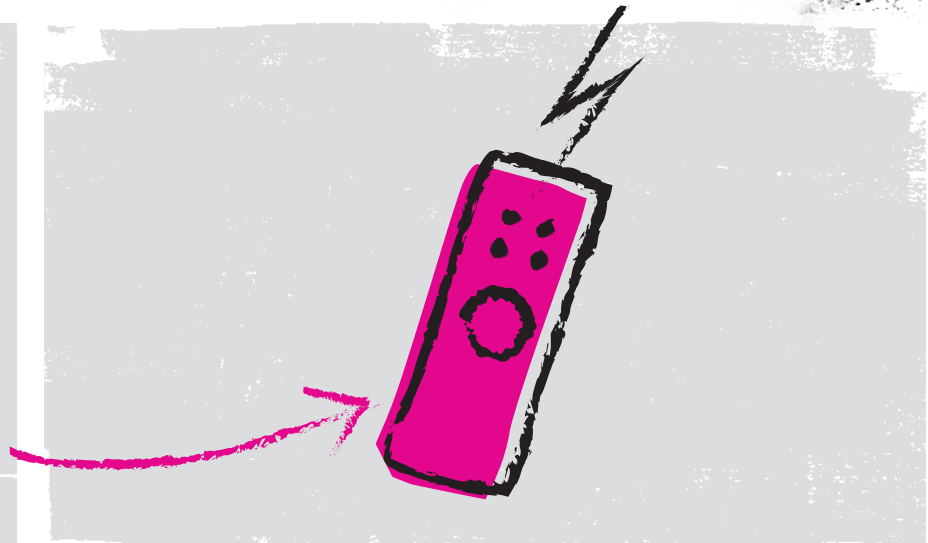


EDGEWARE PRODUCT PORTFOLIO		
MGMT & CONTROL	TV System Manager	
	TV Analytics	
	Multitenancy	
ORIGIN SOFTWARE	TV Content Capture	
	TV Repackager	
	TV Ad Insertion	
	CDN Selector	
CDN SOFTWARE	TV Director	
	TV Delivery	
	Edge TV Repackager	
	TV Watermarker	
	<b>Fast Channel Change</b>	
PLATFORM OPTIONS	Public/private cloud	TV Server 4020/4080



## SUB-SECOND ZAP TIME

The Edgeware Fast Channel Change product offers visible quality enhancements to your live IPTV service, even over unreliable networks. It prevents channel change delays, bringing zap time down to less than a second. It also provides live UDP Retransmission, eliminating packet loss by resending corrupted packets.

### WHAT IT DOES

To deliver IPTV in HD or 4K quality requires high video compression, using codecs like H.264 or H.265. These formats significantly reduce file sizes, but they also increase the sensitivity to packet loss, and can extend the zap time way past 20 seconds. Fast Channel Change (FCC) brings the zap time back to less than a second and UDP Retransmission (RET) resends lost video packets to eliminate image and audio distortion.

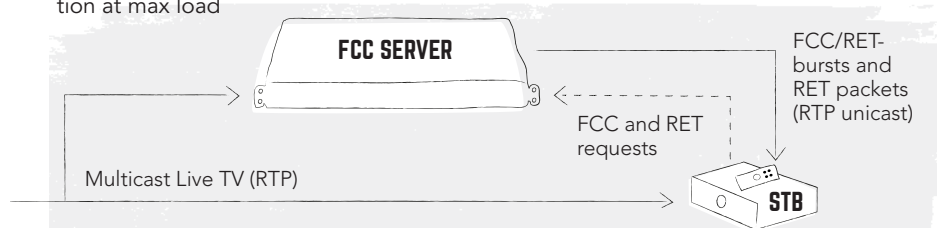
Both FCC and RET require unique unicast bursts to each consumer, which can massively increase traffic volumes. You can dramatically offload TV traffic and avoid costly and time-consuming network upgrades by deploying these functions at the edge. In addition, you reduce latency and the risk of congestion, delivering an amazing viewing experience to your IPTV customers.

