

# Berlinale: R&S®CLIPSTER mastering solution puts the sparkle into world premieres



The Berlinale is the meeting place for international filmmakers. And the technology solutions used there must meet their high standards.

## At a glance

The BERLIN INTERNATIONAL FILM FESTIVAL, or Berlinale for short, shows almost 1100 films in more than 2200 screenings in a public program and at the European Film Market. Filmmakers and trade visitors from more than 120 countries come to Berlin for the festival. It is essential that the film festival runs smoothly. DCPs must be created and distributed to the 60 or so screens throughout the city. Many projects arrive just in time, if not at the last minute. However, the audience must not notice any of this. Organizers therefore need to be able to fully rely on the technology they use. In its role as official supplier, Rohde&Schwarz has been the technology partner of the BERLIN INTERNATIONAL FILM FESTIVAL since 2012.

## Executive summary

- **Customer:** BERLIN INTERNATIONAL FILM FESTIVAL
- **Challenge:** To record and create DCPs on time
- **Project:** Conversion to DCP format of all media not supplied as a digital cinema copy
- **Solution:** R&S®CLIPSTER and R&S®SpycerBox Cell
- **Key benefits:** R&S®CLIPSTER is a reliable tool that has been tried and rigorously tested in productions and meets the highest demands with regard to quality and performance. R&S®SpycerBox Cell is a high-performance central storage solution for production and supports uncompressed and compressed formats up to 8k

## The customer

The annual BERLIN INTERNATIONAL FILM FESTIVAL, or Berlinale for short, is Germany's only "A movie" film festival and one of the most important events of the international film industry. Numerous film stars are pleased to come to the German capital again and again, despite the unpleasant winter weather in Berlin.

The Berlinale is huge. More than 1100 films are shown in more than 2200 screenings on around 60 film screens. Apart from the star-studded international competition, there are also many sections and initiatives such as the Retrospective, the European Film Market and Berlinale Talents. The Berlinale is the meeting place for international filmmakers as well as a marketplace and networking platform on the highest international level.

Here, it is essential that nothing goes wrong during the ingest process, production of the DCPs and distribution to the screening locations.

## The challenge

An international film festival has its own rules, its own tempo and the highest quality demands. The event is in the international spotlight, media reporting is everywhere, and everything happens at an extremely fast pace. Countless stars tread the red carpets. All united by the love of film, cinema and the stories that they want to tell. The audience also often includes filmmakers and, in particular, film buffs who also expect the highest quality.

In this highly challenging environment, it is imperative that the event organizers can at all times rely on the technology they use. Speed, flexibility and top quality must be ensured despite the constant time pressure.

"Premium content requires premium quality in mastering," explains Ove Sander, who is responsible for digital cinema at the Berlinale. "Film festivals such as the BERLIN INTERNATIONAL FILM FESTIVAL are the most demanding

platform imaginable in the film industry. Speed, reliability and the highest quality are essential. Without exception and without flaws."

Film projects are not always completed early. For film festivals, subtitles must be added. Films are supplied in different formats and on different media. Despite meticulous planning, problems can occur that are unforeseeable but need to be resolved quickly.

## The solution

Rohde&Schwarz has been working together with the Berlinale for years. The German company is highly valued as a technology provider because it stands for reliability, performance and innovation. In 2018, Rohde&Schwarz once again provided three R&S®CLIPSTER systems and R&S®SpycerBox Cells.

The R&S®CLIPSTER mastering station supports many different video formats. This allows the previously digitized films to be quickly converted and processed. Furthermore, R&S®CLIPSTER generates high-quality DCPs faster than in realtime. Last-minute adjustments such as subtitle changes are easy to make.

R&S®CLIPSTER has established itself as the complete mastering and deliverable solution for premium content. The new functions allow content creators to master their films and TV content more quickly and reliably. The superiority of R&S®CLIPSTER is especially evident in productions with higher resolutions, higher frame rates and enhanced colors (bigger, better pixels).

R&S®CLIPSTER offers the IMF feature set, which includes localization of subtitles. And the alpha compositing feature enables data such as title sequences and text clips in multiple languages to be easily exchanged directly on the timeline. Content that has been mastered for a specific region can now be modified for worldwide distribution.

R&S®CLIPSTER has integrated the HEVC and ProRes 444 XQ formats for delivering content in the high-resolution high dynamic range (HDR) and wide color gamut (WCG) formats. The additional output of audio via HDMI™ simplifies quality control.

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R&S®CLIPSTER 6.2 offers HDR workflows with image processing using floating-point arithmetic. This enables the wide dynamic range of the HDR material to be precisely converted. Rohde & Schwarz has succeeded in importing a high-quality master such as a linear OpenEXR file and rendering it in the output color space with the appropriate quantization (12-bit PQ/SMPTE ST 2086). This is necessary in order to meet the constantly growing HDR color management requirements. R&S®CLIPSTER 6.2 takes the next step toward a flexible HDR mastering solution.

