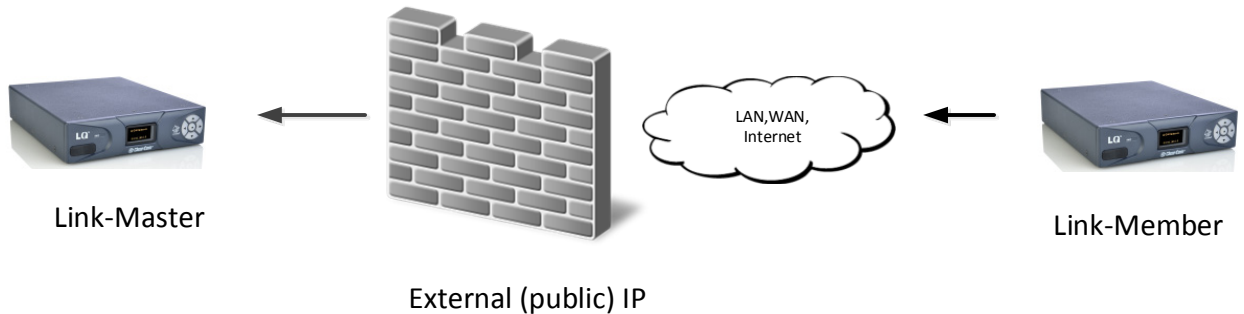


7 Internet connectivity



All devices within a Link-Group must have connectivity to the Link-Master on TCP port 80. When linking devices over the Internet, make sure that this connectivity is stable. Internet connection to an LQ device requires special configuration within your firewall (port-forwarding).

7.1 Getting an external IP address

When networking LQ devices over the Internet, an external IP address is required as a first step in making sure Link-Members can reach the Link-Master. The external (public) IP address must be static and non-changing. Normally an Internet Service Provider (ISP) will provide external addressing in Dynamic Host Configuration Protocol (DHCP) mode. This is not guaranteed to remain static but instead will change periodically. This will cause linking issues as the LQ devices will not be able to reach the master if the IP address changes. Therefore, it is suggested that you purchase a static address from your ISP. Failure to do this could result in a loss of service.

Note: Another alternative is to maintain DHCP addressing but use the Address Reservation feature available in most managed routers. This will instruct the router to allocate a specific DHCP address to an LQ device identified by its MAC address. The unit's MAC address can be retrieved through the LQ's front panel menu.

7.2 Port-forwarding

In order to facilitate connectivity to an LQ unit that is behind a firewall, certain ports need to be mapped from your firewall to the LQ device. This mapping will forward traffic received on those ports from the Internet directly to the LQ unit.

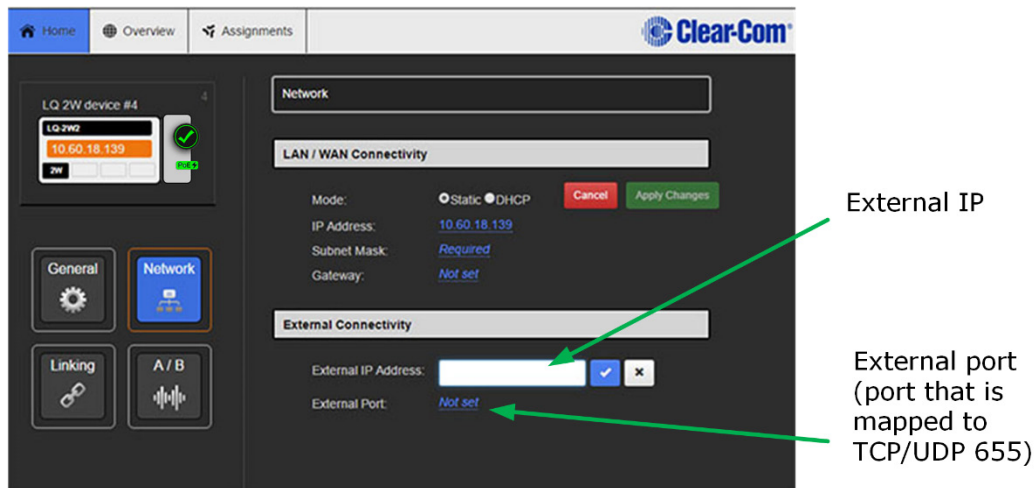
- The Link-Group uses TCP port 80 for link initiation and Web management.
- All the units use port 655 (TCP and UDP) for group connectivity and audio transmission.

