



Release Notes:

Helix Server 12.0.0

Helix Proxy 12.0.0

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Table of Contents

1.	VERSION INFORMATION.....	2
1.1	File names:	2
2.	HARDWARE/SOFTWARE REQUIREMENTS.....	3
3.	NEW FEATURES IN HELIX VERSION 12.0.0.....	3
3.1	Fast Channel Switching	3
3.2	Enhanced Rate Adaptation	3
3.3	Multi-core Scalability	3
4.	DOCUMENTATION ADDITIONS	3
4.1	Security Updates	3
4.2	Memory Allocation	3
4.3	PSTACK Installation.....	4
4.4	Windows Registry Update.....	4
4.5	Cross Version Plug-in Compatibility.....	4
4.6	RTPLive Legacy Mode Support	4
4.7	Reduced Startup Delay Configuration.....	4
4.8	Fast Channel Switching	5
4.8.1	Fast Channel Switching and Super-blocked Content.....	5
4.9	Major Issues Fixed in Release 12.0.0	5
5.	KNOWN ISSUES AND WORKAROUNDS IN RELEASE 12.0.0	6
5.1	Admin System.....	6
5.2	Alternate Mount Point.....	6
5.3	Broadcast Redundancy	6
5.4	Content Distribution	6
5.5	Fast Channel Switching	6
5.6	General Server and Proxy	6
5.7	Installer.....	7
5.8	IPv6.....	7
5.9	Live	7
5.10	Logging.....	7
5.11	Media Data Pipeline / Enhanced Rate Adaptation	7
5.12	Multicast	7
5.13	Reduced Startup Delay	7
5.14	SLTA	7
5.15	SNMP.....	8
5.16	Windows Media Support.....	8
5.16.1	Windows Media Support with Windows Media Player 11	8
5.16.2	Windows Media Content using HTTP and Redundancy	10
5.16.3	Multicasting using Windows Media.....	10
5.17	Crash Avoidance Issues (CAs) and Memory Leaks	10
6.	CHECKSUM.....	11

1. Version Information

Release: Helix Server 12.0.0 and Helix Proxy 12.0.0

Version: 12.0.0.1095

Build: servproxyall-042408-11628

Release Type: General Availability

Products: Helix Server, Helix Proxy

1.1 File names:

Windows Server and Proxy Software:

rs1200-ga-win32.zip

px1200-ga-win32.zip

Linux Server and Proxy Software:

rs1200-ga-linux-rhel4.tar.gz

px1200-ga-linux-rhel4.tar.gz

Solaris 10 Software:

rs1200-ga-solaris-10.tar.gz

px1200-ga-solaris-10.tar.gz

Documentation:

HelixServerAdmin.pdf

HelixServerConfig.pdf

HelixProxyAdmin.pdf

HelixProxyConfig.pdf

Note: not all files are distributed with all distributions.

2. Hardware/Software Requirements

Supported Platforms:

- Redhat Enterprise Linux 4
- Solaris 10
- Windows 2003 Server

Additional information about platform configuration recommendations for operating systems and hardware available at:

http://www.realtnetworks.com/resources/contentdelivery/server/recommended_platforms.html

3. New Features in Helix version 12.0.0

3.1 Fast Channel Switching

Fast Channel Switching provides a mechanism for users to switch between multiple pieces of compatible content, in a shorter period of time, and with little or no rebuffering. Switches are controlled by sending http signal requests to the Helix Server to switch the input stream, while maintaining the client-server connection.

3.2 Enhanced Rate Adaptation

An improvement to the Media Delivery Pipeline (MDP) feature, allowing for easier, more straightforward configuration, better end-user experience, and better overall QOS, and more effective rate adaptation and management.

3.3 Multi-core Scalability

The Helix platform is now designed to take better advantage of processors with multiple cores, and multi processor systems, providing improvements in both scalability and stability on such systems.

