

R&S® SpycerNode SC

POST PRODUCTION

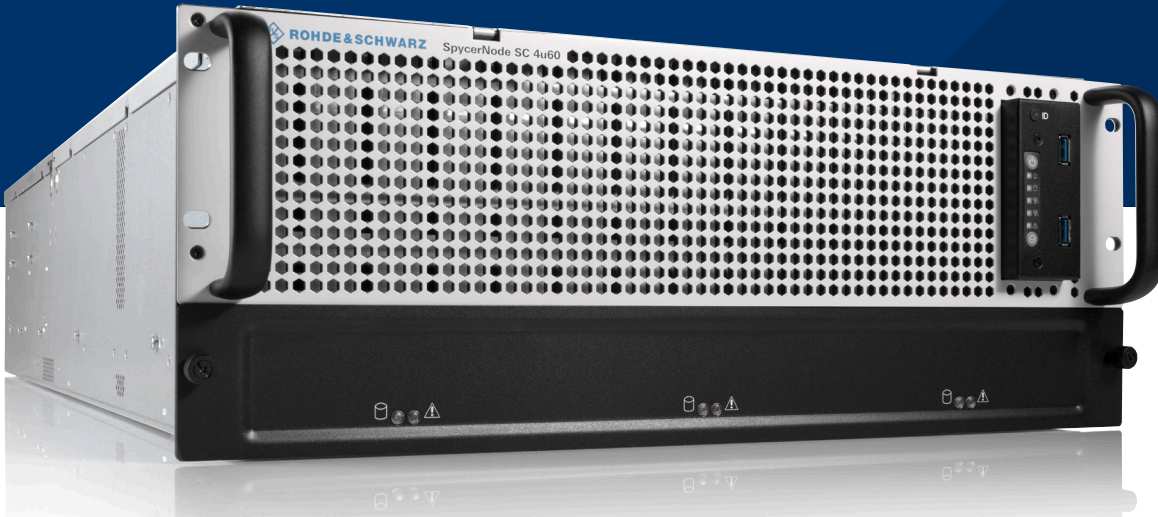
Application Brochure
Version 03.00

ROHDE & SCHWARZ

Make ideas real



ADDRESSING THE CHALLENGES OF POST PRODUCTION



A technical film production does not begin when images and sounds are recorded. Long before the first camera is switched on, various factors have to be considered and decisions made in order to achieve the desired result.

In order to achieve the best use of creative factors such as resolution, dynamic range and frame rate, the required technology must be specified as precisely as possible in advance so that equipment can be used efficiently based on its technical parameters. This in turn affects what equipment is used during recording, such as cameras and lighting, as well as the application and techniques to be used during post production. “We will fix it in post” is probably a phrase that is used all too often and in most

cases is not appreciated – it should be avoided at all costs since unforeseen tasks unnecessarily burden the post production process and have a direct impact on the agreed project costs.

Creatives who use editing, conforming, VFX, color grading and sound applications are considered artists. They should not be distracted or limited in their creativity by technical constraints. Therefore, the primary applications the creative artists use must be equipped with powerful hardware. Collaboration between users and their applications is essential and means that all individuals and components involved in the post production process have access to the same data. Metadata needs to be created and managed, access rights need to be managed in an audit-proof way, and processing steps in the workflow require working with and dealing with proxies.

During the post production process, partial content segments have to be approved or checked again and again. In many cases the decision-makers may not be available at the post production site but must still be able to make decisions regarding the content and

The storage network could be considered the best kept secret and central nervous system of a post production facility.

