MAJOR BROADCASTER TRUSTS R&S®SpycerNode HPC STORAGE FOR NEWS OPERATIONS

At a glance

One of America's leading broadcasters needed a high-throughput storage solution for news graphics. The solution had to support more than 300 clients while located in two sites and kept in active synchronization, providing a high level of resilience.

Rohde & Schwarz demonstrated the performance of its R&S®SpycerNode solution in a proof-of-concept (PoC) phase. The full implementation runs over a dedicated subnet on 100 Gbit Ethernet connectivity for secure delivery of urgent news graphics.

Executive summary

► **Customer**: A leading US broadcaster
► **Task**: High-performance storage and management of news graphics
► **Challenge**: Provide intuitive response to more than 300 graphics clients and maintain two storage locations in synchronization
► **Solution**: R&S®SpycerNode media storage
► **Key advantages of this solution**: 24/7 uninterruptible operation for critical news teams, built on a complex, secure network infrastructure using spine-leaf architecture and layer three switches with fast failovers between regions

ROHDE & SCHWARZ

Make ideas real

The customer

The customer is a leading US broadcaster, with multiple daily news programs and high audience recognition. With presence across the continent, this project involved a primary installation at the company's news headquarters in New York, with a backup facility some 16 km (10 miles) away.

News graphics

The broadcaster had an existing storage network for news graphics workstations, which was reaching end of life, was not capable of elegant failover and had difficulties to manage the constantly increasing amount of smaller graphic files.

The decision was taken to use the opportunity to advance the functionality, to provide high-speed transfers between the main and co-location, and for disaster recovery.

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The broadcaster was looking for a modern technology with high throughput performance and carried out an RFI process to examine the market. There were some specific requirements from the outset, such as enterprise class flash technology with outstanding throughput performance, storage depth greater than 1 Pbyte and multiple redundancy levels.

A PoC was carried out to prove the desired solution was deliverable. R&S®SpycerNode was selected as the winning solution.

Particularly important in this PoC was the ability to integrate into the existing IT networks within a complex corporate infrastructure and provide simple management. The demonstration showed how R&S®SpycerNode with the Spectrum Scale file system integrated seamlessly with the broadcaster's Active Directory services. It also showed how its HTML5 web user interface allowed responsive system monitoring, troubleshooting and control from any location. Rohde&Schwarz undertook further development of the user interface in response to active discussions with the broadcaster.

At the end of the tests and analysis, and in response to a request for proposal, Rohde&Schwarz won the order for its technical solution and cost-effective system design.

