

# Dynamic LPAR Tips/Checklist for RMC Authentication and Authorization

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<b>1.0 Verify the DLPAR Requirements</b>	4
<b>2.0 Checklist for DLPAR Setup</b>	4
2.1 Verify If the Required Software is Functional	4
2.2 Verify Your RMC/DLPAR Network/Hostname Setup	6
<b>3.0 Setting up the HMC/Partition(s) Hostname and Network</b>	7
3.1 If DNS is On	8
3.1.1 If the HMC and the Partition(s) both use Long name	8
3.1.2 Other Hostname Formats	8
3.2 If DNS is Off	8
<b>4.0 Procedures for Renaming a HMC/Partition Hostname, Redefining a Partition, or Switching a Partition between SMP and LPAR Mode</b>	9
4.1 Step 1: Removing IBM.ManagedNode Resources on HMC	9
4.2 Step 2: Removing IBM.ManagementServer Resource on Partitions	9
<b>5.0 Appendix 1: Other Useful Tips/Checks</b>	11
5.1 To access Linux on the HMC	11
5.2 An Alternate Way to Open an Xterm on HMC	11
5.3 Use LAN Surveillance to Check Your Network Problem	11
5.4 An Quick Way to Verify if the System is DLPAR Ready	11
5.5 Check Serial Cable Connection Between HMC and CEC	12
5.6 Checking for HMC version from ssh	12
<b>6.0 Appendix 2: Common Questions for RMC/DLPAR</b>	13
6.1 Is There a Relation b/w DLPAR/LparCmdRM and SFP/ServiceRM?	13
6.2 Authentication & Authorization Process between HMC & Partitions	13
6.3 What Does the Output of lspartition -dlpar Mean?	14
6.4 Do IBM.DRM and IBM.HostRM Need to be "Active" on Partition for DLPAR to Wor	14
6.5 Does IBM.CSMAgentRM Need to be Active on HMC?	14
<b>7.0 Appendix 3: Known Defects with HMC GA3 GOLD Level</b>	15
7.1 Problem #1: HMC' acls File is Missing the DEFAULT Stanza	15
7.2 Lspartition -dlpar Shows Active <1> but the DLPAR is not enable on the GUI	15
7.3 Problem #2: AIX ctcas daemon is 'inoperative' on A	15
7.4 Problem #3: AIX ctcas daemon is 'inoperative' on H	15
<b>8.0 Change History</b>	16
<b>9.0 References</b>	17

## 1.0 Verify the DLPAR Requirements

Please see Appendix session if you need instruction how to access Linux on command line.

	Verify	> Command -> Result -> Action
1	HMC level	Click [ <b>Help</b> ] and then [ <b>About</b> ] on the HMC main window. This should be release 3 version 1.1 or higher <u>Customers are encouraged to get the latest software</u> which can be obtained at <a href="http://techsupport.services.ibm.com/server/hmc?fetch=corrsrv.html">http://techsupport.services.ibm.com/server/hmc?fetch=corrsrv.html</a>
2	AIX Firmware	> lsmcode Platform Firmware level is RKA20905 System Firmware level is RG02*_GA3_*
3	AIX filesets required for DLPAR  (on each LPAR/SMP)	AIX level should 5.2. These following filesets should be on partitions. > lslpp -l rsct.core* > lslpp -l csm.client  The missing fileset can be installed from the AIX installation CD.

## 2.0 Checklist for DLPAR Setup

### 2.1 Verify If the Required Software is Functional

	Verify	Result and Action												
1	HMC daemons are running	> su - root > lssrc -a  <table> <thead> <tr> <th>Subsystem</th> <th>Group</th> <th>PID</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>ctrmc</td> <td>rsct</td> <td>822</td> <td>active</td> </tr> <tr> <td>ctcas</td> <td>rsct</td> <td>823</td> <td>active</td> </tr> </tbody> </table>	Subsystem	Group	PID	Status	ctrmc	rsct	822	active	ctcas	rsct	823	active
Subsystem	Group	PID	Status											
ctrmc	rsct	822	active											
ctcas	rsct	823	active											

