Sat**Expander**

Xprime

Innovative 5G Video Delivery Solution

Live video streaming is congesting mobile networks and impairing user experience. With 5G, mobile service providers are aiming to introduce more video content and services, delivering live and on-demand video to any device, everywhere.

DESIGNED FOR MOBILE VIDEO EXPERIENCES

SatExpander Xprime is an innovative video delivery solution for high-quality and efficient distribution of media services over 5G networks. Taking CDN to the edge, SatExpander Xprime brings content closer to users, minimizing network congestion and maximizing user experience. Primed and ready to handle high volume of video content, SatExpander Xprime introduces broadcast / multicast video distribution to network edges and one-to-many content distribution at the network edge, converting a shared media broadcast into unicast, and distributing the content to any user device - from smartphones to TV sets. Mitigating heavy traffic loads to avoid network congestion, SatExpander Xprime enables the delivery of high definition (HD) and ultra high definition (UHD) resolutions as well as opens the door for immersive entertainment services.

EMPOWERING FIXED WIRELESS BROADBAND VIDEO DELIVERY

Fixed Wireless Access (FWA) enables the delivery of high-bandwidth connectivity to homes through the 5G network, presenting a viable alternative to fixed-line networks. SatExpander Xprime complements FWA in supporting multiple video streams for each household, eliminating network bottlenecks, and opening the door for high-quality TV content distribution over 5G, and even 4G, mobile networks.
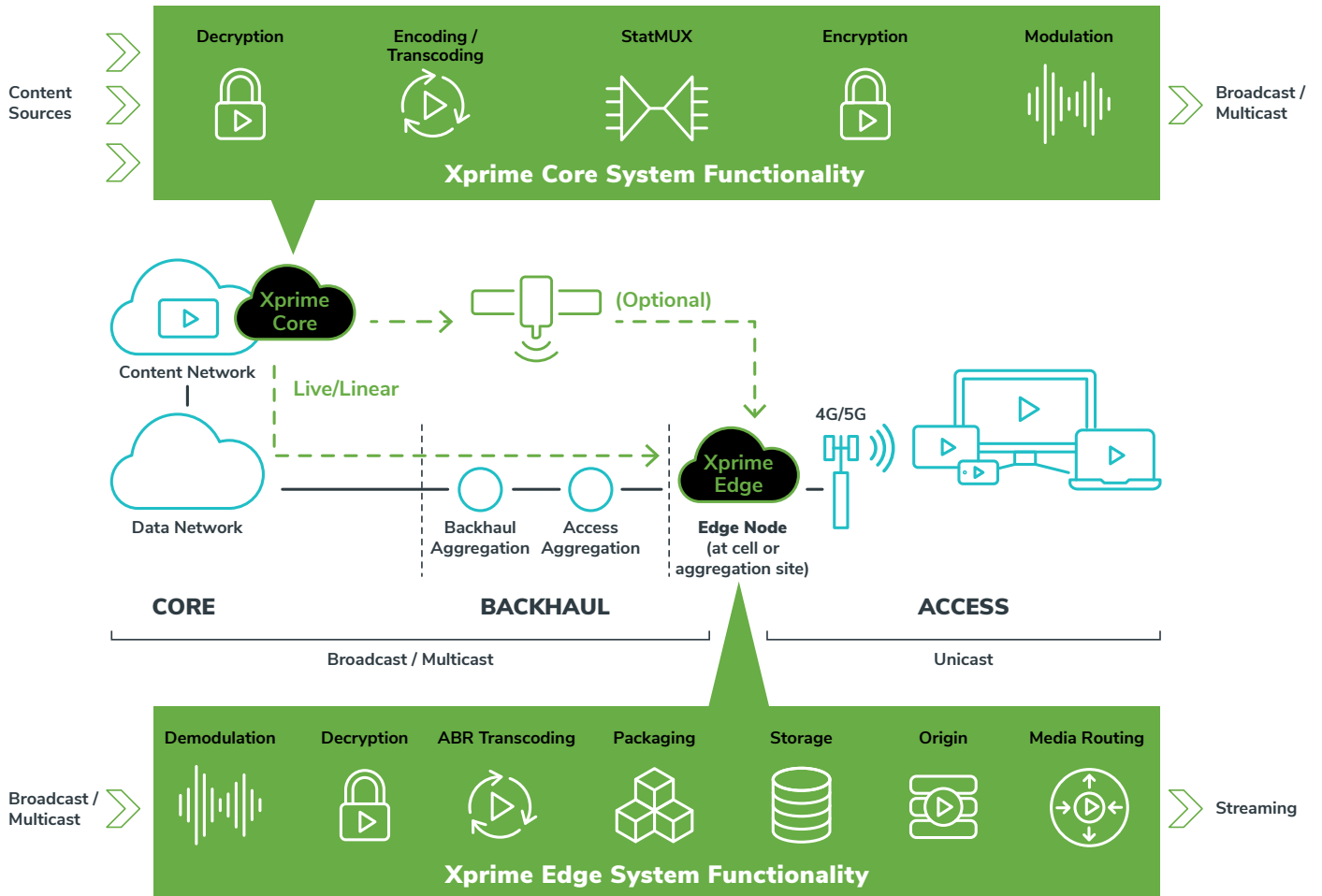
HIGHLIGHTS

