# MAGNUM Support Tools

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**Title:** MAGNUM Support Tools
**Version:** 1.0 (2018/05/10)

# Contents

# Overview

The MAGNUM Support Tools module has been developed with the expectation that it can be installed on any MAGNUM version without concern for version mismatch. The tool aims to be useful on any system, old or new. In specific circumstances certain tools provided by this package will have limited functionality or not be supported on older versions. However, the general tool set should be useful for debugging on any system. A description and information on the tools provided is listed below.

For all binary files listed below, for further information on use, help is provided by each. The help can be obtained by adding -h or --help to the binary command. This help will provide more detailed information on the options available.

As of version 1.1.1, MAGNUM Support Tools provides access to specific tools via the configshell interface (admin user). These are provided via the "MAGNUM" menu option. When installed on older systems, it is possible to add to the existing layout, specifics can be found at the bottom of this page to obtain this.

# Tools

## Capture Tools

```
Available In: 1.0.0 (moved from MAGNUM Utilities)
```

This tool suite is used for capturing and parsing PCAP files into human-readable forms. There are currently four binaries that provide specific functionality for capturing and parsing communication between MAGNUM systems and controlled devices. You can learn more about capturing device communication, see Device Communication

### *Binaries*

- /opt/magnum-support-tools/bin/parse_pcap (removed in 1.3.0)
    - Parses standard PCAP files (tcpdump, wireshark) and converts binary formats to human-readable descriptions
    - Replaced by /opt/magnum-pcap-parse/bin/parse_pcap
- /opt/magnum-support-tools/bin/watch_stream (removed in 1.3.0)
    - Parses live captured communication streams and converts binary formats to human-readable descriptions
    - Replaced by /opt/magnum-pcap-parse/bin/watch_stream
- /opt/magnum-support-tools/bin/device_communication_ports
    - Takes in one or more device names and returns a tcpdump filter string to provide for capturing device traffic
- /opt/magnum-support-tools/bin/capture_device_traffic
    - Capture communication between MAGNUM modules and devices and once complete will create a parsed capture
    - Available through configshell menu on MAGNUM-SDVN versions 1.16.7 and greater

### *Limitations*

Older versions of MAGNUM cannot support all specific filter options, but all effort was taken to provide as much as possible. Versions prior to SDVN 1.10 does not support *--include-only-rtrsrv-traffic* option and will get all communication between modules and driver service.

## Commissioning Link Checker

```
Available In: 1.1.0
```

The commissioning link checker tool is provided to run at commissioning or expansion of a system. This tool will affect live video and should only be run during maintenance windows. This tool will take down all ports on an IPX/EXE that are configured in the system and check the other end of the link to detect if the link is detected as "down" on the other side of the link. This tool is going to report any links that it finds that the two ends are not reporting the same status. The tool progresses by turning off ports on the core device (IPX/EXE).

### *Binaries*

- /opt/magnum-support-tools/bin/commissioning_link_checker
    - Checks link for miswiring in the system
    - Configurable delay value for checking downstream end (default 10 seconds)

### *Limitations*

Some devices may not support link monitoring so they can not be accurately verified

**CAVEAT**: can only verify links that are currently listed as "UP"

## System Link State

```
Available In: 1.1.0
```

The system link state tool provides a quick report on current status of links in the MAGNUM system in a simple CSV format.

### *Binaries*

- /opt/magnum-support-tools/bin/get_link_states
    - Reports current link state in the system to CSV report

**NOTE**: Requires magnum-signal-monitor-service-0.1.0

## Emulate System

```
Available In: 1.1.0 (moved from MAGNUM Utilities)
```

This tool is useful for converting a configuration to use emulation for in-house testing. The tool can be used to emulate against one or more servers. When emulating against remote servers, this tool will emulate the system and then attempt to copy the system configuration to the emulation servers automatically. For more specific information on emulating customer systems, see Emulate Systems

### *Binaries*

- /opt/magnum-support-tools/bin/emulate_system
    - Tool provided to convert MAGNUM configuration to emulation

## Replay Logged Routes

```
Available In: 1.1.0 (moved from MAGNUM Utilities)
```

This tool parses the router service logs and detects and routes and subscription actions taken for a given time period. It will then send the same requests to the system to replay the routes.

### *Binaries*

- /opt/magnum-support-tools/bin/replay_logged_routes
    - Replay logged routes and subscriptions

## Compare System Packages

```
Available In: 1.1.0
```

This tool is useful for comparing multiple server package versions. It will provide a detailed difference between all packages on a system. By default it will compare the local system to one or more other servers.

### *Binaries*

- /opt/magnum-support-tools/bin/compare_system_packages
    - Compare all system packages from a server against one or more other servers

## Compare System Tweaks

```
Available In: 1.2.3
```

This tool is useful for comparing multiple server tweaks. It will provide a detailed difference between all tweaks on a system. By default it will compare the local system to one or more other servers.

