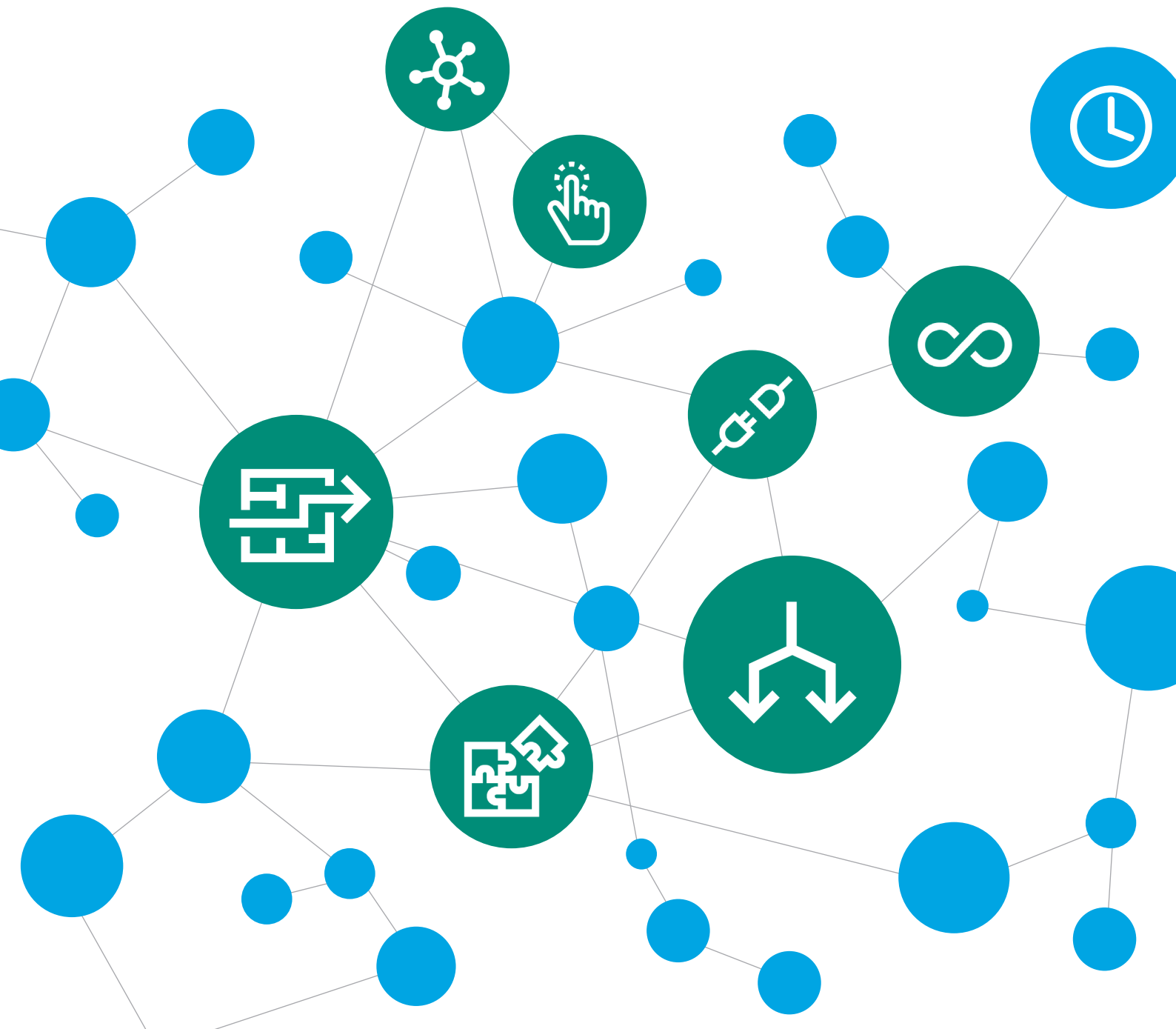