- Edge-based media delivery for mobile networks
- Highest quality user experience
- Latency free real-time video
- High efficiency media delivery
- Live and on-demand streaming
- High volume video content
- Any mobile and fixed user device
- Total streaming control
- Broadcast to unicast edge conversion
- All-in-one edge CDN: ABR transcoding, packaging, caching and delivery

AGILE AND FUTURE PROOF ARCHITECTURE

SatExpander Xprime, an innovative take on mobile video delivery, features the latest in edge and software-defined networking. Built on off-the-shelf servers with modular architecture and carrier grade management system, SatExpander Xprime maximizes and optimizes network capabilities to power next level video experences. SatExpander Xprime solution comprises of two server-based modules: Xprime Core and Xprime Edge.

EDGE-BASED MEDIA DELIVERY FOR MOBILE NETWORKS

Xprime Core System Functionality
- Content Sources
- Decryption
- Encoding / Transcoding
- StatMUX
- Encryption
- Modulation
- Broadcast / Multicast

Content Network — Xprime Core
Data Network
Live/Linear
(Optional)
Backhaul Aggregation
Access Aggregation
Xprime Edge
Edge Node (at cell or aggregation site)
4G/5G

CORE — **BACKHAUL** — **ACCESS**
Broadcast / Multicast — Unicast

Xprime Edge System Functionality
- Broadcast / Multicast
- Demodulation
- Decryption
- ABR Transcoding
- Packaging
- Storage
- Origin
- Media Routing
- Streaming

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NOVEL MOBILE VIDEO SOLUTION

XPRIME CORE

Running as part of the core network, Xprime Core enables dynamic broadcast delivery of multimedia content over the mobile network. Xprime core centralizes content acquisition from multiple sources in multiple formats, performs multi-channel transcoding to HEVC, and transmit a single high-quality profile of each video channel. The high-quality profiles are broadcasted to multiple edge locations over terrestrial backhaul connections, mitigating bandwidth congestion by eliminating the need for numerous unicast streams. Alternatively, the high-quality profiles can be broadcasted over satellite, utilizing a single bandwidth to broadcast video content to hundreds and thousands of cell sites, bypassing the terrestrial backhaul connections, delivering the video content directly to the edge locations, offloading that video services from the terrestrial network.

XPRIME EDGE

Running at the network far / deep edge - either cell sites or aggregation sites, Xprime Edge performs video transcoding, packaging, caching and delivery, closer to users' devices, mitigates network congestions and significantly improves latency.

ALL-IN-ONE EDGE CDN

A compact and powerful edge module, Xprime Edge incorporates all elements of content delivery, including processing, transmission, streaming, and security on a single platform. Xprime Edge receives broadcast / multicast media content from the Xprime Core, demodulates the transmission when used over a satellite link, executes decoding and transcoding, generates multiple video profiles, performs multi-profile packaging, caches video chunks, and delivers live video streams to multiple user devices over the wireless network. In addition, local caching is used to store high demand video content as well as live content for a given period of time, enabling pause / catch-up / replay capabilities as well as VOD services.

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NOVEL EDGE COMPUTING FOR VIDEO STREAMING

Leveraging Multi-access Edge Computing (MEC) architecture, Xprime Edge allows flawless ingest of the video content into the radio access network. Xprime Edge identifies user requests for content locally available at the edge and streams the content via the mobile base station to the relevant user devices. This leads to savings of bandwidth over the network's backhaul link as most user video traffic is generated and delivered from the cell site location by the Xprime Edge module.