ProntoVision
World's first HDTV
disk recorder

1997

R&S®CLIPSTER
World's first PC workstation
with a real-time scaler for 2K

2003

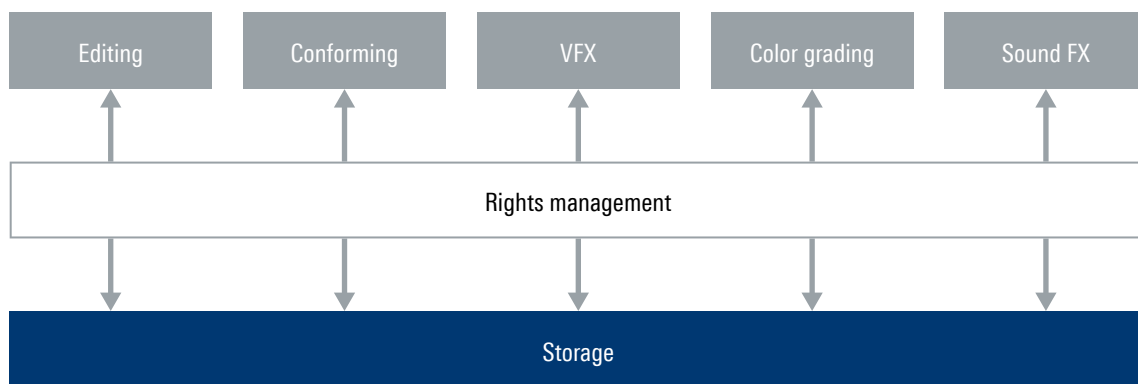
R&S®SpycerBox
First SAN-in-a-box
concept worldwide

2007

R&S®CLIPSTER
World's first real-time
4K RED® workflow

2009

R&S®SpycerPAM supports advanced rights management to keep your content accessible by only the right people



its processing. All these processes require a powerful network of components in which storage plays a central role.

The storage network could be considered the best kept secret and central nervous system of a post production facility. Nervous systems are expected to simply work. There is no time or budget for complex configuration, adjustments, managing different networks or different technologies, complicated data transfers or worrying whether an application actually gets given the bandwidth it needs from the network – no one should have to argue with an artist about dropped frames.

Rohde&Schwarz has many years of experience in post production and has supported creative and technical users with tools such as R&S®CLIPSTER, R&S®SAN and the R&S®SpycerBox models. Many years ago Rohde&Schwarz supported the transition of analog to digital and above all made it affordable.

R&S®SpycerBox Cell
Fastest 1 RU media
storage worldwide

R&S®SpycerNode
Best-in-class media
storage system

R&S®SpycerNode SC
Best-in-class media
storage system

2014

2018

2021

More than just storage

The R&S®SpycerNode SC series offers much more functionality than just storage. R&S®SpycerNode SC provides a network platform that meets all the requirements of modern post production, using high performance technology while making it easily available to users in the media industry. R&S®SpycerNode SC is the latest member of the R&S®SpycerNode family and is specially designed for the needs of high-end post production. It is available in various configurations. With a bandwidth of up to 22 Gbyte/s per unit, up to 11 applications can access the system simultaneously in real time in 4K full 16-bit RGB 24 fps. If that is not enough, add another system (or more), which at least doubles the bandwidth thanks to linear scaling, even during operation. Users will only notice a twice as big and twice as fast namespace. Different applications have different technical requirements. For example, a system that works with MXF-based compressed files needs a lower data throughput than a system that has to deal with uncompressed high-resolution image sequences. Too often, the compromise is to choose a more powerful technology and thus provide the applications with an over-provisioned system for compressed processing, e.g. in complete flash technology systems, which incurs more costs than necessary.