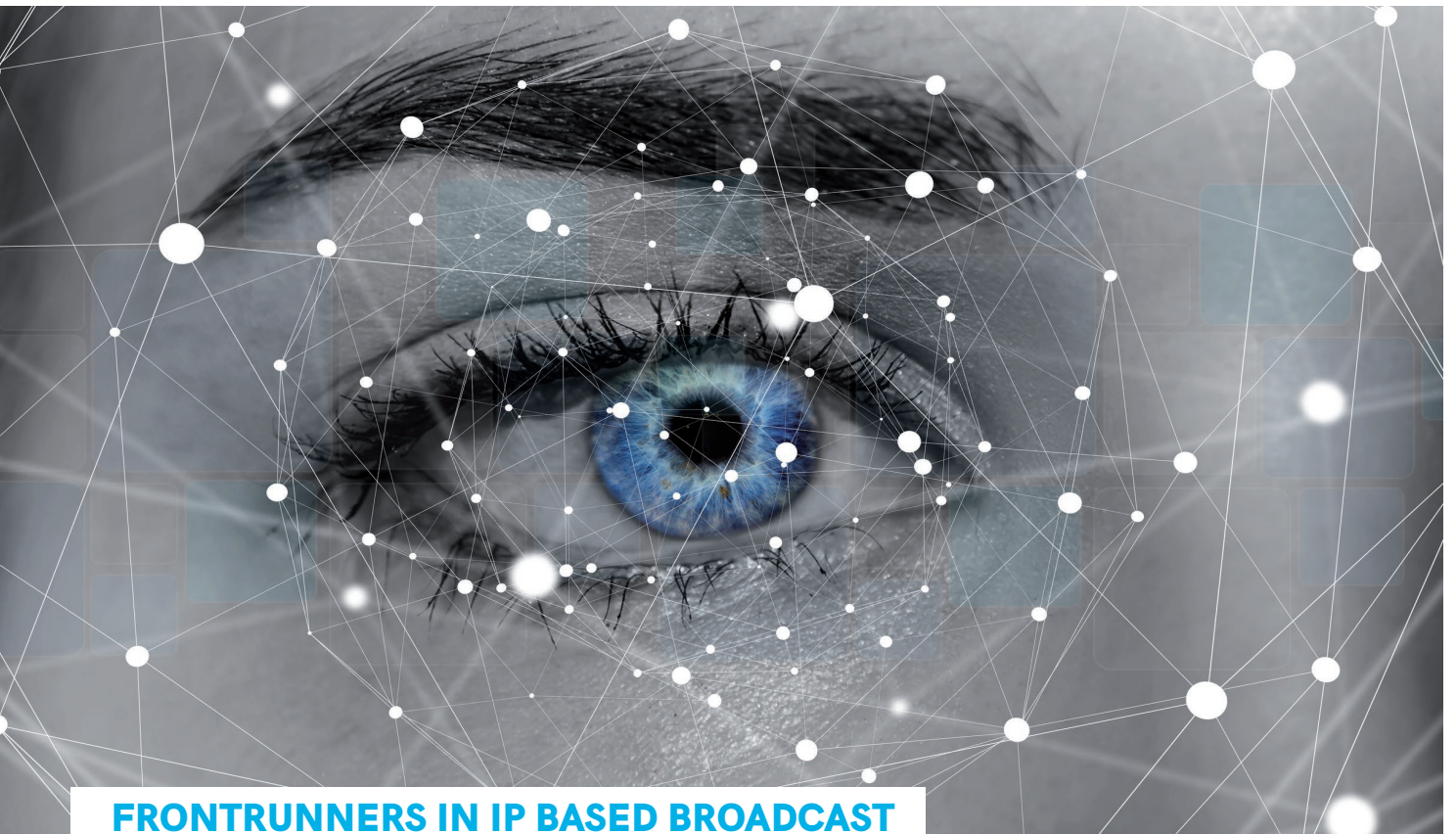KSC **SILKNET**

