

IP Internet Protocol in Broadcast Video production

A paradigm shift in the video production industry



Change in digital media consumption



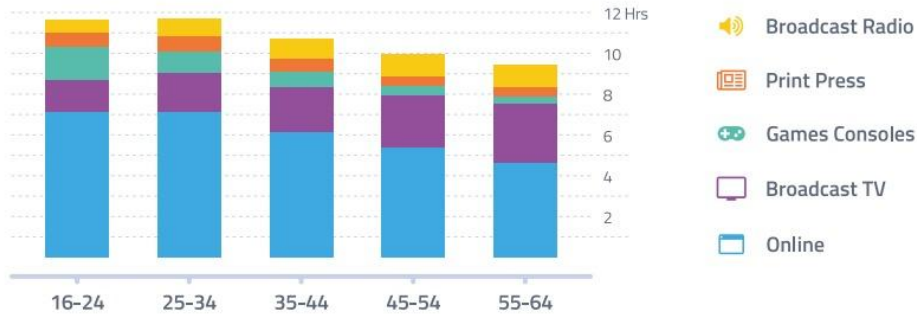
Change in digital media consumption



Change in digital media consumption

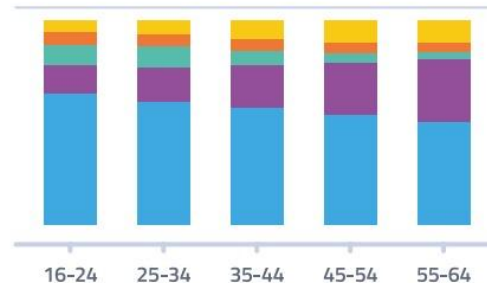
MEDIA CONSUMPTION BEHAVIORS BY AGE

Number of hours and minutes per day typically devoted to the following



Share of Total Media Time

| | 16-24 | 25-34 | 35-44 | 45-54 | 55-64 |
|-----------------|-------|-------|-------|-------|-------|
| Online | 64% | 60% | 57% | 54% | 49% |
| Linear TV | 14% | 16% | 21% | 26% | 31% |
| Games Consoles | 10% | 9% | 7% | 5% | 3% |
| Print Press | 6% | 6% | 6% | 5% | 5% |
| Broadcast Radio | 6% | 7% | 9% | 11% | 11% |



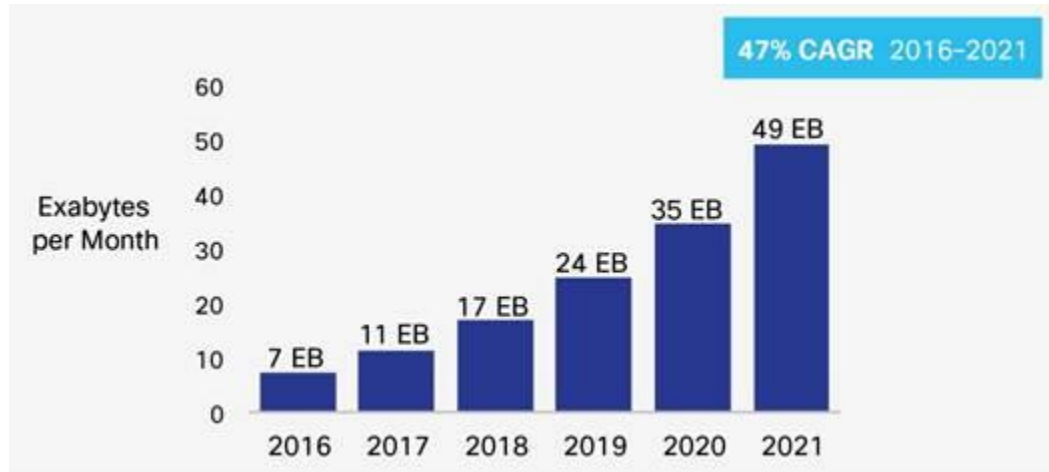
Question: Roughly how many hours do you spend on/doing the following each day?

Source: GlobalWebIndex Q1-Q3 2016
 Base: Internet Users aged 16-64 (global)

Answered: over 150k
 Russia: ~4000

Change in digital media consumption

Smartphones and smart devices changes the way we consume digital media and video content.

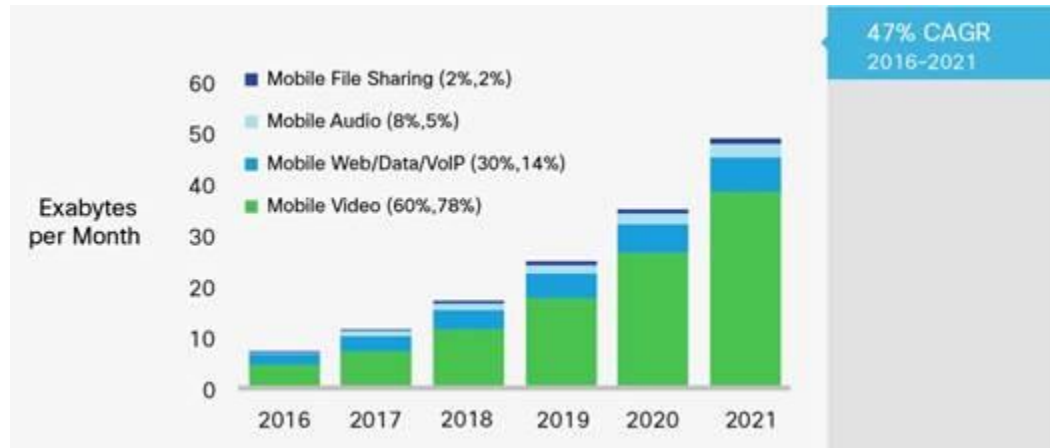


Global Mobile Data Traffic, 2016 to 2021

Source: Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2016–2021 White Paper

Change in digital media consumption

Smartphones and smart devices changes the way we consume digital media and video content.



