# VideoFlow

## THE **CONFIDENCE** TO BROADCAST OVER ANY IP NETWORK

VideoFlow's DVP offers the confidence to broadcast live over any IP network including over the open Internet. The DVP protects the video quality and ensure service continuity over IP reaching reliability levels similar to those of satellite or fiber connections at a fraction of the cost.

## Key Benefits

### Unmatched service continuity under any network conditions

Service continuity is essential for successful broadcast service over IP. If you can't guarantee uninterrupted service to your viewers (think live sporting event), your ratings and advertising dollars are going to plummet. The VideoFlow DVP product line is designed to protect your company's revenue offering the world's best Service Continuity toolset Including dynamic load sharing, adapting the video rate on-the-fly and flexible options for enabling cost-effective non-single point of failure video delivery networks.

### Effective video quality protection over any IP network

IP networks are characterized by packet jitter, packet loss, and link capacity fluctuations - making them inherently unreliable for professional broadcast video. To achieve broadcast service success over IP, you can't afford to comprise on video quality. Built to meet your service requirements, VideoFlow's proven DVP product line offers a unique set of innovative video quality features that eliminate jitter and recover 100% of lost packets with the lowest bandwidth overhead and delay on the market.

### Lowest total cost of ownership (TCO)

The success of your broadcast service over IP hinges on your ability to continually provide the best quality of experience (QoE) to your viewers which means ensuring the highest video quality with zero tolerance to service interruptions. While you can't compromise on QoE, you can control your TCO. VideoFlow's DVP product line reduces costs by enabling successful broadcast services over low-SLA IP networks, including the open Internet, ensure broadcast quality with industry-low overhead and bandwidth costs and prevent costly service disruptions from network downtime.

### Low cost of change

While moving or expanding your broadcast services to an IP network will reduce operational costs and help you generate new revenue streams, this transition also comes with a price tag. This cost of change is often a critical factor in your decision to move to IP and your choice of a solution. VideoFlow gives you a painless and cost-effective way to reap the benefits of professional broadcast service over IP while minimizing the impact on your legacy broadcast equipment.

### Penetrate new markets and generate higher revenues

Besides reducing costs, moving your broadcast service to an IP network can also open up lucrative revenue opportunities through expansion into new markets. VideoFlow's DVP product line enables quick and cost-effective deployment of professional broadcast service over IP - where you need it. DVP's Service Continuity and Video Quality Protection toolsets let you leverage any available IP network, as well as the public Internet, in markets that were previously out of reach or too expensive to develop.

VideoFlow

## Video over IP

**Interfaces**
  10/100/1000 Base-Tx, RJ-45 connectors
  4-ports ASI IN, BNC connectors, hardware option
  ASI to IP conversion

**Encoding Formats**
  MPEG2, H.264, H.265/HEVC

**Video Resolution**
  QCIF, SD, HD, 2K, 4K, 8K

**Encapsulation**
  TS over IP
  MPEG over IP
  188/204 Bytes per MPEG packet
  1-7 MPEG packets per IP packet
  CBR/VBR

**Transport**
  SPTS, MPTS
  Multicast/Unicast
  UDP
  RTP/UDP
  RTSP, RTMP, HLS, DASH (push or pull)

**Advanced**
  Integrated Encoder (FFMPEG)
  Integrated Transcoder (FFMPEG)
    *MPEG2 ⇨ H.264, H.264 ⇨ MPEG2*
    *MPEG2 ⇨ H.265, H.265 ⇨ MPEG2 (optional)*
    *H.264 ⇨ H.265, H.265 ⇨ H.264 (optional)*
  Conversion
    *Video resolution*
    *Frame rate*
    *GOP structure*
    *Audio format*
    *Audio sample rate*
  File playout
  Confidence Monitoring
  TS Service Demux per stream
  TS PID Demux per stream

**Publishing**
  HLS,
  RTMP

## Network

**Architectures**
  Point-to-point
  Point-to-multipoint
  Multipoint-to-point
  Transit (Video over IP Cross-connect)
  Bi-directional