BEST-IN-INDUSTRY CONTENT PROTECTION

The escalation of piracy threats and unauthorized access to high-value content is impacting media services' revenues and profitability, and undermining media business models. SatExpander Xprime utilizes extensive security algorithms and mechanisms to provide secured media delivery on top of greater transmission resiliency and robustness. Utilizing multi-layer encryption together with powerful entitlement tool, SatExpander Xprime provides superior core-to-edge content protection.

POWERFUL OPERATIONS SUITE

Easy to install, configure, integrate, and operate, SatExpander Xprime includes a service-oriented management system, enabling to rapidly introduce and modify content and services, as well as maintain and monitor connectivity. Media flow and connectivity grid dashboards provide an overarching centralized view for easy orientation and monitoring, while advanced media, resources and interface configuration tools simplify service setup, resource allocation, and ongoing operations. Additionally, SatExpander Xprime management system enables real time gathering and analysis of network, service, and user information for further optimization of the video delivery and the user experience.

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Xprime CORE
TYPICAL SPECIFICATIONS *

INPUT / OUTPUT INTERFACES

- Copper or Fiber 4x10GbE IP interface
- Satellite Modulator
  - Up to 80Msps / 425Mbps
  - DVB-S2 / DVB-S2X / NS4™

**INPUT (ACQUISITION) /
OUTPUT (DISTRIBUTION)
PROTOCOLS**

- Single Program Transport Streams (SPTS)
- Multiple Program Transport Streams (MPTS)
- IP Multicast and Unicast (UDP/IP)
- MPEG-2 Transport Stream
- Zixi and SRT

TRANSCODING CODECS

- Video: H.264, H.265 / HEVC, VP8, VP9
- SD, HD Up to 4K (UHD)
- Audio: AAC, AAC-LC, HE-AAC, AC3, MP3

CONTENT PROTECTION & SECURITY

- BISS 1 / 2 / CA based on EBU TECH 3292-s1 standard
- SatExpander Managed DRM - AES-256 TS Encryption

PHYSICAL AND ENVIRONMENTAL

- COTS-based server
- 19" x 1RU / 2RU
- Power options: 500W / 800W / 1600W
- Dual power supply
  - Active – Active
  - 100 – 240VAC
  - -48VDC option
- Temperature
  - Operational: 10° to 35°C (50° to 95°F)
  - Storage: -30° to 60°C (-22° to 140°F)
- Humidity
  - Up to 90% non-condensing

Xprime EDGE
TYPICAL SPECIFICATIONS *

INPUT / OUTPUT INTERFACES

- Copper or Fiber 10GbE IP interface
- Satellite Demodulator
  - Up to 80Msps / 425Mbps
  - DVB-S2 / DVB-S2X / NS4™

**INPUT (ACQUISITION) /
OUTPUT (ABR PACKAGING & DELIVERY)
PROTOCOLS**

- Single Program Transport Streams (SPTS)
- Multiple Program Transport Streams (MPTS)
- IP Multicast and Unicast (UDP/IP)
- Zixi and SRT
- HTTP Live Streaming (HLS)
- CMAF Packaging
- MPEG-DASH
- Video Origin and Storage
- Static and Dynamic content caching

TRANSCODING CODECS

- Adaptive Bit Rate (ABR)
- Video: H.264, H.265/HEVC, VP8, VP9
- SD, HD Up to 4K (UHD)
- Audio: AAC, AAC-LC, HE-AAC, AC3, MP3

CONTENT PROTECTION & SECURITY

- BISS 1 / 2 / CA based on EBU TECH 3292-s1 standard
- SatExpander Managed DRM - AES-256 TS Encryption

PHYSICAL AND ENVIRONMENTAL

- Telco server
  - 19" x 1RU / 2RU
  - Depth 43.18 cm / 17 in
  - Weight (approximate): 11.4 kg / 25.4 lbs
- Power consumption: ~180W Typical
- Input power
  - Dual -48VDC
  - Dual AC 100 – 240VAC option
- Temperature
  - Operational: 10° to 35°C (50° to 95°F)
  - Storage: -30° to 60°C (-22° to 140°F)
- Humidity
  - Up to 90% non-condensing

*Specifications may change per design

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For more information visit www.SatExpander.com