Mobile Video Will Generate More Than Three-Quarters of Mobile Data Traffic by 2021

Source: Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2016–2021 White Paper

The background features a dark blue field with a network of glowing light blue lines and nodes, representing a complex network structure. The nodes are small, bright blue spheres, and the lines are thin, creating a web-like pattern.

NDITM Network Device Interface

Scale

Growing number of sources

Connectivity

How easy it will be for you to access
to sources

Delivery

Different media platform, different
content

Conversion

Disparate devices & formats

Encoding/Decoding

- DCT Compression Schema – like DNxHD or ProRes
- High Performance
- Encode 1080p at 2200 fps, 4K at 780 fps, and 8k at 210fps on modern Intel i7 based machines
- The peak signal-to-noise ratio (PSNR) of the NDI codec exceeds 70dB for typical video content.
- NDI has a technical latency of 16 video scan lines, although in practice, most implementations would be one field of latency. Hardware implementations can provide full end-to-end latency of within 8 scan lines.

Formats

- NDI fully supports all resolutions, frame rates, and video streams, with and without alpha channel. In practical terms, resolution and frame rates will be determined by the capabilities of endpoint devices.
- The most common implementations are expected to utilize 8-bit UYVY and RGBA video, however support for 10-bit and 16-bit is available. The internal pipeline of the codec is maintained entirely at 16-bit or better.
- NDI supports realtime transmission of video, audio, alpha channel, timecode, tally, control commands & metadata

High-Efficiency Mode – NDI|HX – PTZ and Connect Spark

- Allows for full resolution, full frame-rate video over wireless networks
- Allows for full resolution, full frame-rate video over limited bandwidth network environments

Pan / Tilt / Zoom camera support – greater precision and response – NDI PTZ

- Assimilates video, audio, tally and camera control
- Removes need for separate control device
- Eliminates complexity of signal flow and protocols

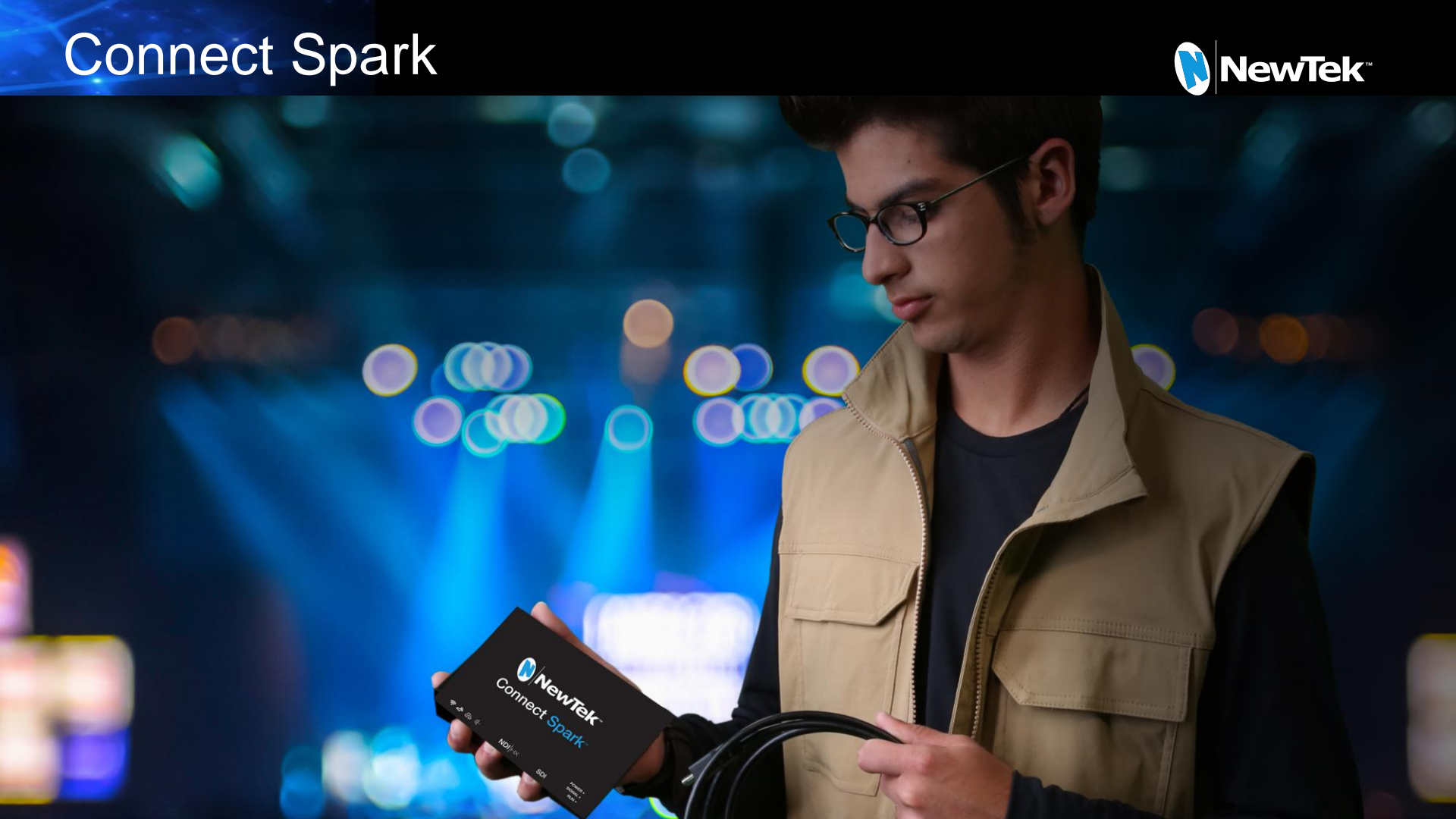
Improved Encoding Performance – lower latency; quality improvements