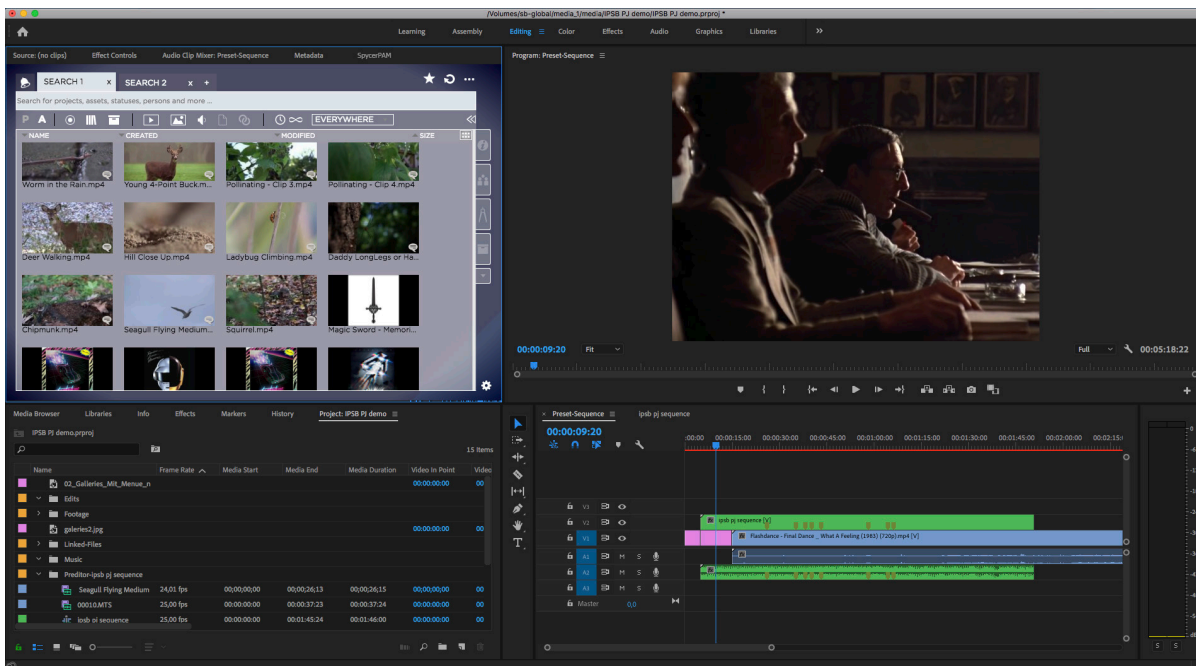
R&S®SpycerNode SC can be internally equipped with different hard disk technologies, spinning disks and flash technology, and they can also be mixed. Per data policy, e.g. identified by the file extension, data can be automatically written to the flash tier or to the rotating tier

and also be read again. If this method is not sufficient, folders can be created within the namespace that refer to the respective underlying hard disk technology. If it is necessary to move folders or files to the other tier, this is done by maintaining the uniform resource locator (URL) so that applications do not lose the path or have to rescan. This means that “media offline” is no longer a problem.

Network speed

Clients can be connected at different network speeds, depending on the requirements of the application. Typically, connections between 25 Gbit/s to 100 Gbit/s are used. Network technology opens previously unimagined possibilities, but precise configuration and equipment of the hardware is essential. During the development of R&S®SpycerNode SC Rohde&Schwarz has placed great emphasis on defining parameters within which performance can be ensured. This begins with qualified network cables through switch configuration to the necessary resources and configurations within the clients. It is not enough to add a network card to a system and expect it to deliver top performance. R&S®SpycerNode SC as a server is optimized in terms of bandwidth and latency for the requirements of media and entertainment, especially for working with image sequences. Multiple 100 Gigabit Ethernet interfaces are connected to the spine switch to aggregate the interfaces. R&S®SpycerNode SC platform will soon support 200 Gigabit Ethernet and 400 Gigabit Ethernet providing an additional leap in performance. R&S®SpycerNode SC is already compatible with the higher network speeds, making it future-proof.

R&S®SpycerPAM Adobe Premiere integration.



Project organization

Another strength of the system is the organization of projects. The system can automatically manage files associated with individual projects. It controls user access through efficient rights management and audit compliance. This multi-tenant capability is protected from unwanted access through containerization, not just from a single storage fabric, but from a single node. Through the intelligent use of flexible network technology, it is possible not only to do away with a dedicated storage network such as Fibre Channel or Infiniband, but also to use spine-leaf networks with lower speeds (1 Gigabit Ethernet). Clients that need to enrich content with metadata via R&S®SpycerPAM (production asset management), for example, or clients that have to deliver proxy-based templates in our web-based editor, can be integrated into the system via this cost-effective variant. It does not matter what kind of client is used – R&S®SpycerNode SC is multi-protocol capable, and as a hybrid system offers both block and file storage at the same time, always providing the appropriate bandwidth.

