NEWTEK NDI™ –SOLVING PROBLEMS

11/21/2016

INTRODUCTION

Like any network based system, NDI depends on at least two machines or devices being able to connect and communicate with each-other; of course there are a number of reasons why this might not be successful in any environment. This document will help explain the most common issues and help you diagnose and correct them to get the full benefit of NDI.

OVERVIEW

Basically, NDI networking consists of just two operations:

1. It detects other NDI sources on the network using mDNS. mDNS uses port 5353.
2. NDI devices makes use of a messaging server on the sending device and number of video channels required. The NDI messaging server uses port **5960**. Video channels will then be used in ascending sequence to meet the total number of NDI streams available on the system. Ports must be open through the entire path between network subnets. (If NDI needs to be extended to multiple subnets or manual configuration is required due to mDNS broadcast being disallowed on the network, NDI can support the entry of IP address for specific devices.)

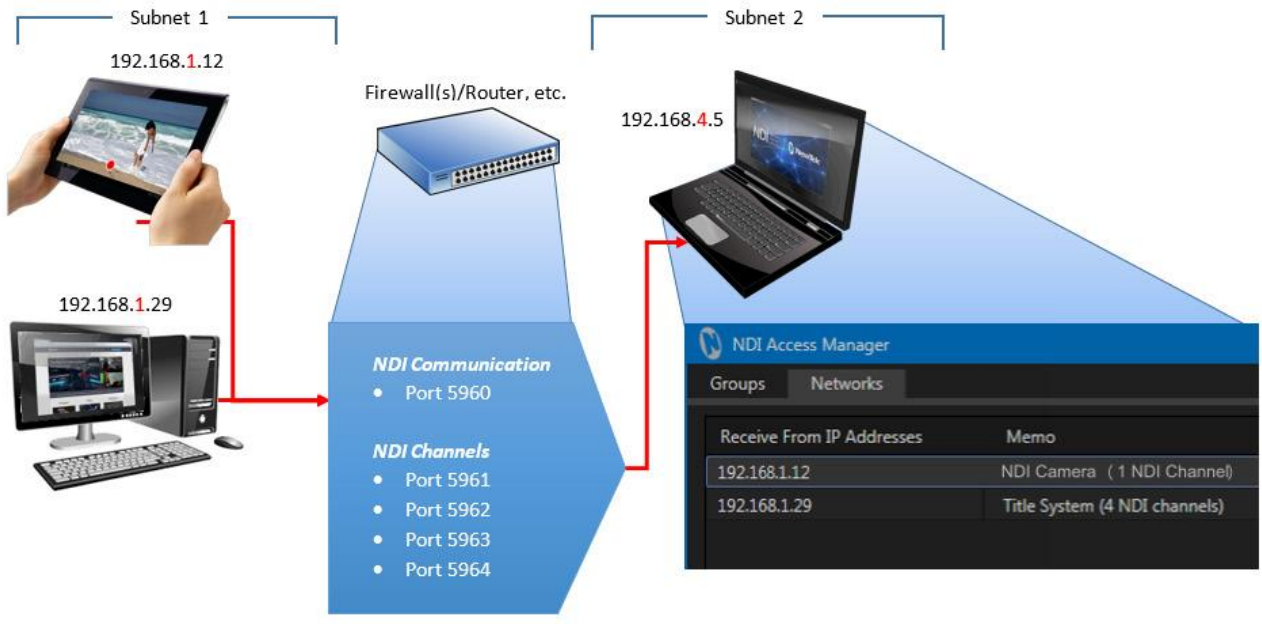

Figure 1. Sample Networking Scenario.

Total number of NDI channels matter – you must ensure that, starting from port 5960 and counting up, sufficient network ports are available for the maximum supplied by any one NDI source, plus one (for NDI server messaging).

Thus adding an IP Address for a system supplying one NDI channel to the 'Receive from IP' list means ports 5960 and 5961 must be available. Another source serving eight NDI channels requires ports 5960 – 5968 to be free, etc.

