Mult-IP 3.11.0
Release Notes

Introduction

This document highlights release 3.11.0 of the Mult-IP mobile VPN solution. Use it to keep track of new features and improvements, corrected issues and known limitations that have the potential to impact end-user experience in marginal conditions.

Read this document before upgrading the system to release 3.11.0.

In this release

About this release

This release features the following improvements on top of those previously provided by version 3.10.0 and 3.10.1.

Replacement of DHCP Server by a DHCP Relay

Ref: CAS-06481-M1V8G0

Mult-IP gateway now acts as a DHCP relay agent. It is a Bootstrap Protocol (BOOTP) relay agent that relays Dynamic Host Configuration Protocol (DHCP) messages between Mult-IP clients and DHCP servers for different virtual IP networks.

The DHCP Relay Agent is compliant with RFC 1542, "Clarifications and Extensions for the Bootstrap Protocol." As such, it will allow Mult-IP to request IPs on specific virtual IP segments according to the policy group associated with the Mult-IP client.

> **Important:** The previous DHCP Server function is not available anymore in 3.11.0. Before upgrading the system to 3.11.0, it is mandatory to setup a proper external DHCP Server. Radio IP Software support team can be called upon to assist you with this procedure through professional services. A specifically designed DHCP migration tool is available to help transitioning to your existing DHCP environment.

Improvement of Inter-gateway Communications

Ref: CAS-06940-X4F8D9

The master gateway election process has been refactored for additional reliability and support of larger gateway farms. This caused the elimination of two Radio IP Windows™ Services: "Radio IP Election Module" and "Radio IP Instance Manager" which functions have been integrated into "Radio IP Mult-IP Gateway". Starting with 3.11.0, the election process as well as all inter-gateway communication rely on multicasts instead of broadcasts. The next master gateway to be elected can now be predicted and is shown in the console through the master gateway election rank number.

> **Important**: To maintain proper inter-gateway communications on Mult-IP 3.11.0, multicast packets must be allowed and handled by the network infrastructure. This must be verified before upgrading the system.

GPS Director Integration

As GPS Director version 2.1.0 and lower relied on the "Radio IP Instance Manager" Service which has been removed in Mult-IP 3.11.0, it is mandatory to upgrade GPS Director to version 2.2.0 to maintain communication.

> **Important**: To maintain compatibility with Mult-IP 3.11.0, GPS Director must be upgraded to version 2.2.0. In addition, select the new GPS node in the Mult-IP Console, enable GPS Director and define appropriate IP address and port to establish connectivity.

Policy Packages now have a Schema Version

To better track which version of group policies are in use on each mobile client, a policy schema version was added. It can be viewed through the console.

Console Clients List Browsing Features

Ref: CAS-06699-X4F9G5, CAS-06700-G8G1T9

It is now possible to search, filter and sort through the clients list. New columns have also been added for better monitoring of mobiles (Registration Status, Policies Schema Version)

Support of a Recovery Site Following a Disaster at the Main Site

In the event the main site becomes unavailable as a result of a disaster, Mult-IP clients can be quickly recovered through a Disaster Recovery (DR) site where gateways are on standby. A manually activated trigger will make the DR site gateways to become active and to seamlessly resume connectivity to all Mult-IP clients. After the registration to a DR gateway, clients are provided with a specific set of policies as defined by the DR site configuration.

Fully Integrated Segment Management

Starting with version 3.11.0, there are no more requirements to use the Windows™ Network Adapter interface to add, remove or edit IP segments, or the master IP address. Those actions have been integrated in the console interface which simplifies the provisioning process as well as guarantees reliability of the settings.

Analytics Module Improvements

Ref: CAS-06667-G8W9G2, CAS-06703-N5H0W9, CAS-06681-S7V1T1, CAS-006682-P8L1W2

A number of improvements have been implemented into the Analytics Module:

- Quicker report generation time,
- UDP connections are now shown in connection reports,
- Reports format changed for .xlsx which allows more than 65535 lines in Excel,
- DB size growth control and size reduction.