4. Documentation Additions

4.1 Security Updates

Please review the recent Security Update and Incident Report. The most recent posting can be reviewed by visiting <http://www.service.real.com/help/faq/security>

4.2 Memory Allocation

The Helix Server and Proxy consume memory on a per-client basis. The amount of memory consumed will vary, according to the nature of the presentation streamed to each. Memory is allocated by using the `-m #` command line flag at startup, where # is the amount of memory to allocate, in megabytes.

For example, starting the server with the command `Bin/rmserver rmserver.cfg -m 512` would allocate 512 megabytes of memory to the server process.

Memory allocation limits of Helix Server and Proxy:

- Solaris: 4GB
- Linux/i386: ~2.8GB
- Windows: 2 GB (the OS is limited to 2 GB also)

About Memory-Mapped I/O

Since the server uses memory-mapped I/O that is not counted as part of this -m shared memory segment, additional memory should be reserved for mapped I/O. Not doing so may result in a significant performance penalty. The amount of memory needed for memory-mapped I/O varies with the number of clips being played and the bit rate of those clips. Generally reserving about 30% of the system memory for memory-mapped I/O is a good rule of thumb, but when setting this variable, one should monitor the system performance and watch for sudden changes in performance such as page faults.

4.3 PSTACK Installation

There are known stability issues on Solaris and Linux systems running Helix Server and Helix Proxy which don't have pstack installed. Pstack is installed and configured on Solaris by default, however if you are running RHEL4, you will need to install and configure pstack for reliable Helix Server and Helix Proxy operation. You find the pstack package by searching for "pstack" under Packages at <http://rhn.redhat.com>. Please refer to your Linux documentation for instructions on installing or updating package files.

4.4 Windows Registry Update

When running the Helix Server and Helix Proxy on Windows, it will be necessary to increase the Default Send Buffer size in the operating system. To do this you will need to add a value to your Windows Registry.

1. Launch the Registry Editor from the Start→Run... option by typing the **regedt32.exe** command
2. Traverse through the tree to the following branch:
 - a. HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\AFD\Parameters
3. Add a new DWORD Value to the key called **DefaultSendWindow** and set that value to **32767** (decimal).
4. Restart your Windows 2003 Server machine.

This change will prevent poor QOS for clients connecting to live broadcasts over TCP.

4.5 Cross Version Plug-in Compatibility

Plug-ins are not binary-compatible between v9/v10 and v12 on Linux and between v11 and v12 on Solaris due to changes in compiler versions. The plug-ins need to be recompiled with the updated build environment to be useful.

4.6 RTPLive Legacy Mode Support

A configuration variable has been added to fix an issue with live streams using RTP which caused sync, and other QOS issues. The variable is <Var RTPLiveLegacyMode="1"/>. When this flag is set to 1, RTP transport forces initial RTPtime and sequence to be 0. After a PAUSE, sequence will be the last sequence number of RTP packet plus 1 and RTPtime will reflect the elapsed time between the PAUSE and PLAY request (i.e. RTPtime is offset only at the initial PLAY request). This is in accordance with 3GPP specifications.

4.7 Reduced Startup Delay Configuration

It is possible to increase the limit on RSD packet buffer queue duration through the following configuration variable:

```
<List Name="LiveReducedStartupDelay">  
  <Var MaxDurationOfRSDPacketBufferQueue="90"/>  
</List>
```

The default value for this is 70 seconds and the units are in seconds. The above section is not present by default in the configuration. It needs to be added manually and the value adjusted accordingly.

4.8 Fast Channel Switching

Ensure that when selecting content which will be switchable that any live streams are available at the Helix Server when the client switches to them. Don't setup FCS with Pull Split streams, as the Helix Server will need to request the stream before it can switch to that content.