If approval from a director external to the post production facility or distributing content for viewing is necessary, use the Galleries function. External users are informed by email or chat about new content in their private space and can review that content on a proxy basis. If necessary (and permitted), high-resolution content download is possible. An external connection can be secured via the Rohde&Schwarz trusted VPN gateway, which ensures absolute security on the client side with a software-only solution certified according to NATO standards – good enough for valuable content.

R&S®SpycerNode SC is designed to serve media applications where users are working to tight timelines and unforgiving deadlines. Offered as a single system or scalable to a synchronous mirrored metro-cluster system, R&S®SpycerNode SC can operate in a performance mode or an endurance mode, the latter eliminating the need for defragmentation, saving time and money. Unconventionally, R&S®SpycerNode SC is easy to set up and quick to get running – using the Easy Setup Wizard it takes just a few minutes.

Delivering on the promise

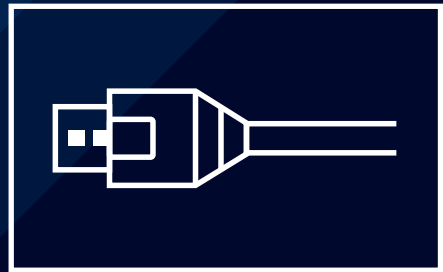
The R&S®SpycerNode SC offers much more functionality than just pure storage – it is a highly convenient content network that removes complexity to enable creative talent to focus on the real work at hand. R&S®SpycerNode SC was developed by media professionals for media professionals.



UP TO 22 Gbyte/s



ONLINE SCALABLE



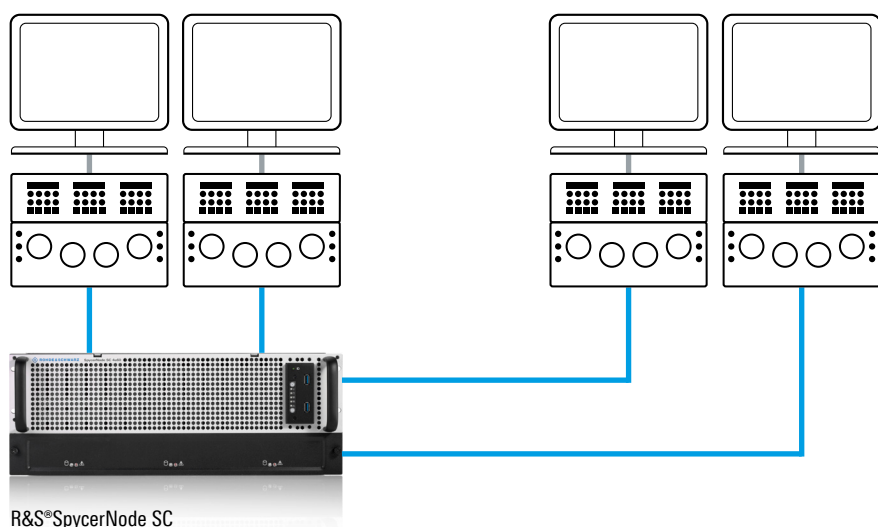
NETWORK TECHNOLOGY

APPLICATIONS

Thanks to its interoperability and scalability, R&S®SpycerNode SC can be deployed in any post production workflow. No matter what your storage needs are, R&S®SpycerNode SC easily adapts to your requirements. With its integrated R&S®SpycerPAM production asset management solution, R&S®SpycerNode SC is simple to integrate into your existing creative tools and allows you to collaborate on projects easier than ever before. The following examples give you an idea of the deployment flexibility of R&S®SpycerNode SC.

COLOR GRADING

Perfecting the appearance of a media production is a highly creative and challenging step. When uncompressed frames and instant response are a must to allow colorists to focus on creativity, R&S®SpycerNode SC offers blazing performance maintained over time with built-in security and reliability.