Remote Update Status Monitoring

From this version, it is possible to monitor the progress of remote update to mobile clients through the console.

Selection of COM ports to be scanned to protect third party HW

Mult-IP serial drivers now provide a list of COM ports to be scanned therefore allowing skipping ports connected to third party device that could otherwise react unexpectedly. Configuration is done from the management console.

Configurable Driver Display Name

Ref: CAS-06645-Q5J1X1

It is now possible to edit the Driver displayed name through the console. That custom name will appear on the client deskband.

The client deskband/dashboard now displays which gateway it is registered on.

Previously, that information was only available from the console.

Syslogs Improvements

- If desired, syslogs can now be forwarded to multiple destinations
- Adding- editing and deleting a role now generates a syslog message

Please refer to the Mult-IP 3.11.0 Administration Guide for full details.

Corrected Defects in 3.11.0

MIP-666 CAS-06706-P5G6Y1	**Setting Authentication to none in duplicated group will also set it to none in original group** Fixed.
MIP-961 CAS-06809-P0R7T61 CAS-06980-H1C1Q9 CAS-06984-R2H2G7	**Unable to view Client Properties when opened twice, slow console responsiveness** While the ClientProperties dialog is being created, it starts a thread to query the properties to the FrontEnd.In the current case, it turns out that this query comes back so fast that the ClientProperties dialog is not done being created. When trying to process the result, we try to access the dialog (that technically does not quite exist yet) and fails. Fix is to postpone the creation of the querying thread until the dialog is actually fully created.
MIP-1013 CAS-06713-P5P8N4	**Documentation issue for License Console** License console section was added to the Administration Guide document to help gather info of acquired licenses.
MIP-1039 CAS-06916-N6X7C5	**MIP Client did not Switch to Slave when the Master Gateway Rebooted** During a switchover, gateways are reconnecting to new NDIS Server. Upon connection, status of locally registered clients on each gateway are sent to NDIS server. NDIS server sends the status of each client received to all other gateways causing the reset of connections and pipes for those clients. This is not necessary if the client is not locally registered on the gateway receiving the message. A test was added and the processing is not done if the client is not locally registered on the gateway receiving the message.
MIP-1117 CAS-06830-N8Z0R8	**G3 modem need to be power cycled in order for driver to go green** Socket was trying to connect but nothing happens after that. Fixed: socket is now created and bound to modem interface address only instead any addresses. If modem address is not available, timer for connection to status port is restarted.
MIP-1138 CAS-06845-J7J9J2	**Sudden loss of MASTER status** The initial cause for this is the notification of the mobile being registered that is not received by the GW. In that scenario, since the master was just moving around, the other GW did not have time to re-register themselves to the new storage master. The method that verifies if a client is running locally has been changed to take "locallyRegistered" into consideration; Thus, any call that needs to fork to a remote gateway should not become entangled in that situation anymore. (see "Improvements of Inter-gateway Communications" section in this document)
MIP-1192 CAS-06897-F3K5K7	**Radius NAS identifier not present with Mult-IP** Wireshark shows communication with Radius Server however Radius Server is sending Access-Reject(3) to Mult-IP Gateway. Starting with 3.11.0, NAS identifier attribute was added to radius packet. NAS identifier is "RadioIP MultIP Gateway"

