



Scalable Media Distribution
Seamless Multi-Screen Convergence
Green Design



INTERNET AND TELEVISION MEDIA CONVERGING
RAPIDLY EXPANDING CONTENT LIBRARIES
PERVASIVE HD



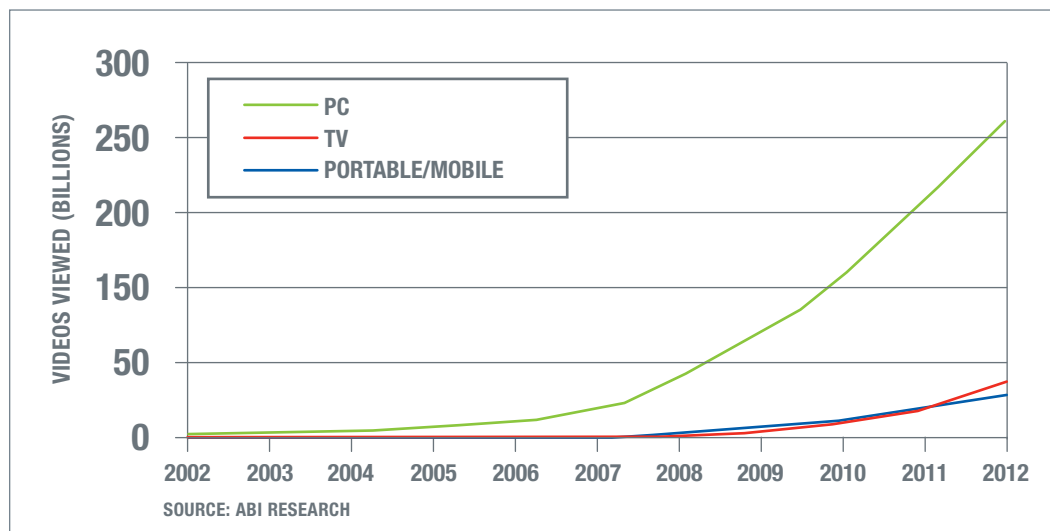
THE DIGITAL MEDIA EXPLOSION

The growth and popularity of digital media have created a whole new set of challenges for network operators. Delivering large files at high bit rates from ever-expanding content libraries drives rapid and unpredictable growth in overall network traffic volume. Traditional server-based delivery methods for content distribution are less effective, less efficient and are becoming significantly more costly.

Users are moving to a more on-demand lifestyle and with that comes an appetite for a whole new generation of content services. The shift to content on demand is in high gear and now includes:

- Delivery to multiple screens: TV, PC and Mobile Phone
- Converging of television content with internet based content
- A desire for seamless service boundaries

There is no mistaking the explosion that is now straining network infrastructures.



This extraordinary growth in content consumption, changing viewing patterns and rising user sophistication has placed a heavy burden on today's service planners, implementation teams and maintenance staffs. It is clear that traditional methods of video distribution, content storage, bandwidth utilization will not suffice. Network and Services engineers are now looking to:

- Increase content delivery and streaming while optimizing rack and power efficiency
- Optimize their network deployment to most cost efficiently use existing bandwidth capacity
- Support a broad range of delivery protocols