7.3 How to configure the Link-Master to be externally reachable

Both the external IP address and the audio port forwarded within the firewall will need to be configured within the Link-Masters device configuration page.

7.3.1 Set Link-Master external IP address

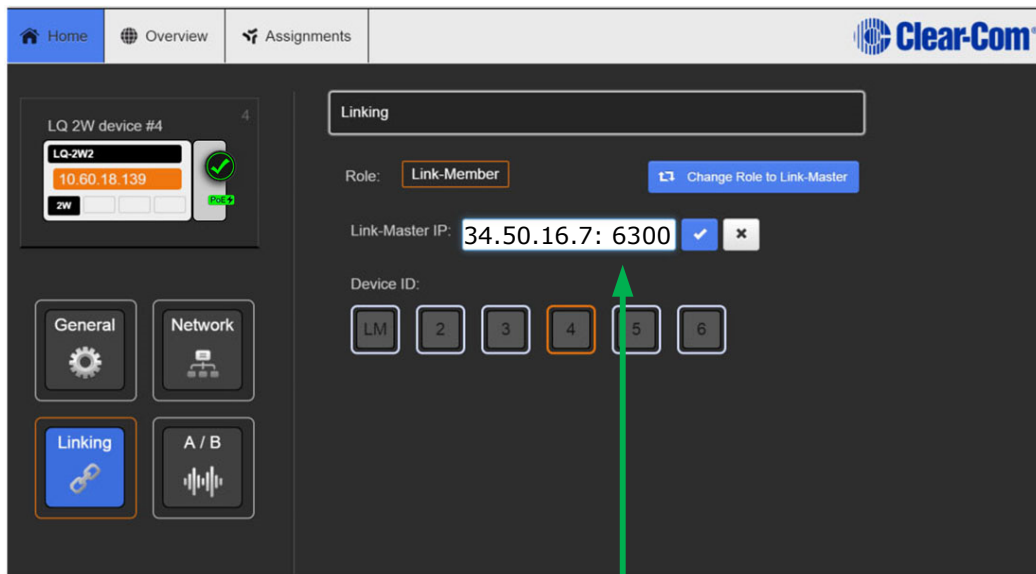
- 1) Navigate to the Link-Master's network configuration page by clicking on the Link-Master device in the **Overview** page and then the **Network** button.
- 2) Enter the external IP address which the Link-Master will be reachable from.
- 3) Enter the Port configured within the firewall that maps to the LQ device's audio port (TCP/UDP: 655).



7.3.2 Link devices to the remote Link-Master

- 1) Join an LQ device to the Link-Group by entering the IP address of the device, as displayed on the front panel, into your browser.
- 2) Navigate to the **Linking** page for that device and click **Change Role to Link-Member** (if currently in Link-Master mode).
- 3) Enter the Link-Master's external IP address and management port using the format [IP:Port].

Note: This must be the port that is mapped to port 80 within the firewall



Link-Master IP and external port if required.

