

A tool to mass configure NAT MCHs

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Outline

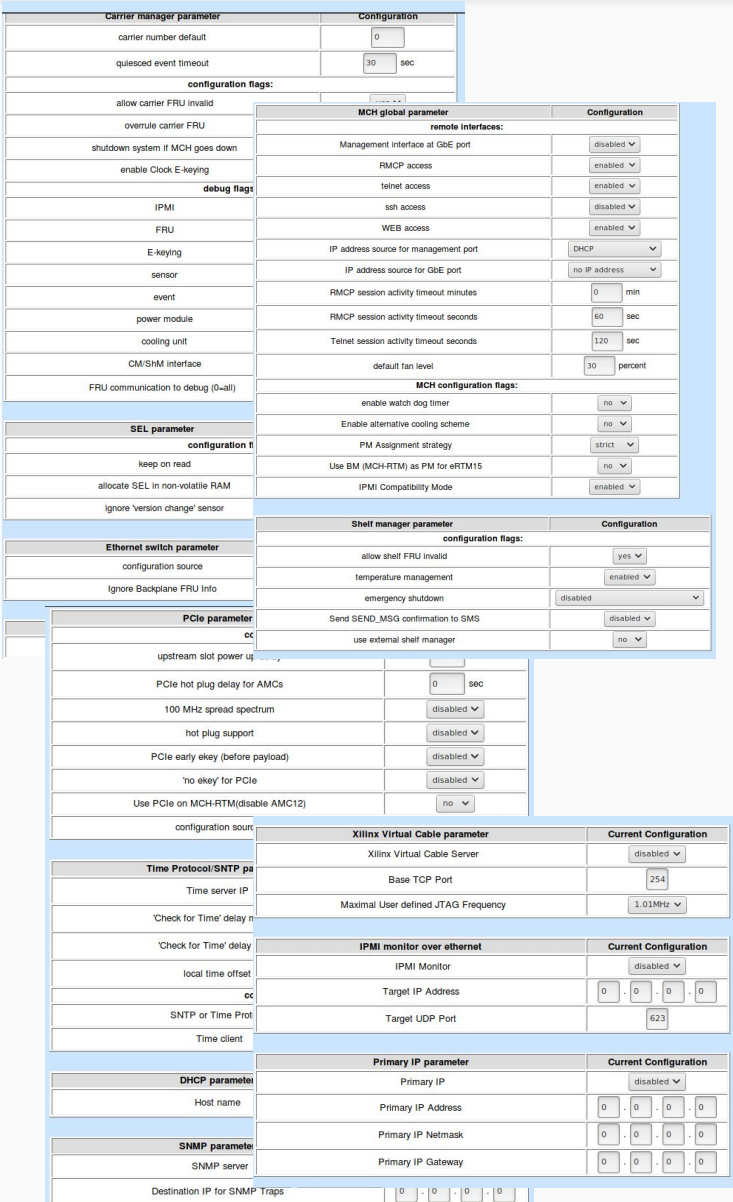
- What MicroTCA Carrier Hub (MCH) Is, Why We Need Is
- Workflow for A Single MTCA Configuration
- What to do when we need to deploy a lot of crates
- MCH Tool Architecture
- Live Demo
- Outlook
- Questions, Comments



- The MCH is the **heart** of a uTCA crate : It provides the central management and data switching entity for a MicroTCA system and as such comprises of a base module and numerous optional daughter cards, which can be mounted on the base module.
 - Clock generation and distribution
 - Ethernet Switches
 - PCI Express Switch
 - Management : power, cooling, and communications between AMCs.
- It gives us too many degree of freedom to select what we want to use with MTCA system configuration.
- A proper configuration is mandatory in order to enable all the needed functionalities and performance.