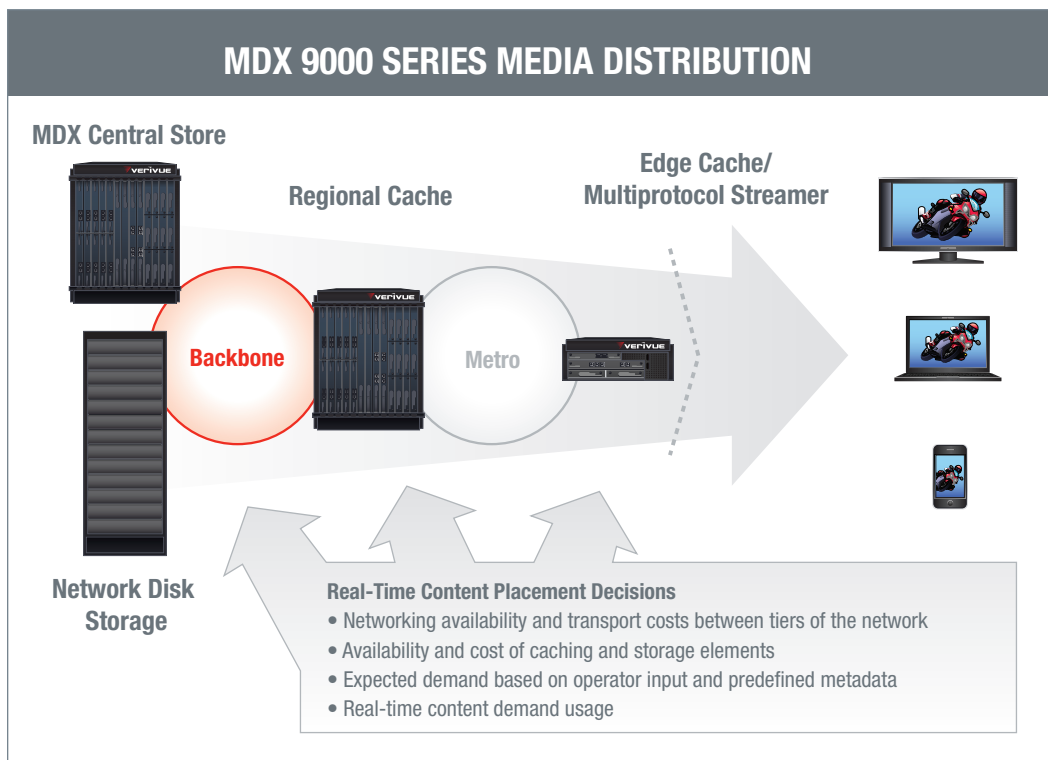
In today's economic and environmental climate, planning for all infrastructure migrations must also consider space and energy efficiency as key drivers in selection of the next generation technology. Today, data center operations are being measured on metrics such as Power Utilization Efficiency (PUE) in an effort to control overall cost and to participate in global conservation efforts. Continuing to expand operations will require a new approach, one that allows for content delivery expansion without adding racks upon racks of power-hungry servers.

MARKET DYNAMICS

- On-line video viewing was up 53% from '08 to '09*
- Time-shifted TV viewing has seen a 40% increase in the past year alone*
- Many operators now moving beyond 100 channels of HDTV
- The number of people watching video on cell phones was up 52% from '08 to '09*
- Google sites surpassed 10B videos viewed/month in August '09**
- The WW requirement for video streams will top 150 trillion by 2012**

MDX 9000 SERIES: MEDIA DISTRIBUTION SWITCH

Verivue develops and markets high-performance IP platforms that enable network operators to distribute, deliver and manage enormous amounts of IP-based media traffic across a growing and diverse number of end devices; offering solutions for Internet video, cable video and IPTV applications. Headquartered in Westford MA, Verivue was founded in 2006 to address these market and technology trends. Backed by experienced management, Verivue has assembled a world class team with an unparalleled track record for delivering industry leading infrastructure products. To address these new market challenges Verivue has developed the MDX 9000 Series Media Distribution Switch, a new class of networking product designed to provide cost-effective scalability of content distribution for multi-screen delivery. Leveraging the capabilities of IP networks, the MDX allows service providers complete flexibility to ingest, store and deliver their expanding content libraries to consumers — whether that's to PC's, set-tops, mobile devices, or broadband enabled consumer electronic devices.



A traditional video service facility can require dozens of independent rack-mount servers, load balancers and switches with little economy of scale. Current implementations also handle TV, PC and handheld applications separately while requiring the full content library to be duplicated locally at every site. This model becomes unsustainable as subscriber bases grow and rapidly expanding content libraries stretch the limits of these legacy systems. The MDX Series is specifically designed to address this critical market requirement.

The MDX 9000 Series Media Distribution Switch supports the existing and emerging growth of IP video services. Whether you are a Broadband operator, Cable Operator or Telco Provider, the MDX 9000 provides the scalability and rich feature set necessary to support your existing and future business services. Its flexibility allows operators to change or expand their video service requirements without replacing their infrastructure – minimizing their capital expenditures and maximizing profitability. The MDX 9000 is offered in two platforms to accommodate varying operator needs and growth forecasts

GROWTH IMPACT CONSIDERATIONS

- Constrained rack space
- Rapidly increasing power requirements
- Increased cooling requirements
- Expanding content libraries
- Duplication of storage
- Installation complexity
- Overall service reliability
- Simplification of network management