> *Hint: When multiple NICs are provided, NDI automatically takes advantage of the additional bandwidth for both send and receive operations.*

RESOLVING ISSUES

Obviously your local network router or switch must permit communication using the ports assigned to NDI. Although most common networks do not block the mDNS port, it is not uncommon for networks to be configured to block high port numbers. This would prevent NDI from transmitting video. Similarly, a software based firewall on the system itself might block the ports used by NDI. It is best to first test with firewalls turned off, then add the relevant firewall rules as needed. Note, too, that WIFI routers often block multicast traffic or transfer over certain port ranges between wired and wireless networks.

Please also note that Windows sets new network locations to Public by default. This location is designed to keep machines from being visible and responding to broadcast pings. This location type also affects mDNS responses and, in turn, keeps NDI video streams from being discovered and registered on the network. For successful discovery and registration of NDI, network locations should be set to Work or Home.

The Domain network location is used for domain networks, such as those at enterprise workplaces. This type of network location is controlled by the network administrator and cannot be selected or changed. In this type of configuration, mDNS discovery must be allowed at the domain level.

If you cannot see other NDI sources on the network, the three most common causes are:

1. The NDI sources might not be in the same NDI groups as you are monitoring. The easiest way to check this is to use the NDI Group Manager (provided in NDI Tools) and remove to all of the listed sending and receiving groups for both systems.

2. The mDNS ports are blocked on either the sender, receiver or network.

3. Computers must be on the same "sub-net" to automatically discover each-other.

If you can see other NDI sources on the network, the most common cause is that the port numbers required for video transfer are blocked by local firewalls, or by the network hub itself.

To debug failed connections, proceed as follows:

1. Run reliable NDI sending and receiving applications (such as NDI Test Patterns and NDI Video Monitor, both in NDI Tools) on the same computer system. This approach bypasses the local network infrastructure. If they fail to connect, then the problem is either your NDI group configuration, or local software based firewalls.

2. Connect two computers together using a network crossover cable. If NDI connections succeed in this configuration but fail when attached to the network, the network infrastructure is the most likely cause of the problem.

Hint: When selecting a network switch, it is useful to check throughput speeds. Ensure that ports are full duplex and that both upstream and downstream speeds for each port are at least 1 Gbps. It is best to force the ports on managed switches to utilize 1 Gbps (in contrast with allowing Auto Negotiation, which can sometimes result in 100Mb connections or even lower).

APPLICATIONS

NewTek iVGA PRO	This application is not supported for NDI, having been replaced by "NDI Scan Converter". The latter is included in NDI Tools, which you can download without cost from NDI.NewTek.Com
NewTek LiveText	Native NDI support is provided by LiveText 3.0, which will be a free download from the main NewTek downloads page.
NewTek TriCaster MINI, NewTek TriCaster MINI SDI, NewTek TriCaster 410, NewTek TriCaster 460, NewTek TriCaster 860, NewTek TriCaster 8000	Version 2-5 for these systems provides support for NDI using the Net 1 and 2 inputs and Network output. This update may be downloaded from the NewTek website.
TriCaster Advanced Edition	The TriCaster Advanced Edition version 3-2 provides support for NDI using the Net 1 and 2 inputs and Network output, and may be downloaded from the NewTek website. The upcoming TriCaster Advanced Edition IP version offers a complete, end-to-end, NDI and IP based workflow on every input and output.
Other TriCaster models	NDI has not been extended to other TriCaster models at the current time, but may be added in the future.
VMC1 Products (including VMC1 IN and OUT)	All models in the product family support NDI.
NewTek TalkShow	The TalkShow version 1-2 update (or better) available from the NewTek website adds full NDI support.
NewTek 3Play	In the very near future, software updates providing native NDI output for all current 3Play models will be available from the NewTek website.
Applications created prior to March 2016 by other vendors that support Network Inputs using AirSend	The "NewTek AirSend Updater", available from NDI.NewTek.Com, locates any AirSend applications and updates them to support NDI automatically.

KNOWN ISSUES

SCAN CONVERTER DISPLAYS BLACK OR INCORRECT VIDEO FOR SOME APPLICATIONS

When you have two discrete graphics cards (nVidia and Intel) then Windows is not correctly able to capture the application contents for some specific applications (e.g. Google Chrome). Disabling one of the GPUs will resolve this issue.

If windows AERO (also known as DWM) is disabled it is not possible to capture all application contents when other applications obscure them and so the relevant area of the desktop will be captured in that case.