MIP-1201 CAS-06907-L7S2G0	**Mult-IP Stays Yellow even if Cell card is back in coverage** Fixed by the use of a new Boost Asio library in the IP Driver.
MIP-1254 CAS-06964-G8H7W2	**Broken cellular aircard device on win7_64 when COM is scanned** By way of console setting, it is possible to avoid scanning a set of COM ports.
MIP-192	**Client DHCP status not shown properly for disconnected clients** Fixed now that Mult-IP acts as a DHCP relay.
MIP-252 CAS-06733-V4L7V3	**NDIS Server – 2 active instances causing BSOD** The root cause of the BSODs caused by the Mult-IP driver is that it was holding forever on an NDIS packet when the NDIS server was closed because there was no longer consumers for the packets. NDIS was therefore never calling the driver's Halt handler because it was waiting for the driver to release all NDIS resources first. The solution is: • When the device is closed (by NDIS server) track this state and release all NDIS packets. • When we receive NDIS packets, now check for the device close state and release incoming packet if the device is closed.
MIP-364 **MIP-628**	**Changing default scope needs a service reset to be effective** Fixed now that Mult-IP acts as a DHCP relay.
MIP-402	**The Master IP does not migrate to slave gateways correctly after it is changed** Now that master IP setting is integrated into the console, it properly migrates to slave gateways
MIP-463	**Source IP and Port inverted for destination on down link connections (Gateway to Mobile)** The Client properties tab now shows valid source IP and Port information for downlink connections.
MIP-445	**New added group not found in groups list** When adding groups on a multiple gateway system, it was sometimes observed that the console could not display the newly added group on the gateway where the action was performed.
MIP-541	**Console not displaying the new name of a renamed group** When renaming a group, from the group properties tab, the new name was not effective in the tree view even after a collapse-refresh-expand step.
MIP-646	**Removal of a G2 Gateway Driver may cause system freeze** Removing the Dataradio G2 driver could cause a freeze of the Gateway service before the deletion was complete. It has been fixed however; such actions should always be planned during a system maintenance window.

ALM-269 **MIP-370**	**Scope name accepts invalid characters** Fixed, now does not accept invalid characters.
ALM-27	**The Mult-IP VNIC does not generate standard MAC addresses** Upon installation, the Mult-IP software (both Gateway and Client) creates a virtual network interface card which carries its own MAC address range. Radio IP's MAC addresses now complies with standard UAC or LAC MAC formats.
ALM-2737 **MIP-58**	**Uniqueness of Scope Name is now enforced.** The system now prevents the use of the same scope name for two different scopes.
ALM-2757 **MIP-1124**	**Syslog messages for Motorola DataTAC network statistics are not handled by Genesis Server** Fixed
ALM-2760	**The password configured for RAS is not properly copied when duplicating a group.** Fixed
ALM-279	**Infinite lease duration not applied on mobile device** Fixed now that Mult-IP acts as a DHCP relay.
ALM-35	**Mult-IP Client deskband may not automatically load after reboot of a new client install** Fixed an issue where the iconic Radio IP deskband would not automatically show in the Windows toolbar despite a machine reboot required after Mult-IP Client installation. This issue was limited to Windows 7 x64 systems.
ALM-37	**Management console reports a total client count value when no clients are connected** Fixed an issue where in a load balancing environment, the management console was reporting a total client count higher than 0 with no clients connected.
ALM-792	**Postponed Remote Updates are not followed by regular reminders** Fixed.

Corrected Defects Delivered Through Version 3.10.0 Patches:

All fixes delivered through 3.10.0_p10 patches have been integrated into Release 3.11.0. For details, see Document "Read this first – 3.10.0 p10" delivered with the latest 3.10.0 patch 10 software.

Known Defects

Known limitations to this release are organized in the following categories.

General, on page 8

Load Balancing, on page 10

Drivers, on page 10

Management Console, on page 11

General

ALM-30	**Broadcasts are not processed by the Mult-IP Gateway**
	Mult-IP Gateway does not process broadcasts. Therefore, attempting UDP broadcasts over a segment assigned broadcast address using third party tools will result in no Mult-IP packets transmitted.
	On the other end, a UDP broadcast sent from the client workstation using the same third-party tool on the same broadcast address will be received by the Gateway.
ALM-31	**Using Filter Editor to reject or block packets is the same as dropping packets**
	Filter Editor makes no distinction between **Reject all packets** and **Block all packets**. This observation also applies to rules based on packets blocked to a destination IP or port, which causes packets to be dropped instead of being rejected.
	Implications in processing TCP connections which do not reset when Filter Manager blocks TCP SYN.
ALM-79 **MIP-608**	**Remote desktop sessions freezing if attempted from a gateway to an XP SP3 client**
	Remote desktop sessions initiated from a gateway machine to a mobile client using the client's supplied virtual IP address and logged in user credentials will be allowed to start but will ultimately freeze during logon.
	Workaround: to perform a successful remote session, simply log in to the mobile device using built-in administrator credentials.