- Encodes on a modern i7-based machine at rates similar to those listed below:
- 8K at 320fps, 4K at 1000fps, 1080p at 2500fps

Multicast and Unicast Support – Unicast by default

- Allows for a single NDI source to serve to one or any number of destinations, limited only by network infrastructure

Connect Spark



Two models of Connect Spark



**HDMI
With Loop
Through**



**HD-SDI
With Loop
Through**



Connect Spark Layout



- Wifi Indicator
- SD Indicator
- Tally Light

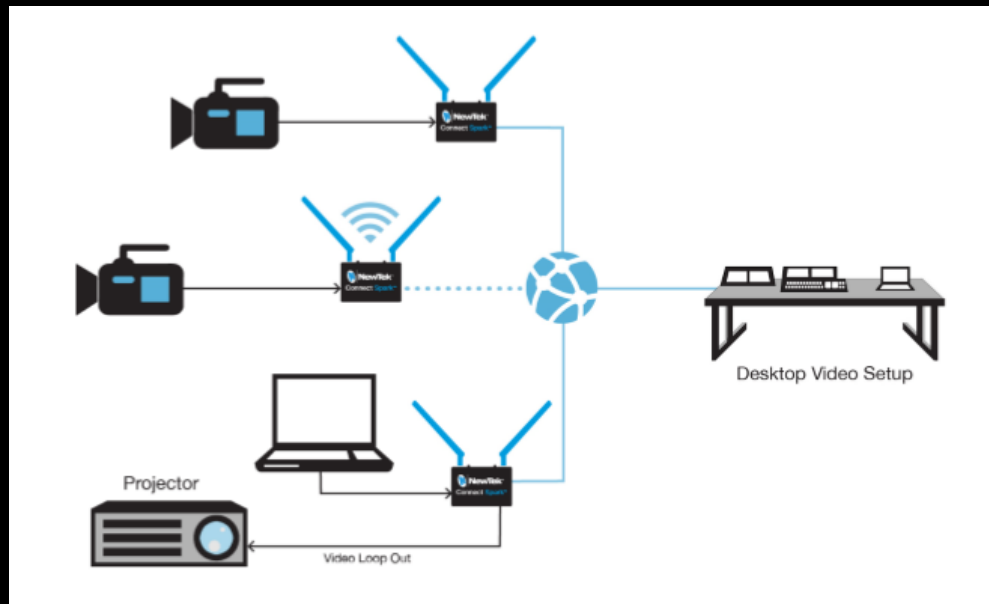
- Dual Antenna

*Micro SD Slot
(not shown)*

- 12v Power
- USB (supports storage)
- Audio In
- Audio Out

- Gigabit Ethernet (NOT PoE)

Bin the tielines...



- **Wireless or wired transmission**
- **Not just cameras... consoles... computers....**


Web interface for settings and control



NewTek Connect Spark NDI ?

Audio / Video Settings Administration

Video Input



Record

Stop Length 00:00:16 Drive Space Remaining 1.76 GB Download

Video Bandwidth

Low Medium High Audio Input Digital Analog

Volume

A black rectangular base with two blue antennas extending upwards and outwards. A white Wi-Fi symbol is centered between the antennas. The background is dark with blue light effects.

Say GOODBYE to cost, cables and confusion

Welcome to the fastest, easiest, and best way
to get video into your shows.

Say

HELL

to the fastest, easiest
way to get IP video
into your production.



NewTek NDI PTZ Camera



- 20x Optical Zoom
- Up to 1080p60 HD
- Tally Light
- Power Light

NewTek NDI PTZ Camera



- 12v Power or PoE
- Gigabit Ethernet
- USB
- RS232 in/out sockets

- RS422 (Wired)
- HDMI Out
- 3G-SDI Out



All through one cable...

NDI HX – High Efficiency



Video Bandwidth

Low

Medium

High

- Integral to NDI PTZ and Connect Spark
- Part of NDI 3.0
- Supported by 3rd party device manufacturers....



NewTek IP Series

Ecosystem Components



The NewTek IP Series Ecosystem





VMC1 Video Mix Engine

Live switching—without limits.



VMC1 Video Mix Engine

Live switching—without limits.

The NewTek IP Series Video Mix Engine is the nucleus of your interconnected production workflow, empowering your organization to ascend to a new level of quality, creativity, flexibility, and performance. Powered by NewTek's industry-leading live production technology, the Video Mix Engine is where the systems, devices, software, and sources in your workflow converge for mixing, compositing, and delivery with incomparable configuration and control.



