Upgrade from Polling to TDMA

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This section describes the firmware with time-division multiple access technology support (TDMA) and provides a procedure how to upgrade the firmware with Polling technology to TDMA .

Firmware versions are identified using the corresponding abbreviation in the name:

- MINT - firmware with Polling technology support. For example, R5000-H08S01-MINTv190. 54.
- TDMA - firmware with TDMA technology support. For example, R5000-H08S11-TDMAv201. 34.

> ⚠ **NOTE**
>
> The Polling and TDMA firmware versions are not compatible. The upgrade from Polling to TDMA is recommended starting from the "MINTv1. 90. 25" version.

TDMA limitations

1. Supported hardware platforms: H05, H06, H07, H08, H11.
2. It works only with MIMO devices.
3. "transient" mode is not supported.
4. It is recommended to use the same firmware version on all devices in the network.
5. All synchronized master devices in sync mode with AUX-ODU-SYNC must have the following equal parameters:
   - Frame Size
   - DL/UL ratio.
6. There are the following conditions of use in various channel width:
   - 5, 10, 20, 40 MHz - fully supported.
   - 3.5, 7, 30 MHz - operates, but there may be minor frame deviations (with "Greenfield" mode enable).
   - 14, 15, 30 MHz - not recommended for use.
   - 28 MHz - fully inoperable.
7. Recommended channel width in PtMP topology: 20 and 40 MHz. This is due to large overhead for the service information transmission in narrow channel width.

Upgrade from Polling to TDMA procedure

TDMA firmware must be installed on all involved in a radio connection devices. This process is better to start with the most distant from the access point devices.

Before starting:

1) Check the device configuration and ensure that the switch group with SVI is used for access and remote management.

2) On CPE devices enable:

- Automatic transmit power control ("ATPC" option).

In order to do this go to the section "Basic Settings" -> "Link Settings" in web-interface and check the box "Auto":

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Figure - ATPC enable

- Set the maximum possible transmit power in the field "Tx Power" and click "Apply".

3) Download TDMA firmware from the ftp server: https://ftp.infinet.ru/pub/Firmware/beta/TDMA/ for the appropriate hardware platform.

4) Upload firmware on all devices: go to the section "Maintenance" -> "Upload", click "Choose File" in the field "*Firmware*", followed by the «Upload» button after the file has been picked up.

5) After clicking the «Upload» button, the system performs three operations: uploading, saving and validating the new file uploaded and indicates if each of the operation succeeded or failed. In case that the process succeeded, you have to reboot the unit in order to apply the new changes.

Firmware

Firmware

Upload   Ok

Save   Ok

Validate   Ok

Reboot

Figure - Successfully upgraded firmware

⚠ **NOTE**

Please note, that service on the CPE units will be suspended until firmware updates on the base station.

⚠ **NOTE**

All devices after upgrading to TDMA version becomes a Slave. The only exception will be a device with the enabled "Polling" option (command "*mint pollstart*"), which becomes the **Master** and has the following parameters by default:

- Frame Size: 5 ms
- Max Distance: 70 km
- DL/UL: Auto
- STA RSSI: -20 dBm.

After upgrade set the actual value of the "Max. Distance" parameter.

7) Upgrade the device boot monitor for hardware platform "H08" (R5000-Omx/R5000-Mmx models) via command.
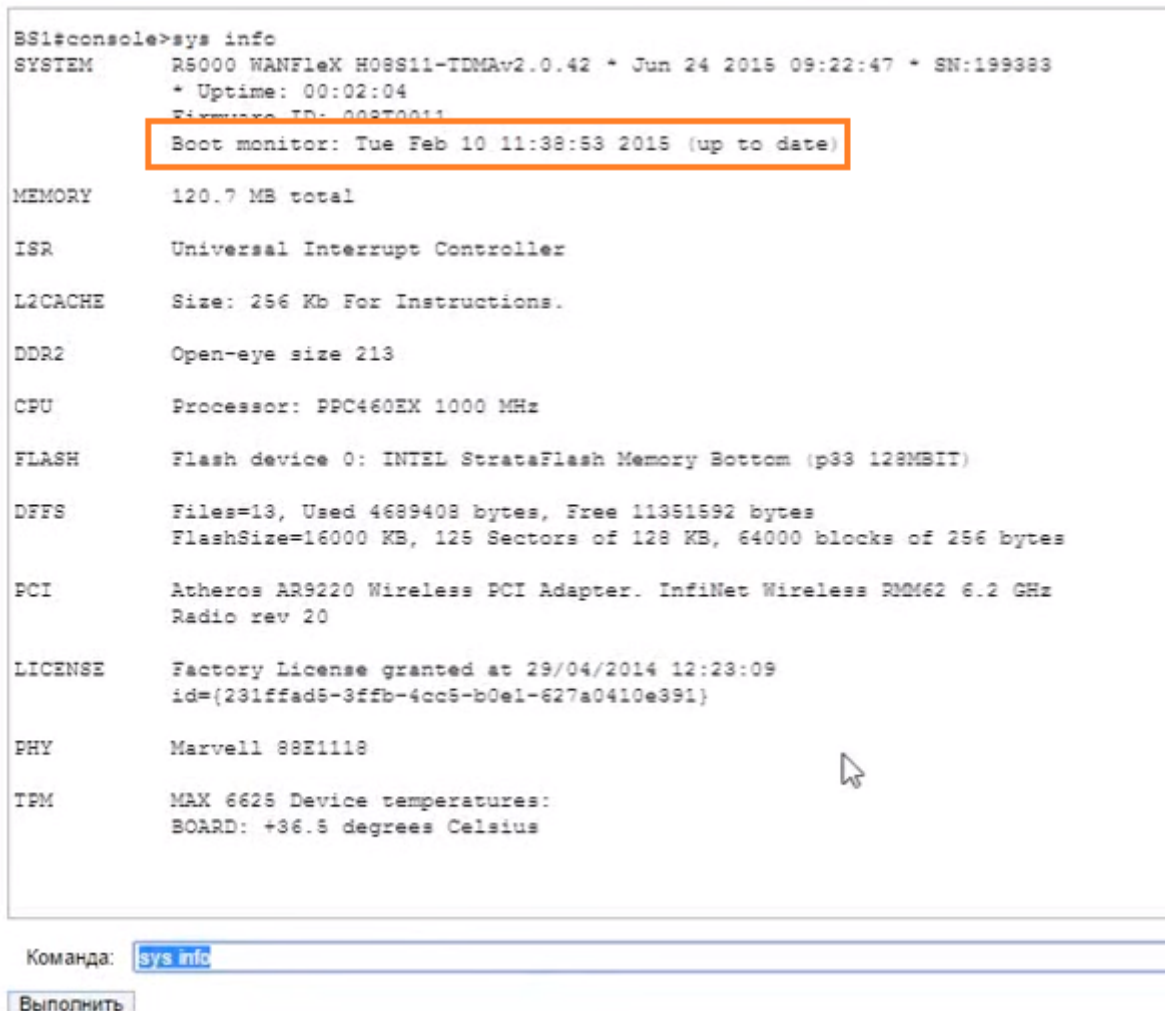
```
_upgrade -q
```