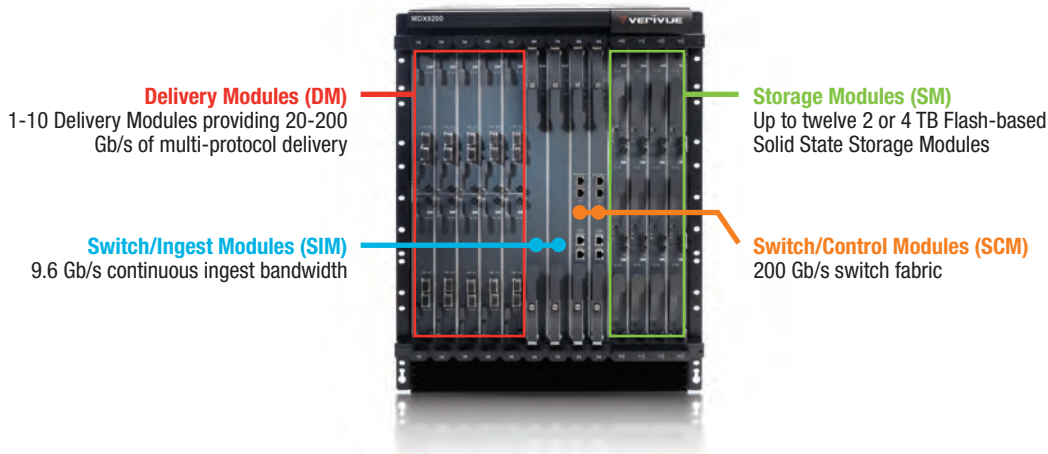
MDX 9200 AND THE MDX 9020



MDX 9200 – Media Distribution Switch

The flagship MDX 9200 is a **Carrier Class Ethernet Switch** with integrated storage and delivery capabilities. It provides network operators with a network element capable of caching and intelligently distributing content throughout a network while featuring delivery capacity to both HTTP and traditional video-on-demand devices. Its purpose-built design allows for cost-effective scaling of content delivery in a network switch designed for non-stop operations, low-power utilization and a compact footprint.

Designed around a blade-based architecture, MDX 9200 provides operators with cost-effective scaling of either bandwidth or storage capabilities within a 14-RU platform. The MDX 9200 renders existing on-demand solutions obsolete. It provides a scalable, feature-rich platform that far exceeds the capabilities of PC based design.



Its modular design is based around industry standard components, quickly tracking price/performance semiconductor improvements over time. The MDX also provides significant benefits by lowering the TCO for on-demand delivery services by eliminating the need to support dozens of switches, load-balancers, firewalls and their associated overhead.

The Verivue MDX 9200 is all about providing the infrastructure capacity and capabilities to serve the emerging growth of on-demand content delivery. Building upon a high-availability video service switch, the MDX 9200 ensures that an operator has the ability to easily grow into their future video delivery needs. By addressing the requirements of bandwidth growth, content libraries expansion and multi-platform video delivery, the MDX 9200 provides the flexible path for multi-dimensional service business growth.

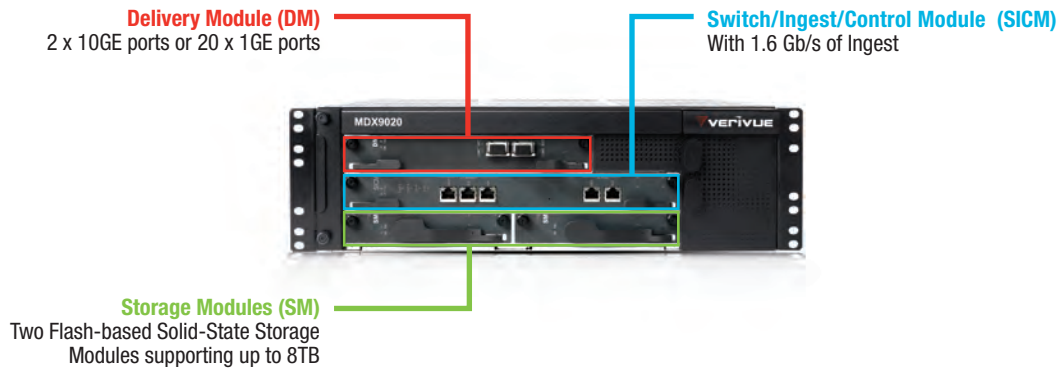
PLATFORM HIGHLIGHTS

- VueStor™ high performance and reliable Flash storage optimized for content delivery
- Seamless support for both broadband and traditional VOD media delivery
- Scalable delivery and storage growth capacity
- Low power, energy efficient platform
- Hot-swappable hardware architecture; upgrade, add or replace modules with no downtime
- Reduce the complexity/cost of multi-device solutions combining storage, Ethernet switching, firewalling, load balancing
- Deliver long-tail content as efficiently and cost effectively as the most popular programming
- Real-time cache decision algorithms account for network availability/costs as well as fixed/on-demand content popularity

MDX 9200 AND THE MDX 9020

MDX 9020 – Edge Media Distribution and Cache

Designed around a compact, high-density 3-RU platform, the MDX 9020 merges solid state flash memory, networking and delivery functions into a single platform. This multi-purpose design collapses racks of storage, servers and switches into a single platform. Designed to grow with the needs of the provider, the MDX 9020 can serve as a central site aggregation and streaming platform or sit at the edge of a large distribution network. Combined with the higher capacity MDX 9200, the MDX family provides an end-to-end solution for all topologies and site level requirements.