Performance figures ¹⁾

	DPX 2K 24p 16 bit	OpenEXR 4K 25p 16 bit	DPX 4K 50p 12 bit	OpenEXR 4K 60p 16 bit	ProRes 4444 XQ (no alpha) 4K 30p
Data rate	319 Mbyte/s	1330 Mbyte/s	2650 Mbyte/s	3190 Mbyte/s	301 Mbyte/s
Streams	69	17	8	7	73

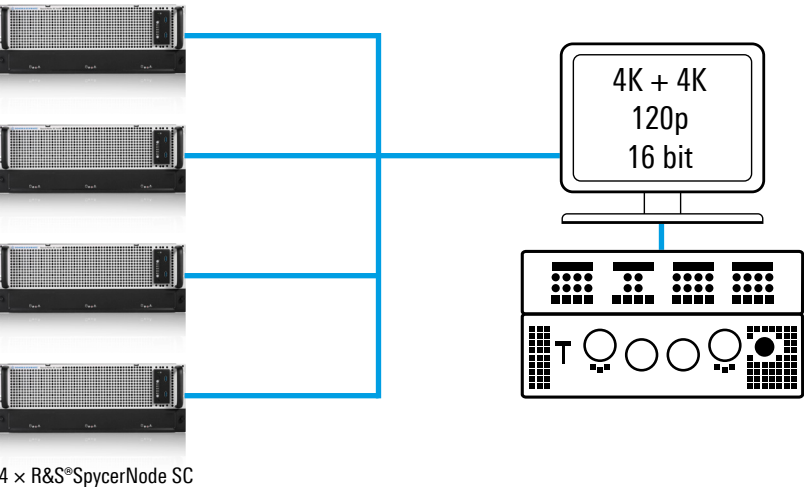
¹⁾ Performance data refers to „read“ processes and depends on the technical configuration of protocols, network and memory.

Displayed configuration

Number of R&S®SpycerNode SC	Drive type	Overall performance	Online scalability
1 × 4u60	60 SSD	22 Gbyte/s	yes

HIGH-BANDWIDTH COLOR GRADING

If your clients' blockbuster demands high frame rates and uncompressed files with a bit depth of 16 bit, then above all you need performance. R&S®SpycerNode SC delivers massive bandwidth plus all the other benefits. Do not compromise your expectations when you do not have to.

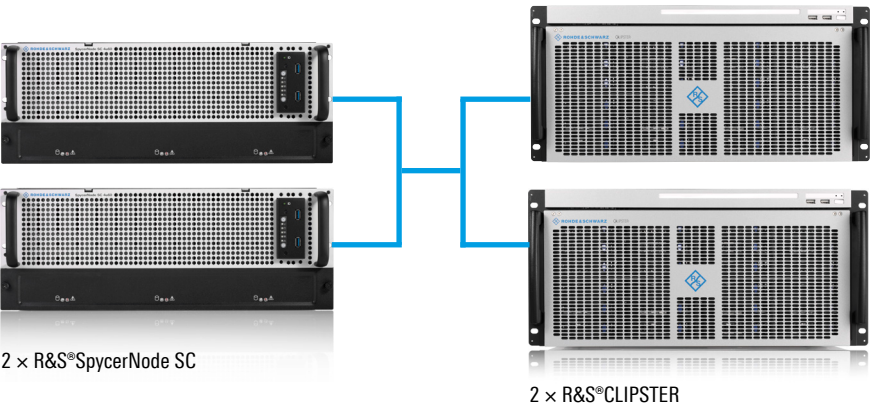


Performance figures ¹⁾					
	DPX 4K 50p 12 bit	OpenEXR 4K 60p 16 bit	OpenEXR 4K academic 60p 16 bit	DPX 4K 120p 16 bit	DPX 4K 120p 16 bit stereoscopic
Data rate	2650 Mbyte/s	3190 Mbyte/s	3510 Mbyte/s	7010 Mbyte/s	14020 Mbyte/s
Streams	33	28	25	13	6

Displayed configuration			
Number of R&S®SpycerNode SC	Drive type	Overall performance	Online scalability
4 × 4u60	4 × 60 SSD	88 Gbyte/s	yes

DI (MASTERING)

It may be necessary to create more than 30 000 different versions of a movie in order to serve all the different platforms and regional differences. You need a high-speed, completely resilient mastering process in order to deliver your clients' content in time. R&S®SpycerNode SC connected to R&S®Clipster and your other workflow solutions can be central to your mastering solution.

