HYDROLOGIC EQUIPMENT MODIFICATION NOTE 3, REVISION A
Operations Division
W/OPS12: JCS

SUBJECT:	**Community Hydrologic Prediction System (CHPS) Hardware Installation**
PURPOSE:	To install one Dell R710 Controller (CHPS4), one Dell R900 Application Server (CHPS5) and one Dell R900 Database Server (CHPS6) in Advanced Weather Interactive Processing System (AWIPS) River Ensemble Processor Rack 8 (REP Rack).
SITES AFFECTED:	See Attachment D.
AUTHORIZATION:	The authority for this note is Request for Change (RC) 12092.
VERIFICATION STATEMENT:	This procedure was tested and verified at Taunton, MA (TAR) and NHOR.
ESTIMATED COMPLETION DATE:	Upon receipt of equipment from the Office of Hydrologic Development (OHD) and no later than December 10, 2010.
TIME REQUIRED:	Approximately 3 hours
ACCOMPLISHED BY:	Electronics Systems Analysts (ESA) and/or Electronics Technicians (ET)
EQUIPMENT AFFECTED:	AWIPS REP Rack
SPARES AFFECTED:	None
PARTS/MATERIALS REQUIRED:	CHPS Field Installation Kit includes: 2 – Dell R900s 1 – Dell R710 3 – Keyboard Video Mouse (KVM) cables 3 – Power Cords 6-gage 9-foot (to be supplied by the site) 3 – Power Cords 6-gage 6-foot (to be supplied by the site) 6 – Ethernet cables 10-foot (to be supplied by the site)
SOURCE OF PARTS/MATERIALS:	OHD
DISPOSITION OF REMOVED PARTS/MATERIALS:	N/A
TOOLS AND TEST EQUIPMENT REQUIRED:	Side cutters Screwdriver Flashlight
DOCUMENTS AFFECTED:	None
PROCEDURE:	Attachment A provides CHPS installation procedures. Attachment B provides HUB 6 Blocking CHPS4 installation procedures. Ensure no unauthorized equipment has been installed in the REP Rack. Engage two people when installing the Dell R710. Engage three people when installing the Dell 900s.

TECHNICAL ASSISTANCE: For questions or problems pertaining to this note, contact Randy Rieman at (301) 713-0624 x165, (301) 467-2543 or Randy.Rieman@noaa.gov.

REPORTING INSTRUCTIONS: Report the completed modification using the Engineering Management Reporting System (EMRS) according to the instructions in EHB-4, Maintenance Documentation, Part 4. Include the following information on the EMRS report:

Maintenance Description (block 5): **Hydro Mod Note 3A – Installation of the Community Hydrologic Prediction System (CHPS) Hardware**

Equipment Code (block 7): **CHPS**

Serial Number (block 8): **Please provide the serial number of each CHPS device in Maintenance Comments (block 15).**

Maintenance Comments (block 15): **Installed the CHPS Hardware I.A.W. Hydro Mod Note 3A.**

Mod No. (block 17a): **3A**

A sample EMRS report is provided as Attachment **E**.

Deirdre R. Jones
Director, Operations Division

Attachment A – CHPS Installation Procedures
Attachment B – Hub 6 Blocking CHPS4 Installation Procedures
Attachment C – REP Rack Layout
Attachment D – List of Affected Sites
Attachment E – Sample EMRS Report

ATTACHMENT A - CHPS Installation Procedures

A.1 Installing Dell R710 Rack Mount Rails

NOTE:	The rack units on the REP Rack are numbered. Each unit consists of three holes.

1. Locate the Dell R710 ReadyRail mount kit located in the top of the Dell R710 box (the middle box). Refer to Figure A-1.