R&S®SpycerNode 5u84.
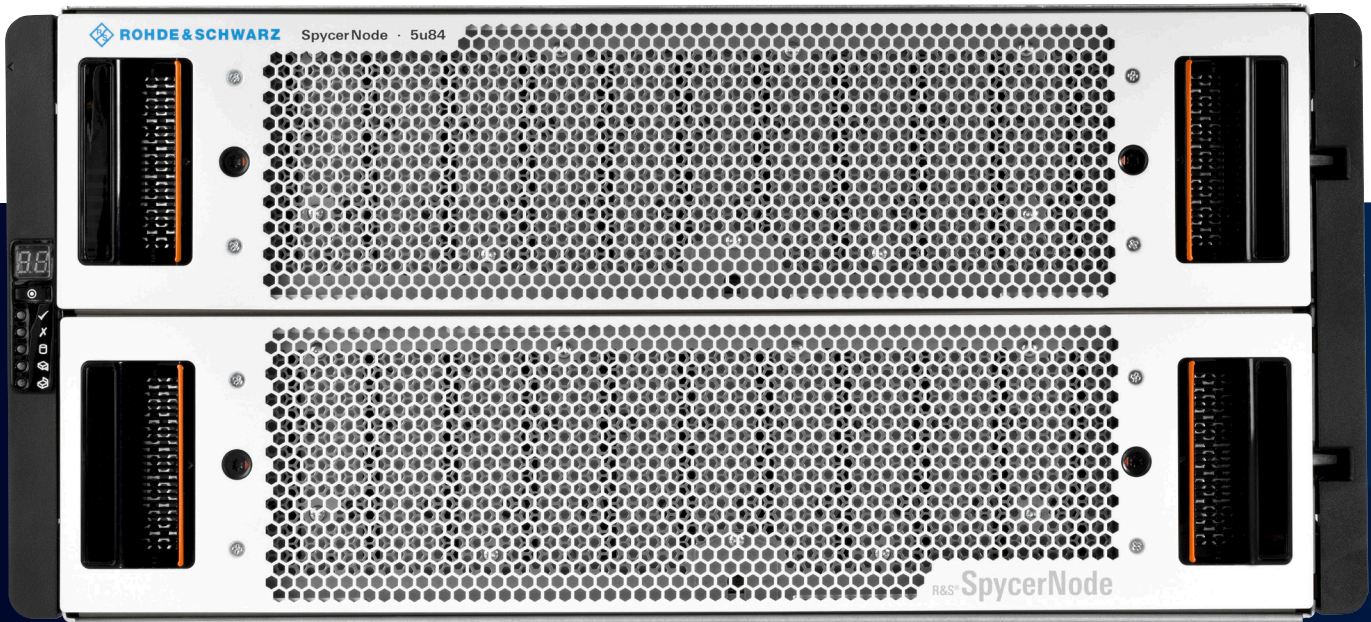
The challenge

As a major, trusted news broadcaster, the user has a consistently high demand for attractive and engaging graphics, and uses a number of software tools to create them. There are more than 300 clients registered to the graphics network.

The creative graphic designers need access to raw materials, the ability to store rendered files in a variety of formats (such as Flame, C4D, Adobe After Effects, Maya and Premiere Pro), and to ensure that the finished graphics sequences are delivered to the appropriate studio or play-out center in a timely manner.

The initial implementation called for a storage capacity of > 1 Pbyte pure flash storage. The solution needed the ability to scale further, in terms of data capacity, performance and in the number of clients supported simultaneously.

Clients and storage nodes at the main and co-location are connected over 100 Gbit Ethernet. The co-location, about 16 km (10 miles) away from the main location, serves as a disaster recovery center. Its storage network, therefore, must be kept in perfect synchronization with the head-quarter's facility.

Connection between the two sites is via a third-party ISP, providing the same 100 Gbit connection. The SLA for the ISP is for a latency of 1 ms or better between the two sites. With a primary location in New York and a co-location 16 km (10 miles) away, the broadcaster specifically required not only state-of-the-art erasure code redundancy for ultra fast disk rebuilds and intrinsic node redundancy, but also required synchronous mirroring of all assets between both locations at all times.
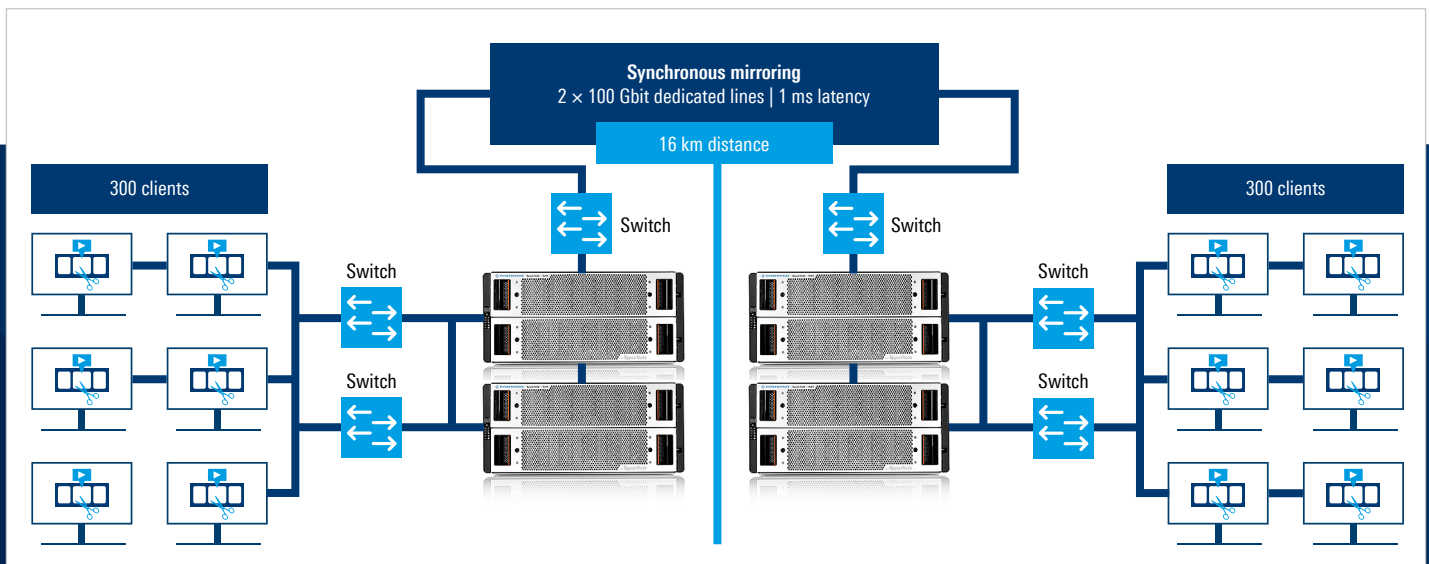
An additional challenge is derived from the nature of the content (lots of relatively small graphics assets), which are created and accessed by a high number of users. This high number of users, often working in collaboration, need to be served in parallel with lots of small files – a process that would highly stress and slow down any standard storage setup.