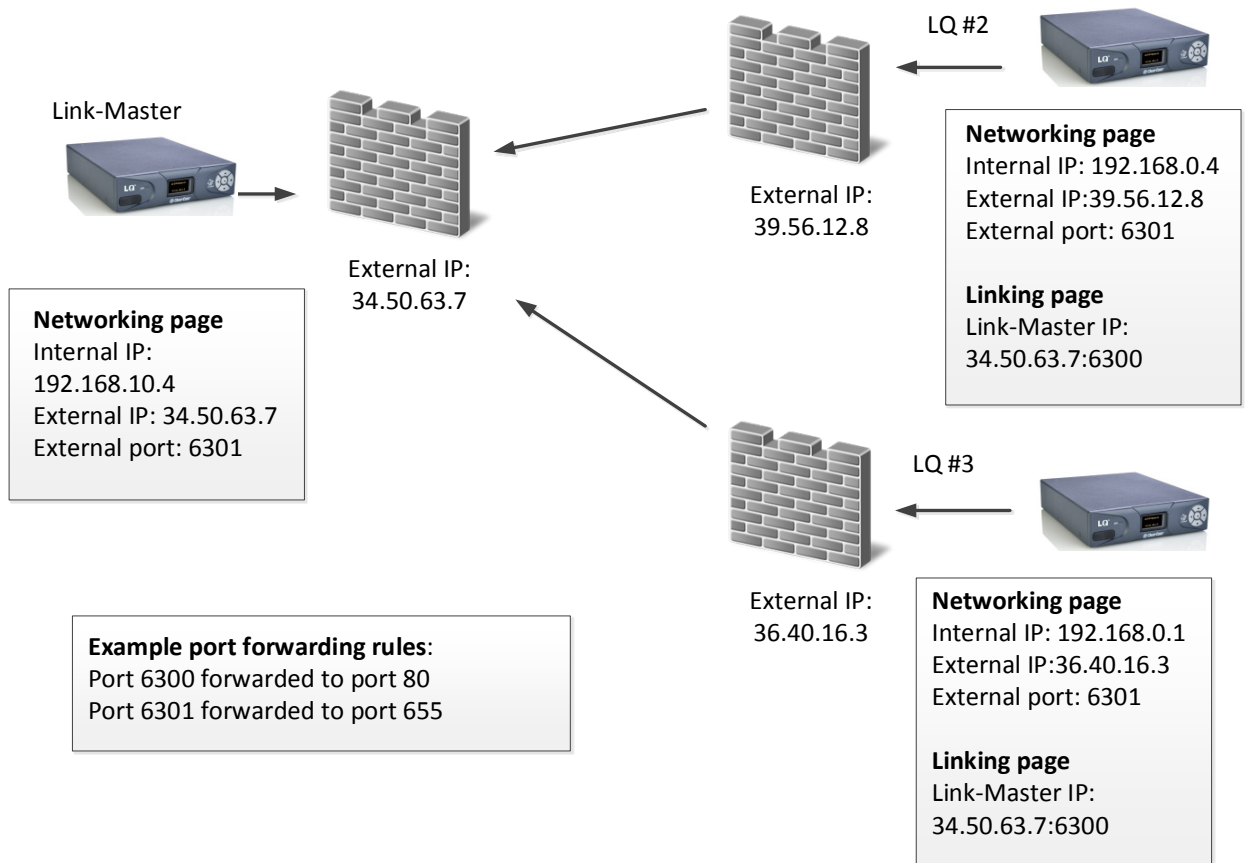
- 4) If the Link-Master is reachable on its management port, the available device IDs will be highlighted. Select one of the blue highlighted IDs and click **Apply Settings**.
- 5) Once the devices are successfully linked, all Link-Members will appear within the **Overview** page.

7.4 How to configure Link-Members to be externally reachable

Clear-Com recommends that all units in a Link-Group are reachable over the Internet. In some cases this will mean external (public) addressing of the Link-Members in a group as well as the Link-Master. This prevents a loss of service if the master is unobtainable for any reason and creates more efficient audio routing. Setting an external IP and interface port on individual Link-Members will reduce the risk of loss of connection if the Link-Master is unavailable.

Perform the following steps if connecting Link devices across more than two firewalls:

- 1) Navigate to the **Networking** page on each Link unit and input the external IP address and port number. See below for example IP addresses and port-forwarding.



Note: The external port set on the **Networking** page is the interface port (655), in this example port-forwarded to 6301.

Note: The external port set on the **Linking** page is the management port (80), in this example port- forwarded to 6300.