Figure A-1: Dell R710 Rail Box

2. Remove the slide rails from the box and perform the following (Figure A-2):
    a. Position the right rail in the REP Rack and seat the top hooks so that the pegs of the front and rear flanges are aligned from the outside of the vertical rail with the top holes of rack unit 38 and the bottom holes of rack unit 37 on the front and rear rails of the rack. See Section B.1 if there is trouble aligning the rail hook.
    b. Push the rear rail flange toward the front of the REP Rack until the second hook locks into place in the square holes on the vertical rails.
    c. Push the front rail flange toward the back of the REP Rack until the second hook locks into place in the square holes on the vertical rails.

Figure A-2: Front Rail Flange for Dell R710

3. Repeat for the left side rail.

A.2 Installing Dell R710

1. Extend the two slide assemblies out of the rack until they lock.
2. Remove the R710 from its shipping container.
3. Mount the R710 to the extended rails by performing the following (Figure A-3):
    a. Lift the system into position between the extended rails. Using a minimum of two people, each person should place one hand on the front-bottom of the system and the other hand on the back-bottom of the system.
    b. Tilt the front of the system upward while aligning the back shoulder screws on the sides of the system with the back J-slots on the slide assembly.
    c. Engage the back shoulder screws in the rear J-slots.
    d. Lower the system until the middle and front screws are engaged in the appropriate J-slots.
    e. Push the system inward on the slide assemblies until the system-locking mechanism clicks into place, locking the slide to the system.
    f. Depress the rail release button and slide the server into the rack until it clicks into place. If the system slides 6 inches and stops, see Section B.2.
    g. Install the cable management system that is appropriate for the site.

Figure A-3: Dell R710 Installed without Face Cover

4. Install the face cover on the server and label the unit **CHPS4**.

A.3 Installing Dell R900 Rack Mount Rails

1. Locate ONE of the Dell R900 rack mount boxes and remove the kit slide rails from the box. Refer to Figure A-4.

NOTE:	The rack units on the REP Rack are numbered. Each unit consists of three holes.

Figure A-4: Dell R900 Rail in Box

2. Remove the red tape from the right rail, ensuring the flanges are set for installation and perform the following (the flange with hooks and spring loaded blue release button are facing out):
   a. At the front of the REP Rack (Figure A-5), position the rail with the bottom hook of the front flange aligned with the bottom hole of rack unit 34.

Figure A-5: R900 Rail Installed - Front of Rack

b. Push the front rail flange toward the front of the REP Rack until the mounting hooks are positioned in the square holes on the vertical rails, and then push down on the flange until the locking button pops out and clicks

c. At the back of the REP Rack (Figure A-6), pull back on the mounting bracket flange and position the rail with the bottom hook of the rear flange aligned with the middle hole of rack unit 34.

d. Pull back on the rear rail flange toward the back of the REP Rack until the mounting hooks are positioned in the square holes on the vertical rails, and then push down on the flange until the locking button pops out and clicks.

e. On the back of the REP Rack, it is optional to insert one screw in the middle hole of rack unit 36 and another screw in the middle hole of rack unit 33. This is not a requirement.

Figure A-6: R900 Rail Installed - Rear of Rack

3. Repeat for the opposite side rail (remove green tape).

4. Locate the other Dell R900 rack mount kit box and remove the kit slide rails from the box.
5. Remove the red tape from the right rail, ensuring the flanges are set for installation and perform the following (the flange with hooks and spring loaded blue release button are facing out):
    a. At the front of the REP Rack, position the rail with the bottom hook of the front flange aligned with the bottom hole of rack unit 30.
    b. Push the front rail flange toward the front of the REP Rack until the mounting hooks are positioned in the square holes on the vertical rails, and then push down on the flange until the locking button pops out and clicks.
    c. At the back of the REP Rack, pull back on the mounting bracket flange and position the rail with the bottom hook of the rear flange aligned with the middle hole of rack unit 30.
    d. Pull back on the rear rail flange toward the back of the REP Rack until the mounting hooks are positioned in the square holes on the vertical rails, and then push down on the flange until the locking button pops out and clicks.
    e. It is optional to insert one screw in the middle hole of rack unit 32 and another screw in the middle hole of rack unit 29. This is not a requirement.
6. Repeat for the opposite side rail (remove green tape).