4.8.1 Fast Channel Switching and Super-blocked Content

There are a number of issues which can arise with Fast Channel Switching when serving .RM content which can be avoided with content created in a certain manner. Normally created .RM content enables "super-blocking", which leads to a number of potential issues when using FCS. These issues can include unexpected rebuffering, blocky video, occasional video freeze, and video QOS degradation over time (issues are related to the pre-roll length, clip lengths, and the number and frequency of switches). Many of these can be avoided by disabling "super-blocking" when creating content. This can be done by adding the following line to the mediaProfile section of your encoder job file:

```
<maxPacketInterleavingDuration type="duration">0</maxPacketInterleavingDuration>
```

4.9 Major Issues Fixed in Release 12.0.0

1. Using '?' characters (or the escaped equivalent) within the query parameters of a URL no longer returns a file not found error.
2. No longer experiencing higher than normal amounts of packet loss for inbound streams using UDP.
3. The video portion of SLTA streams no longer stops displaying if no client attempt is received for that stream within ~15 minutes of starting the SLTA stream.
4. SLTA no longer fails for DRM enabled mount points.
5. Various inaccuracies in the Helix Proxy monitor and statistics with SSA enabled have been fixed.
6. Setting the ExtraMediaRate value greater than 100 no longer causes the default value of 20 to be used.
7. Setting the Helix Proxy's DefaultStreamPageSize greater than 32768 no longer causes the Helix Proxy to fall back to pass-thru mode.
8. The MDP rate manager can now be used for client's which don't support 3GPP or Helix Adaptation.
9. IP Binding will now bind to the IPv6 loopback address (::1)
10. The Helix Admin Monitor will now correctly display bandwidth for connections from a Quicktime player
11. Issue where the parent proxy in a chained proxy split sometimes drops the connection after a period of 2 keep-alive intervals has been fixed.
12. Issue where the Helix Server would not stream content created by ffmpeg has been fixed.
13. Issue causing a delay in the startup of live RTP streams has been fixed.
14. Issue where using PreferClientTCP="1" would sometime fail has been fixed.
15. Live Archiving has been fixed.
16. Issue where cloaked Quicktime playback sometimes abruptly ceases after ~65 seconds has been fixed.
17. Issue with occasional CPU spike when playing Windows Media content.
18. Fixed key mismatch using DAUC with the Helix Proxy.
19. Issue which broke chained Helix Proxies has been fixed.
20. Fixed several default configuration and Helix Admin System settings which were in error.
21. A large number of issues with the Media Data Pipeline (MDP) functionality have been fixed.
22. Several minor 3GPP Rel6 compliance issues have been addressed.
23. Numerous crash avoidance detection (CA) situations fixed.

5. Known Issues and Workarounds in Release 12.0.0

Below is a summary of known issues in stability and functional areas of the Helix Server 12.0.0 and Helix Proxy 12.0.0.

5.1 Admin System

1. Clicking on some pages of the Helix Admin System will cause extraneous 404 errors in the server's logs.
2. Changing the Transmitter Source name in the Admin System requires a server restart for the change to take effect, however the Admin System will not notify the user that this is required

5.2 Alternate Mount Point

1. Alternate Mount Point with the same (duplicate) List Name does not log an error in Error.log. The Alternate Mount Point feature can be configured via the configuration file only. Currently there's no GUI interface for this function.

5.3 Broadcast Redundancy

1. When sending a live feed to the Helix Server, if the filename has multiple periods in it then broadcast redundancy generates multiple alternative files available. This means that one live feed being sent in is duplicated potentially hundreds of times (depending on the number of dots in the original filename).

5.4 Content Distribution

1. If no "/" mount point exists in the rmserver.cfg and Cdist is configured, the Content subscriber sends the wrong URL to the Content publisher when looking for content and therefore returns a "404 - File Not Found." The default mount point must always exist in order for the feature to work as designed.