In addition, an optimized architecture and the accelerated hardware enable image processing in realtime up to 4k 120p. Other features include support for the Avid DNxHR® codec and the ability to process HDR metadata for Dolby® Cinema.



R&S®SpycerBox Cell – the high-performance central storage solution.

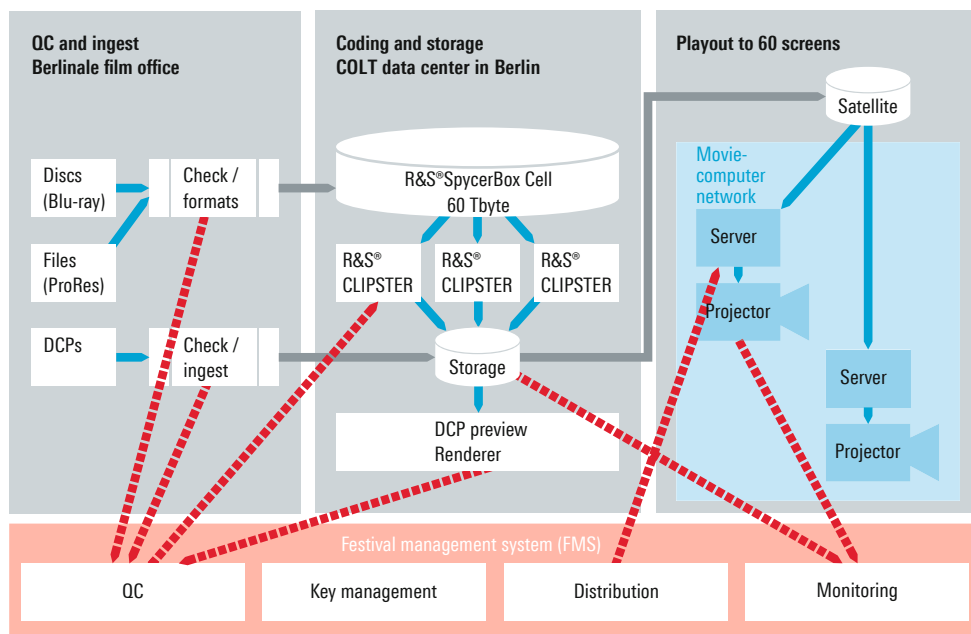
The modular and scalable R&S®SpycerBox Cell is a production storage solution for content from individual sources in various resolutions (e.g. 4k and UHD) and frame rates (up to high frame rate material). The redundant concept of the storage solution with hot-swappable storage disks and power supply units provides the necessary safety and reliability. Extensive monitoring of the entire infrastructure additionally provides the necessary control to enable fast and adequate response in tense situations.

### The project

Three R&S®CLIPSTER systems for digital mastering were provided for the BERLIN INTERNATIONAL FILM FESTIVAL. Data was stored on R&S®SpycerBox Cells in the COLT data center. The films were supplied in digital form on hard drives or using IBM's Aspera system.

"We use a central petabyte storage system from Dell EMC for managing the films that we receive," says Sander, describing the infrastructure. "From there, we send over 250 films every day to the more than 30 festival cinemas. This wouldn't be possible without high-grade technology like that from Rohde & Schwarz."

## Installation overview



R&S®CLIPSTER was connected to the software solution (FMS) of the Berlinale. The FMS had integrated task management where all incoming video data was stored and ran through a defined workflow with material and quality controls. At the points where R&S®CLIPSTER was integrated in the workflow, the FMS independently generated predefined projects that R&S®CLIPSTER could open directly.

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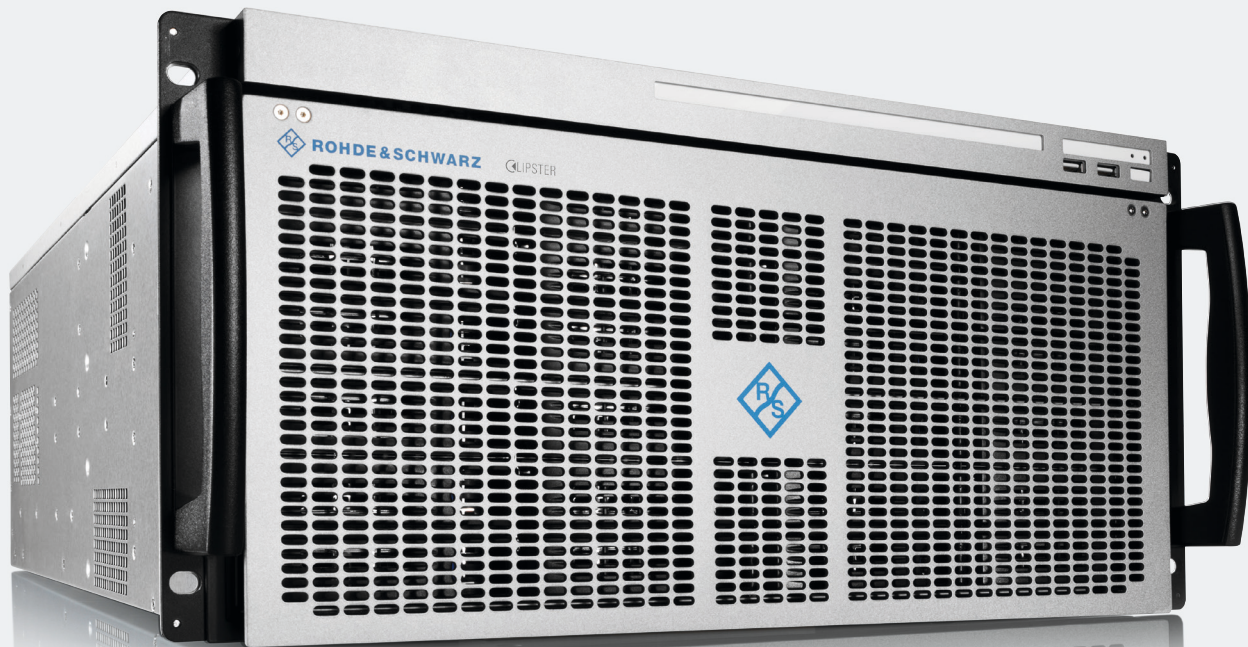
## Cabling