VMC1 Video Mix Engine

Live switching—without limits.

- 4K UHD up to 60fps
- 4x 3G/HD/SD-SDI inputs & outputs
- NDI-enabled 3RU chassis
- 2x 10 GigE + 2x GigE NIC
- NewTek live production technology
- Digital, analog and network audio
- 8-M/E vision mixer, plus PREVIZ
- 44x external video sources (SDI + NDI)
- 4x media players
- 10x animated buffers
- 5x frame buffers
- 55x clip players
- 16x external audio mixer inputs (8 channel)



VMC1 Video Mix Engine

Live switching—without limits.

- 4x PGM outputs (SDI + NDI)*
- 4x local SDI source outputs (NDI)
- 4x media player outputs (NDI)
- 15x still frame buffer outputs (NDI)
- 8x dynamically routed outputs from any connected sources (NDI)
- 4x audio mixes (8-channel)
- 4x multiviewer outputs (Displayport/DVI/HDMI)
- 1x streaming encoder
- 4x ISO recording channels (QuickTime)
- Social media export

*Session formats greater than 1920 × 1080 are limited to one mix output
Quad Link 3G-SDI / NDI and three 3G outs via NDI

Software-Driven Live Production



4 Internal DDR Players



10 Animation Players



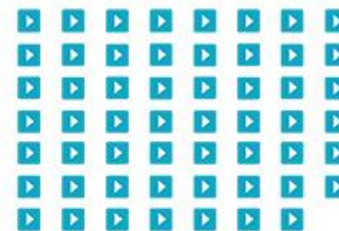
5 Still Buffers



44 Source Channels
(Includes Key & Fill)



MIX



55 Clip Players

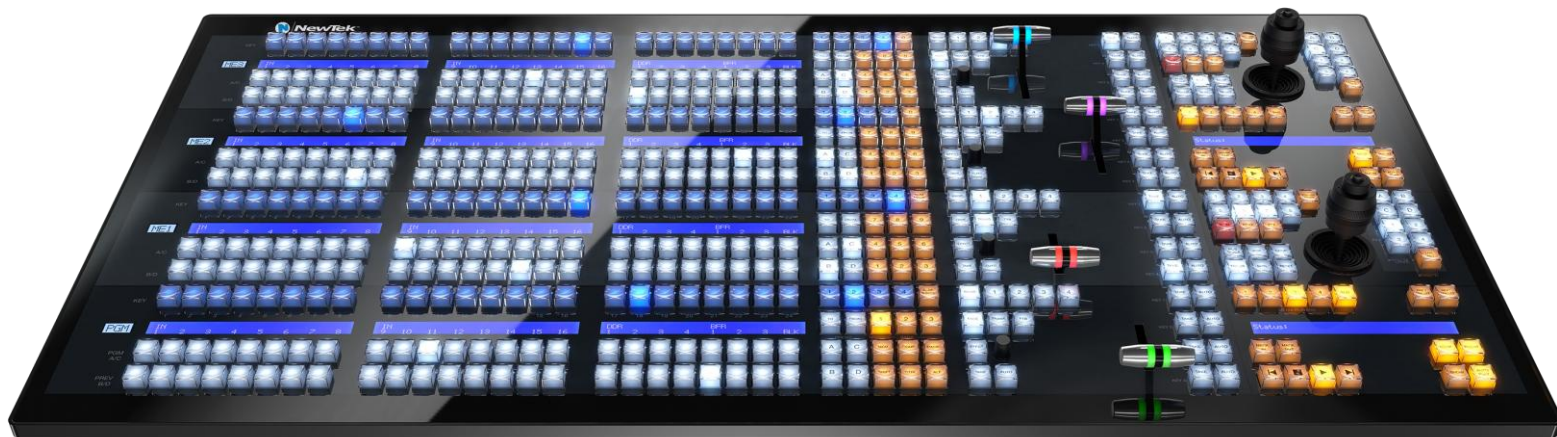
16 Audio Inputs
(8 Channels each)



Black Source Generator

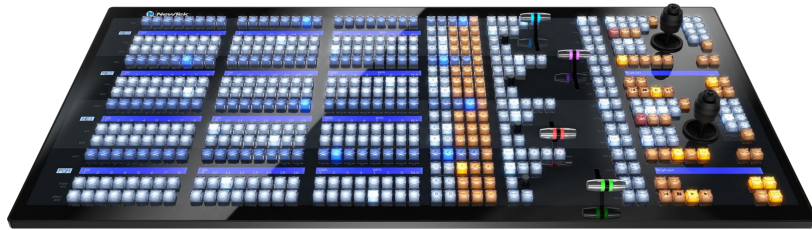
Multi-Destination Delivery





VMC1 4-Stripe Control Panel

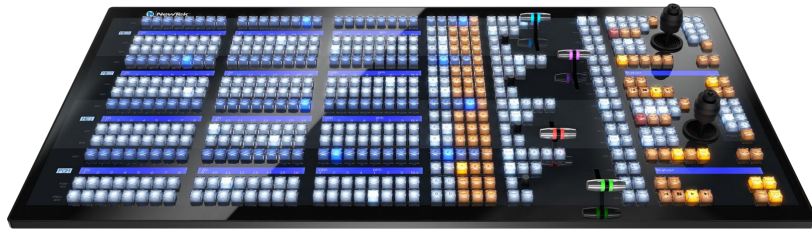
Assume command.