# Orchestrating the IP World.

KSC SILKNET – The broadcast SDN controller for IP based networks in production, contribution and distribution.

# KSC SILKNET



## FRONTRUNNERS IN IP BASED BROADCAST SOLUTIONS.

**At BFE we do not believe in going with the times. We believe in being ahead of them.**

As early as 2011 – when IP was nowhere close to being introduced broadly to the broadcast industry – BFE developed an IP based broadcast control and monitoring system, used e.g. in production at ZDF, one of Europe's largest public broadcasters. Since then, while the industry caught up to the phenomenon that is IP, BFE's groundbreaking system underwent a constant evolution, making it one of the most advanced and versatile Software Defined Network (SDN) controllers designed specifically for the broadcast industry.

### BRIDGING THE GAP.

In the process of transitioning from classical SDI to modern IP based infrastructures, two realities must be balanced against each other: fulfilling the ambitious standards of the broadcast world and at the same time taking advantage of modern standard IT infrastructure.

KSC SILKNET, the broadcast SDN controller by BFE, orchestrates and monitors devices of different manufacturers in IP based audio and video infrastructures. KSC SILKNET integrates solutions for demands of the broadcast world into the "Software Defined Networking" IT world and facilitates a safe and intuitive handling of production, distribution and contribution networks.

### CONNECTIVE & INTUITIVE.

KSC SILKNET uses a hardware abstraction layer to support all relevant standard and proprietary protocols. This creates the ability to integrate switches and edge devices of any brand into the system. Via a northbound interface, broadcast control systems of all manufacturers can control the IT infrastructure using the Ember+ protocol.
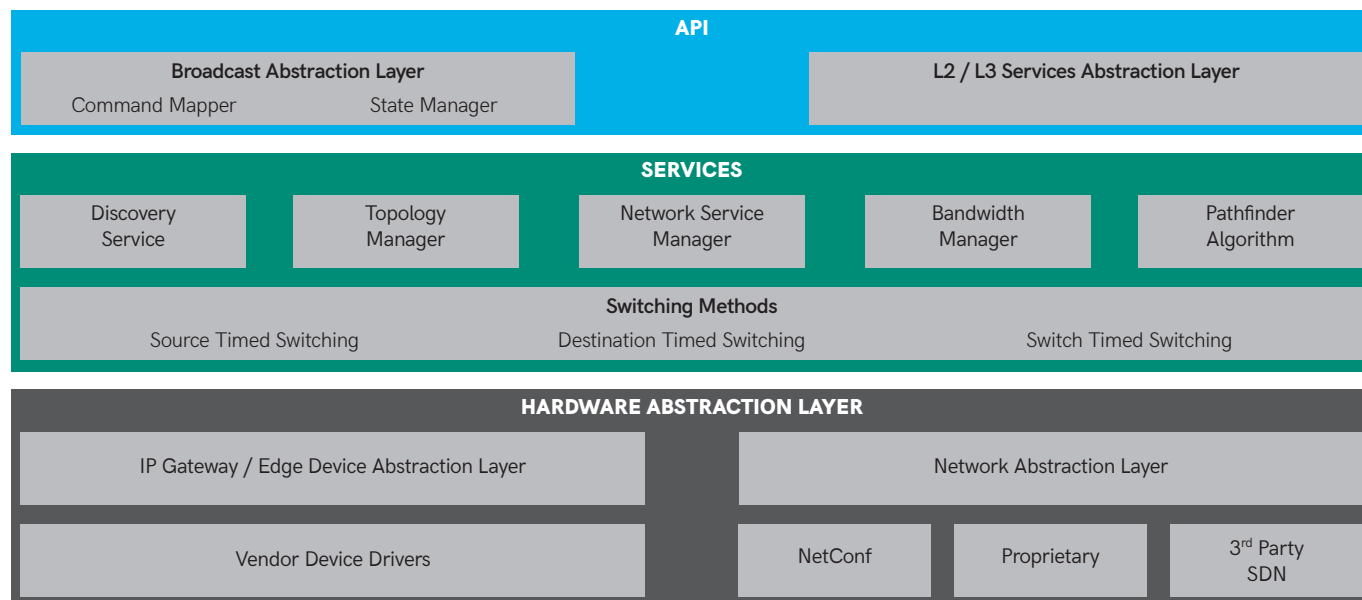
Through an extended northbound API KSC SILKNET offers deep integration of the broadcast control and monitoring solution KSC CORE. Settings such as network service types, protection mode, switching method and more can be chosen in KSC CORE without the need to statically configure them. Even managing devices and their parameters as well as transferring them to KSC SILKNET is made possible.

Configuration of KSC SILKNET as well as monitoring the IT infrastructure is done via a web based application.

Connection management of network services is also possible through the KSC SILKNET GUI, without using the broadcast control system.

