

Considerations for Mechanical Packaging of Cisco 3270 Rugged Integrated Services Router

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Overview

This document highlights some of the considerations in repackaging a Cisco 3270 Rugged Integrated Services Router into a small enough enclosure suitable for carrying on a person.

No effort has been made to validate that these considerations to reduce the weight and size do not compromise the thermal aspects of the commercial, off-the-shelf product. Systems integrators bear the responsibility for any testing and validation of final design.

Figure 1. Prototypical Concept of Repackaging



- Cisco 3270 based, 3 board stack (HMARC, MRPC, WMIC) with thermal plates removed
- Size: ~6.15"W x 1.65"H x 12.00"D
- Weight: ~2.9 Lb.
- 1 FE port, 2 GigE ports
- HMARC and WMIC Consoles (on rear)

Some Materials That May Be Useful

Cisco Parts:

- 3270 HMARC, Cisco PN: C3271MARC-TP=
- 3202 4.9Ghz WMIC, Cisco PN: C3202WMIC-A49-K9=
- MRPC power supply, Cisco PN: C3201MRPC-TP=
- WMIC upgrade kit for cables, Cisco PN: C3230WMIC-KIT=
- (includes Ethernet jumper cable, two coax antenna cables, and two antenna jacks)
- Antenna, Cisco PN: AIR-ANTM2050D-R=

Anixter Parts (<http://www.anixter.com>):

- MARC console and LED cable, Tyco PN: 1521189-1 ([1521189.pdf](#))
- WMIC console and LED cable, Tyco PN: 1521290-1 ([1521290.pdf](#))
- Ethernet jack assembly (Qty=3), Tyco PN: 1521197-1 ([1521197.pdf](#))
- Ethernet jumper cable, Tyco PN: 1521289-1 ([1521289.pdf](#)) (one included in WMIC upgrade kit above, ordering individually)

Misc. Parts:

- Ribbon Cable for power to WMIC, Samtec PN: TCMD-25-D-09.75-01-R (<http://www.samtec.com>)
- DC Power Jumper parts
 - 4 CKT Receptical Housing, Mouser PN: 538-39-00-0211 (<http://www.mouser.com>)
 - Qty=2, 16 AWG socket, Mouser PN: 538-39-01-4041
 - 16 AWG stranded red insulated wire
 - 16 AWG stranded black insulated wire
 - 16 AWG crimp tool, Mouser PN: 538-11-01-0199
- Screw, #4-40x0.31 Phillips, Flat Head 100° CSNK; PENCOM PN: SC4918 (<http://www.pencomsf.com>)
- Screw, #4-40x0.25 Phillips, Pan Head with square cone washer; PENCOM PN: SC3377 Rev B
- Standoff, #4-40x0.625L x 3/16Hex Male/Female, AMATOM PN: 9730-SS-0440-7 (<http://www.amatom.com>)
- Pin Fin Heatsink w/adhesive; Wakefield PN: 625-25AB-T5 ?? (<http://www.wakefield.com>)
- LED (tricolor), Medland PN: L529EGWCA-H501 (<http://www.medlandandassociates.com/cisco.php>)
- Thermal Gap Filler, Chomerics PN:T630G (http://www.chomerics.com/products/thermagap_t630.htm)

Custom Sheetmetal Parts* (drawing names in parenthesis):

- Bottom Plate (bksm-bottom)
- Top Plate (bksm-top)
- Front Panel (bksm-front)
- Rear Panel (bksm-rear)