The Verivue MDX 9000 Series of switches are all based on the same modular architecture. This provides not only complete delivery and application compatibility between platforms but provides investment protection for Verivue customers. As storage capacity and underlying bandwidth requirements change within a service network, modules may be migrated from an MDX 9200 to a MDX 9020, and vice versa, reducing capital costs. Verivue is committed to protecting its customers' investment in networking infrastructure. The MDX 9020 continues on that path by providing a modular, scalable, intelligently distributed platform which safeguards customers' business.

PLATFORM HIGHLIGHTS

- Can operate as an edge cache and distribution platform or as a central site host
- Low footprint per stream density – 3-RU
- Ultra-low power consumption
- Common management and software with the 9200
- Common modules with 9200 for sparing efficiency

MDX PLATFORM INNOVATION

Seamless Multi-Screen Convergence

Many operators are building multi-screen convergence strategies to help meet customers' expectations of accessing content anywhere, anytime, on any device.



Today, the networks needed to deliver content to multiple screens are, for the most part, accessed separately. The TV uses one network, the broadband connected PC uses another, and the wireless device relies on yet another.

These discrete networks require physically separate servers and storage, with no economies of scale. At any point in time, a disproportionate number of the servers on one network may be running at very low utilization while servers on another network fail to keep up with traffic demands. Resource planning is more difficult and precious data center resources like power, cooling and space are wasted while operations costs skyrocket.

With the introduction of the MDX, the lines between networks and access technologies are erased. Video services can now be delivered to all screens from a common network platform. The mix of transport protocols, codecs, and container formats needed to support a broad range of end user devices are delivered from the same platform, allowing operators to engineer the network for peak usage across multiple screens rather than separately optimizing across silos of servers.

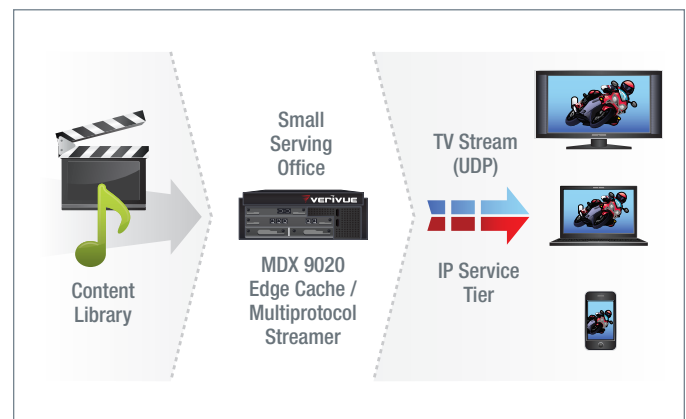
The MDX helps operators deliver the benefits of anytime, anywhere access in a simple, more cost-effective way.

Content Distribution

Traditional media delivery solutions today operate as standalone, server-based products requiring that the full content library be duplicated and managed locally at every site. As content libraries and subscriber bases grow, this approach is no longer economically viable. Operators require solutions that optimize content storage across the network, while simultaneously minimizing any additional investment in network transport bandwidth.

Verivue ICD

Leveraging content delivery network (CDN) techniques, Verivue reduces an operator's need to endlessly upgrade storage and network resources to accommodate the endless growth in content delivery and streaming capacity. Verivue Intelligent Content Distribution (ICD) is a network application which monitors content usage and distribution throughout a network. By continually monitoring consumers' content requests, Verivue ICD makes real-time decisions about content placement within the network, pushing popular content to the edge while pulling less popular titles back to the network core. In doing this, Verivue ICD balances the cost of storage on the network edge against the cost of transporting content across a network. Best of all, Verivue ICD automates this process and reduces the operational overhead of managing content across a network.