### *Binaries*

- /opt/magnum-support-tools/bin/compare_system_tweaks
    - Compare all system tweaks from a server against one or more other servers

## Compare Debian Packages Against Rootfs

```
Available In: 1.1.2
```

This tool is useful for comparing current system debian packages against the debian packages installed with the rootfs. It will provide a detailed difference between existing packages on a system with what was expected.

### *Binaries*

- /opt/magnum-support-tools/bin/compare_debs_to_rootfs
    - Compare all system packages from a server against rootfs

## Power-On Video Route Checker

```
Available In: 1.1.0
```

The power-on video route checker is a tool used for testing video paths in a system after power-on. Generally useful for truck installations when they arrive on-site. The tool will route a single known good video source to all video destinations in the system. Any routing errors will be reported. Once the one-to-all route is made, the Ethernet statistics on any configured link within the system will be reset. After a configurable delay, the tool will query the Ethernet statistics to determine if it is receiving video without errors (when possible). Any device not reporting video, or reporting packets with error will be reported.

During the test, MAGNUM servers within the same cluster will be disabled. Along with this the test will disable routing against the local system through the web and Clienthost interfaces.

### *Binaries*

- /opt/magnum-support-tools/bin/power_on_route_check
    - Tool to route a single video source to all video destinations in a system
- /opt/magnum-support-tools/bin/reload_power_on_route_state
    - Reload saved route state from the beginning of a power on check

### *Limitations*

Limited device support for first development

- Supported Devices:
    - MMA10G-VIP variations
    - 3067VIP10G-3G
    - 3067VIP10G-J2K
    - 570IPG-3G18-SFPP12
    - EXE-X-IP18-10GE6
    - EQX-IP18-IPG
    - 2430RX2-10G _(can not detect error on link)_

## Route Invariance Checker

```
Available In: 1.1.2  (moved from MAGNUM Utilities)
```

This tool is used for checking a system for route invariances.

This examines a system for the following:

- Missing RX streams: The upstream device is providing this stream on a link but the downstream device is not tuned to receive it
- Missing TX streams: The downstream device is tuned to receive a stream on a link but the upstream device is not providing it
- Two different sources: A destination device is tuned to two streams for redundancy, but those two streams do not originate from the same place
- Non-redundant streams: A destination device is tuned to two streams for redundancy, but only one stream is actually reaching the device

It does not detect the following:

- Duplicate crosspoints on switches
- Over-provisioned links

### *Binaries*

- /opt/magnum-support-tools/bin/route_invariant_checker
    - check system for IP routes that have been left behind

# Force Link Status Tool

```
Available In: 1.1.16
```

In some larger systems, a link has reported 'down', but both ends of the link believe it to be 'up'. After investigation, manual updates in MAGNUM Signal Monitor Service were performed through the debug interface. This tool scripts the process and allows manual intervention to correct the situation without a restart of the process or specific RnD knowledge of the internal working of the process. This tool operates on a single port of a single device at a time. This tool is meant to be deprecated as of magnum-signal-monitor-service 0.8.0.

### *Binaries*

- /opt/magnum-support-tools/bin/force_link_status_update

# Restore Corrupted Database

```
Available In: 1.1.7
```

In specific situations the PostgreSQL database that MAGNUM processes rely on may become corrupted in rare cases. This tool is a last resort to restore a system to a previously known working state. It will destroy the existing database and reload a previously good working restore point.

**NOTE**: This tool is only to be used in extreme situations as it can cause more damage than it is trying to solve if used in the wrong situation

### *Binaries*

- /opt/magnum-support-tools/bin/restore_corrupted_database
    - removes corrupted database and restores from a restore point

# Dual Hot Route Check

A simple tool that checks for routes in a system that are "single-hot" instead of "dual-hot". It determines this information from Router Query Service.

### *Binaries*

- /opt/magnum-support-tools/bin/dual_hot_route_check
    - checks state of routes for dual-hot status

# Compare CORE State

In typical dual-hot systems, there are distinct main and backup addresses used for transmit for dual-hot divergent paths. Often it is useful to know the "sync" between two COREs in a system. This tool will generate a report based on the MAGNUM configuration and comparing the COREs port-by-port to determine differences for troubleshooting purposes.

### *Binaries*

- /opt/magnum-support-tools/bin/compare_exe_state
    - compare state of two COREs (EXE/IPX) based on MAGNUM configuration

# Enable/Disable Devices

A tool to bulk enable/disable devices within the system.

## *Binaries*

- /opt/magnum-support-tools/bin/device_toggle
    - enable/disable a large number of devices in the MAGNUM system

## Manual Static System Routes

```
Available In: 1.2.10
```

This tool replaces using /opt/magnum-driver-service/bin/synergy_cli to setup manual static system routes that are not handled via magnum-inband-control-service. This tool effectively performs the same task, however, it no longer requires the user to restart driver service. The issue with the previous method was that card replacement feature did not interact well with the manual command set directly on the device. When the card would re-connect, the manual routes would be lost on the device, causing connections to be lost.