A.4 Installing the Two Dell R900s

CAUTION

The Dell R900 system is heavy and positioning the unit this high in the rack must be done with safety first and foremost. Use any lifting equipment (Figure A-7) that is available at the site. If there are any concerns, do not install these systems. The CHPS Project Team will figure out a solution. It must be emphasized that safety comes first.

Figure A-7: Equipment Lifting Trolley

1. Extend the lower two slide assemblies (rack unit 34) out of the rack until they lock.
2. Remove the R900 from its shipping container.
3. Mount the R900 to the extended rails by performing the following:
    a. Lift the system into position between the extended rails. Using a minimum of two people, each person should place one hand on the front-bottom of the system and the other hand on the back-bottom of the system.

NOTE: A third person could be used to help stabilize the system when positioning between the extended rails.

b. Tilt the front of the system upward while aligning the back shoulder screws on the sides of the system with the back J-slots on the slide assembly.

c. Engage the back shoulder screws in the rear J-slots.

d. Lower the system until the middle and front screws are engaged in the appropriate J-slots.

e. Push the system inward on the slide assemblies until the system-locking mechanism clicks into place, locking the slide to the system.

f. Depress the rail release button and slide the server into the rack.

g. Secure the system to the rack with the thumbscrews.

h. Install the cable management system that is appropriate for the site.

4. Label the server **CHPS5**.
5. Extend the upper two slide assemblies (rack unit 30) out of the rack until they lock.
6. Remove the R900 from its shipping container.
7. Mount the R900 to the extended rails by performing the following:

   a. Lift the system into position between the extended rails. Using a minimum of two people, each person should place one hand on the front-bottom of the system and the other hand on the back-bottom of the system.

   b. Tilt the front of the system upward while aligning the back shoulder screws on the sides of the system with the back J-slots on the slide assembly.

   c. Engage the back shoulder screws in the rear J-slots.

   d. Lower the system until the middle and front screws are engaged in the appropriate J-slots.

   e. Push the system inward on the slide assemblies until the system-locking mechanism clicks into place, locking the slide to the system.

   f. Depress the rail release button and slide the server into the rack.

   g. Secure the system to the rack with the thumbscrews.

   h. Install the cable management system that is appropriate for the site.

8. Label the server **CHPS6**.

A.5 Attaching the Power Cords to the CHPS4

1. Facing the rear of the rack, attach a 6-foot power cable to the power supply on the left side of CHPS4 (CHPS4 PS-L) and run the cable **up to** the second outlet from the left on the front set of outlets (facing the front of the rack) on PSCH1 (second from top, power strip). Do NOT attach the power cable to the power strip.
2. Facing the rear of the rack, attach a 9-foot power cable to the power supply on the right side of CHPS4 (CHPS4 PS-R) and run the cable **down to** the second outlet from the left on the front set of outlets (facing the front of the rack) on PSCH2 (bottom power strip). Do NOT attach the power cable to the power strip.

A.6 Attaching the Power Cords to CHPS5 and CHPS6

1. Facing the rear of the rack, attach a 6-foot power cable to the power supply on the left side of CHPS5 (CHPS5 PS-L) and run the cable **up to** the third outlet from the left on the front set of outlets (facing the front of the rack) on PSCH1 (second from top, power strip). Do NOT attach the power cable to the power strip. Refer to Table A-1.
2. Facing the rear of the rack, attach a 9-foot power cable to the power supply on the right side of CHPS5 (CHPS5 PS-R) and run the cable **down to** the third outlet from the left on the front set of outlets (facing the front of the rack) on PSCH1 (bottom power strip). Do NOT attach the power cable to the power strip.
3. Facing the rear of the rack, attach a 6-foot power cable to the power supply on the left side of CHPS6 (CHPS6 PS-L) and run the cable **up to** the fourth outlet from the left on the front set of outlets (facing the front of the rack) on PSCH2 (second from top, power strip). Do NOT attach the power cable to the power strip.
4. Facing the rear of the rack, attach a 9-foot power cable to the power supply on the right side of CHPS6 (CHPS6 PS-R) and run the cable **down to** the fourth outlet from the left on the front set of outlets (facing the front of the rack) on PSCH2 (bottom power strip). Do NOT attach the power cable to the power strip.