**VPN**
  GRE tunnels
  UDP optimized tunnels
  AES128 encryption
  AES256 encryption
  IPsec tunnels

**NAT Traversal**
  EasyLink
  Address-restricted cone NAT
  Port-restricted cone NAT
  Symmetric NAT

**IP Header Conversion / Remapping**
  DST/SRC IP address remapping
  UDP DST port number remapping

**Transport Layer Conversion**
  UDP to RTP (input)
  RTP to UDP (output)

**Advanced**
  VLAN Tagging
  Virtual IP address (per interface)
  Network Time Protocol (NTP) client
  Domain Name System (DNS) client
  Static routing
  Port forwarding

**Utilities**
  Live bit rate monitoring
  Live packet loss ratio monitoring
  Speed test
  Traffic capture (network sniffer)
  Stream detection
  Ping

## Video Quality (VQ) Protection

### Jitter elimination
Configurable buffer (default: 500 msec)

Min configurable delay: 10 msec

Max configurable delay: 10 min

Transit delay (Fortress): 5 msec

Lock to PCR mode (CBR)

Lock to packet rate mode (VBR/CBR)

### Lost packets recovery
Automatic Repeat reQuest (ARQ)

SMPTE 2022 -1/2 FEC Tx

SMPTE 2022 -1/2 FEC Rx

FEC Rx to ARQ Tx conversion

ARQ Rx to FEC Tx conversion

Hybrid ARQ/FEC

### Advanced
Null packet deletion/reconstruction (NPD)

ARQ Prioritized Protection Flow (PPF)

## Service Continuity

### Adaptive
Controlled Adaptive Rate (CAR) per stream[1]

Multi Profile Distribution (MPD)

MPTS Dynamic Rate (MDR)

### Network Resources Sharing
Dynamic Load Share (DLS)

Load sharing per stream[1]

### No single point of failure (NSPOF)
Stream Duplication

Hitless input TS redundancy per stream

Input TS failover per stream[1]

Stream Input Redundancy (SIR)

Stream Output Redundancy (SOR)

Wakeup Peer DVP (WPD)

Multiple ISP connections

Multiple DHCP clients

Multiple default gateways

## TS Analysis and Statistics in Real-time

### PID, CC, PMT, PAT information
### PCR bit rate information
### ETSI TR 101 290 Priority 1, 2, 3
### Graphical Network Statistics (GNS)
TS number of lost packets

TS number of recovered packets

TS number of unrecovered packets

TS number of sync losses/disconnects

Input TS bit rate

Input TS Packet rate

Input TS packet loss ratio

## Security

### Local
Username / password protection

Integrated Firewall

### Remote
AES128 encrypted VPN

AES256 encrypted VPN

Remote DVP management via VPN

Remote site management via VPN

## Control and Monitoring
Peer DVP Statistics

Email alerts

Web UX

Alarms, Syslog, Event Logger

HTTP/HTTPS, Telnet / SSH

SNMP (v1, v2, v3)

REST

| | DVP VXU | DVP VXR | DVP10XU | DVP VM |
|---|---|---|---|---|
| **Operational Mode** | | | | |
| *Protector, Sentinel, Fortress* | YES | YES | YES | YES |
| *Virtual Machine* | N/A | N/A | N/A | ESXi Virtual Box KVM VMWare |
| **Video over IP** | | | | |
| *Interfaces* | | | | |
| 10/100/1000 Base-Tx | YES | YES | YES | N/A[1] |
| RJ-45 connectors | 3 | 5 | 5 | N/A[2] |
| 4-ports ASI IN, BNC connectors[3] | NO | NO | YES | N/A |
| ASI to IP Conversion | N/A | N/A | YES | N/A |
| *Capacity* | | | | |
| Max bit rate | 40Mbps | 60Mbps | 80Mbps | N/A[2] |
| Max number of TS | 16 | 16 | 32 | N/A[2] |
| **VPN** | | | | |
| *Max number of tunnels* | 8 | 8 | 16 | 200 |
| **Control and Monitoring** | | | | |
| *Remote Interfaces* | | | | |
| 10/100/1000 Base-Tx, RJ-45 | YES | YES | YES | N/A |
| Intelligent Platform Management Interface (IPMI) | NO | NO | NO | N/A |
| *Local Interfaces* | | | | |
| LCM (Status, Management IP address) | NO | NO | YES | N/A |
| RS-232 | YES | YES | YES | N/A |
| VGA | YES | YES | NO | N/A |
| **Environmental** | | | | |
| *Ambient Temperature* | | | | |
| Operational | -20-60°C -4-140°F | 0-40°C 32-104°F | 0-40°C 32-104°F | N/A |
| Storage | -20-70°C 4-158°F | -20-70°C 4-158°F | -20-70°C 4-158°F | N/A |
| *Humidity (non condensing)* | | | | |
| Ambient operational humidity | 5%-95% | 5%-95% | 5%-90% | N/A |
| Ambient storage humidity | 5%-95% | 5%-95% | 5%-95% | N/A |
| *Physical Dimensions* | | | | |
| Chassis (W x H x D) | 145x35x84 mm 5.8''x1.4''x3.4'' | 431x43x305 mm 17''x1.8''x12.1'' | 431x43x305 mm 17''x1.8''x12.1'' | N/A |
| Weight | 0.7 kg, 1.5 lb. | 7 kg, 15.4 lb. | 4kg, 8.8 lb. | N/A |
| *Power* | | | | |
| Number of power supplies | 1 | 1 | 1 | N/A |
| Input voltage | AC 100-240V @50-60 Hz | AC 100-240V @50-60 Hz | AC 100-240V @50-60 Hz | N/A |
| Max Power | 12VDC/2.5A 30W [4] | 220W | 150W | N/A |
| *Compliance* | | | | |
| CE, FCC Class A, RoHS | YES | YES | YES | N/A |