What MicroTCA Carrier Hub (MCH) Is, Why We Need Is

- It provides three options
 - Console (USB, RS232 or Telnet)
 - Script File
 - Web browser
- However, one needs all of them, NONE of each one can configure NAT MCH correctly.
- Basic options (around 70) in Web interface should be properly and consistently answered.
- the external debug connection and firmware update are mandatory
- In addition, several hundreds MTCA system which we have to deploy in near soooooon.
- In terms of configuration management, we have to track down its configuration carefully.



The screenshot displays the MicroTCA Carrier Hub (MCH) configuration web interface, organized into several sections:

- Carrier manager parameter:** Includes fields for carrier number default (0), quiesced event timeout (30 sec), and configuration flags (allow carrier FRU invalid, overrule carrier FRU, shutdown system if MCH goes down, enable Clock E-keying).
- SEL parameter:** Includes configuration flags (keep on read, allocate SEL in non-volatile RAM, ignore 'version change' sensor).
- Ethernet switch parameter:** Includes configuration source and ignore Backplane FRU Info.
- PCIe parameter:** Includes upstream slot power up, PCIe hot plug delay for AMCs (0 sec), 100 MHz spread spectrum (disabled), hot plug support (disabled), PCIe early ekey (before payload) (disabled), 'no ekey' for PCIe (disabled), and Use PCIe on MCH-RTM(disable AMC12) (no).
- MCH global parameter:** Includes remote interfaces (Management interface at GbE port, RMCP access, telnet access, ssh access, WEB access), IP address source for management port (DHCP), IP address source for GbE port (no IP address), RMCP session activity timeout minutes (0 min), RMCP session activity timeout seconds (60 sec), Telnet session activity timeout seconds (120 sec), default fan level (30 percent), MCH configuration flags (enable watch dog timer, Enable alternative cooling scheme, PM Assignment strategy, Use BM (MCH-RTM) as PM for eRTM15, IPMI Compatibility Mode).
- Shelf manager parameter:** Includes configuration flags (allow shelf FRU invalid, temperature management, emergency shutdown, Send SEND_MSG confirmation to SMS, use external shelf manager).
- Xilinx Virtual Cable parameter:** Includes Xilinx Virtual Cable Server (disabled), Base TCP Port (254), and Maximal User defined JTAG Frequency (1.01MHz).
- IPMI monitor over ethernet:** Includes IPMI Monitor (disabled), Target IP Address (0.0.0.0), and Target UDP Port (623).
- Primary IP parameter:** Includes Primary IP (disabled), Primary IP Address (0.0.0.0), Primary IP Netmask (0.0.0.0), and Primary IP Gateway (0.0.0.0).
- SNMP parameter:** Includes SNMP server and Destination IP for SNMP Traps (0.0.0.0).

- Assemble MTCA Crate with Power Module, and MCH
- Connect the dedicated debug cable and an ethernet cable to MCH
- Setup the MCH IP address
- Update the latest firmware through TFTP
- Setup the basic configuration
- Upload the clock configuration file
- Check its configuration
- Create the configuration report

1. *Visual inspection (LEDs):*
 - a. *Cooling Unit*
 - b. *Power Module*
2. *Test slots with dummy AMC board*
3. *Plug in all AMCs and check LEDs*

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How many one can do at the same time?