General

ALM-342	**The "Validate Gateway on UDP connection" field prevents mobile device registration** Mobile devices employing drivers set to UDP mode (such is the case with the Generic IP driver needed for initial (or connections initiated after a **Restore to Factory Default** command is invoked) will not register if the Validate server on UDP connection functional group DriverManager option is set to True. Client deskband indicator will turn orange as an indication that the client is trying to register. This condition will prevail regardless of whether you invoke the Reset Connection or Restore to factory default command. Workaround: set "Validate Gateway on UDP connection" to False.
ALM-428	**Inconsistent VNIC identifier** In Windows 7 /2008 R2, the Mult-IP Virtual Network Interface Card (VNIC) appears as Mult-IP Network Adapter in Control Panel > Network Connections. However, IPCONFIG lists the same VNIC as generic adapters such as "Local Area Connection 2" while both views should convey the same name.
ALM-1367	**Mult-IP Client deskband displays "Service Stopped" when logged in as a second user** When logging on to a mobile device in a secondary user session (such is the case when one user logs off and another one takes over the MDT), the Mult-IP Client deskband will display the Service Stopped balloon text even though the client is properly registered and online.
ALM-2163	**Configured packet size not applied properly** In a multiple driver system configuration, smallest configured packet size is applied throughout. This may result in some performance penalty.
MIP-1040	**DHCP release not supported when triggered on client VNIC** It is not possible to release the VNIC's IP address by issuing the command ipconfig /release "VNIC interface name". Locally the client IP changes to 0.0.0.0, but the GW is not sending the release message to the DHCP server. This is because the only way for a gateway to assign/release an address is through the client registration process.
MIP-1012	**A reset connection triggers DHCP discover/renew messages** Due to the system architecture, the client registration process is considered as a NIC reload and thus "discover"/"renew" DHCP messages are generated. This is causing no adverse effect on the system.

Load Balancing

ALM-34	**In Load Balancing mode, clients keep removed gateway routes**
	In a Load Balancing network, removing a gateway from the network causes clients to be transferred to the remaining available gateways, which is to be expected.
	It was therefore observed that even though clients do move to other gateways and apply proper routes on one network interface, they still maintain the removed gateway routes on a second interface (in a twin adapter mobile configuration).
ALM-936	**Remote update files not replicated on slave gateways**
	According to the remote update process, remote update files saved on the master gateway and then published to all slave gateways in a Load Balancing environment should be propagated to slave gateways but sometimes it fails.
	Workaround: A restart of the Remote Update Agent service on slave gateways ensures file propagation completion.
MIP-564	**Some mobile client properties not always updated on all opened consoles**
	Some mobile properties such as "Gateway Name", "Connections" and "Statistics" may have discrepancies between consoles connected to different gateways.

Drivers

ALM-349	**Source IP address of UDP response packet from gateway is 0.0.0.0**
	The following behavior observed in marginal conditions will cause UDP response packet from gateway to be dropped because it carries an invalid 0.0.0.0 source address.
	Client IP driver initialization which takes place after a gateway has been restarted attempts network address translation (NAT) on an invalid gateway UDP response packet with IP "0.0.0.0", therefore causing this packet to be dropped. Note that subsequent packets are processed normally. The impact on transmission is therefore limited to a single packet.
ALM-399	**Driver connection speed over UDP is not configured by default**
	The driver parameter known as Connection speed which sets the transfer speed (in bits per second) allowed on a given network should always be set by end-user to a value other than the default "0". Paying attention to this parameter offers the potential to greatly increase performance over broadband networks such as 4G or LTE.