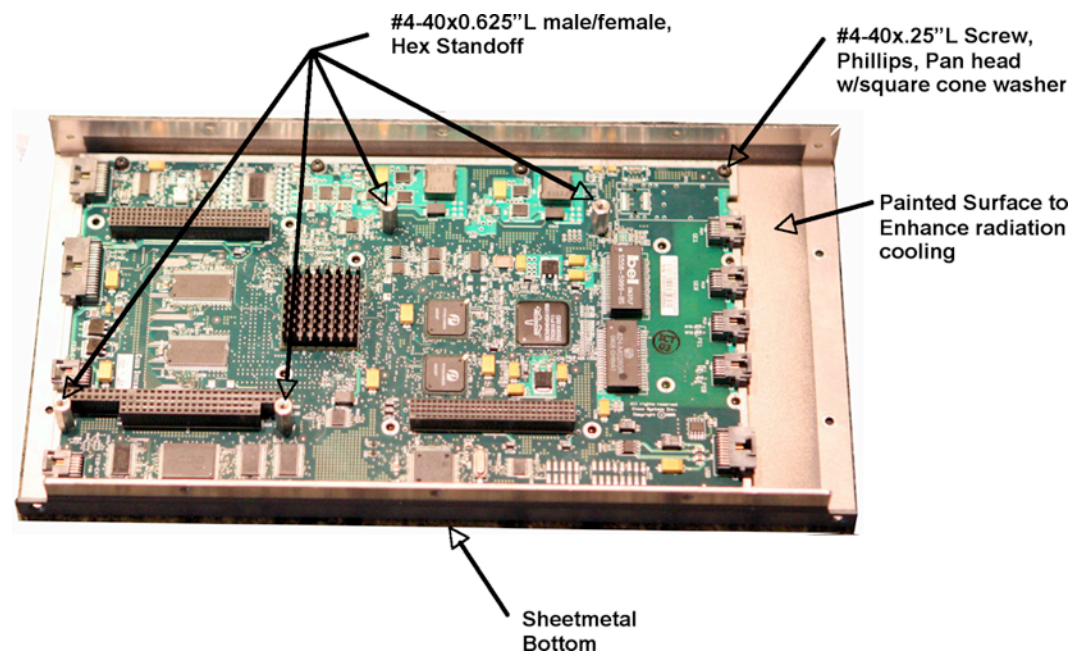
*Sample 2-D drawings and a 3-D database can be provided as reference for the custom sheetmetal parts. For inquiries and/or access to the sample drawings or database, email request to: siracuse@cisco.com.

