

N-Series Networked AV solutions can be used in a wide range of environments: from small, isolated systems to larger, integrated deployments with complicated topologies. With this broad spectrum of use cases to support, N-Series development engineers have discovered networked AV solutions using multiple approaches, fostering the diversity necessary for covering as many networking scenarios as possible (while at the same time enhancing the balance between bandwidth, image quality, and streaming capabilities).

N-Series Encoders, Decoders, and Windowing Processors are divided into three main product series lines: N1000, N2000, and N3000. Although in most cases, these three product lines represent independent solutions that support a specific networking environment type, you must also take into account other compatibility considerations when designing the ideal system that will fit your project needs. This document provides basic system design guidelines with a focus on stream compatibility.

Product Details

An N-Series system is comprised of Encoders, Decoders, Windowing Processor units, Network Video Recording solutions, and Audio Transceivers. N-Series systems allow you to distribute HD video and audio across a Gigabit Ethernet network. This section provides details on the individual N-Series products available. Refer to the *N-Series Networked AV - Stream Compatibility Chart* on page 2 for more details.

N1000 Series

- **Minimal Proprietary Compression (MPC)** – Compatible across all MPC-enabled products.
- **Uncompressed** – N1000 and N2000-4K can be run in uncompressed mode with an inter-compatibility up to 720p (up to 1080p with scaling enabled). Uncompressed will also work with legacy N1000 products.
- **N1512 Windowing Processor** – Compatible with both MPC and uncompressed modes. The N1512 can input up to four streams and will output one MPC or uncompressed stream through a single port to the switch. The N1512 requires four additional gigabit connections to the network switch via the four **U0-U3** ports. Each **U** port supports one input stream to the Windowing Processor and requires a unique IP address.
- **N2510 Windowing Processor** – N1000 products can also be used with the N2510 *in uncompressed mode and for input only*. This use does require the N2510 to have additional gigabit connections to the network switch via the **U0-U3** ports. As mentioned before, each **U** port supports one input stream to the Windowing Processor and requires a unique IP address. The output of the N2510 Windowing Processor will be a JPEG 2000 N2000 stream.

N2000 Series

- **JPEG 2000** – Compatible across all current and legacy N2000 product lines with the exception of JPEG 2000-4K and N2300 4K Compressed Lite products. See the *N-Series Networked AV - Stream Compatibility Chart* on page 2 for seamless switching restrictions.
- **JPEG 2000-4K** – Compatible only within the 4K product line, however it can be recorded via an N6123 NVR.
- **Uncompressed-4K** – Compatible within the 4K product line at full 4K resolution as well as with N1000 Decoders up to 720p60 (1080p w/scaling enabled).
- **N2300 4K Compressed Lite** – Compatible only between the N2300 4K Compressed Lite Encoders and Decoders.
- **N2510 Windowing Processor** – Compatible across all current and legacy N2000 product lines with the exception of JPEG 2000-4K. Can input up to four streams and will output one JPEG 2000 stream. N1000 products can also be used with the N2510 *in uncompressed mode and for input only*. See the *N-Series Networked AV - Stream Compatibility Chart* on page 2 for seamless switching restrictions.

N3000 Series

- **H.264** – Uses industry-standard H.264 encoding and decoding methods and is directly compatible across all N3000 products. Can be run in SVSI Encoder, RTP, RTSP, HTTP Live, and RTMP stream modes. It also can be set up in either a unicast or multicast mode with the ability to output a multicast stream and a single unicast stream simultaneously.
- **N3510 Windowing Processor** – Compatible across all N3000 product lines. Takes up to nine inputs and then outputs a single H.264 stream. Also has a single, direct HDMI output.
- **Third-Party H.264** – The N3000 uses H.264 standards for encoding and decoding and can therefore be used with third-party H.264 networked AV products. HDCP protected sources cannot be streamed to third-party devices.

NOTE: H.264 implementations can vary greatly with each manufacturer, so it is best to test compatibility in-house with the N3000 units before specifying, designing, purchasing, and/or implementing a system with a mixed approach.

N4321 Audio Transceiver (ATR)

- **Audio Only** – Compatible across all product lines regardless of video stream type. Can input mic/line level analog audio to generate a network audio stream. Can also take any network audio stream, convert it to analog, and output balanced or unbalanced audio.
- **Audio Streams** – All audio streams are 100% compatible across all product lines regardless of video stream type.

N6123 Network Video Recorder (NVR)

Able to record and playback MPC, JPEG 2000, JPEG 2000-4K, N2300 4K Compressed Lite, H.264, and legacy uncompressed stream types including HDCP content. Not compatible with uncompressed 4K streams. Can also convert and remote copy recordings, as long as no HDCP content or tag is present. N2300 4K Compressed Lite does not have convert and remote copy capability.

N-Series Networked AV - Stream Compatibility Chart

	N1122 Encoder	N1133 Encoder	N1115 Wall Encoder	N1512 WP	N2122 Encoder	N2135 Encoder	N2151 Encoder	N2312 Encoder	N2510 WP	N3132 Encoder	N3510 WP	N4321 ATR	N6123 NVR
N1222 Decoder	●	●	●	●	☒	☒	☒	☒	☒	☒	☒	◆	●
N1233 Decoder	●	●	●	●	☒	☒	☒	☒	☒	☒	☒	◆	●
N1512 WP	●	●	●	●	☒	☒	☒	☒	☒	☒	☒	◆	●
N2212 Decoder	☒	☒	☒	☒	◻	◻	☒	☒	◻	☒	☒	◆	◻
N2222 Decoder	☒	☒	☒	☒	◻	◻	☒	☒	◻	☒	☒	◆	◻
N2235 Decoder	☒	☒	☒	☒	◻	◻	☒	☒	◻	☒	☒	◆	◻
N2251 Decoder	☒	☒	☒	☒	☒	☒	◆	☒	☒	☒	☒	◆	▼
N2322 Decoder	☒	☒	☒	☒	☒	☒	☒	▲	☒	☒	☒	◆	☒
N2510 WP	⌘	⌘	⌘	⌘	◻	◻	☒	☒	◻	☒	☒	◆	◻
N3232 Decoder	☒	☒	☒	☒	☒	☒	☒	☒	☒	⚙	⚙	↕	⚙
N3510 WP	☒	☒	☒	☒	☒	☒	☒	☒	☒	⚙	⚙	↕	⚙
N4321 ATR	◆	◆	◆	◆	◆	◆	◆	◆	◆	↕	↕	◆	◆
N6123 NVR	●	●	●	●	◻	◻	▼	☒	◻	⚙	⚙	◆	❖

Legend

●	N1000 MPC Mode 1920X1200@60	⚙	N3000 H.264 1080x1920@60
⌘	Only compatible if the N1000 is in Uncompressed Mode 720p60*	◆	N4000 Audio **
◻	N2000 JPEG 2000 1920x1200@60	↕	N4000 Audio (N3K requires that you enable the Audio Stream setting) **
◆	N2000 JPEG 2000 4K Compressed Mode 4096 x 2160@60 4:2:0 and/or Uncompressed Mode 4096x2160@30 4:2:2	❖	N6000 Network Transfer
▲	N2300 4K Compressed Lite 4096x2160@30 4:2:0	☒	Incompatible - Requires Transcode
▼	N2000 JPEG2000 4K Compressed Mode 4096 x 2160@60 4:2:0		

* 720p maximum resolution over the network. Note that the N2510 can bring in uncompressed streams, however it is not recommended as it can only output N2000 JPEG 2000 streams.

** Audio streams can be shared throughout all products as well as across streams regardless of video stream compatibility.