios of interface solutions.

- TI's Digital Portfolio includes: 1394 (FireWire), USB and PCI Express.

Why HANA makes it simple:

- HANA, the High-Definition Audio-Video Network Alliance, is a cross-industry collaboration. This alliance includes content and service providers as well as many CE providers.

- HANA members support a set of standard requirements to advance the wide-spread deployment of new HD products and services as well as distribution and licensing scenarios. HANA is focused on delivering a trusted home network to meet consumer needs.

- One of HANA's primary objectives is to provide standards-based solutions. These solutions deliver a variety of consumer products and services for the ultimate HD experience, including end-to-end requirements for connected, high-definition and home entertainment.

- HANA endorses IEEE 1394 (FireWire) as the physical transport protocol for HD audio/video and data distribution.

- IEEE 1394 consumer electronics devices ensure a trusted home network with DTCP-5C Encryption.

- IEEE 1394 delivers guaranteed QoS, high-bandwidth, plug-and-play, interoperability, room-to-room connectivity and content protection.