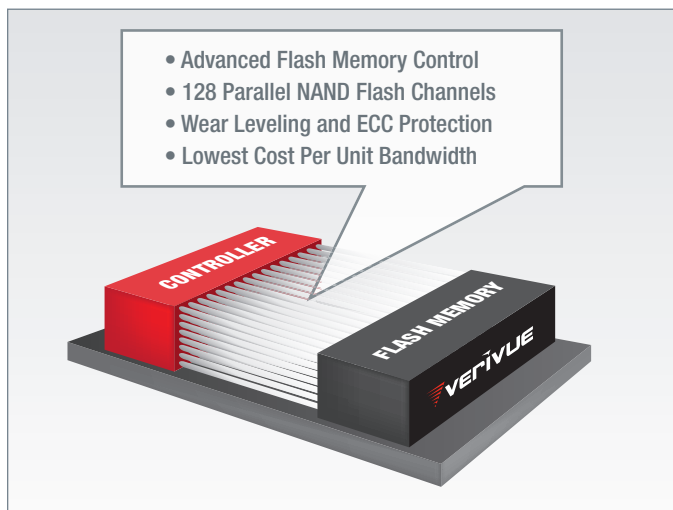


MDX PLATFORM INNOVATION

VueStor™

Solid-State Storage Subsystem

One of the many MDX innovations is its VueStor shared-storage solution, a revolutionary solid-state storage subsystem based on flash memory technology. VueStor allows (DRAM-like) performance with storage capacity on par with hard drives. Compared to traditional "spinning disk" solutions, VueStor improves streaming performance and reduces energy consumption. Better yet, Verivue has optimized its usage of flash memory to create a flash-based storage system with reliability significantly better than hard-disk based systems.



VueStor is uniquely engineered for content delivery, eliminating the performance bottleneck of traditional flash-based solid-state drives (SSDs). Its many advantages over traditional storage includes:

- High performance, single store—High capacity access to all content without bottlenecks.
- High reliability— Patent-pending technology which maximizes flash longevity while simultaneously increasing reliability
- Ultra-low power consumption

VueStor's unique architecture provides a single content store, comprised of storage striped across Storage Modules and flash memory chips. This provides significant performance advantages to any and all content, while supporting hot upgrades of the storage system. Best of all, as a single content store, VueStor eliminates content replication across SSDs and HDDs, which have been necessary to prevent content hot-spotting.

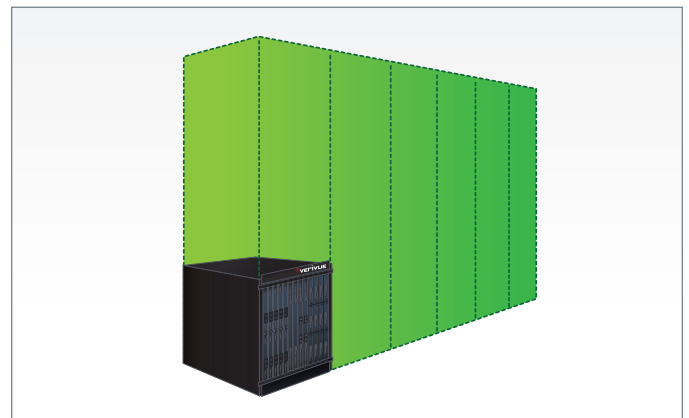
Green Design Advantage

Power consumption and heat dissipation are two critical issues facing operators today. Increased video capacity requirements lead to ever-increasing numbers of servers, each generating incremental heat and increased energy cost. In fact, a typical video serving office can require dozens of independent rack-mount servers with hundreds of repetitive parts. Each standalone server requires network adapters, cables, and supporting LAN switches with no economy of scale as the number of servers grows.

By consolidating on MDX platforms, operators can increase the utilization of their hardware and decrease the number of physical assets needed. Its energy efficiency features include:

- Modular system design allows common components like cooling fans and power supplies to be shared, thereby delivering power savings.
- Front-to-back cooling in support of hot-air and cold-air aisle configurations to increase cooling efficiency, a recent best practice in data centers.
- MDX eliminates the need for operationally expensive load balancers, network switches, storage shelves, thereby reducing power and rackspace.

In this context, the MDX is an important new platform for operators to evaluate when weighing the relative TCO associated with building out video streaming infrastructure. With its unique solid-state storage technology reducing energy consumption and improving cooling efficiency, the MDX helps alleviate the power consumption limitations emerging in many data centers.



Current approaches to network content delivery infrastructure have become obsolete. The imperative for planners of rich media content networks is to manage TCO while providing flexibility for evolving market requirements. Deploying racks of inefficient and power-hungry server, storage and networking gear is no longer a cost-effective, scalable solution for solving the dramatic growth in content delivery bandwidth. Verivue's MDX attacks this challenge with an innovative storage and distribution system built on a carrier grade network platform that brings unparalleled scaled, efficiency and performance to next-generation content networks.