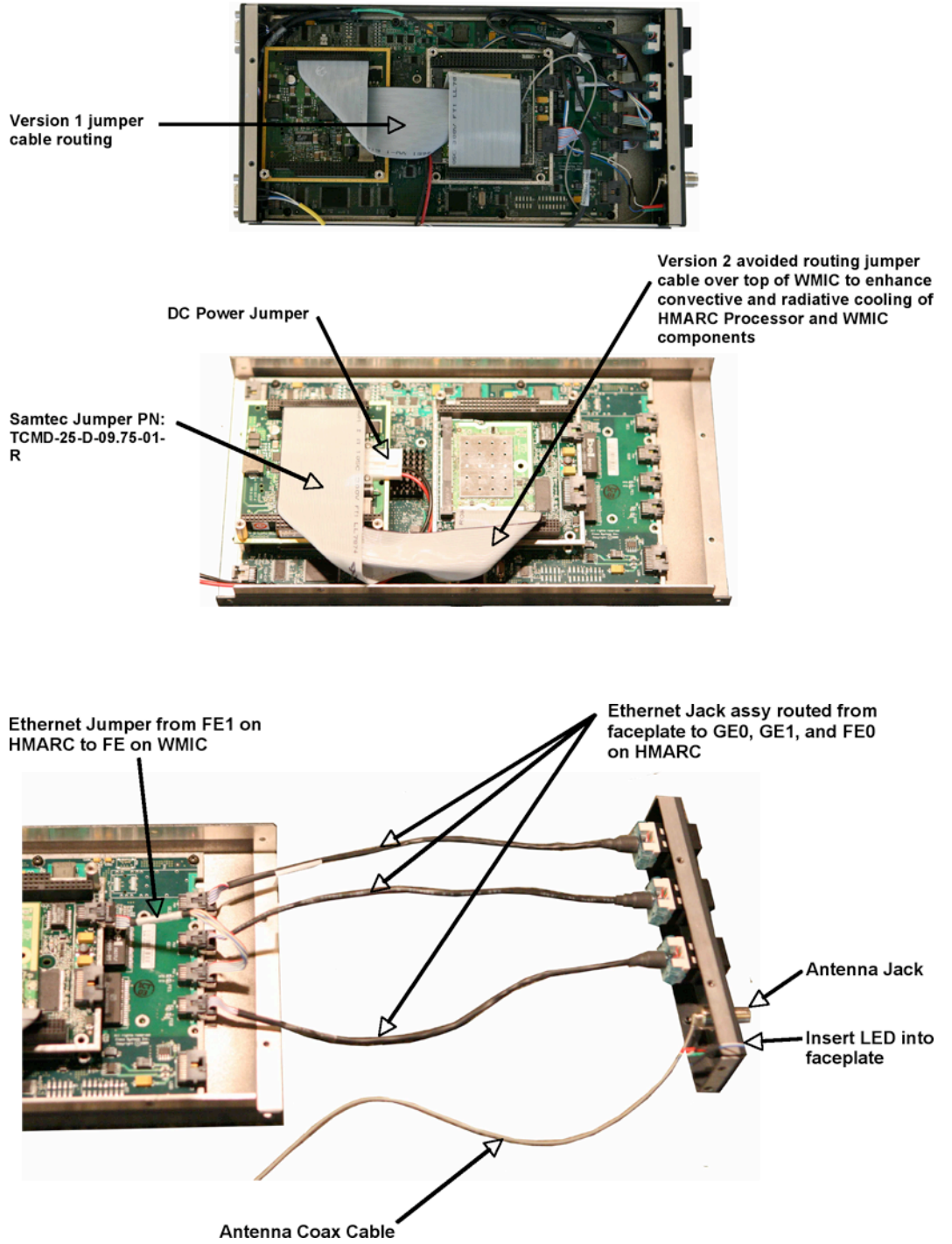
General Mechanical Information

The HMARC and MRPC cards are not currently offered without the thermal plates attached so the first consideration is the removal of the thermal plates to reduce weight with the associated reduction in thermal design limits. In order to create a router as thin as possible, another consideration is clipping the PC104 connector leads that protrude from the bottom side of the HMARC card. A possible enclosure would be a four-piece aluminum housing designed to minimize space around the circuit boards, while height reduction could be achieved via a flat ribbon cable to provide power to the WMIC card from the MRPC. A custom power jumper may be needed to provide the 12 volt input to the MRPC, and the MARC console cable may need modification to provide adequate length to route the console connection to the backpanel while providing the leads to the LED on the front panel. System integrators may want to consider adding a pin fin heatsink to the HMARC processor to help with natural convection cooling within the enclosure. Inclusion of thermal gap filling material under some of the hotter areas of the HMARC circuit board may help conduct the heat to the bottom plate.

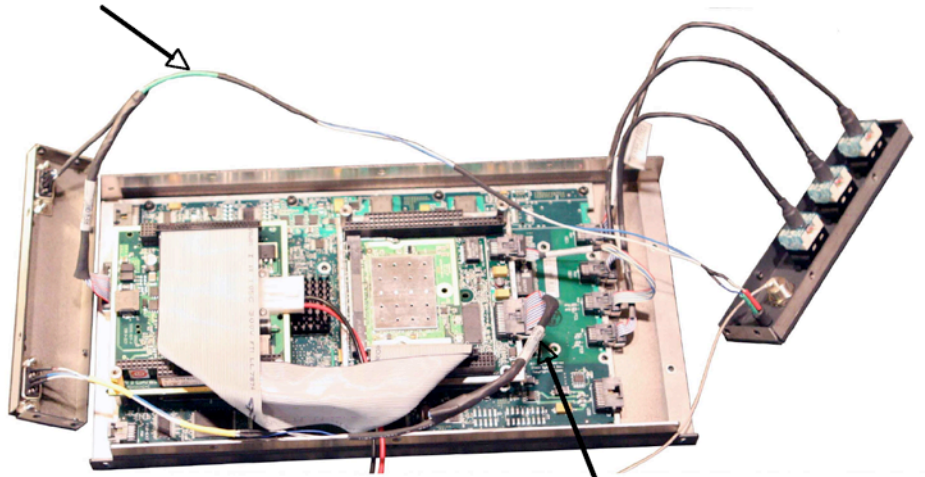
Assembly Information

The following text and illustrations show the general assembly considerations for a possible repackaging concept. If more specific information about potential assembly is desired for consideration, please contact Cisco by sending an email to siracuse@cisco.com.