Drivers

ALM-2165	**UDP fragmentation not effective on Non-IP drivers with UPD_not_garanteed option (DataTAC, G2)**
	UDP packets larger than the size defined for the driver will get dropped by Mult-IP. Ensure proper packet size is defined in accordance with the application requirements.
MIP-1315	**G3 plugin not re-connecting if modem interface is disconnected/reconnected**
	In a configuration where the driver is not binding by Interface name ("Use Configured Interface Only" = False) and scans each interface to try to connect, the plugin once connected to the modem (and the driver green), then the interface is disconnected/reconnected, G3 driver will not become green again. The G3 plugin is stuck on the wrong interface and not able to scan anymore until next computer reboot.

Management Console

| ALM-40 MIP-26	**The Management Console does not propagate active console users to all Front Ends**
	The list of active users is not reliable if the Management Console is installed on multiple workstations and that their respective local Front End is used to connect to Mult-IP Gateway(s).
	As a workaround, use the **Connect to alternate Front End Service** feature to connect all active consoles to the IP address of a single Front-End.
ALM-42	**First console session may reveal two active users**
	Right after logging on to the Management Console for the first time (using default administrative credentials), clicking the Mult-IP root node followed by the User(s) tab (upper left quadrant) may reveal two active users: *admin* (the logged user) and *anonymous*.
ALM-394	**Error message displayed while upgrading a running management console**
	Leaving the management console running while it is being upgraded will prompt a message listing the apps and services that must be closed in order to allow actual file upgrade. As expected, the upgrade program will close the apps and services but an error message of type "The setup was unable to close all requested applications" will pop up near the end of the process.
	You may disregard this message: simply click OK to successfully complete the process.
ALM-395	**Client List indicates wrong data for Out of Coverage or offline clients**
	Whenever a client goes offline or drops out of coverage, and the gateway to which it was last connected later goes offline as well, the management console' s client list will rightfully show current client status while displaying "Unreachable Server" in the Gateway column instead of last registered gateway name.

Best Practices and Limitations

→ **Sensitive Configuration File** — Gateway and Client services write configuration data to an XML file. While you may browse this file for troubleshooting purposes you are strongly advised against editing. Any change to any component of the Mult-IP system should be strictly carried out through the Management Console.

→ **Policy Change Notification** — The Management Console GUI does not highlight newly-changed unpublished values.

→ **Remote Update Recommended Practice** — In order to allow client upgrade download, a remote update package must be registered on the master gateway (in a Load balancing solution). While you may perform remote update package registration on any gateway, you are encouraged to determine which gateway runs as master (see checkmark on gateway icon in the management console) and perform the procedure from the master gateway host. Consult the Mult-IP Administration Guide for detailed instructions.

→ **Windows XP SP3 Broadcast Pass thru** — In some instances, broadcast packets originating from a Windows XP client's physical interface may pass-through the Mult-IP VPN tunnel. For example, if the network on which the physical network is connected enforces a non-default subnet mask such as 172.16.0.0/20 (255.255.240.0) instead of 172.16.0.0/16 (255.255.0.0) the Windows XP operating system will add an erroneous direct broadcast route to the OS routing table. In this example, the direct broadcast route appears to be 172.16.255.255 instead of the expected 172.16.15.255. When the physical network card sends a broadcast packet with IP 172.16.15.255 as its destination, the OS looks for a specific route for that destination. The erroneous entry added earlier will prevent the OS from finding an acceptable route, thus sending the broadcast packet to the default gateway, which in this case, is the Mult-IP default route. To circumvent this Windows XP limitation, it is recommended to define a block-type filter for the physical segment's direct broadcast, in this case a block rule to destination address 172.16.15.255. Consult your Mult-IP Administration Guide for hints and tips on defining filter rules.

→ **Client Machine Name Restriction** — Even though marginal in scope, it is worth noting that applying an erroneous computer name (one containing symbols) to a workstation will cause the Mult-IP Client Network Dashboard GUI to crash.