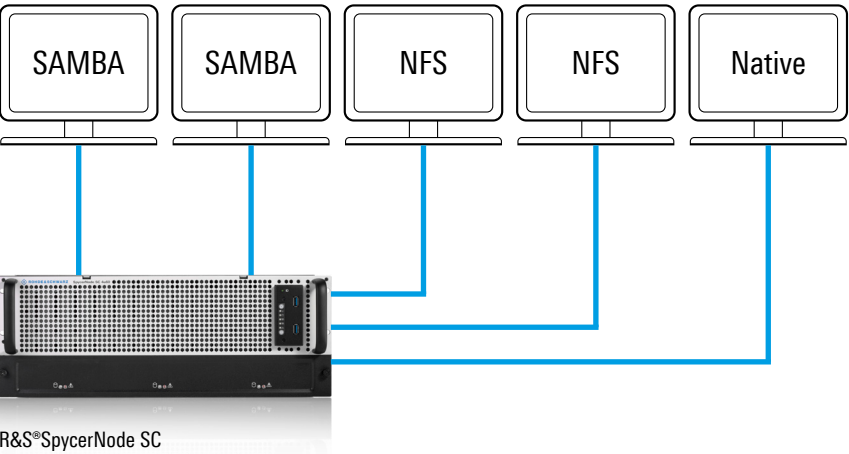


Performance figures ¹⁾					
	DPX 2K 24p 16 bit	OpenEXR 4K 25p 16 bit	DPX 4K 50p 12 bit	OpenEXR 4K 60p 16 bit	DPX 4K 120p 16 bit
Data rate	319 Mbyte/s	1330 Mbyte/s	2650 Mbyte/s	3190 Mbyte/s	7010 Mbyte/s
Streams	138	33	17	14	6

Displayed configuration			
Number of R&S®SpycerNode SC	Drive type	Overall performance	Online scalability
2 x 4u60	4 x 60 SSD	44 Gbyte/s	yes

CGI

Fantastic landscapes and high-quality character animation result from highly efficient rendering processes in which very meticulous artists bring a fantasy world to life. High efficiency and reliable outputs are mandatory to achieve the best and most realistic result. In busy environments where connectivity and reliability are key for large numbers of people, R&S®SpycerNode SC offers the necessary openness and interconnectivity.

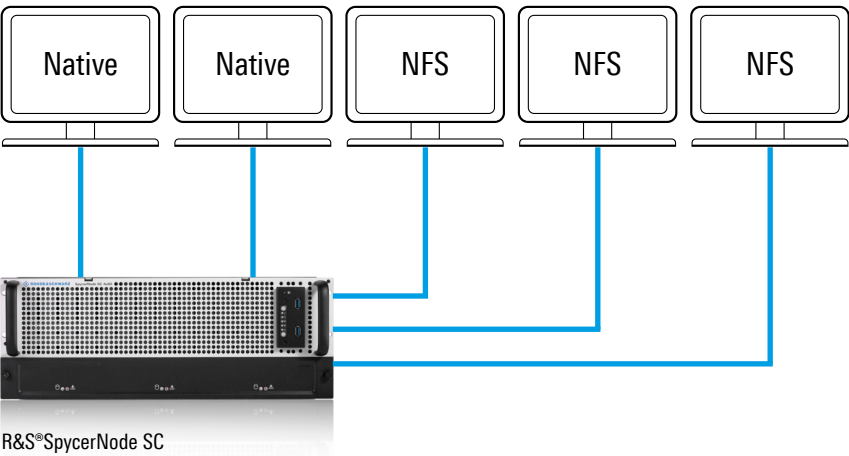


Performance figures ¹⁾					
	OpenEXR 4K 25p 16 bit	DPX 4K 50p 12 bit	OpenEXR 4K 60p 16 bit	ProRes 4444 XQ (no alpha) 4K 30p	DPX 4K 120p 16 bit
Data rate	1330 Mbyte/s	2650 Mbyte/s	3190 Mbyte/s	301 Mbyte/s	7010 Mbyte/s
Streams	17	8	7	73	3