The diagram illustrates the network cabling for three R&S CLIPSTER units (no. 1, 2, 3) and an R&S SpycerBox Cell (SN162150046). The units are connected to a Metadata switch, an FC switch, and a Management switch (VNC). The IP addresses for the units are 10.100.100.1, 10.100.100.2, and 10.100.100.3. The Metadata switch has IP 10.100.100.150. The SpycerBox Cell has IP 10.100.100.4. The Management switch has IP 10.25.21.238. The FC switch has IP 10.25.21.235. The SpycerBox Cell is connected to Ethernet 1 (10.25.4.80) and Ethernet 2 (DHCP free). The legend indicates the following connection types: SDI (green), 10-gigabit Ethernet (optic) (blue), 1-gigabit Ethernet (copper) (red), Fiber channel (grey), and RS-422 (black).

**Legend:**

- SDI
- 10-gigabit Ethernet (optic)
- 1-gigabit Ethernet (copper)
- Fiber channel
- RS-422

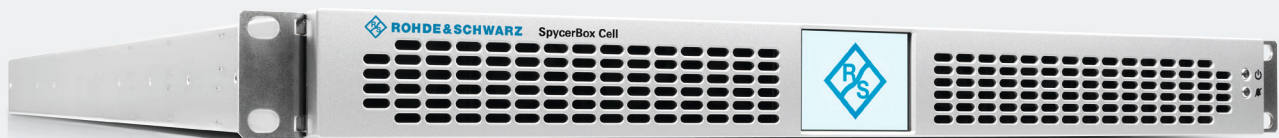




## R&S®CLIPSTER 6.2

### Highlights and specifications

- Playout up to 4k 120p RGB 12 bit
- Ingest up to 4k 60p YUV 422 10 bit
- Realtime processing up to 4k 120p RGB 10 bit
- Realtime processing up to 4k 60p RGB 32-bit float
- DCI and IMF J2K encoding up to 4k 60p RGB 12 bit
- SDI, display port, HDMI™ display interfaces
- 32-bit floating-point processing
- Color volume conversions
- PQ and HLG conversions
- Color profiles
- Dolby® Vision Cinema
- OpenEXR 4k 60P
- Quicktime HDR metadata
- Avid DNxHR®
- 4k 120P hardware processing
- HDMI™ 2.0A HDR10



## R&S®SpycerBox Cell

### Highlights and specifications

- High-performance central storage solution for production
- Supports uncompressed and compressed formats up to 8k
- Modular storage concept for growing demands
- Powerful combination of storage density and scalability
- Redundant concept with hot-swappable components
- Low entry price
- Extensive monitoring of the entire infrastructure
- Low CO<sup>2</sup> emission
- Available as SAS, NL SAS and SSD version
- SSD version for extreme performance
- 1 height unit
- 30 top-mounted, hot-swappable media hard drives
- 1+1 redundant, hot-swappable hard drives for the operating system
- 1+1 redundant, hot-swappable power supply
- 1 × display port (rear)
- 1 × DVI (rear)
- 1 × 1 Gigabit Ethernet
- 2 × USB 2.0 ports (rear)
- 2 × USB 3.0 ports (rear)
- CentOS 7.0

## Service that adds value

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

## Rohde & Schwarz

The Rohde & Schwarz electronics group offers innovative solutions in the following business fields: test and measurement, broadcast and media, secure communications, cybersecurity, monitoring and network testing. Founded more than 80 years ago, the independent company which is headquartered in Munich, Germany, has an extensive sales and service network with locations in more than 70 countries.

[www.rohde-schwarz.com](http://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**

Certified Environmental Management  
**ISO 14001**

## Rohde & Schwarz training

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