VMC1 4-Stripe Control Panel

Assume command.

The NewTek IP Series 4-Stripe Control Panel is the tactile interface that connects you to the systems, devices, software, and sources that form your interconnected production environment. Paired with the Video Mix Engine over your network, the 4-Stripe Control Panel delivers consummate control of the most sophisticated productions under the most demanding of circumstances.



VMC1 4-Stripe Control Panel

Assume command.

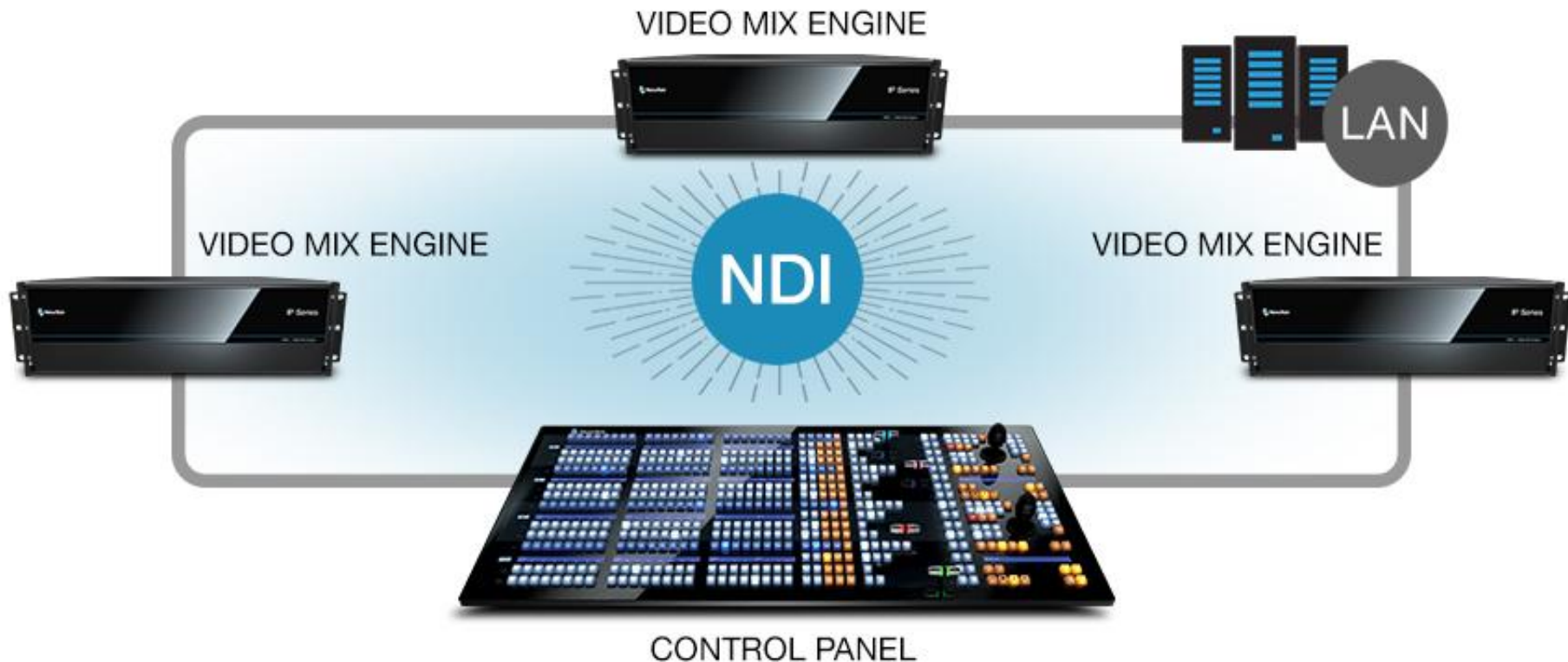
- Four independently assignable stripes with 72 total crosspoints per stripe
- Dynamic LCD stripe & switcher source label displays
- Ethernet connectivity to pair with NewTek IP Series Video Mix Engine over network
- Precision controls, premium hardware mechanics, and ergonomic design
- 4x multi-mode T-bars with variable illumination & 2x multi-purpose 3-axis joysticks
- Supports connection with & control of multiple Video Mix Engines



VMC1 2-Stripe Control Panel

Assume command.

