# Tech Tip
## Networking Troubleshooting and Best Practices

The most common problems can be caused by network configuration and out-of-date firmware. Router configuration and switches can prevent the DMS and MCA or multiple X5 zones from discovering each other on the network.

- ☐ The first step for troubleshooting is to check networking connections and power cycle the equipment to check for communication.

- ☐ Keep connections as simple as possible and connect only the DMS and MCA to a dedicated router directly. Once communication is confirmed, connect other devices back onto the network.

- ☐ A dedicated wireless N router is recommended. Best practice is to have the MCA and DMS hard wired directly to the router.

- ☐ ISP supplied modem/router combination devices may have incompatible settings that can cause issues between the DMS-3.1 and C-Series controllers (see tips below). It is recommended not to use these modem/router combination devices, because the end user may not have access to all services of the device. The ISP may have sole control over the device settings and send updates to reset, reinitialize, or replace the device at their discretion.

- ☐ Check for **firmware updates** available for your Russound equipment to make sure the MCA and DMS is up-to-date to take advantage of any additional features and supporting services. From the SCS-C5 programing software: Tools menu > System Check.

- ☐ The MCA and DMS3.1 GUI can be access via a web browser by typing in **http://mcac3** , **http://mcac5 or http://dms31** respectively**.** If this fails it could be an issue with NBNS port 137 on the network. Alternatively, the IP address of the Russound equipment can be used to access the GUI.

- ☐ Use a network discovery and IP scanning application that can assist to better understand the network, such as FING. http://overlooksoft.com/ FING is free and available for iOS and Android and can assist in identifying devices on the network and if there are any IP addressing conflicts.

☐ If you are experiencing issues, we will often request a **FING** report along with the following information:

> Router - brand and model:
> Switch - brand and model:
> Service Provider:
> Symptoms:

☐ **Router Configuration**: A few routers may need additional configuration to prevent incompatibility or intermittent connection issues. Access the router and check user accessible settings that enable support for **Multicast** or **IGMP** or check for options that are actively filtering these protocols and disable.  For example, if a customer can connect to a website or the MCA's Admin page (Unicast) but a Multicast stream (like Airplay) or the DMS-to-MCA communication is intermittent or fails, you will need to check these settings.

- Check for other options that could have an effect on communication: Options such as **UPnP** should be <u>enabled</u>
- Options such as **IGMP Proxy**, **IGMP Snooping**, **Multicast Filtering** or **WMM Proxy** should be <u>disabled</u>.

# Glossary

**Unicast**: The delivery of a message or information to is sent from one point to another point.  An example would be connecting to an IP address or a URL such as www.google.com.

**Multicast**: The delivery of a message or information from one-to-many destination computers simultaneously in a single transmission.

**IGMP: Internet Group Management Protocol**: An integral part of IP Multicast and is used for one-to-many networking applications such as online streaming audio and video, gaming, and allows more efficient use of resources when supporting these types of applications.

**UPnP: Universal Plug and Play**: Allows device to device networking of media servers and streaming devices.

**WMM: Wireless Media Management** is a Quality of Service for Wireless networking that is a subset of 802.11e and provides basic prioritization of data packets based on four categories - voice, video, best effort and background.

**NBNS: NetBIOS Name Service:** NBNS serves to translate human-readable names to IP addresses and can run on top of several different network protocols. Example "mcac5: is the NetBios name of the MCA-C5 controller on the network.

## Ports and Services

- **MCA-C3/C5 and X5**:    TCP ports 9620-9621
- **DMS-3.1**:       TCP ports 9651-9653
- **NBNS**:        UDP 137
- **Apple Bonjour** (AirPlay and the MyRussound app) include the following:
  - **mDNS/Bonjour**:  TCP port 5353, multicast IP = 224.0.0.251
  - **AirPlay** (Additional) TCP ports 1027-1028
- **Streaming Radio** includes: TCP 5000 or 6000, 80, 139, 445,
             UDP 53, 137, 138

- For instructions on making sure these ports are open, please consult the support materials of your router/gateway/switch.

## Common Router Configurations

**Here are some examples of commonly used Routers and how to configure them to work with our systems and Airplay:**

- **Verizon Fios - Actiontec MI424-WR -** Login to the router > Routing > Advanced; Look for an **IGMP Proxy** setting \if there, click on this\set to **disable**\click Apply**.** Or **IGMP**  > Disable and Submit
- **ASUS Routers: RT-N56U RT-N66U -** Enabling "Multicast" traffic fixed it for all devices (iPhone and iPad, DMS, MCA) Login to Router > Wireless > Professional > Multicast to HTMIX 130/144 or Enable Multicast.    IGMP Snooping: Wireless > Professional > Disable IGMP snooping.
- **Linksys Router: E1000, E1200, E1500, E1550, E4200 other models -** Multicast is filtered by default. Login to the Router and select Security > Filter Multicast should be <u>deselected</u>.

- D-Link Router: DIR-825, DIR-615, and DIR-655 - Log into Router > Advanced Tab > Advanced Network > Enable UPnP and Enable Multicast Streams should be <u>selected</u>