Table A-1: Power Cables

Power Strip PSCH1

←Left, viewed from front of rack

	#1	#2	#3	#4	#5	#6
Front Facing		CHPS4 PS-L	CHPS5 PS-L	CHPS6 PS-L		
Rear Facing		CHPS1 PS-L	CHPS2 PS-L	CHPS3 PS-L		

←Left, viewed from rear of rack

Power Strip PSCH2

←Left, viewed from front of rack

	#1	#2	#3	#4	#5	#6
Front Facing		CHPS4 PS-R	CHPS5 PS-R	CHPS6 PS-R		
Rear Facing		CHPS1 PS-R	CHPS2 PS-R	CHPS3 PS-R		

←Left, viewed from rear of rack

A.7 Attaching the CHPS Networking Cables

Attach the Ethernet cables as outlined in Table A-2**.** Refer to Figure A-8, Figure A-9 and Figure A-10.

NOTE:	The monitor control cables will be installed at a later date.

Table A-2: Cable Reference

SOURCE DEVICE	SOURCE IDENTIFIER	DEST. DEVICE	DEST. IDENTIFIER	WIRE NUMBER	PART NO.
CHPS4	Port Gb 1	REP/GSW-1	port 12		
CHPS5	Port Gb 1	REP/GSW-1	port 14		
CHPS6	Port Gb 1	REP/ GSW-1	port 16		
CHPS4	Port Gb 2	REP/ GSW-2	port 12		
CHPS5	Port Gb 2	REP/ GSW-2	port 14		
CHPS6	Port Gb 2	REP/ GSW-2	port 16		
CHPS4	USB & monitor	KVM	port 6		
CHPS5	USB & monitor	KVM	port 7		
CHPS6	USB & monitor	KVM	port 8		

