Tuning the RAVIN Control Channel

The information in this article applies to:

RAVIN 2.0 Service Pack 2 (RAVIN 2.1) and higher, RAVIN Control Channel, RAVIN Media Server, RAVIN Engine, RAVIN Communicators

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Summary

This knowledgebase article will help you understand how to tune the RAVIN control channel (RTMC) to find the best network bandwidth utilization while still ensuring that the RAVIN Communicator and OEM-partner clients receive the appropriate RTMC data. Please note, this is an advanced feature of RAVIN, and should be used with care.

Overview

RAVIN 2.0 and beyond employs the use of the RAVIN Control Channel to transfer status & presence information across the RAVIN domain. This RAVIN Control Channel uses an implementation of Secure Reliable Multicast (SRM) to transfer this data across the network.

The RTMC is used to identify to all RAVIN users who is currently online as well as their status (e.g. Available, Away, On the Phone, etc.) and other information like “Speaking” or “Typing” when a user is typing a text message.

To generalize, there are several layers between the application the user uses and the network. It looks something like this:

RAVIN Application ← → RAVIN Engine ← → RAVIN Control Channel ← → RMT ← → IP Network

Where RMT is the Reliable Multicast Transport.

When the RAVIN Application (e.g. RAVIN Dispatch Communicator) changes its status from Available to Away, the application communicates that to the Engine, which in turns passes it to the Control Channel, which finally translates it into an RMT message that is sent on the network.

There are several types of RMT messages including data messages, SYNC messages and NACK messages. Data messages include data such as the User ID, User name and other data set by the application such as status or “speaking” or “typing”. SYNC messages are messages sent on the Control Channel by the originating participant to alert all other participants on a particular

channel that the last message sent was number *nnn* from the originating participant. NACK messages are sent by other channel participants when they have received messages out of order or realize they are missing a message from a particular participant.
As part of its overall reliability algorithm, the RAVIN Control Channel will (by default) over-send packets (i.e. the sending of additional packets). Over-sending allows participants to receive the majority of packets. However, over-sending of packets results in additional network bandwidth utilization - a concern that must be taken into account especially in Wide Area Network (WAN) environments.

Please note, this is an advanced feature of RAVIN. . Mis-configuration of this feature could cause RAVIN to stop functioning, and impact your network environment as a whole. Please use with care.

Also, please note that NICS strongly recommends up-front planning of the over-send factors and tweaking them during install and initial testing to find the best results.

Content

Over-sending Control Channel data is a good way to ensure all participating clients will receive the necessary Control Channel data without having to request the information again.

With RAVIN 2.0 Service Pack 2 (RAVIN 2.1) and later, NICS will allow you to configure the over-send rate of the data packets as well as the SYNC packets.

Example:
Data over-send rate of 2
SYNC over-send rate of 3
Sample data packet of 512 bytes.

With the above configuration, there will be 1,096 bytes of data sent across the network. That is (512 x 2) + (24 x 3) = 1,096 bytes and a total of 5 packets.

Note: the over-send rate includes the original packet of data to be sent. So, the data over-send rate set to 2 sends out the initial data packet and one extra copy of it. The SYNC over-send rate set to 3 sends out the initial SYNC packet and two extra copies of it.

The above values are used for the majority of Control Channel data packets (e.g. status updates, users coming online, etc.).

Let's take the above example a little further. Instead of just one client on the network, let's say that 250 clients join the network simultaneously. Each client coming online generates a data packet of 512 bytes. If we leave the over-send rates the same as above, there will be 1,096 x 250 = 274,000 bytes of data and 1,250 packets sent across the network.

The above over-send values are the default in RAVIN 2.1. NICS has found that these settings work well over a wireless connection that could be considered a somewhat lossy network.

However, you may be running RAVIN across a network that is more or less stable and requires tweaking to these over-send values.

The below instructions will show you how to change the over-send values. Before changing these values, please keep the following things in mind:

1. Increasing the over-send values does not need to be done in parallel; you can increase one over-send value and decrease another.
2. Increasing the over-send values will increase the likelihood of all participants receiving the appropriate data and SYNC messages the first time.
3. Decreasing the over-send values will significantly decrease the amount of network bandwidth utilized by the Control Channel.

For best practices, you should use small and concise channel names and user names as this data is part of the Control Channel data packets sent across the network.

To change the over-send values for data and SYNC packets, please perform the following:

1. Login to the RAVIN Management Server as an Administrator.
2. Navigate to System / System Settings.
3. Change the URL that appears in your web browser window from …/system_settings_form.asp to …/internal_system_settings_form.asp (add internal_ before system_settings_form).
4. Hit enter.
5. Click the Edit button.
6. Locate the entry for **RAVIN.ctrlstream.global.oversendfactor** and change the value to a number from 2 to the one of your choosing. This is the data packet over-send value.
7. Locate the entry for **RAVIN.ctrlstream.global.syncfactor** and change the value to a number from 3 to the one of your choosing. This is the SYNC packet over-send value.
8. Click the Save button.
9. Navigate to Channels / Channels and click the "Commit Changes" button.
10. Restart all components that use the RAVIN Control Channel including all RAVIN Media Servers, RAVIN Communicator Clients and any OEM clients that use the Control Channel.

Note: in steps 6 & 7 above, you **MUST NOT set the value to 0**. Setting the value to zero will cause no data to be sent on the Control Channel.

Reminder: in steps 6 & 7, the over-send factors include the value for the original packet being sent – in other words, setting these values to 1 means that only one data packet and one SYNC packet will be sent with no over-send.

MoreInfo

NICS cannot provide hard & fast settings for the over-send factors due to many conditions including, but not limited to, every network topology being different. NICS strongly recommends that the Systems Integration Partner changes these numbers until the right combination of over-send factors is found so that network bandwidth utilization is kept to a minimum but that all participants on a channel are receiving the appropriate data in an acceptable timeframe.

To help our Systems Integration Partners more easily trace how many packets the Control Channel is generating, NICS will soon distribute Ethereal dissection plugins that filter specific packets as well as assist in creating IO graphs that track the number of data and SYNC packets being sent on the network. These tools will more easily help users create the optimal over-send factor settings.

Notes

NICS **does not** officially support making changes to the internal_system_settings_form table. These changes are **at your own risk**.

There is the possibility that by incorrectly changing the over-send factor values, you can harm the network and/or the RAVIN domain. NICS urges you to make these changes/tests on a lab or development network first.