The command accepts a device name and a command file as arguments to the tool. The tool was made to support reading the original input format of a file-based synergy_cli tool. It also supports a more simplistic directive style which has been used for extracting Synergy state from devices. For more information, run the help of the provided binary file with (-h).

### *Binaries*

- /opt/magnum-support-tools/bin/manual_static_routes
    - perform manual configuration of static routes on an EXE/IPX

## Duplicate Terminal ID Checker

```
Available In: 1.3.2
```

This tool is used to check for a system that might be infected with duplicate terminal IDs. In general, this should not happen, as UUIDs are used and should be randomly generated with low probability of collision. This will generate a report if there are duplicates detected locally

### *Binaries*

- /opt/magnum-support-tools/bin/check_for_duplicate_terminals
    - perform system check for duplicate terminals

## Clear USB/USB-HID from Unlinked Ethernet Ports

```
Available In: 1.3.3
```

This tool is used to clear USB/USB-HID receive addresses from MMA10G-TRS and MMA10G-TRM devices where a link is not set in the MAGNUM configuration.

### *Binaries*

- /opt/magnum-support-tools/bin/clear_unused_usb
    - Clear USB/USB-HID RX addresses from SFPs that are not linked in system

## Standardize System Bitrates

```
Available In: 1.3.4
```

This tool is used to set all bitrates to be consistent throughout a system. It will request bitrate values for various stream types associated with encapsulation addresses prior to executing the changes.

### *Binaries*

- /opt/magnum-support-tools/bin/standardize_system_bitrates
    - Force all bitrates of the same type to match

## Get Terminal Information

```
Available In: 1.2.11, 1.3.5
```

A tool to use on the command line to obtain information related to a terminal identifier (UUID in 1.18, integer in 1.17 and previous). This will by default provide a default name for the terminal.

### *Binaries*

- /opt/magnum-support-tools/bin/get_terminal_info
    - Obtain terminal names for requested identifiers

## Get System Information

```
Available In: 1.3.8
```

A tool to use on the command line to obtain information related to a MAGNUM system (device count, etc)

### *Binaries*

- /opt/magnum-support-tools/bin/system_information
    - Obtain system counts/scale

## Disconnect Server From Emulated TCP Device

```
Available In: 1.3.8
```

A tool to use force an emulated device to drop all connections for a given MAGNUM server. This will cause the server to re-sync with that device.

### *Binaries*

- /opt/magnum-support-tools/bin/drop_emu_tcp_connection
    - force server to re-sync to device

## Check Provisioned Bandwidth

```
Available In: 1.5.6
```

A tool to check the provisioned bandwidth of a link in a MAGNUM System.

### *Binaries*

- /opt/magnum-support-tools/bin/check_provisoned_bandwidth
    - Check currently provisioned bandwith of a link, or set of links

## Distribute Packages

```
Available In: 1.6.2
```

A tool to check to distribute packages from one server to multiple

### *Binaries*

- /opt/magnum-support-tools/bin/distribute_packages
    - Takes a CSV of server IPs and distributes a directory of packages to those servers

## Detect 1-1 Quad Route Variances

```
Available In: 1.6.4
```

A tool to check to audio channels to detect if they do not pair 1-1 within their quad

### *Binaries*

- /opt/magnum-support-tools/bin/detect_non_quad_routes
    - Generates a CSV report of top-level destination or subscription and the group that is not 1-1

## PTP/Device Clock Report

```
Available In: 1.7.4
```

A tool to check which PTP clock devices are paired with in a system

### *Binaries*

- /opt/magnum-support-tools/bin/ptpreport
    - Generates a CSV report of device to PTP clocks

## Database Schema Comparison

```
Available In: 1.7.16
```

A tool to compare live database schema against a "clean" version of the same schema

### *Binaries*

- /opt/magnum-support-tools/bin/compare_database_to_expected
    - Generates a DIFF report when database schema does not match clean schema

## Get Driver Service Port

```
Available In: 1.7.18
```

This tool is for obtaining driver service port given a device name configured in the system.

### *Binaries*

- /opt/magnum-support-tools/bin/get_driver_service_port
    - Given a device name, print the driver service port it is listening on

# Appendix A: Configshell Menu Option

This section is only required when installing this on an older MAGNUM system. In the case MAGNUM Support Tools does not create a new menu in the *admin* configshell menu, you can manually edit the layout file to add the tools into the menu. To add the menu, copy and paste the following code snippet into */etc/configshell.d/layout.cfg*. The snippet below should be placed in the *main_menu* list, generally somewhere after the **Debug** menu.

```
{'left_text': 'MAGNUM',
 'right_text': 'MAGNUM Tools',
 'do_func': do_magnum_support_tools,
},
```