### FEATURES & BENEFITS

- ✓ FCC and UDP RET with guaranteed performance regardless of number and mix of request
- ✓ Runs on a purpose-built Edgeware TV Server, which can be deployed at the network edge to offload traffic and save costs
- ✓ Instant scalability through license keys of up to 20 Gbps output and 4 Gbps ingest per 1U server
- ✓ Easy integration with set-top box clients (RFC compliant)
- ✓ MTBF of 10 years for easy operation and minimal operating expense
- ✓ Less than a second zap time
- ✓ Less than 100W power consumption at max load

### HOW IT WORKS

1. Edgeware's FCC server receives and caches IP multicast streams
2. UDP RET corrects image and audio distortion due to packet loss by resending lost video packets
3. During a channel change, the FCC server initiates a unicast burst to the viewer's set-top box (STB) for a quick reference frame delivery
4. The STB seamlessly switches over to the live multicast for continuous play, while the FCC server terminates the unicast burst
5. This results in an amazing viewing experience with a fast and seamless channel change.



## HOW TO DEPLOY

Edgeware Fast Channel Change is delivered on a purpose-built Edgeware 4020 TV server, a highly distributable and reliable network appliance with minimal power consumption and operating expenses. It can be deployed anywhere in the network – centrally or at the edge for maximum quality of experience.

## TECHNICAL DATA

### APPLICATIONS

- Fast Channel Change (FCC)
- Live UDP Retransmission (RET)

### STREAMING ENGINE

- Hardware accelerated
- Guaranteed performance under all use cases

### STREAMING FORMATS

- UDP/RTP packets
- Unique SSRC per channel
- MPEG-2
- MPEG-4 AVC/H.264
- HEVC/H.265

### STREAM BITRATES

- 1–50 Mbps / stream
- CBR

### OUTPUT STREAMING BANDWIDTH

- 20 Gbps aggregated output streaming, sustained

### LIVE TV INGEST

- Up to 4 Gbps
- Up to 1024 channels
- Direct snooping of UDP multicast

### SECURITY AND INTEGRITY

- Hardware classification/denial of service filter
- Hardware ingress packet rate policing
- Ingress/Egress bandwidth control
- VLAN traffic and control separation
- Linux Iptables/Netfilter firewalling

### MANAGEMENT AND CONTROL

- Embedded Linux
- Standard Linux configuration procedure
- SNMPv3
- syslog
- IGMPv3

### OPEN STANDARDS COMPLIANCE

- RFC4588: RTP Retransmission Payload Format
- RFC6285: Unicast-Based Rapid Acquisition of Multicast RTP Sessions
- RFC3550: RTP A Transport Protocol for Real-Time Applications (RTCP)

### REGULATORY

- NEBS level 3
- FCC Part 15
- CE
- UL/EN 60950-1
- RoHS
- WEEE

### STREAMING / LINE INTERFACES

- 2 x 10 Gigabit Ethernet (10GbE) SFP+
- 2 x 1 Gigabit Ethernet (1GbE) RJ45
- 802.1Q VLAN

### CONTROL PORTS

- 2 x 10/100/1000BASE-T, RJ45
- 802.1Q VLAN
- USB
- RS-232, 9-pin D-Sub
- Control also possible over streaming interfaces

### POWER AND HEAT

- 100 W peak power consumption full configuration, max load
- Heat flow rate: 340 BTU/h

### POWER CONNECTIONS

- -48 VDC or 100-240 VAC 50/60 Hz (factory option)
- Dual redundant power supplies

### PHYSICAL DIMENSIONS

- 1RU/19"
- Height: 44 mm (1.73")
- Width: 448 mm (17.64")
- Depth: 250 mm (9.84")
- Weight: 5.1-6.0 kg (11.2-13.2 lbs)

### ENVIRONMENTAL

#### Operating:

- 0 to 50° C (32 to 122° F)
- 30 – 90% RH (non-condensing)

#### Storage:

- -20 to 70° C (-4 to 158° F)
- 10 – 90% RH (non-condensing)

#### Air flow:

- 8 fans, high reliability, 4+4 redundancy
- Front to rear air flow
- Individual fan monitoring
- Temperature monitoring

### OPTIONS

- 19" Rack mount brackets (Standard)
- 23" Rack mount brackets
- Front panel air filter