Multi-Engine Workflow



NewTek NC1

I/O Connection Product Line

Product Details

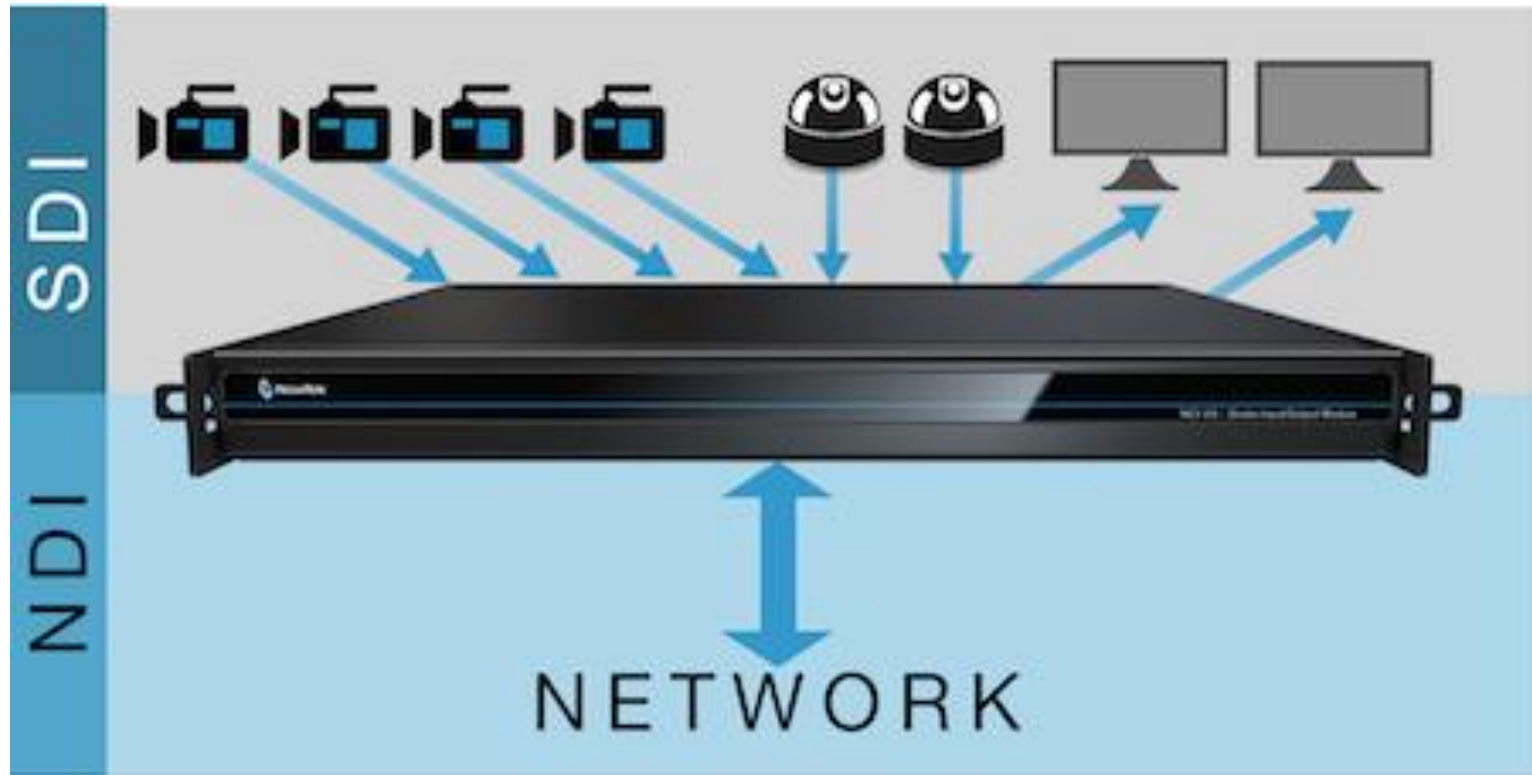


Workflow fusion at its finest.

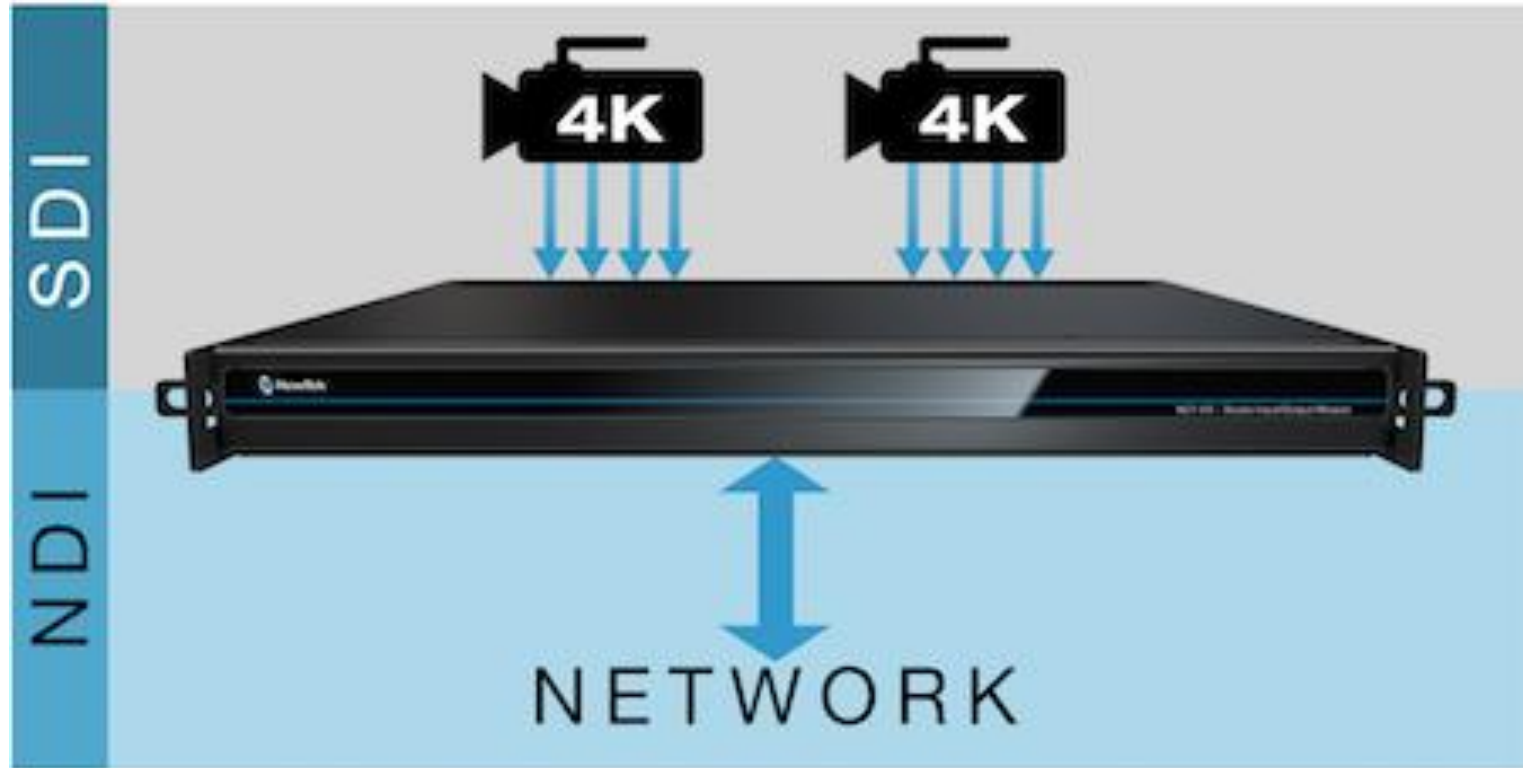
- NDI-enabled 1RU chassis with 8 x SDI connectors
- 8 video channels configurable for input, output, or a combination of both
- SDI/NDI conversion with near-zero latency
- Configurable Quad Link 3G-SDI for 4K UHD Input or Output
- 2x GigE network connectivity
- Compatible with IP Series and TriCaster
- Redundant Power
- MSRP: \$9,995 USD