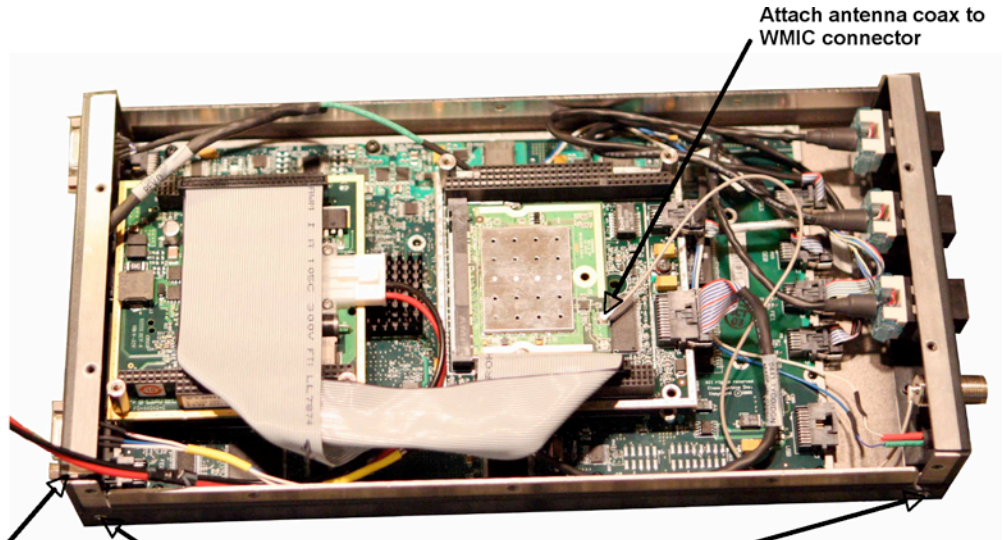




MARC Console Cable (increased length of LED wires)
Routes from HMARC Console connector to rear plate DSUB
and to front plate LED



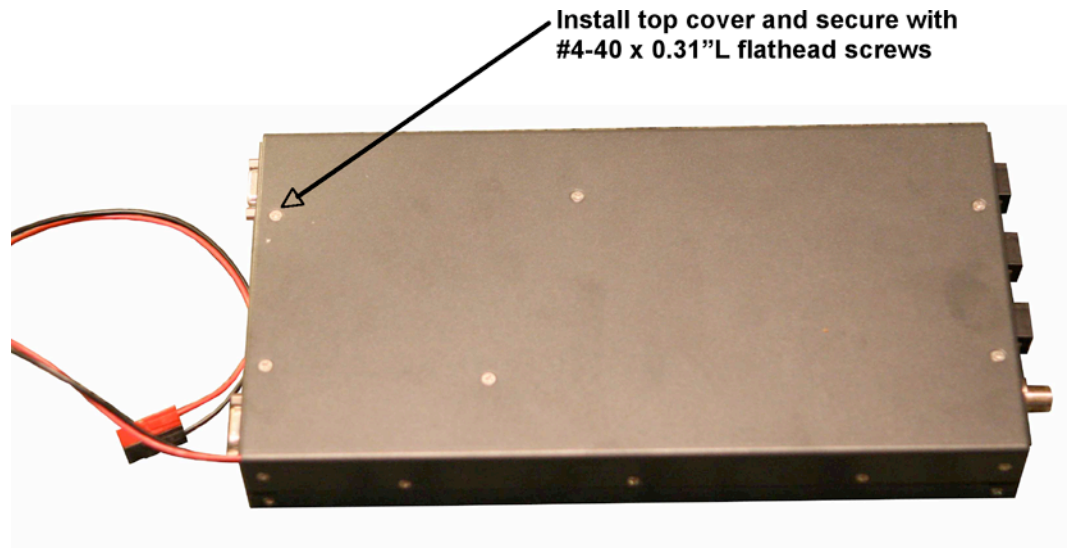
WMIC Console Cable (increased length of console wires)
Routes from WMIC console to rear plate DSUB



Attach antenna coax to WMIC connector

Power Cable will be routed out of this small slot

Assemble front and rear plates to chassis bottom with #4-40 x 0.31"L flathead screws



WMIC Configuration

The WMIC may be assembled using only one antenna connection. Therefore, the default configuration that uses a diversity setup must be changed in the WMIC configuration to use only the right antenna. The following configuration shows the changes that may be necessary:

```
!
interface Dot11Radio0
...
antenna receive right
antenna transmit right
...
!
```

Power Input

The external power requirement is 9-32 VDC with the Red power wire being the positive lead. To help in sizing external battery packs, the minimum continuous load is expected to be in the 0.9 AMP range when a 12 VDC power source is used.

Acronyms

GigE—Gigabit Ethernet

HMARC—Hi-speed Mobile Access Router Card

LED—Light Emitting Diode

MARC—Mobile Access Router Card

MRPC—Mobile Router Power Card

WMIC—Wireless Mobile Interface Card



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