⚠ **NOTE**

Information about hardware platform type is available in the section "Maintenance" -> "Firmware".

⚠ **NOTE**

"*_upgrade -q*" command is available starting with firmware version "MINTv1.90.17". It is recommended to install the firmware version not lower than "MINTv1.90.25" before the boot monitor upgrade. The command can be executed via a web interface in the section "Command Line".

In order to make sure that the boot monitor has been updated, enter the command.

```
sys info
```

```
BS1#console>sys info
SYSTEM       R5000 WANFleX H08S11-TDMAv2.0.42 * Jun 24 2015 09:22:47 * SN:199383
             * Uptime: 00:02:04
             Firmware ID: 008T0011
             Boot monitor: Tue Feb 10 11:38:53 2015 (up to date)

MEMORY       120.7 MB total

ISR          Universal Interrupt Controller

L2CACHE      Size: 256 Kb For Instructions.

DDR2         Open-eye size 213

CPU          Processor: PPC460EX 1000 MHz

FLASH        Flash device 0: INTEL StrataFlash Memory Bottom (p33 128MBIT)

DFFS         Files=13, Used 4689408 bytes, Free 11351592 bytes
             FlashSize=16000 KB, 125 Sectors of 128 KB, 64000 blocks of 256 bytes

PCI          Atheros AR9220 Wireless PCI Adapter. InfiNet Wireless RMM62 6.2 GHz
             Radio rev 20

LICENSE      Factory License granted at 29/04/2014 12:23:09
             id={231ffad5-3ffb-4cc5-b0e1-627a0410e391}

PHY          Marvell 88E1118

TPM          MAX 6625 Device temperatures:
             BOARD: +36.5 degrees Celsius
```

Команда: sys info

Выполнить

Figure - Information about Boot monitor

8) Set appropriate radio parameters. Setting should be performed on the Master device.

> ⚠ **NOTE**
>
> Radio parameters setting is described in the section "Radio link settings in the time division access networks (TDMA technology)".

> ⚠ **NOTE**
>
> In the case of synchronization with AUX-ODU-SYNC, please perform settings described in the section "Connection to the synchronization unit".

Upgrade using the OTA function

To prevent loss of a network availability, by default the upgrade from MINT to TDMA firmware versions using the OTA function is forbidden. In order to update a network over the air, follow the instruction:

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1. Enter the "*mint rf5.0 -air -swmodel*" command in the "Command Line" section of the device from which the network is updating. In a point-to-multipoint topology, it is recommended to use a BS sector or an InfiMUX switch to send the upgrades to other devices.

> ⚠️ **NOTE**
>
> The "*mint rf5.0 -air -swmodel*" command is valid for one firmware upgrade. In order to upgrade devices with different hardware platforms (for example, H11 and H08) or for the repeated uploading of the firmware version, the command will need to be entered again after the first upgrade is completed.

2. Upload the required firmware version to the device in accordance with the instruction above with the OTA function enabled. During a BS sector upgrade, it is recommended to enable the "Neighbors only" parameter, which ensure the upload of the firmware only to subscribers of this sector, otherwise the firmware will be send to all devices of the MINT area.
3. Wait until all devices with the corresponding hardware platform are upgraded, the devices will disconnect from the base station after the upgrade is complete. To track the upgrade process proceed to "Device Status" → "System Log" section. In case of errors, the process must be restarted with re-entering the "*mint rf5.0 -air -swmodel*" command to the configuration.
4. After the last subscriber is disconnected, upgrade the BS sector in accordance with the instruction above.