

# Release notes MC Firmware

## **Firmware 2.04b --> 2.04d (11. May 2015)**

1. Linux Kernel 4.0.0-rc5+ --> 4.0.0+
2. Change in the roaming strategy. With the firmware 2.04b the roaming has been controlled by the bridge application. With the 2.04e roaming is completely left to the WLAN driver of the Linux kernel.
3. access point parameters that prevent a connection to the client are now show in red in the access point list.

## **Firmware 2.04d --> 2.04r (28. July 2015)**

1. DHCP-Server with clear function for reservations
2. MWLC Bridge-Mode added
3. (Wireless --> Roaming) Lower SNR Threshold Parameter removed.
4. (Wireless --> Roaming) in AP Density Modus : "Auto detect" Mode the roaming decisions are done by the bridge application and not only by the WLAN driver of the operating system. The focus is now more on a good signal strength of the AP's and not so much on the potentially possible transmission speed. It is recommended by us to set the AP Density Mode to "Auto Detect".

## **Firmware 2.04r --> 2.06d (09. September 2015)**

1. new Linux-Kernel 4.1.5+
2. DHCP problem in "Level 2 Pseudo-Bridge" Mode solved
3. DHCP-Server revised. Now the processing of the reservations is better.
4. new parameter "Stay connected" in "LAN Client Cloning" - Mode added
5. Improved processing of certificate files
6. NTP RTC Config --> now a start date can defined by a parameter that is set at start up.
7. at "Admin" the HTTPS - Port can be configured.

## **Firmware 2.06d --> 2.06f (04. October 2015)**

1. No downgrade of the firmware to 2.04x should be done with 2.06d. The device will crash and needs maintenance.
2. Some unnecessary parameter in the config were removed.

## **Firmware 2.06f --> 2.06k (18. November 2015)**

1. SCEP (Simple Certificate Enrollment Protocol) Function added („Wireless --> SCEP“)
2. „MWLC Master“ Mode corrected

## **Firmware 2.06k --> 2.06p (17. December 2015)**

1. Bug-fix: The firmware 2.06k in bridge-mode „Single Client NAT“ generates a reboot of the device. The rebooting can only be stopped by doing a default reset of the device
2. Changes in the firmware to serve the 2 new MC devices (MC2, MC4).
3. Additional function to send the state of the WLAN connection to a node connected to the LAN side of the MC device. This information is send with UDP datagrams.
4. Changes to the definition of NAT rules:  
In a simple NAT rule now several ports can be defined for forwarding to an IP address
5. The MC-Config-Program can now communicate with unicast datagrams via the LAN site of the MC devices. This will fasten the firmware upgrade.

## **Firmware 2.06p --> 2.06q (07. January 2016)**

1. Changes to the USB-Printerserver: So far, the manufacturer and the product info

has been registered when a printer is connected to the MC. Without this information, the printer server has not been started. Some printers don't provide this information. The Firmware 2.06q starts the printer server even without this information.

2. Small changes to the website.

#### **Firmware 2.06q --> 2.06s (04. February 2016)**

1. Bug-fix in the serial interface module: Falsification of the serial received data could happen, when the interface received special character sequences and the mode "no parity" was active.
2. Change in the roaming module: To make a decision for a change to another AP a "Probe response" has to be received from that AP in the last 10 seconds.

#### **Firmware 2.06s --> 2.06u (19. February 2016)**

1. Handshake handling in serial COMSERVER mode revised.
2. Error found in the processing of NAT rules.

#### **Firmware 2.06u --> 2.07b (22. March 2016)**

1. In the section „Roaming“ the ping function has been revised.
2. Bug found in the timer module. This error could potentially bring the WLAN client to a restart or stop the devices so that a manual reset is needed.
3. Serial interface: XON - XOFF protocol handling improved

