

Polycom Engineering Solutions

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Network Port & Duplex Settings – Best Practices in Common Environments for All Polycom Video Endpoints

For Polycom ViewStation, VSX and iPower
Product Lines

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Intended Audience

This whitepaper is intended for video conferencing professionals who are familiar with the principles and practices ethernet speed and duplex settings, including auto-negotiation. As this whitepaper addresses setting the ports on both the endpoint and on the managed switch, network management personnel should read this too.

Scope

All generations of all Polycom video endpoints are addressed in this whitepaper. This paper does not cover audio endpoints, bridges, or servers for our enterprise applications products. This whitepaper encompasses tests with multiple switches from multiple vendors. The recommendations and results have been tested across such vendors as Cisco, 3Com, Dell, HP and others. In all of these cases, the switch software (firmware, OS, etc.) has been “current”, meaning that it was less than two years old for most vendors.

Documentation Conventions

If you see speed-duplex settings expressed as one setting followed by a slash (‘/’) followed by another setting, this convention indicates that the settings refer to both the endpoint’s port and the port on the switch into which the endpoint is plugged. In other words, Auto/Auto indicates that both the endpoint and the switch port have been set to Auto-Negotiate.

History

When port speed & duplex auto-negotiation was first introduced in the world of Ethernet, the technology was not consistently deployed across vendors, and often resulted in unpredicted problems. Veteran network administrators recall a time when using the auto negotiation feature rarely worked correctly. As a result, many network administrators reflexively employ hand-set speed and duplex settings even in modern networking environments.

In some popular vendor switch lines, for example, there were some known problems with auto-negotiation up until about two to three years ago. These problems have long-since been ironed out, however.

Some of the Polycom video endpoints from the iPower and ViewStation product lines date back to this time period when auto-negotiation technology was new. The full Polycom line of video endpoints, old and new, have recently been tested in a variety of switch environments on modern equipment. The below best practices apply to any and all switch environments roughly three years old and newer.



The Desired Goal & the Major Problem to Avoid

Whenever port setting-related issues result in a lesser quality video conferencing experience, the culprit is almost always duplex mismatch. If the port on the endpoint and the port on the switch are set (or auto-resolve) to different duplexes (10-Half/10-Full, 100-Full/100-Half, etc.) the resulting impact to the video and audio quality will be quite noticeable. Ensuring that your duplexes are matched is the single most important variable in the port settings. Symptoms of this problem are lost packets, CRC errors, collisions, etc.

The ideal situation is 100-Full/100-Full for the Ethernet connections on all video endpoints, rather this is set by hand or via auto-negotiation. This allows maximum bandwidth and best duplexing possible.

With both of these statements being said, 10-Half/10-Half is a perfectly acceptable port setting as well. The primary goal is to match duplex first, speed second, and to then achieve the best possible speed and duplex given the endpoint and the switch environment.

Best Practices – Your Switch Environment

If your switch environment is greater than three years old, you would be advised to update the firmware, software, OS, etc. to something more recent. Having older equipment running older software is not a guarantee that you will have problems – it merely means that your equipment most likely does not fall under the scope of the trials that were performed to produce these best practices.

Also, with certain vendors and models, problems with auto-negotiation have been seen within the last three years. A good rule of thumb whenever problems with auto-negotiation arise is to upgrade to the latest production (stable) firmware or OS on your switch.

If major packet loss, collisions or CRC errors occur (resulting in highly choppy video calls) work with your network management team to see if auto-negotiation failed somehow to achieve the desired duplex and speed settings. (You can also verify that both ports are set the same in the event of manual settings). In most customer environments with most Polycom endpoints, auto-negotiation will work correctly.

Other things to look for in dealing with port speed and duplex issues are any and all other links in the chain – do your IP calls go through a gateway, a proxy, a round-robin or HSRP router? When debugging IP issues, toggling the negotiation speed/duplex settings on these other links in the chain often has an impact on the quality of the results.

Remember that managed switches are just that – managed according to the policies of your network administrator(s). Coordinate with them for best results.

Mixing Auto-Negotiate and Manual Settings

Whatever setting you give the Polycom video endpoint, the switch on the back end should have the same setting. In most cases with most switch environments, and with most Polycom endpoints, having one port (endpoint OR switch) hard-set to a certain speed (10-Half, 100-Full, etc.) and having the other port (switch OR endpoint) set to Auto-Negotiate will result in more packet loss, collisions, CRC errors, etc. than if you set both ports the same way.

Best Practices – ViewStation Product Line

In all cases with the ViewStation product line (ViewStation, SP 128, SP 384, ViewStation MP, ViewStation 128, ViewStation 512, ViewStation FX, ViewStation EX, VS4000, etc.) the recommendation is to set both endpoint and switch to Auto/Auto.

On the older ViewStation products (such as SP and MP series), the only option for your port settings is Auto-Negotiate, and the UI makes no provision for manually setting the port. The age of these systems varies, with the oldest only supporting 10-Half and the newer ones being capable of 100-Full.

If you run into problems with older ViewStation products working at Auto/Auto, please contact Polycom support.

iPower Product Line

In most cases with the iPower product line, Auto/Auto is the preferred setup as well. In some very unique combinations of older iPower drivers and certain Cisco switches, our lab results indicated that setting to 100-Full/100-Full might be required. Drivers that feature “Legacy Mode” should be set to Auto or 100-Full, with Legacy Mode being the preferred setting over the generic 100-Full.

VSX Product Line

In all cases with the VSX product line (all models beginning with ‘VSX’ as well as the V500), set the ports to Auto/Auto for best performance.

As with the other product lines, Manually set your ports if necessary by coordinating with your network administrator(s).