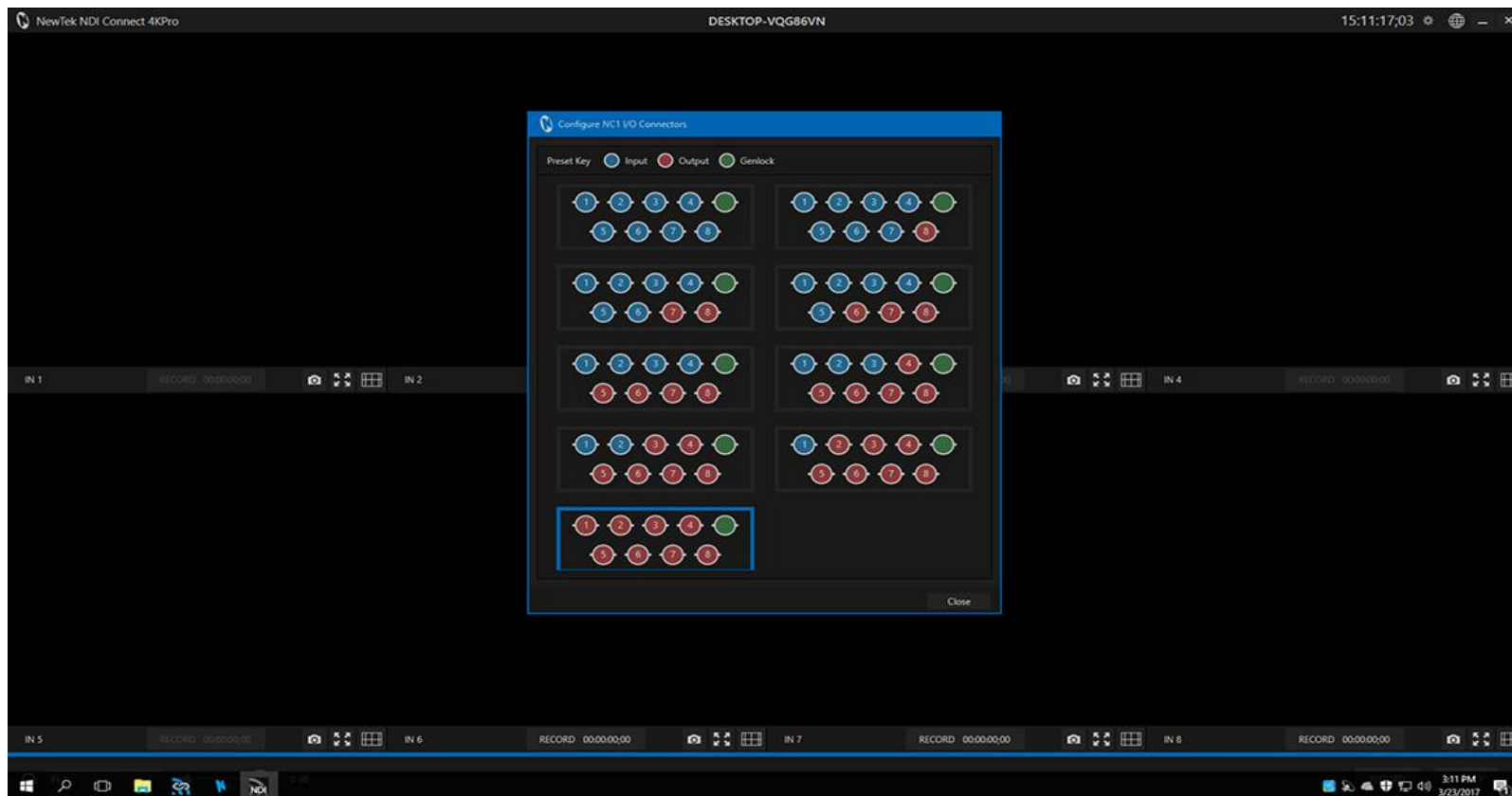
NewTek NC1 Studio I/O Module



NewTek NC1 Studio I/O Module



NewTek NC1 Studio I/O Module



Add inputs. Connect locations.