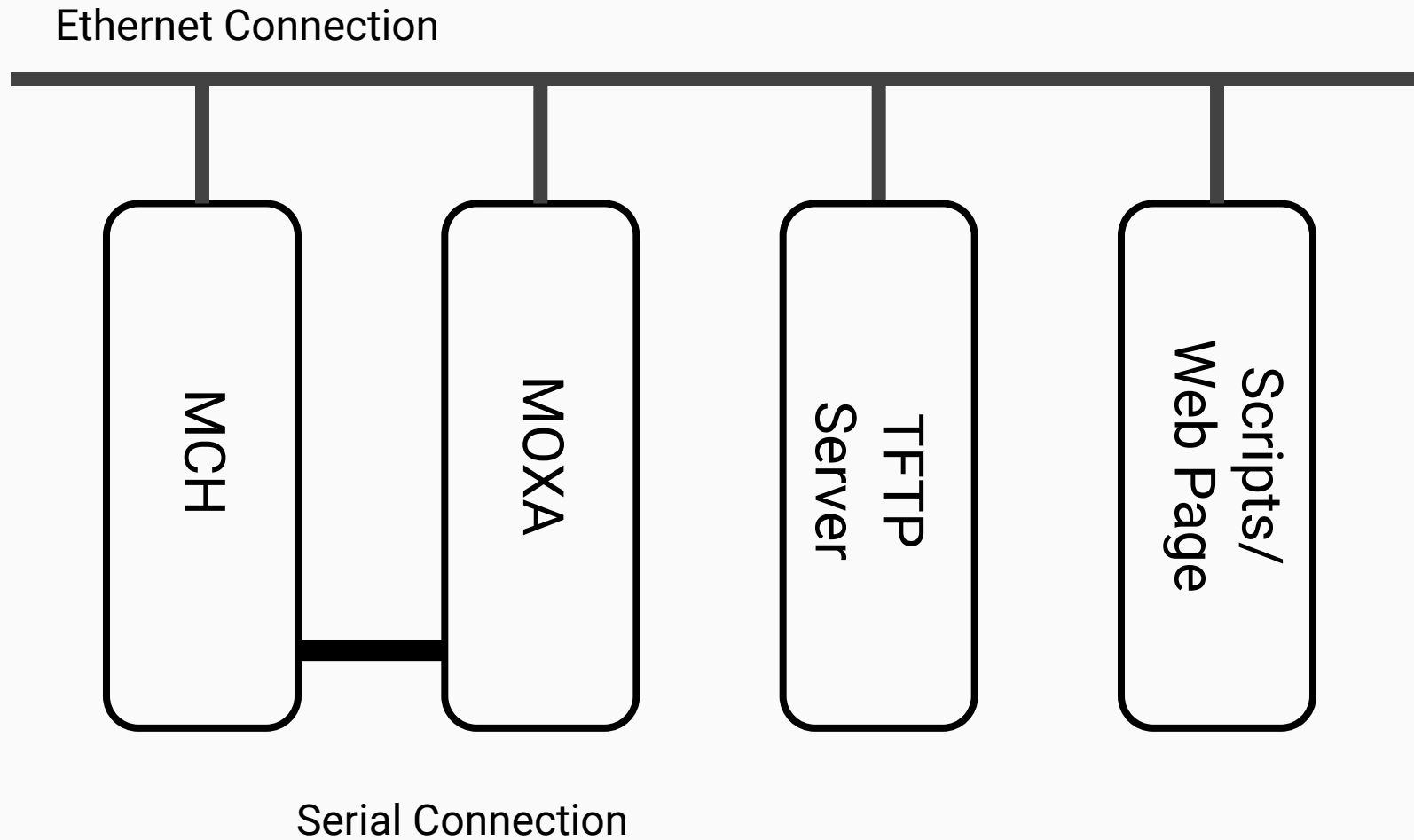
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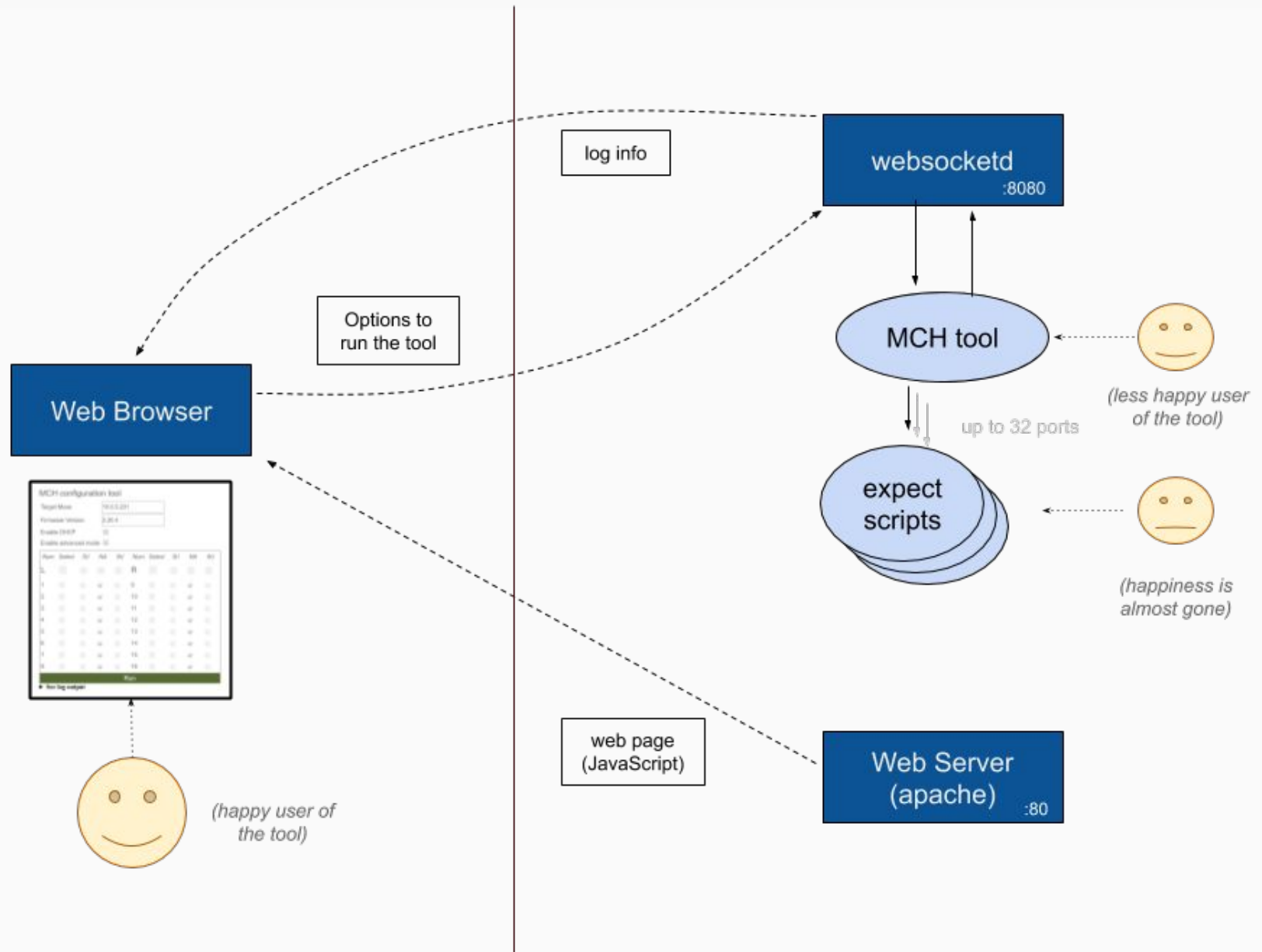
What to do when we need to deploy a lot of crates

- configuring an only crate is a little bit cumbersome:
 - There's no support to load a single file with the default config which covers all necessary values.
 - Access the web page is not always easy (first time?)
 - Command line is super annoying
 - **Even following a recipe, configuring an MCH takes time**
- So... if I need to deploy a lot, what happen?

we need a tool!!
(or a lot of students)







<http://10.0.4.189/>

Live demo

Outlook

What we achieved:

- Now we save a lot of time thanks to this tool
- The interface is easy to use
- The current status is quite stable
- Now, we can configure many MCHs at the same time with a low effort
- Time/unit: from 12 to 2 (6 units)

What can be improved:

- Ease even more the user interface
- Improve log reporting
- Improve the error message reports
- Find a way to run at the same time configuration for different crate form factor.

Questions, comments,...

https://github.com/icshwi/mch_config