#### **Firmware 2.07b --> 2.07c (12. April 2016)**

1. The state of the LAN-Ports are now transferred to the MConfig-Program.
2. The LAN-Status is now shown correctly by the LAN-Port-LED's (MC2 + MC4)
3. The optional temperature sensor is integrated into the firmware

#### **Firmware 2.07c --> 2.07g (13. Mai 2016)**

1. The state of the serial port (Ser1) and the USB-Memory-Stick is now transferred to the MConfig-Program.
2. Now up to 16 DNS-Server-IP's can be registered by the DHCP-Client (WLAN side).
3. Now 2 NTP-Server can be configured.
4. Now DHCP-Server-Rules can be defined as config parameter, to ensure that the LAN clients gets there right IP addresses.
5. A list of BSSID's can be defined that will be preferred or avoided by the roaming algorithm to select the best access point.
6. It is now possible with the MC-Config program (v. 2.2.0.11) to send a preliminary configuration to an MC device. Only when the configuration is confirmed via the MC-Config program within a predetermined time after restart, this configuration is marked as permanent. This can prevent a permanently access via WLAN to the MC device by an erroneous input of a parameter.

#### **Firmware 2.07g --> 2.07k (01. June 2016)**

1. If the LAN-Client-Cloning Mode is selected and the LAN Client Type is „Static“ or „Auto detect“ DNS Server IP addresses can now be configured. If the LAN-Client has a static IP address the MC does not have any DNS information. The MC can not resolve given host names for NTP or SCEP. With the configured DNS IP's the MC can do the name resolutions

2. The number of entries for specific tables was designed variable. These tables have “Add” and “Remove” button at the end of the table. This simplifies the configuration pages and can make them clearer.
3. Bug-fix in the serial module. In UDP mode with not defined remote IP the first datagram should be registered by the MC to send the answer back to that IP. There was an error that the information of the first datagram was not registered correctly. The second received datagram solves that problem. With the firmware 2.07i the first datagram will be registered correctly.

#### **Firmware 2.07k --> 2.07v (25. August 2016)**

1. Fixed a bug in the „ping-test“ mode (roaming parameter). Incorrectly evaluation of the sequence numbers let the function get inactive after a few days (depending on the interval parameter).
2. Extension of wireless-dump feature  
A parameter for handling the „memory full“ event has been implemented. The user can decide if the dump function should be stopped or if the oldest dump file should be deleted.
3. Changes in the DHCP-Client-Module. The IP request from a some DHCP-Server did not work correctly.

#### **Firmware 2.07v --> 2.08a (20. September 2016)**

1. Revision of the Dump function (wireless + Ethernet) for better storage of the wireless and Ethernet recordings.
2. The SNMP function has been significantly expanded. The MIB file of the MC device can now be downloaded from the website of MC (-> Admin -> SNMP)
3. Error in the HTTPS function. If the initial generation of the self-signed certificate was for some reason not fully completed, the HTTPS access to the MC website could not be used. The firmware 2.08a will start the generation again when a defective certificate is detected.

#### **Firmware 2.08a --> 2.09d (14. Dezember 2016)**

1. new: Multi-SSID. Several (up to 8) WLAN profiles can now be configured.
2. The number of instances for the serial interfaces are now also displayed dynamically in the MC-Config program and on the web page
3. The function to limit the transmission bit rates has been revised. With the firmware 2.09d, however, only the bit rates for the mode 802.11 b / g can be set.
4. In some WLAN systems it happens that the WLAN controller allocates BSSID's, which occur twice, whereby a BSSID exists in 2.4GHz and the same BSSID is also used in the 5GHz band. The firmware 2.09d takes this into account and runs both BSSIDs separately in the access point list.
5. There is now possible to prioritize traffic through the tunnel in MWLC mode.
6. A time zone can now be configured to get the right local time stamp in the debug log files.  
-> see “realtime clock”

#### **Firmware 2.09d --> 2.10c (16. March 2017)**

1. New Linux kernel version 4.9.13+ integrated
2. Improved response of the MC to malfunctions during the authentication phase
3. Fixed an error while handling multiple active WLAN profiles.