5.5 Fast Channel Switching

1. Switching between live and either on-demand or SLTA using Enhanced AAC+ or AAC+ content will fail to successfully switch with a non-compatible error.
2. There are a number of QOS issues involving very low bit-rate, short, and fast-preroll .RM clips, including unexpected rebuffering, blocky video, occasional video freeze, and video QOS degradation over time (related to the pre-roll length, clip length, and the number and frequency of switches). These can be avoided by using the "super-block" workaround discussed in section 4.8.1.
3. FCS session GUID will occasionally not get released by the Helix Server.
4. 3GPP content served via RDT, and using delayed switches will freeze on some content. Use PreferRTP if you experience this issue.
5. With Live Pause disabled in the RealPlayer, playback using FCS will sometime hang.
6. Issues exist serving multirate content when the client switches to a stream at a rate other than the highest rate.
7. FCS related parameters are not getting logged in the Helix access log for HTTP switch requests.

5.6 General Server and Proxy

1. System time changes of more than a few seconds while the server is running, and particularly while the server is under load can cause severe memory leaks and potentially restarts. This sort of system time change may be triggered by NTP services, daylight savings changes, or simply by manual date/time changes. We recommend disabling these sorts of services on systems running Helix Server and Helix Proxy, and that time adjustments be made during server down times, or times of low load.

2. MDP never uses packet aggregation and PPM always does, regardless of the setting of the RDTPacketAggregation variable.
3. The Helix Server will respond with a 501 error code if (and only if) an unknown RTSP verb is the first verb encountered in the RTSP session. This conflicts with the RTSP standard, however it should have no real-world impact.

5.7 Installer

1. The silent/non-interactive installer option has been removed.
2. Operating a v12.0.0 Helix Server or Proxy with an earlier version Helix configuration file is not supported, and may have unforeseen consequences.

5.8 IPv6

1. Binding to all IPv6 addresses (“::”) will prevent the RHEL4 Helix Server from starting.

5.9 Live

1. The Helix Server will drop the RTP encoder video presentation when multiple SDP files referencing the same presentation are present in the SDP file directory.

5.10 Logging

1. Superfluous error messages are displayed to stdout on Helix Server startup, and are written to the error log:
E: UASPath C:\Program Files\Real\Helix Server\ClientProfiles\ cannot be read from
E: UASPath C:\Program Files\Real\Helix Server\ClientProfiles\ cannot be written to; Admin System updates can only be written to the Helix configuration file

These errors are incorrect, and can be ignored.

5.11 Media Data Pipeline / Enhanced Rate Adaptation

1. If no "Default" UAS is found, unrecognized User-Agents will receive a 404 error in response to any DESCRIBE request.

5.12 Multicast

1. When configuring Scalable Multicast, “VirtualPath” values cannot be numeric only; “2” won’t work, but “2a” will

5.13 Reduced Startup Delay

1. Setting the variable “CPUThresholdToDisableRSD” to 100 will roll the value back to the default of 65; 99 is the highest value the system will recognize.

5.14 SLTA

1. SLTA crashes abruptly if started with a non-Fully Qualified Domain Name.

5.15 SNMP

1. The SNMP v1 user name must be set to “public” for traps to function properly
2. The Trap Interval value has no effect
3. The Master Agent doesn’t return an error message if it is started with an invalid configuration
4. The Master Agent doesn’t return an error message if authentication information is invalid
5. The Master Agent prints an error when starting without a community string being configured; this error message should be ignored
6. Setting the trap values for CPU or MaxConnections to zero doesn’t disable these traps; you must set them to a value which is high enough that it won’t be reached
7. ServerStart trap is never sent
8. The CPU usage trap is never sent

5.16 Windows Media Support

1. Windows Media 9 live streams won’t work if hosted from SLTA
2. Windows Media Player will sometime give an error when attempting to connect to the server using ASXGen
3. Windows Media Push Splitting fails if setup to use TCP on an IPv6 network
4. Windows Media streams fail to connect to the Helix Proxy via an IPv6 network
5. Windows Media clips will not play properly if clicked on in the Content Browsing window
6. There are various logging errors, which occur when playing MMS through the Helix Proxy