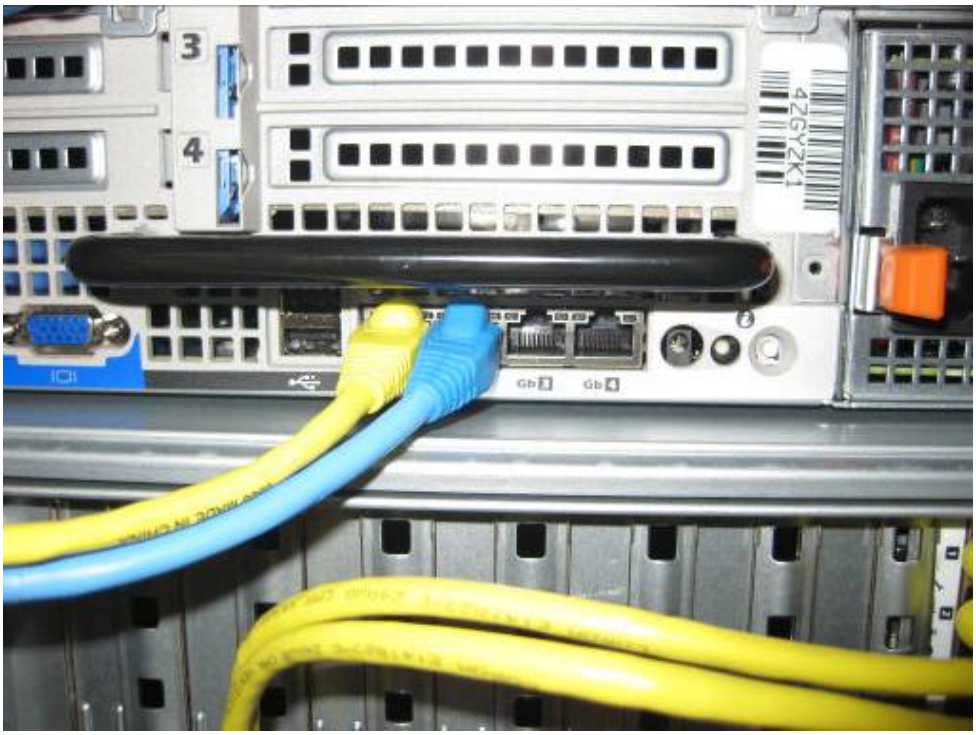


Figure A-8: Dell R710 Ethernet Cable Connections

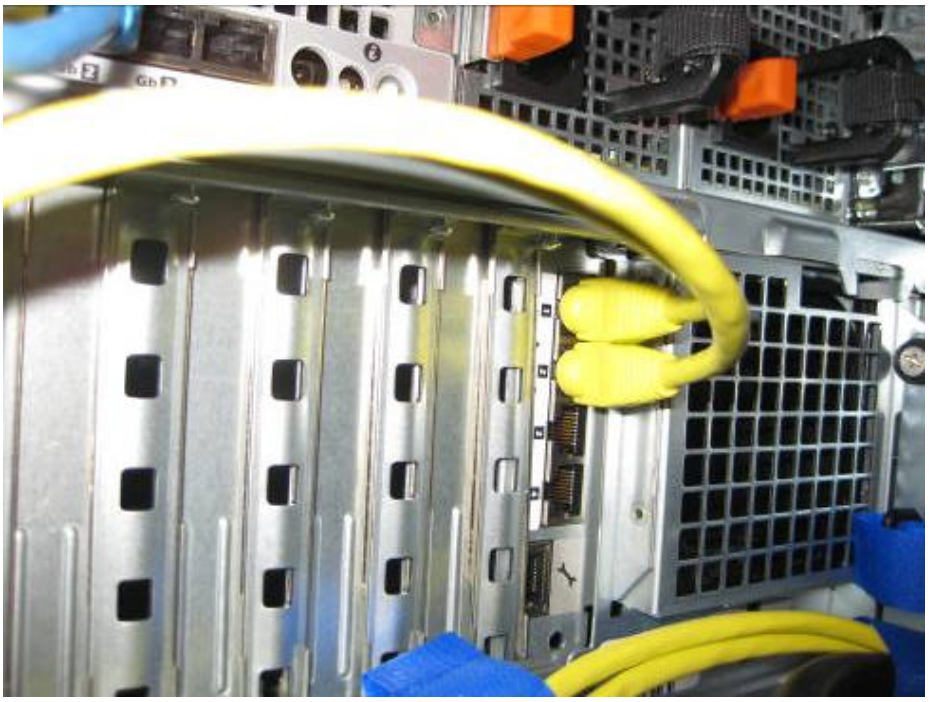


Figure A-9: R900 Ethernet Cable Connections

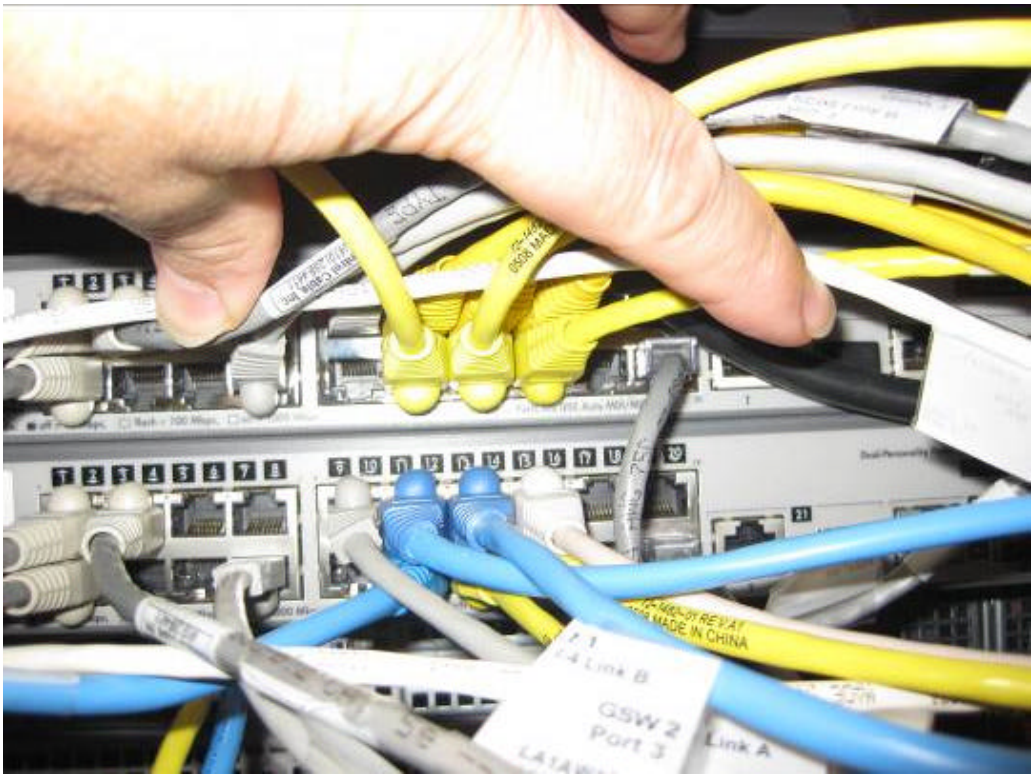


Figure A-10: REP/GSW-1 Ethernet Cable Connections

ATTACHMENT B - Hub6/GSW2 Blocking CHPS4 Installation Procedures

Due to the way the HP Procurve 2824 Switches are mounted in the REP Rack, the switches can present a problem when installing CHPS4.

B.1 Hub6/GSW2 Hardware Blocking CHPS4 Rail Installation

If the CHPS4 rail does not lock into place, this is an indication that the Hub6/GSW2 (HP Procurve 2824), bracket, capture nut and/or screw is sagging down into the top hole of rack unit 38.

NOTE:	The lock nut and screw are shown in Figure B-1 sagging down into the top hole of 38