4. The processing of the files for the trace recordings (WLAN + LAN) has been improved so that now individual files can be selected for download via the MC Config program. These files can be downloaded from the internal flash and from a plugged USB stick
5. Additional information's are now displayed on the home page of the MC in the list of APs. As far as the AP supplies this information, the following is displayed in the "Extra Info" column:
  - Amount of logged in clients
  - Workload (%)
  - TPC Specification of AP
 This information is now also used for roaming in order to determine the most suitable AP.
6. Fixed an error in the NTP client. If the IP of the timer server had to be determined via DNS and the first attempt of this address resolution failed, the attempt was not renewed. Thus, no time was obtained via an NTP server.

#### **Firmware 2.10c --> 2.10i (02. May 2017)**

1. New kernel version 4.9.25 integrated
2. Error in the roaming module when compiling the channels to be scanned..
3. Introduction of a new parameter "Hostname" in the DHCP client module. This means that the "Hostname" parameter, which the DHCP client transmits to the DHCP server, can be set independently of the "Device name" parameter.
4. Fixed bug in the checking certificate validity function. A date beyond 2038 was considered invalid.
5. Wireless Status Information Service extended by some status queries (see manual)

#### **Firmware 2.10i --> 2.10k (18. May 2017)**

1. Improved scan behavior in the 5 GHz band. Now also "hidden" SSID's are recognized.
2. Improved the transmission of broadcast packets in the pseudo-level 2 bridge mode. These packets are sometimes sent by the WLAN system as unicast (level 2) packets.

#### **Firmware 2.10k --> 2.10n (12. June 2017)**

1. With the 2.10k firmware it came isolated to reboots when roaming, if the signal values (SNR) were only relatively weak. It could be determined that these reboots were triggered by overly intensive debug messages of the Linux kernel. After switching off these messages, this behavior could no longer be observed.
2. The SNMP function has now a "CommunityName" parameter so that a value other than "public" can be set.
3. In bridge mode "Level 2 Pseudo-Bridge" you can now activate a DHCP Relay Agent.

#### **Firmware 2.10n --> 2.10r (04. August 2017)**

1. Implementation of a monitoring function which ensures that the bridge process is restarted after an unintended termination.
2. A "memory leak" caused the free memory to be used up. This was especially the case when the LAN client often opened and disconnected new TCP connections. Depending on the intensity, this could lead to a standstill of the bridge function and require a manual reboot.
3. The Serial Port Config has a new option that determines how to handle data that is received when a wireless connection is not yet available.

### **Firmware 2.10r --> 2.10s (01. September 2017)**

1. Bug found that can terminate the bridge process. This could happen in conditions of a weak signal level with many faulty transmission attempts.
2. Linux kernel version 4.9.46+ integrated

### **Firmware 2.10s --> 2.11a (10. October 2017)**

1. In the debug log messages, the date is now also given in the time stamp.
2. Correction in the SNMP module. Some counters defined as 64-bit values were previously supplied as 32-bit values only.
3. Additional option in NAT & Single Client NAT Mode:  
With the "Forward DNS requests" option active, the DNS queries that arrive via the LAN side on the local LAN IP are routed to the DNS server defined on the WLAN side.
4. During repeated failed attempts to authenticate, the WPA Supplicant has blocked the affected SSID for 10 seconds. However, the resulting interruption is very troublesome in some applications. Therefore, an algorithm has been installed, which cancels this lock very soon after activation. The interruption is thus limited to approx. 3 seconds.
5. Linux kernel version 4.9.53+ integrated

### **Firmware 2.11a --> 2.11b (17. October 2017)**

1. Update of the WPA supplicant due to the vulnerability issue known under the name KRACK ("Key Reinstallation Attack") in the security standard WPA2.