5.16.1 Windows Media Support with Windows Media Player 11

Windows Media Player 11 no longer requests media using the MMS protocol. When it encounters an MMS URL for on-demand or live content on Helix Server, the player attempts to access the clip in the following order:

The player first requests the stream over HTTP, issuing an HTTP request in one of two possible ways:

1. If the MMS URL explicitly contains an MMS port number, the player directs the HTTP request toward that port on Helix Server. In this case, the request fails because Helix Server does not listen for HTTP requests on its MMS port. The standard port used for MMS on Helix Server is 1755.
2. If the MMS URL does not provide a port number, the player directs the HTTP request toward Helix Server port 80. If Helix Server uses port 80 for HTTP, the request succeeds and the server delivers the stream as cloaked MMS. If the server does not use port 80 for HTTP, however, the request fails.
3. If the HTTP request fails, the player sends an RTSP request to Helix Server port 554, the standard RTSP port. This request always fails regardless of the RTSP port that Helix Server uses. This is because Helix Server does not support the streaming of Windows Media content over RTSP.

Supporting Windows Media Player 11

You can update your streaming media system to provide Windows Media Player 11 with an alternate HTTP URL whenever it requests an MMS URL. The HTTP URL will contain the appropriate Helix Server port number for the player’s HTTP request. Once the player makes the HTTP connection, Helix Server delivers the stream as HTTP-cloaked MMS.

Note that the HTTP connection used to deliver cloaked streams to Windows Media Player 11 is **not** managed the same as HTTP requests from browsers. You therefore do **not** need to add the mount points under which the Windows Media content resides to the HTTPDeliverable list in the Helix Server configuration file. The content is delivered only to the media player, and is protected against browser caching and user download.

Updating your system requires the following actions:

1. Modify an existing Helix Server configuration value for the ASXgen utility. This causes Helix Server to provide an alternate HTTP URL to any Windows Media Player that requests an MMS URL.
2. Update any .asx files linked to Web pages to include an alternate HTTP URL.

Modifying ASXgen

ASXgen is a Helix Server utility for launching Windows Media Player from a Web page link. Helix Server is configured with a mount point named /asxgen/, which you add to a Web page link for Windows Media content. For example:

```
<a href="http://helixserver.example.com:8080/asxgen/video.wmv">Play Windows Media</a>
```

When Helix Server receives an HTTP request that contains the /asxgen/ mount point, it sends a MIME stream that causes the browser to launch Windows Media Player. This MIME stream instructs the player to contact Helix Server on its MMS port, and explicitly provides the MMS port number (typically 1755).

To support Windows Media Player 11 for on-demand and live streams, you configure ASXgen to provide an alternate HTTP URL along with each MMS request. This alternate URL includes the actual HTTP port number used by Helix Server. After the initial MMS URL returned by ASXgen fails, Windows Media Player 11 requests the stream using the alternate HTTP URL.

To configure ASXgen to Support Windows Media Player 11:

1. Using any text editor, open the Helix Server configuration file (rmserver.cfg). This file resides in the Helix Server main installation directory.
2. Find the ASXgen configuration list and variables:

```
<List Name="ASX File Generator">
  <Var ShortName="pn-asxgen"/>
  <Var MountPoint="/asxgen"/>
  <Var HaveAltHTTPURL="0"/>
</List>
```

3. Enable the HaveAltHTTPURL variable by setting its value to 1:

```
<Var HaveAltHTTPURL="1"/>
```

4. Save and close the configuration file. A Helix Server restart or a "kill -HUP `cat ./Logs/rmserver.pid`" command is required unless the modification is done through the Admin page (see below).

To make the change from "HaveAltHTTPURL=0" to "HaveAltHTTPURL=1" without any restart can be done through the Helix Administrator page. The setting can be found in "Server Setup/Ports" as "Enable HTTP Fail Over URL for ASXGen" – where it can be changed from "No" to "Yes." Finally clicking on "Apply" enables the new setting.

