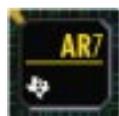*Product Bulletin*

AR7 ADSL/Ethernet Bridge/Router

The devices that comprise TI's AR7 family are single-chip Asymmetric Digital Subscriber Line (ADSL)-to-Ethernet Bridge/Router devices which feature a high-performance communications engine, optimized routing software and market-preferred interfaces. The AR7 devices provide an easy-to-use, cost-efficient solution for an entire product line of residential gateways. The flexibility and performance capabilities of the AR7 bridge/router devices give manufacturers an effective way to address the needs of all market segments, starting with data-only applications that do not need ADSL2+ bandwidth and ranging upward to high-throughput applications incorporating 802.11a/b wireless local area networking (WLAN).

With the AR7, manufacturers can develop affordable ADSL products and quickly differentiate their offerings for each market segment with unique intellectual property. Existing systems based on the AR7's TNETD7300A device can be modified to a TNETD7200 or TNETD7100-based system with little redesign of hardware or software. Market-proven AR7 technology delivers improved loop performance and increased DSL coverage, allowing consumers to enjoy faster data rates at greater distances.

Complete, Flexible Solutions

AR7 solutions include everything needed to quickly bring ADSL products to market: a complete reference design, industry-leading software, drivers, and a comprehensive maintenance and support package. The reference design can be configured with either one or four ports. All AR7 solutions include complete router software and Application Programming Interfaces (APIs) for value-added software enhancements.

Central to each AR7 solution is TI's high-speed communications processor featuring an integrated MIPS™-based 32-bit RISC core, a digital signal processor-based transceiver and an ADSL analog front end (AFE). Integrating all of this functionality into one AR7 greatly reduces the bill of materials (BOM) costs for manufacturers, enabling the most cost-competitive products. In addition, an AR7 includes integrated power management functions and a 10/100-BaseT Ethernet physical layer (PHY), reducing overall system cost and allowing simplified power control design.

Supported ADSL standards include G.992.1 (G.dmt) Annexes A,B,I,J; and ANSI T1.413, issue 2. Like all TI ADSL products, the AR7 solutions have been pre-qualified in TI's world-class interoperability labs, and then rigorously tested by local exchange carriers (LECs) in the field for interoperability with competitive solutions.
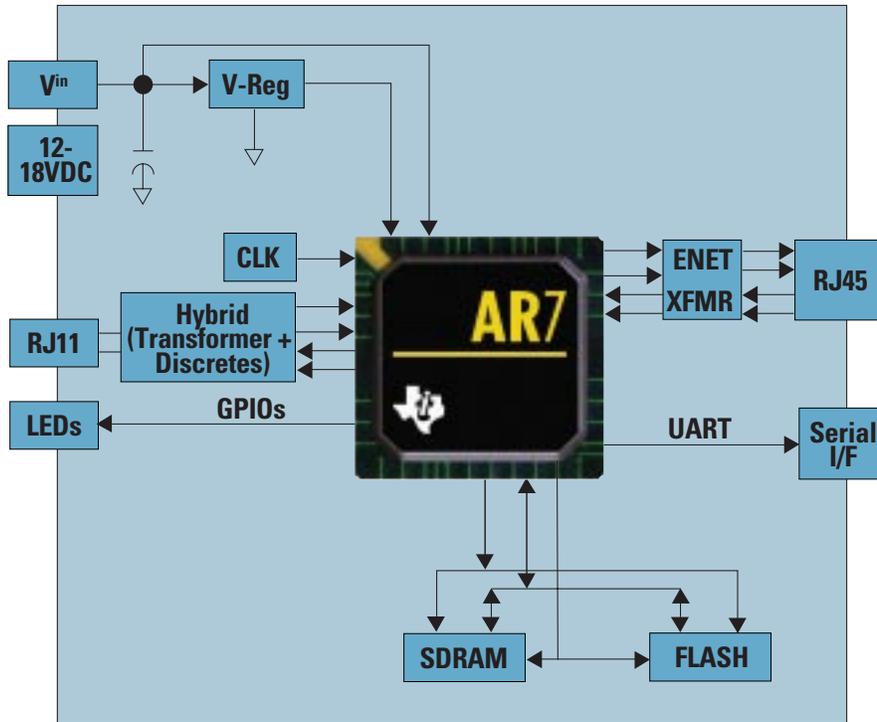
Key Features:
- Code- and pin-compatibility among all AR7 devices ensure software re-use and easy upgrades from data-only TNETD7100 through wireless-capable TNETD7300A
- Linux®-based software environment enables fast development of value-added features across all AR7 devices
- Dynamic Adaptive Equalization™ improves service area coverage
- TNETD7200 and TNETD7300A support all ADSL1 and ADSL2+ standards (G.dmt ITU 992.1, Annexes A,B,I,J, and ANSI T1.413i2) while TNETD7100A1 supports ADSL1
- Passes DSL Forum TR-067 working with all commonly deployed DSLAMs
- Pin-compatible 324-pin BGA package simplifies design and manufacturing of a complete ADSL product line

Robust Broadband Performance

For carriers, AR7 technology helps extend subscriber coverage and significantly improves data rates to more end users. The AR7's unique Dynamic Adaptive Equalization™ (DAE) technology employs techniques such as echo cancellation, configurable equalization structures, switchable hybrid, and programmable transmit and receive filters to correct for line impairments and interference. Service providers have the assurance of an extended ADSL service area for robust broadband performance.