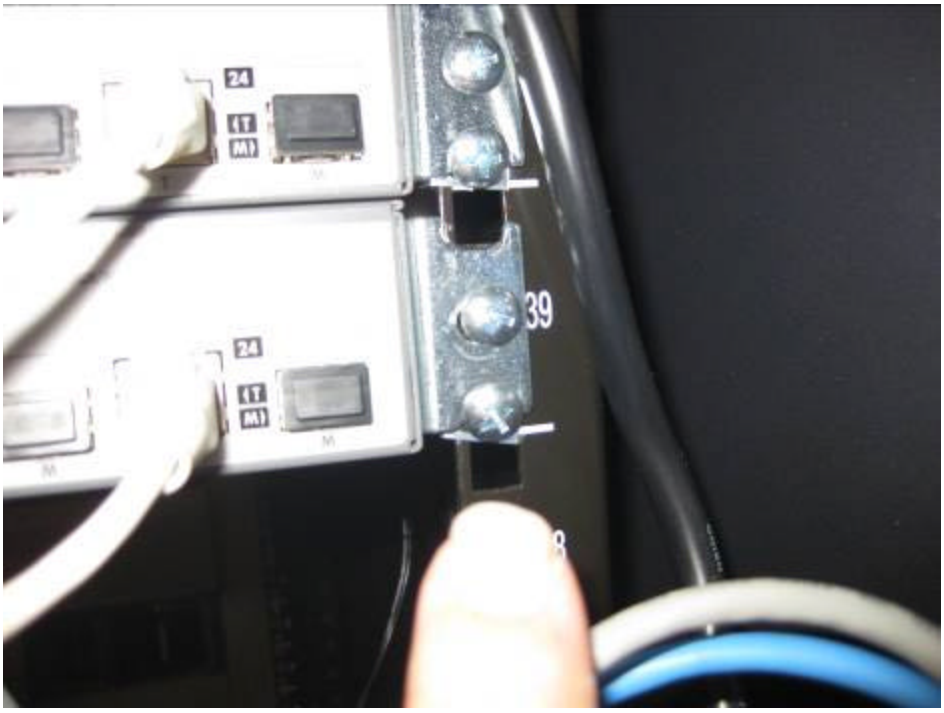


Figure B-1: Hub6/GSW2 Bracket, Lock Nut and Screw

1. Remove the CHPS4 ReadyRail from the rack.
2. Loosen the two screws supporting Hub6 on the offending side. With another person pushing upward on Hub6/GSW2, place a screwdriver against the bottom of the capture nut and tap the bottom of the screwdriver upward with the object of choice (i.e., a small hammer).
3. Tighten the two screws.
4. Attempt to install the rail again.
5. Repeat if necessary.

B.2 Slide CHPS4 All the Way Into Position

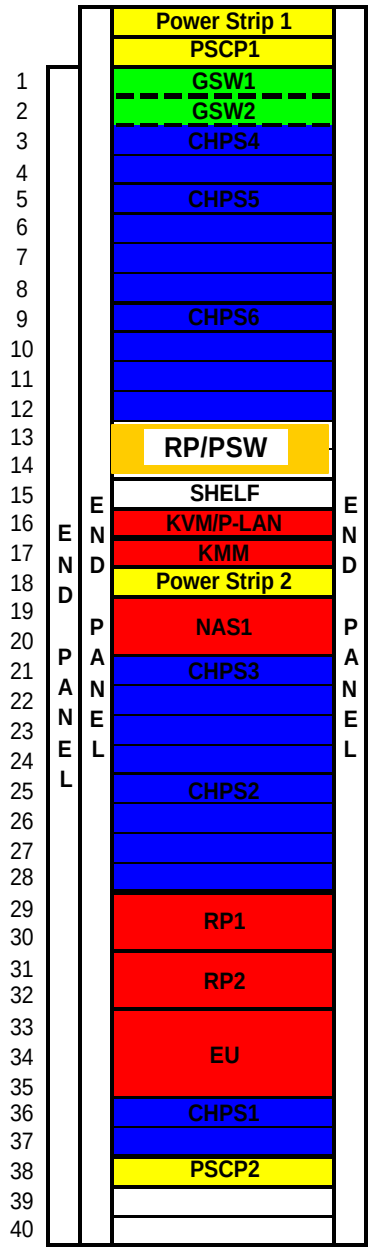
1. Slide CHPS4 out approximately 1 inch.
2. Move around to the back of the rack.
3. With one hand, grasp the back handle on the back of CHPS4, and place the other hand near the rear edge of the sagging Hub6/GSW2.
4. While pushing up on the bottom of Hub6/GSW2, pull CHPS4 toward the back of the rack until Hub6/GSW2 is positioned on the top of CHPS4 (Figure B-2).

Figure B-2: Hub6/GSW2 Positioned on Top of CHPS4

5. Remove hand from the bottom of Hub6/GSW2 and continue to pull CHPS4 toward the back of the rack until it clicks into place.

ATTACHMENT C - REP Rack Layout

NOTE: The REP replacement affects power strips 1 and 2 and reduces the number of REP switches to one.



RACK-8 REP
RFC

Power Strip 1 (top of rack)

	#1	#2	#3	#4	#5	#6
Front Facing	PSW			REP1-L	REP2-L	GSW1
Rear Facing				NS1-L Left	EU-L Left	

←Left

PSCP 1 (top of rack) Power Strip CHPS

	#1	#2	#3	#4	#5	#6
Front Facing		CHPS4-L	CHPS5-L	CHPS6-L		
Rear Facing		CHPS1-L	CHPS2-L	CHPS3-L		

←Left

PSCP = Power Supply CHPS

Power Strip 2 (middle of rack)

	#1	#2	#3	#4	#5	#6
Front Facing	KMM			REP1-R	REP2-R	GSW2
Rear Facing				NS1-R	EU-R Right	