- NDI-enabled 1RU chassis with 4 x SDI inputs
- SDI to NDI conversion with near-zero latency
- 3G/1080p capable
- 2x GigE network connectivity
- Tally
- Compatible with IP Series and TriCaster
- MSRP: \$5,995 USD



Formerly known as VMC1 IN Studio Input Module

NewTek TriCaster TC1









Product Details



Introduction

- NewTek TriCaster TC1 is the most complete software driven live production, content creation and media publishing platform for the new video reality. Taking advantage of modern networking and computing technology to provide video professionals with advanced production capabilities and a future-ready workflow—today, NewTek TriCaster TC1 is the most capable and cost-effective production solution for creating more content and delivering to more platforms, while satisfying the demands—and schedules—of viewers.



- 4K UHD 2160p60 | 3G | HD | SD
- Single 4K output or 4 3G outs
- **16** external inputs* (NDI or SDI) with **4** M/E's
- **Native** IP processing
- NewTek's live production systems are the only ones with integrated **Skype TX** 
- **2** internal video servers with **4** IsoCorders
- **Stream** live or **publish** on-demand       
- Internal or NDI graphics
- Virtual sets
- **3x** multi-viewers



* May require NC1 input modules to handle all SDI sources

The One You've Been Waiting For.

- 2RU chassis or 3RU chassis with redundant power
- 2x GigE network connectivity
- 2 graphic players and 15 channels of buffers
- Digital and analog audio
- PTZ Camera Control
- 4x4x4 Audio Matrix Router



TriCaster TC1



2 Video Servers



2 Graphics Channels



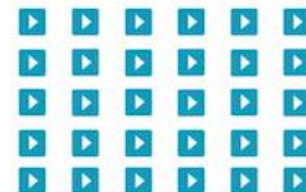
10 Animation Players



5 Still Buffers



16 External
Inputs
(Includes
Key & Fill)



30 Clip
Players

16 External
Audio Inputs
(4 Channels each)



 Black Source Generator

The One You've Been Waiting For.

- 16 External Sources (SDI+NDI)
 - 4K UHD @ 60p on every input
 - 15 Buffers
 - 2 Video Servers
 - 2 Graphics Players
 - 1 Black Source Generator
 - (SDI+NDI) 4 x PGM outputs*
 - (NDI) 4 x Local Input Direct outs
 - 3 x Multiviewer
 - (Record) 4x ISO recording
 - 2 x Streaming Encoder
 - Social Media Delivery
- Combine for up to 20 output channels

Combine for 36 source channels

3RU - \$19,995 MSRP (USD)

2RU - \$14,995 MSRP (USD)

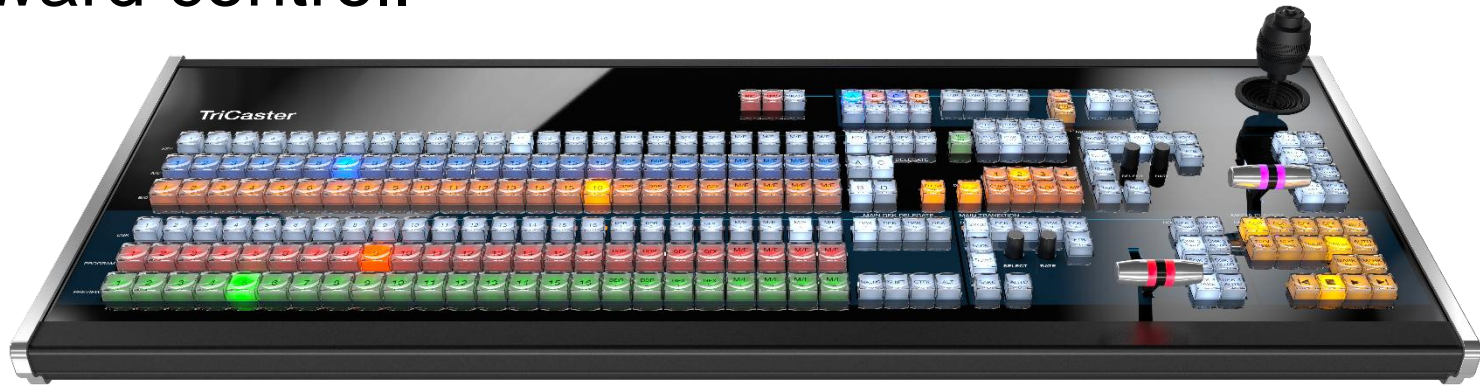


*Session formats greater than 1920 × 1080 are limited to one mix output
Quad Link 3G-SDI and NDI

TriCaster TC1 Control Panels



Forward control.



Forward control.

TC1LP | 24 source buttons | \$11,995.00 USD

TC1SP | 14 source buttons | \$6,995.00 USD

Enter the new video reality in complete command of your productions. With the modernized TriCaster TC1LP and TC1SP control panels, you have total control of the advanced capabilities and functionality of TriCaster TC1—in the physical design that best suits your workflow and budget.



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A paradigm shift in the video production industry