		<pre> IBM.DMSRM      rsct rm      906      active IBM.LparCmdRM  rsct_rm     901      active </pre> <p><b>If these daemons are active go to step 2:</b></p> <p><b><u>If any of the daemons show as inoperative</u></b>, start it manually by</p> <pre>&gt; startsrc -s &lt;subsystem name&gt;</pre> <p>Example: startsrc -s ctcas</p> <p><b><u>If a daemon can't be started</u></b></p> <p>Please contact IBM service personnel.</p>
2	<p>AIX daemons are running (on each LPAR/SMP with AIX 5.20)</p>	<pre> &gt; su - root &gt; lssrc -a   grep rsct Subsystem      Group          PID           Status ctrmc          rsct           21044        active ctcas          rsct           21045        active IBM.CSMAgentRM rsct_rm        21045        active IBM.ServiceRM  rsct_rm        11836        active IBM.DRM        rsct_rm        20011        active IBM.HostRM     rsct_rm        20012        active </pre> <p>IBM.DRM and IBM.HostRM are 'lazy started' resource managers which means they're only started when they get use <u>If IBM.DRM and IBM.HostRM are "inoperative</u>, there is a good chance that you're having network/hostname setup problem between HMC and the partition; to correct this, please refer to section <i>Verify Your RMC/DLPAR Setup.s</i></p> <p><b><u>If any of the daemons show as inoperative</u></b></p> <pre>&gt; startsrc -s &lt;subsystem name&gt;</pre> <p>Example: startsrc -s ctcas</p> <p><b><u>If ctcas can't be starte</u></b></p> <p>If ctcas can't be started, please open a PMR before contact your IBM service personnel.</p>

**NOTES:**

- ctrmc:** is a RMC subsystem
- ctcas:** is for security verification
- IBM.DMSRM:** is for tracking statuses of partitions
- IBM.LparCmdRM:** is for DLPAR operation on HMC
- IBM.CSMAgentRM:** is for handshaking between the partition and HMC
- IBM.DRM:** is for executing the DLPAR command on the partition.
- IBM.HostRM:** is for obtaining OS information.

## 2.2 Verify Your RMC/DLPAR Network/Hostname Setup

	Verify	>Result and Actions
1	HMC: List partitions authenticated by RMC	<pre>&gt; /opt/csm/bin/lsnodes -a Status partition01    1 partition02    0 partition03    1</pre> <p>Where <b>1</b>” means partition is activated and authenticated for DLPAR; <b>0</b>” means otherwise</p> <p>If the partition is activated and still shows Active&lt;0&gt;, you could either have network or hostname setup problem. If you have just rebooted the HMC, wait for a few minutes. If nothing changes after that, check your hostname/network setup as in section <i>Setting up HMC /Partition(s) Hostname and Network</i>.</p>
2	HMC: List partitions recognized by DLPAR	<pre>&gt; lspartition -dlpar &lt;#0&gt; Partition:&lt;001, partition01.company.com, 9.3.206.300&gt; <b>Active:&lt;1&gt;</b>, OS:&lt;AIX, 5.2&gt;, <b>DCaps:&lt;0xf&gt;</b>, CmdCaps:&lt;0x1, 0x0&gt; &lt;#1&gt; Partition:&lt;002, partition02.company.com, 9.3.206.300&gt; <b>Active:&lt;0&gt;</b>, OS:&lt;AIX, 5.2&gt;, <b>DCaps:&lt;0xf&gt;</b>, CmdCaps:&lt;0x1, 0x0&gt; &lt;#2&gt; Partition:&lt;003, partition03.company.com, 9.3.206.300&gt; <b>Active:&lt;0&gt;</b>, OS:&lt;, 5.1F&gt;, <b>DCaps:&lt;0x0&gt;</b>, CmdCaps:&lt;0x0, 0x0&gt;</pre> <p>If all active AIX 5.2 partitions are listed as <b>Active&lt;1&gt;</b>, ..., <b>DCaps:&lt;0xf&gt;</b> your system has been <u>set up properly for DLPAR</u>, you can skip the checklist now.</p> <p>(In this example, partition 002 is being shut down, partition 003 is not activated for it is AIX 5.1.)</p> <p>If you’re missing some active partitions or some partitions are reported as <b>Active&lt;0&gt;</b>, your system probably still has network/hostname set up problem. Refer to section <i>Setting up HMC/Partition(s) Hostname and Network</i>.</p> <p>(If you partition is Active&lt;1&gt; but the GUI is still not DLPAR capable, do a rebuild to get around this problem. See Appendix session for more information about this problem.)</p> <p>If you still can’t get partitions recognized by DLPAR after verifying the checklist, contact IBM service persnnel.</p>
3	AIX: Ensure <i>/var</i>	> df