→ **FTP Mode Recommendation** — A limitation was found in Windows 2008 R2 which prevents a FTP server from initiating a data connection to the client as part of negotiations over its privileged ports. To overcome this issue which causes severe performance degradation up to a break in client-gateway connection, you are encouraged to apply passive FTP. This mode will force client to assume all connection stages (both command and data) over random unprivileged ports.

→ **GPS Plugin for Dataradio G3 hardcoded** — Because the GPS plugin is only instantiated on the Mult-IP gateway, configuration of listening options (such as TCP/UDP and listening port) is not supported in the management console GUI. Listening values are set to default UDP port 56308. This limitation results from the policy system not designed for policy sets on plugins meant to interact with gateway components only.

→ **Drivers disabled in newly-created group** — When adding functional groups, current drivers are loaded in a disabled state. The administrator must therefore access the Driver Manager tab for each group and toggle the **Driver Enabled** parameter to "True" before publishing policies.

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Compatibility Notices

Installing the Mult-IP Management Console on workstations

Observe the following when preparing a Management Console workstation. Mult-IP ships with two Management Console installers targeting specific environment:

Run ConsoleSetup64.exe to install on 64-bit workstations or ConsoleSetup32.exe to install on 32-bit workstations. As Mult-IP context automatic selection is no more supported during install. You must therefore manually set connection to the Mult-IP gateways as described next:
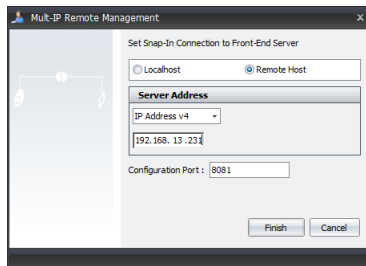
a) Launch the Management Console and ignore connection errors.

b) Select **Connect to an alternate Front End** (Actions pane).

c) As shown, click Remote host and enter the IP information that will allow you to remotely connect to a Mult-IP Gateway host. This example suggests that you locate service by its IPv4 address but the choice of establishing a remote connection using a physical address or computer name is yours to make.

Remote Update unsuccessful due to folder restrictions

Notice to Active Directory users: Changes to the default behavior of the Software Restriction policy, and implementation of such policy in a Group Policy Object (GPO) may prevent Mult-IP remote update files (of type *.msp, *.exe, *.msi) from running on mobile devices, causing the remote update process to fail. Always avoid setting the Software Restriction policy as default rule in Security Levels with rule set to "Disallowed".

Windows XP Browser Broadcasts packet traffic on the Mult-IP VNIC

Windows XP mobile devices may cause unnecessary local broadcast traffic to travel over the VPN tunnel if:

1. The Computer Browser service is enabled on the XP device;

2. The device is connected to a Mult-IP Gateway located in a different subnet

3. The Route Management option of the active client communication driver(s) is left to the default option (Add Mult-IP route, remove interface route).

Packet analysis shows that broadcasts use UDP ports 137 or 138 originating from the machine's physical interface. From there, broadcast packets pass through the VNIC, onto the VPN tunnel reaching the connected gateway even if the destination IP is in a different subnet.

We recommend the following options to remedy this highly exceptional situation:

→ Define filter rules to prevent data over UDP ports 137 and 138.

→ Set a new Route Management option so that broadcasts use a default gateway other than Mult-IP.

Mult-IP Client Compatibility

Mult-IP clients 3.11.0 are only compatible with Mult-IP Gateways 3.11.0.

Mult-IP Gateway Compatibility in Load-Balancing

In a load-balancing system, all gateways must be first stopped and upgraded to version 3.11.0 before being put back in service again. Special care must be taken to avoid inter gateway communication if all gateways are not running the same version as this will cause XML data corruption.

Mult-IP Client Backwards Compatibility

The next table will help you determine which versions of the Mult-IP Client software can safely register to the latest Mult-IP Gateway. Should the Mult-IP Client version you are running be listed as Not Supported, you are advised to upgrade to a supported client version before upgrading the Mult-IP Gateway software.

< 3.8.0	All previous versions are not supported.
3.8.0 and up	Supported