

## Switches recommended for use with DirectOut devices

DirectOut recommends using switches with PTP support for AES67/RAVENNA and Dante. If no PTP-aware switch can be used, a managed switch with configurable QoS and IGMP v2 support can be used instead. However, this will impact the quality of the PTP synchronization. If external (non-networked) devices are involved in the setup, PTP-aware switches are always required.

DirectOut devices were successfully tested with the following switches and Network Audio protocols:

<b>Artel Quarra Series [AES67/RAVENNA, Dante, Soundgrid]</b>	
<a href="https://www.artel.com/solutions/quarra/">https://www.artel.com/solutions/quarra/</a>	
PTP support	IEEE1588 v2, Transparent Clock and Boundary Clock modes
QoS	configurable (including QoS translation)
IGMP	v2 and v3 support
PoE	available
Switch:	<a href="https://www.artel.com/media-transport-products/quarra-ptp-10-gbps-ethernet-switch/">https://www.artel.com/media-transport-products/quarra-ptp-10-gbps-ethernet-switch/</a>
Configuration Guide:	<a href="https://www.artel.com/-/media/ae2aa6f06a624cc9b50cd7f6cb1f6251.ashx">https://www.artel.com/-/media/ae2aa6f06a624cc9b50cd7f6cb1f6251.ashx</a>

<b>Luminex GigaCore Switches [AES67/RAVENNA, Dante, Soundgrid]</b>	
<a href="https://www.luminex.be/products/gigacore/">https://www.luminex.be/products/gigacore/</a>	
PTP support	IEEE1588 v2, Transparent Clock
QoS	configurable
IGMP	v2 and v3 support
PoE	available
NOTE: Link Redundancy (RLinkX) is supported with Soundgrid, Link Aggregation (MultiLinkX) is not supported with Soundgrid.	

<b>Arista 7020TR48 [AES67/RAVENNA, Dante]</b>	
<a href="https://www.arista.com/en/products/7020r-series">https://www.arista.com/en/products/7020r-series</a>	
PTP support	IEEE1588v2, Boundary Clock
QoS	configurable
IGMP	v2 and v3 support
PoE	not available

<b>Netgear AV-Line M4250 [AES67/RAVENNA, Dante, AVB (additional license required)]</b>	
<a href="https://www.netgear.com/de/business/wired/switches/fully-managed/gsm4212p/">https://www.netgear.com/de/business/wired/switches/fully-managed/gsm4212p/</a>	
PTP support	IEEE1588v2, Transparent Clock
QoS	configurable
IGMP	NETGEAR IGMP Plus™
PoE	available