# SOFTWARE ARCHITECTURE.

At the core of KSC SILKNET the modules discovery service, topology manager, network service manager, pathfinder and bandwidth manager intelligently handle tasks to guarantee performance and an excellent user experience.

| API | |
|---|---|
| **Broadcast Abstraction Layer**<br>Command Mapper        State Manager | **L2 / L3 Services Abstraction Layer** |

| SERVICES | | | | |
|---|---|---|---|---|
| Discovery Service | Topology Manager | Network Service Manager | Bandwidth Manager | Pathfinder Algorithm |
| **Switching Methods**<br>Source Timed Switching        Destination Timed Switching        Switch Timed Switching | | | | |

| HARDWARE ABSTRACTION LAYER | | |
|---|---|---|
| IP Gateway / Edge Device Abstraction Layer | Network Abstraction Layer | |
| Vendor Device Drivers | NetConf        Proprietary | 3rd Party SDN |

## > DISCOVERY SERVICE

Fulfills NMOS IS-04 version 1.3 specifications and automatically identifies and registers NMOS com-patible equipment.

## > TOPOLOGY MANAGER

Designed to present the network topology in an optimal way, while including valuable information such as status of sender and receiver and currently used and/or available bandwidth for every link between switches. Other device parameters such as SDP files or currently established network services along the entire route can be added when needed.

## > NETWORK SERVICE MANAGER

Keeps track of all currently established network services and their status – such as the used / available bandwidth at a specific link between two switches.

## > PATHFINDER ALGORITHM

Calculates the most efficient route between sender and receiver that delivers enough bandwidth for the specific network service. When establishing point-to-multipoint connections the algorithm identifies the optimal junction to the receivers. While doing so, the system supports all network architectures, ranging from central switch, to spine-leaf or intermeshed network structures. When switching with hitless-mode protection, pathfinder calculates two routes in two different networks or two disjunctive routes in one network. In this way, the system offers the ultimate protection against interruptions and loss of signal.

## > BANDWIDTH MANAGER

An intelligent algorithm manages prioritization and protection of data transfer, guaranteeing 100% Quality of Service (QoS) necessary for video, audio and the associated metadata. Therefore, QoS is no longer a question of probability and best effort – as in IP based system environments that do not manage bandwidth.

In addition, KSC SILKNET is capable to easily and safely reserve bandwidth and routes for conventional IT services without jeopardizing the quality of video and audio services.

# THE BEST OF BOTH WORLDS.

**Combining KSC SILKNET with KSC CORE is the ideal solution for transferring familiar workflows from the broadcast world into IP based infrastructures.**

Using a modern architecture and native integration of both systems presents the possibilities to either maintain classical workflows or establish new ones, utilizing the benefits the IT world offers.

Hybrid system environments can be successfully implemented by using a combination of KSC SILKNET and KSC CORE. This allows for flexible and gradual transformation of established environments in line with available budgets. Technical challenges as well as matters of changes in staff can thus be managed easily. This approach guarantees smoothest possible 24/7 operations and tackles not only the technological but also the organizational change.

## KEY FEATURES.

> Support of SMPTE 2110, SMPTE 2022-6, AES67, Dante
> Compatible with SMPTE 2022-7 specifications
> Destination timed switching (alternatively make-before-break or break-before-make)
> Automatic identification of devices via NMOS IS-04 version 1.3 registration and query service and connection establishment via NMOS IS-05 version 1.1 connection management
> NMOS IS-07 version 1.0 compatible transmission of time-critical information (e. g. for camera tally information, audio levels as well as button press and status information from control panels)
> Compatible with layer 3 networks
> Independent from network infrastructure
> Neutral approach in terms of manufacturers of switches and devices
> Intuitive, web based GUI for configuration and monitoring
> Northbound WebAPI interface (allowing network abstraction and integration of 3$^{rd}$ party broadcast control systems)
> Extended northbound API for deep integration of BFE's KSC CORE control and monitoring system
> Maximum availability through hot/hot standby cluster

## BENEFITS IN A NUTSHELL.

> Gradual migration from SDI to IP based infrastructures thanks to the support of hybrid system environments
> Freedom of choice in combining broadcast workflows with benefits of the IP world
> Quick access to all network services
> Visualization of network services
> Session Description Protocol Viewer
> Flow Information Viewer

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## KSC SILKNET

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