### **Firmware 2.11b → 2.11c (01. February 2018)**

1. Linux kernel version 4.9.61+ integrated
2. Zero pointer error in DHCP client fixed.
3. Bug in the log server function fixed.
4. Implemented a NTP server on the LAN side. This NTP server is only active in NAT or Single-Client-NAT mode and transmits the data received by the NTP client on the WLAN side.

### **Firmware 2.11c → 2.11m ( 14. June 2018 )**

1. Linux kernel version 4.9.105+ integrated.
2. Memory error in "Level2 Bridge Mode" fixed. If the LAN client often went offline, memory was reserved that was not freed. This could lead to the MC being unable to communicate after a longer time.
3. Additional parameter "AP Scoring" in the "Roaming" section:  
This parameter can be used to determine whether all information such as transmission power, channel load, bandwidth (20 or 40 Mhz) and signal strength (SNR) is used for the rating of an AP or whether the stronger signal alone is rated.
4. Additional "Connection Watchdog" function introduced in the "Roaming" section:  
This function enables a monitor that registers the incoming WLAN data from the currently connected AP. If any data is not received for the given time, a new scan is performed. The current AP is rated lower in the following "scoring", so that the AP is likely to change.
5. New parameter in "LAN Client Cloning Mode":  
"MAC to Clone" can be used to define a MAC address that is to communicate via WLAN.

### **Firmware 2.11m → 2.11p (13. August 2018)**

1. "Logging" → WLAN Dump Event function deactivated. It turned out that this function has no practical benefit.
2. At „Roaming“ → "Preferred / avoided access points" there is now the option "strictly avoid" with which an access point can be blocked.
3. fixed an error in the relay function in UDP mode.

### **Firmware 2.11p → 2.11p1 (24. August 2018)**

1. fixed an error in the ranking of the AP's in the 2.4GHz band.

### **Firmware 2.11p1 → 2.12a (28. November 2018)**

1. Linux kernel version 4.9.140 integrated
2. The interfaces via which the MC-Config program can access the MC can now be restricted:
  - LAN + WLAN (default)
  - LAN
  - Zugriff gesperrt
3. integrated support for AC radio cards
4. The switching status of the relay can now also be queried via the WLAN info from the LAN client.
5. If WLAN or LAN recordings are active on an MC (→ Logging), this status is displayed in the MCCConfig in the Status column (MCCConfig from version 2.0.2.42).
6. Experimental power save function implemented. This allows the MC to be put into sleep mode for a certain time. In this state, the energy requirement is reduced to ~30% of normal consumption.
7. Port MAC authentication for LAN clients implemented in NAT mode
8. Faster start-up of the MC at the same location (first test last WLAN frequency)
9. If a default reset is done via the reset button, the MC checks whether a USB stick with the file "Default.cfg" is plugged into the device. If yes, this Config is stored internally and activated.
10. LAN cloning: Improved and corrected procedure for handling ARP packets

### **Firmware 2.12a → 2.12f (25. März 2019)**

1. Linux kernel version 4.9.164 integrated
2. Pseudo Level 2 Bridge Mode:  
Support for passive clients implemented.  
When this function is activated, LAN clients that do not send any data on their own are

made "known" in the WLAN by the MC sending pings with the IP of the passive LAN client to a specific IP via WLAN.

3. Home Webside:  
In addition to the SNR, the signal strength and the noise level of the received signal are now also displayed.
4. Relay Function:  
You can now append a sequence to the command to switch off the relay, which specifies a delay time with which the relay is to be switched off. The delay time is defined as follows <xx> (xx = time in seconds)
5. Bugfix: Special certificate format can now be imported again.
6. Feature: Bridge-Mode  
If the bridge function is deactivated, it is now possible to define the IP settings on the LAN side (incl. DHCP client function).
7. Antenna gain can now be specified as a parameter. This allows the radio transmitter to adjust the transmit power so that the legal requirements are met.