Updating ASX Files

If you direct Windows Media Player to MMS streams using ASX files, you can update the files to include an alternate HTTP URL. Simply add a second REF entry to the same content, using an HTTP URL that indicates the Helix Server HTTP port number. For example:

```
<ASX Version = "3.0">
  <ENTRY>
    <Ref href = "mms://helixserver.example.com:1755/wmvideo.wmv"/>
    <Ref href = "http://helixserver.example.com:8080/wmvideo.wmv"/>
  </ENTRY>
</ASX>
```

Note: Updating ASX files is not required only if the MMS URL in each file does **not** contain an explicit MMS port number and your Helix Server uses port 80 for HTTP connections.

Using a Proxy

Windows Media Player 11 does not provide an option to use an MMS proxy. Instead, its player preferences contain options to use an HTTP proxy and an RTSP proxy:

1. For the HTTP proxy, you can select any HTTP proxy available to you. You cannot use Helix Proxy, however, because Helix Proxy does not proxy any media using HTTP.
2. For the RTSP proxy option, you can specify Helix Proxy. Note the following, however:
3. Because Helix Server does not support Windows Media over RTSP, Helix Proxy cannot proxy any Windows Media content residing on Helix Server for Windows Media Player 11. Streams originating from Helix Server can be delivered only by an HTTP proxy as HTTP-cloaked MMS.
4. Helix Proxy can proxy on-demand and live, RTSP-based Windows Media streams originating from a Windows Media Server. However, all streams are delivered in pass-through mode only. Helix Proxy does not cache on-demand clips or split live streams.

5.16.2 Windows Media Content using HTTP and Redundancy

1. "LiveEncoder Redundancy" does not work with Live feeds from Windows Media Encoder (due to the fact that Windows Media Player v11 is now the standard which only allows HTTP connections to Helix server for content).

5.16.3 Multicasting using Windows Media

Starting the multicasting without using Windows Media Encoder causes Crash Avoidance on server. Access with administrative rights is necessary in order to encounter this issue. The following example list the necessary reproduction steps:

1. Configure Windows Media Encoding & Windows Media Multicasting as per the Admin Reference Guide
2. Click on Broadcasting
3. Click on Windows Media Multicasting.
4. Click on Stop Transmitting Check box.
5. Kill the Windows Media Encoder.
6. Make Enable Broadcast as a Yes & Click on Apply. It will start Transmitting Channel.
7. Again click on the Stop Transmitting Check box.
8. After few seconds the server will generate Crash Avoidance instances.

5.17 Crash Avoidance Issues (CAs) and Memory Leaks

1. Requests for .RP content where listed media files are missing will result in a CA.
2. Unused SDP files in the SDP file directory, and having directory scanning enabled will cause the Helix Server to leak memory.
3. Using the "Unblocking Rate Manager" to server .smi or .mp3 files will cause the server to CA when clients request those file types. It is advised that you select another rate manager if you are serving that type of content with MDP or ERA.
4. Restarting the Helix Server with an active RTP Live stream connected will occasionally cause the Server to CA following the restart, and for the live stream to not be available.
5. The Helix Server binary will start up with a Helix Proxy license installed (instead of a Server license), however it will CA during attempted playback.
6. If the streamer count is significantly higher than the processor count (4x or more), the Helix Server will display a memory leak.
7. The Helix Server will CA when attempting to switch to content distributed content with non switchable media.

6. Checksum

MD5 Checksum	File Name
5e9c1e40ff5850869966265867b9a83f	px1200-ga-linux-rhel4.tar.gz
40ba58f6a5513355a7852d092eada97c	px1200-ga-solaris-10.tar.gz
a334f350b34034a30ca22d3b49e0f2f1	px1200-ga-win32.zip
3cb0bb9b31bf9a4ff5e86f114d0e7fc9	rs1200-ga-linux-rhel4.tar.gz
2487984a2371ff5b29a75cd0b5409981	rs1200-ga-solaris-10.tar.gz
62c7b8fea16f5c376d955946798644f8	rs1200-ga-win32.zip