(1) Hypervisor dependent
(2) hardware platform dependent
(3) Hardware Option
(4) External PS adapter

| | DVP10S | DVP100S | DVP1000S | DVP1000 |
|---|---|---|---|---|
| **Operational Mode** | | | | |
| *Protector, Sentinel, Fortress* | YES | YES | YES | YES |
| *Virtual Machine* | N/A | N/A | N/A | N/A |
| **Video over IP** | | | | |
| *Interfaces* | | | | |
| 10/100/1000 Base-Tx | YES | YES | YES | YES |
| RJ-45 connectors | 4 | 4 | 4 | 7 |
| 4-ports ASI IN, BNC connectors[3] | YES | YES | YES | YES |
| ASI to IP Conversion | YES | YES | YES | YES |
| *Capacity* | | | | |
| Max bit rate | 100Mbps | 500Mbps | 1600Mbps | 800Mbps |
| Max number of TS | 16 | 80 | 200 | 200 |
| **VPN** | | | | |
| *Max number of tunnels* | 16 | 80 | 200 | 200 |
| **Control and Monitoring** | | | | |
| *Remote Interfaces* | | | | |
| 10/100/1000 Base-Tx, RJ-45 | YES | YES | YES | YES |
| Intelligent Platform Management Interface (IPMI) | YES | YES | YES | NO |
| *Local Interfaces* | | | | |
| LCM (Status, Management IP address) | NO | NO | NO | YES |
| RS-232 | YES | YES | YES | YES |
| VGA | YES | YES | YES | YES |
| **Environmental** | | | | |
| *Ambient Temperature* | | | | |
| Operational | 5-35°C -41-95°F | 5-35°C -41-95°F | 5-35°C -41-95°F | 0-40°C 32-104°F |
| Storage | -20-70°C -4-158°F | -20-70°C -4-158°F | -20-70°C -4-158°F | -20-70°C 4-158°F |
| *Humidity (non condensing)* | | | | |
| Ambient operational humidity | 8%-90% | 8%-90% | 8%-90% | 5%-95% |
| Ambient storage humidity | 5%-95% | 5%-95% | 5%-95% | 5%-95% |
| *Physical Dimensions* | | | | |
| Chassis (W x H x D) | 437x43x263mm 17.2''x1.7''x10.4'' | 437x43x366 mm 17.2''x1.7''x14.4'' | 437x43x366 mm 17.2''x1.7''x14.4'' | 431×43×415 mm 17''×1.8''×16.4'' |
| Weight | 5 kg, 11.1 lb. | 5.5 kg, 12.2 lb. | 5.5 kg, 12.2 lb. | 8.2 kg, 18.1 lb. |
| *Power* | | | | |
| Number of power supplies | 1 | 1 | 1 | 2 |
| Input voltage | AC 100-240V @50-60 Hz | AC 100-240V @50-60 Hz | AC 100-240V @50-60 Hz | AC 100-240V @50-60 Hz |
| Max Power | 150W | 220W | 275W | 275W |
| *Compliance* | | | | |
| CE, FCC Class A, RoHS | YES | YES | YES | YES |