Displayed configuration			
Number of R&S®SpycerNode SC	Drive type	Overall performance	Online scalability
1 × 4u60	60 SSD	22 Gbyte/s	yes

VFX

Creating scenes that look realistic but would be too time-consuming, dangerous or just impossible to capture for real requires storage that delivers back-to-back frames with no waiting times for the artist. Performance degradation over time and decreasing bandwidth due to physical storage limitations have absolutely no place in this application. R&S®SpycerNode SC does not suffer from the issues of older storage solutions.

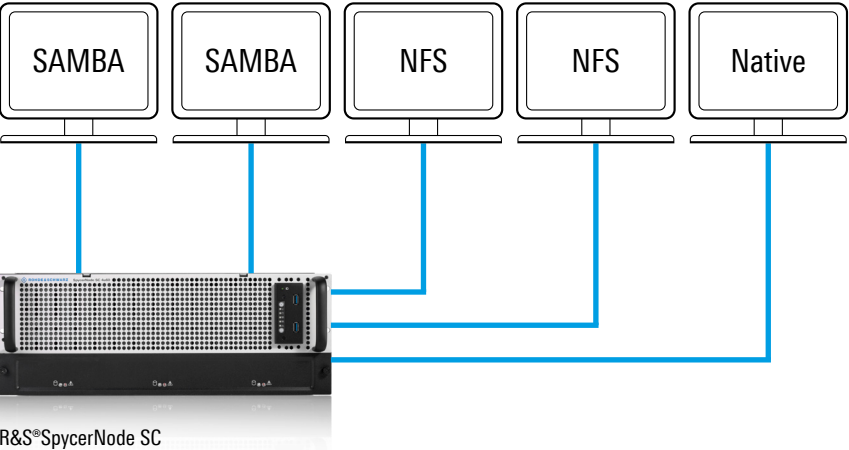


Performance figures ¹⁾					
	OpenEXR 4K 25p 16 bit	DPX 4K 50p 12 bit	OpenEXR 4K 60p 16 bit	ProRes 4444 XQ (no alpha) 4K 30p	DPX 4K 120p 16 bit
Data rate	1330 Mbyte/s	2650 Mbyte/s	3190 Mbyte/s	301 Mbyte/s	7010 Mbyte/s
Streams	8	4	3	37	2

Displayed configuration			
Number of R&S®SpycerNode SC	Drive type	Overall performance	Online scalability
1 × 4u60	30 SSD (½ × 60 SSD)	11 Gbyte/s	yes

EDITING

Storytelling is the foundation of every blockbuster. An editor needs tools that provide the freedom of flexible changes and multiple iterations of a single scene without any restrictions or limitations in the workflow. When you need high bandwidth and no single points of failure to get the job done, R&S®SpycerNode SC keeps your teams connected and keeps delivering without performance degradation over time.



Performance figures ¹⁾					
	OpenEXR 4K 25p 16 bit	DPX 4K 50p 12 bit	OpenEXR 4K 60p 16 bit	ProRes 4444 XQ (no alpha) 4K 30p	DPX 4K 120p 16 bit
Data rate	1330 Mbyte/s	2650 Mbyte/s	3190 Mbyte/s	301 Mbyte/s	7010 Mbyte/s
Streams	17	8	7	73	3

Displayed configuration			
Number of R&S®SpycerNode SC	Drive type	Overall performance	Online scalability
1 × 4u60	60 SSD	22 Gbyte/s	yes

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 & measurement, technology systems, and networks & 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.

www.rohde-schwarz.com

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

Rohde & Schwarz training

www.training.rohde-schwarz.com

Rohde & Schwarz customer support

www.rohde-schwarz.com/support