←Left

PSCP 2 (bottom of rack) Power Strip CHPS

	#1	#2	#3	#4	#5	#6
Front Facing		CHPS4-R	CHPS5-R	CHPS6-R		
Rear Facing		CHPS1-R	CHPS2-R	CHPS3-R		

←Left

PSCP = Power Supply CHPS

Figure C-1: REP Rack Layout

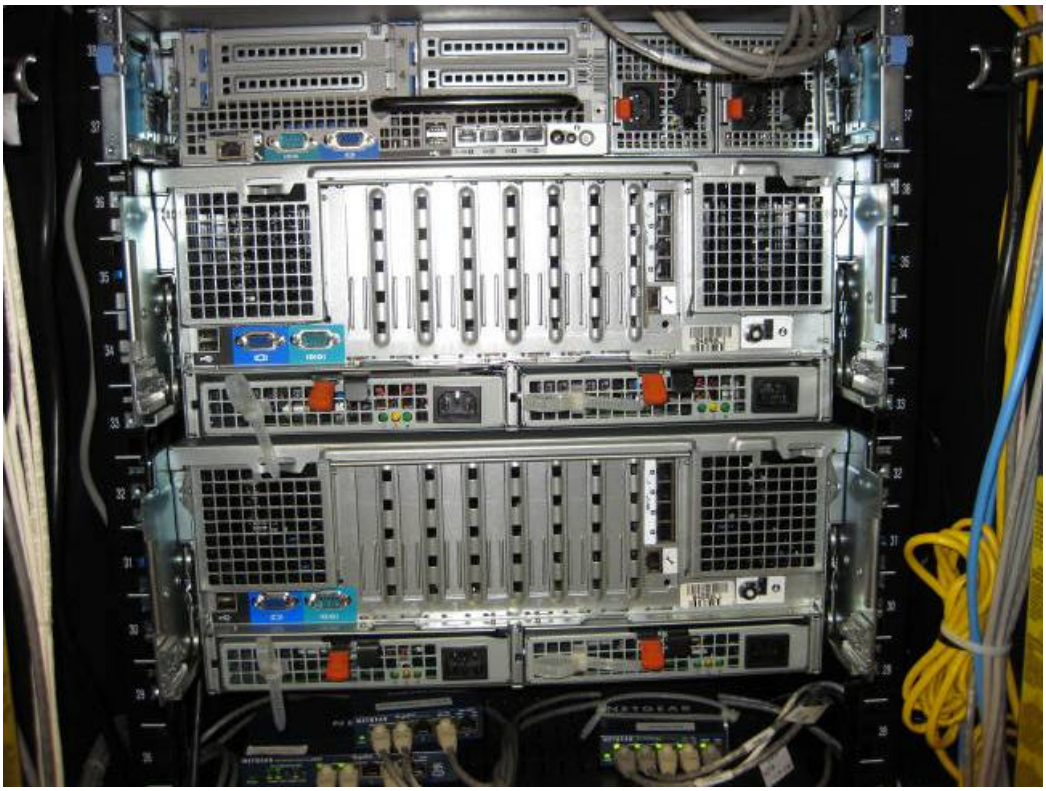


Figure C-2: Rear of REP Rack after Installation

Figure C-3: Front of REP Rack after Installation

Figure C-4: Front of REP Rack after Installation with Face Covers

ATTACHMENT D - List of Affected Sites

LOCATION:	SITE ID	Deadline to Install Mod Note
Anchorage, AK	ACR	December 10, 2010
Atlanta, GA	ALR	December 10, 2010
Forth Worth, TX	FWR	December 10, 2010
Pleasant Hill, MO	KRF	December 10, 2010
Chanhassen, MN	MSR	December 10, 2010
HQ Development, MD	NHOR	December 10, 2010
Slidell, LA	ORN	December 10, 2010
State College, PA	RHA	December 10, 2010
Salt Lake City, UT	STR	December 10, 2010

ATTACHMENT E - Sample EMRS Report