Software Platform

The Network Support Package (NSP) for AR7 solutions features the Linux® operating system as well as

TNETD7100 Block Diagram

all of the needed network functionality. The flexibility and ease-of-use of a software environment that is consistent across all AR7 solutions ensures application portability, allowing developers to quickly address different market segments or regional requirements. In addition, the AR7 Platform Support Package (PSP) includes management APIs, DSL-DK and SAR drivers, supported by comprehensive documentation.

The Linux-based NSP includes APIs and peripheral drivers, as well as gateway, security and remote management features. Applications such as web-based management, content filtering and virtual private network (VPN) support can be easily customized for product differentiation purposes. All of the required drivers, in addition to their source code and documentation, are included in the NSP.
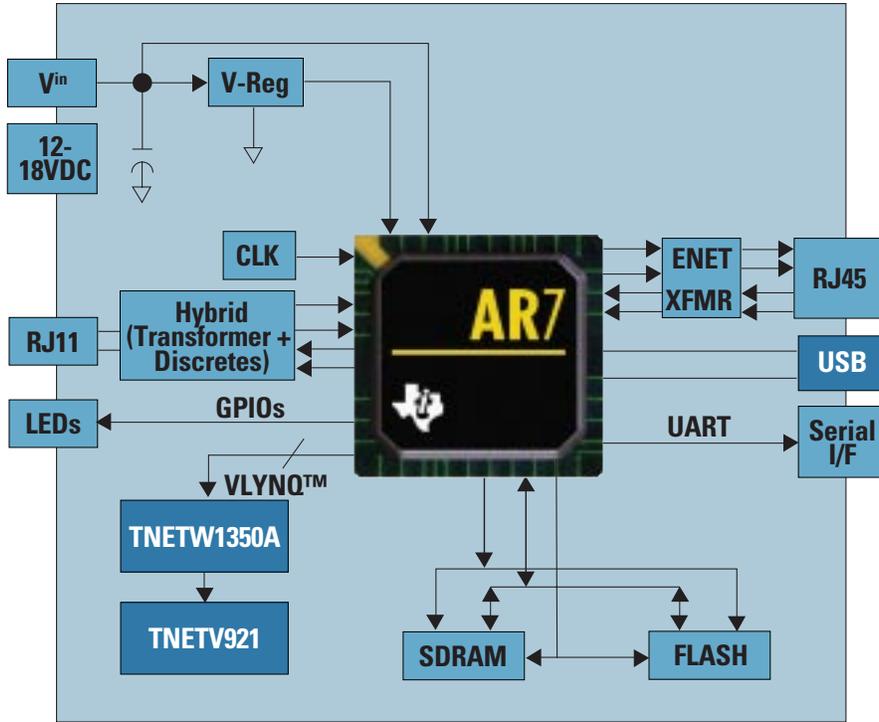
Comprehensive Support Speeds Development

The AR7 solutions include comprehensive support programs that have been developed for TI's ADSL and 802.11 WLAN technologies. These include classroom and regional training programs, online access to TI's applications engineering teams, enrollment in TI's interOps Test Labs and weekly product updates.

Crucial support services are available at key points in the development cycle, including hardware design review, hardware diagnostics check, and initial on-site software/hardware integra-

tion. In addition, TI can assist with system interoperability and performance tuning. Also available are white papers, technical manuals, data sheets, application notes and frequently asked questions.

Product Line Flexibility

The AR7 can form the basis for a complete line of ADSL bridge/router products that address divergent market segments with differing requirements and price sensitivities. From data-only segments that require few enhancements to markets needing integrated WLAN functionality, the common software environment and NSP shared by all AR7 platforms give manufacturers the ability to quickly develop and bring to market new ADSL bridge/router

TNETD7200 Block Diagram

products with targeted capabilities. Moreover, the hardware and software elements shared by all AR7 platforms simplifies support and maintenance issues, reducing manufacturers' and service providers' operating costs.

TI also offers optimized power management solutions for ADSL systems, including complete plug-in modules tailored for AR7 solutions, as well as discrete power devices for flexibility. To help speed development, TI supplies firmware as well as silicon for all its networking products.

For More Information

To learn more about the AR7 ADSL-Ethernet bridge/router, or about other ADSL solutions from TI, contact your local TI field sales office or visit **www.ti.com/AR7overview**.

Features	TNETD7300A	TNETD7200	TNETD7100A2	TNETD7100A1
Ethernet Interfaces	Two (MII and PHY)	One (MII or PHY)	One (PHY only)	One (PHY only)
VLYNQ™ interfaces	Two	One, but daisy chaining via VLYNQ enables voice and/or wireless solutions	None	None
ADSL	ADSL1/2+, Annex A/B	ADSL1/2+, Annex A/B	ADSL1/2+, Annex A/B	ADSL1 only
End equipments supported	Bridge Router WLAN WLAN & Switch WLAN/Switch/Voice WLAN & Voice Voice	Bridge Router WLAN WLAN & Switch WLAN & Voice Voice	Bridge Router	Bridge Router

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