Delivering the solution

The active discussions between broadcaster and Rohde & Schwarz continued throughout the contract period. Members of the Rohde & Schwarz professional services team provided consultancy on the architecture and implementation, working on added functionality to meet the broadcaster's exacting demands.

The need for synchronous replication is a good example of the post-sale consultancy and development. Vendor and customer collaborated to develop the architecture which ensures the two sites each carry the same data at all times. The complex, secure network infrastructure depends upon a spine-leaf architecture. The user-specified Arista layer three switches are readily integrated with the R&S®SpycerNode family.

The broadcaster imposed tight security and rigorous performance requirements, particularly in terms of network security and data throughput. The Rohde & Schwarz team worked closely with the broadcaster's network engineers to meet all protection requirements. Access to the network was closely guarded through the use of Active Directory. Redundancy was also critical. The storage array in each location – headquarters and remote co-location facility – is identical. Each uses several R&S®SpycerNode media gateways and R&S®SpycerNode 5u84 devices.

Synchronous mirroring
2 × 100 Gbit dedicated lines | 1 ms latency

16 km distance

300 clients

Switch

Switch

Switch

300 clients

Switch

Switch

Switch

Storage subsystems running Spectrum Scale provide inherent resilience. The HPC (high-performance computing) RAID technology, based on state-of-the-art erasure coding techniques, enables rebuilds up to four times faster than conventional RAID, and provides protection for as many as three simultaneous disk failures. With mean time to data loss measured in thousands of years, the system is essentially loss-proof.

A limiting factor in standard storage systems is the RAID controller which limits the number of IOPS to a drive array. In a classic or standard flash system based on hardware RAID, the drives can deliver many more IOPS than the hardware RAID controller can process. R&S®SpycerNode uses software erasure coding (a software RAID) which does not limit the number of IOPS – R&S®SpycerNode makes use of the full potential of the IOPS capability of the flash drive array which results in superior performance where more small files can be delivered simultaneously to a high number of clients.

Two 100 Gbit Ethernet connections with a very low latency (1 ms or better) are used to connect the two locations. R&S®SpycerNode employs a synchronous mirror as part of this deployment. This is important because the read/write capability is governed by the speed at which the client can access both locations. For the client, this is transparent. In case of a disaster at one location, the client continues to access the co-location without any problem, and operators will be unaware which site is providing the source material, rendering the material or storing the finished content. The integral content management system software, embedded in R&S®SpycerNode, provides an instant and convenient overview of the assets on the storage system, including metadata capabilities and file previews.

The broadcaster chose Rohde & Schwarz to provide a complete, integrated system. During the PoC and design phases, the professional services team had demonstrated that the company was flexible and determined to solve the practical challenges the workflows presented. A true technical partnership was created and continues into the life of the deployment. Initial discussions on the system began early 2019, with the PoC tests starting in August of that year. Design, implementation and testing ran until the early months of 2020, with the broadcaster cutting over to the new networked storage in May 2020.

Note that the last part of the project took place during the severe restrictions of the COVID-19 pandemic, with Rohde & Schwarz delivering much of its expertise remotely.

SUMMARY

The R&S®SpycerNode implementation has comfortably met the broadcaster's requirements, in terms of security, performance, workflow and ease of use for operations and management. In constant 24/7 use, the system has proven to be highly reliable, stable and robust.

Following the successful rollout to the news teams, the broadcaster is now looking to expand by adding more user groups – sports – which involves the addition of further R&S®SpycerNode hardware to provide additional capacity and performance bandwidth. The design of R&S®SpycerNode allows virtually limitless expansion at any time, with no risk even during operation.

From inception, through proof-of-concept, to delivery and the ongoing close relationship, Rohde & Schwarz R&S®SpycerNode continues to satisfy both the customer's initial and ongoing performance challenges in HPC storage for broadcast news graphics.

Service that adds value

► Worldwide
► Local and personalized
► Customized and flexible
► Uncompromising quality
► Long-term dependability

Rohde & Schwarz

The Rohde & Schwarz technology group is among the trailblazers when it comes to paving the way for a safer and connected world with its leading solutions in test and measurement, technology systems, and networks and cybersecurity. Founded more than 85 years ago, the group is a reliable partner for industry and government customers around the globe. The independent company is headquartered in Munich, Germany and has an extensive sales and service network with locations in more than 70 countries.

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Sustainable product design

► Environmental compatibility and eco-footprint
► Energy efficiency and low emissions
► Longevity and optimized total cost of ownership

Certified Quality Management
ISO 9001

Certified Environmental Management
ISO 14001

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