

Viarte: HDR/SDR Tone Mapping/Conversion SD/HD/4K Standards Conversion & Digital Remastering Server Clusters & Services

Top Reasons To Consider Viarte Conversion Solutions and Services

- Advanced HDR to SDR tone mapping achieves a genuinely improved SDR+ viewing experience on all existing SDR display device. Leveraging existing SDR broadcast, OTT & cinema.
- Single stream, backwards-compatible SDR to HDR, reduces the complexity of a possible silicon implementation in an HDR TV, or set-top box.
- Superb unmatched quality - a truly immersive viewing experience on all devices.
- Unique architecture: low-delay, high throughput, automation, configuration flexibility and scalability.
- Significant savings in time and bandwidth (up to 80%) beyond AVC/HEVC.

Advantages of Viarte Conversion Quality

- GPU accelerated advanced dynamic HDR to SDR (Rec.709) tone mapping preserves creative intent by keeping maximum possible detail at all light levels, accurate color balance, and the overall brightness impression.
- Immersive, vivid viewing experiences on all viewing devices, from SDR+ (rec709) to the newest HDR TVs, irrespective of whether the original content is SDR or HDR, interlaced or progressive, etc.
- On-the-fly automated HDR to SDR+ tone mapping and SDR to HDR up-conversion allows live HDR event broadcast and OTT streaming, with minimal additional capital expenditure for SDR+ broadcast distribution, or optimal SDR+/HDR distribution for OTT.
- SDR to HDR conversion achieves realistic contrast and shadows, substantially enhances sharpness, dark detail, specular highlights and color while preserving SDR creative intent. It takes full advantage of the latest HDR displays in both color and brightness. It also complements our HDR to SDR+ Tone Mapping without requiring input dynamic Metadata.
- The latest Viarte MC processing can readily handle HDR material to the high precision required. Viarte any-to-any MC frame-rate conversion offers particularly accurate conversion for HFR, giving stunning quality for HDR with HFR. Additional features include:
 - Cinema-quality conversion, anything from 23.976p to HFR. Sophisticated, accurate simulated motion-blur reduces playback judder when downconverting from HFR down to lower rates;
 - Precise temporal conversion by up to +/-10% allows material to fit a time slot without judder.
- MC deinterlacing/inverse telecine with 100% vertical output resolution, and imperceptible flicker.

- Superbly sharp video up/down scaler, with natural-looking edge enhancement.
- Breakthrough quality, GPU accelerated HDR/SDR MC noise reduction, achieves up to 80% bit-rate savings beyond AVC/HEVC, while keeping subtle detail and sharpness. Benefits include:
 - i. High quality OTT distribution of HDR or SDR, particularly for PQ encoded sources,
 - ii. Reducing noise in digital remastering from SDR to HDR, increasing immersiveness.
 - iii. Viarte tone mapping with MC noise reduction achieve a combination of amazing picture quality and significant bandwidth savings beyond HEVC/AVC.
- Precision: 32-bit internal component calculations and 16-bit I/O for all Y,Cb,Cr components.
- Single stream processing for cinema/Blu-ray, OTT and broadcast applications, with any EOTF/OETF combination of gamma, BBC HLG, PQ (SMPTE ST 2084).

Advantages of Viarte Architecture

Viarte server cluster processing gets a near-linear boost in throughput with the number of servers, leveraging isovideo's proprietary, efficient and scalable splitting technology. Main benefits include:

- Fast turn-around IP-studio workflow via automation, and by enabling downstream tasks to synchronously start as soon as the first output frame appears, which is usually within seconds to minutes depending on configuration.
- Efficient scalability: Viarte clusters work together to give powerful performance. For example, clusters can perform 4K frame-rate conversions, or very high quality HEVC encoding in realtime, etc.
- Significant cost and time savings by directing remote IP live feeds to a centralized Viarte cluster to perform SDR/HDR conversion/tone mapping, standards-convert, review, archive, transcode, and forwarding to other facilities on-the-fly.

Other Benefits

- Accurate color conversion between Rec 601, Rec 709, DCI-P3, BT 2020, etc.
- Multiple encoding formats: HEVC, H.264, Prores-HQ, AVC-Intra, DNxHD, etc.
- Accurate and flexible output timecode control. Also DPP AS-11 compliant.

Awards and Film Applications

- Viarte was a one of five prestigious Game-Changer Awards winners by the IABM/NAB in 2013. isovideo is honored to be a part of [IABM's](#) 40th Anniversary Publication.
- isovideo has been credited for “footage conversion” in several feature films, including Ron Howard's "*Made in America*"; "*Finding the Gold Within*" by Karina Epperlein; "*Love & Mercy*" by Bill Pohlad. Viarte has also been used for digital re-mastering of "*Some Kind of Monster*" of Metallica and "*Take Every Wave*" by Rory Kennedy, etc.