	directory is not 100% full (on each LPAR/SMP)	<p>If /var is 100% full, use <code>smitty</code> to expand it. If there is no more space available, visit subdirectories to remove unnecessary files (e.g. <code>trace.*</code>, <code>core</code>, etc.)</p> <p>After expanding the /var directory, execute these command to fix possibly corrupted files.</p> <pre>&gt; rmrsrc -s "Hostname!='t' " IBM.ManagementServer &gt; /usr/sbin/rsct/bin/rmcctrl -z &gt; rm /var/ct/cfg/ct_has.thl &gt; rm /var/ct/cfg/ctrmc.acls &gt; /usr/sbin/rsct/bin/rmcctrl -A</pre>
4	AIX: Verify if you have network problem? (From each LPAR/SMP)	<pre>&gt; ping &lt;hmc_hostname&gt;</pre> <p>If ping fails, check your hostname/network setup. See section <i>Setting up HMC/Partition(s) Hostname and Network</i>.</p>
5	AIX: Verify partition(s) to HMC authentication (from each LPAR/SMP)	<pre>&gt; CT_CONTACT=&lt;HMC name&gt; lsrsrc IBM.ManagedNode</pre> <p>You should get a list of resource classes on HMC.</p> <p>If there is any error, you probably have network/hostname problem, please refer to section <i>Setting up HMC /Partition(s) Hostname and Network</i>.</p>
6	HMC: Verify network setup by telnet-ing into each partition(s) from the HMC.	<pre>&gt; telnet &lt;hostname&gt; &gt; "Ctrl c" or "exit" to end</pre> <p>If you can't telnet, you have a network problem, refer to section <i>3.0Setting up HMC/Partition(s) Hostname and Network</i>.</p>
7	HMC: Verify HMC to partition(s) authentication	<pre>&gt; CT CONTACT =&lt;partition hostname&gt; lsrsrc IBM.ManagementServer</pre> <p>If nothing is displayed or if there are any errors, you probably have a hostname problem, please refer to section <i>Setting up HMC /Partition(s) Hostname and Network</i>.</p>

## 3.0 Setting up the HMC/Partition(s) Hostname and Network

Most of DLPAR problems we have encounter from the labs during testing have been improper network and hostname(s) setup. This section aims to reduce these network setup/configuration problems.

First, find out the hostname format the HMC and its partition(s) are using; short or long name. Your setup depends largely on the format of the hostname. The hostname format can be determined by typing the command "hostname" on the HMC and AIX system respectively then use `Hhost return_from_hostname` to verify it.

### Example:

```
> hostname
Partition.company.com
```

```
> host Partition.company.com
Partition.company.com has address 9.3.14.199
```

---

## **3.1 If DNS is On**

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### **3.1.1 If the HMC and the Partition(s) both use Long name**

- No hostname entry is needed in */etc/hosts* on either AIX or the HMC.
- If */etc/hosts* has the hostname entry, the longname **must** be before the short name for HMC and all partitions (host names are case sensitive).

Example:

```
10.10.10.11    mymachine.mycompany.com    mymachine
```

- After update */etc/host* file, refresh RMC by either rebooting or

```
> /usr/sbin/rsct/bin/rmcctrl -z
> /usr/sbin/rsct/bin/rmcctrl -A
```

---

### **3.1.2 Other Hostname Formats**

- If the hostname command returns the short name, put the shortname **before** the longname in */etc/hosts* on both HMC and the partitions; If the hostname command returns the long name, put the longname **before** the shortname in *the /etc/hosts* file on HMC and all partitions (names are case sensitive).

Example:

```
10.10.10.11    mymachine    mymachine.mycompany.com
```

- Make sure that on the partition(s) (just partition(s)), the file */etc/netsvc.conf* exists with one line:  
*hosts=local,bind*
- Refresh RMC by either rebooting or by commands

```
> /usr/sbin/rsct/bin/rmcctrl -z
> /usr/sbin/rsct/bin/rmcctrl -A
```

---

## **3.2 If DNS is Off**

- The HMC and partition(s) */etc/hosts* file need to be modified to contain the correct entries for the HMC and **all** partitions' hostnames. If the hostname command returns the short name, put the short name **before** the longname in */etc/hosts* for HMC and all partitions (names are case sensitive). If the hostname command returns the long name, put the long name **before** the short name in */etc/hosts* for HMC and all partitions (names are case sensitive)

- Make sure that on the partition(s) (just partition), file `/etc/netsvc.conf` exists with one line:  
`hosts=local,bind.`
- Refresh RMC by either rebooting or
  - > `/usr/sbin/rsct/bin/rmcctrl -z`
  - > `/usr/sbin/rsct/bin/rmcctrl -A`

Customers should add **all the LPAR's hostnames to the `/etc/hosts` file on the HMC**. The HMC hostname must be added to each LPAR `/etc/hosts` file. Because the customer does not have DNS data, we do not have a domain name, only a short hostname, therefore the DNS enabled box will not be enabled.

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## 4.0 Procedures for Renaming a HMC/Partition Hostname, Redefining a Partition, or Switching a Partition between SMP and LPAR Mode

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**NOTE: This procedure is required *only* if you have the HMC GA3 GOLD level. If you have PTF2 or later, there is no need to perform this.**

- When a partition is switched between LPAR and SMP (Single Machine Partition) mode.
- When a partition is redefined, i.e. It could be assigned a new partition ID.
- When a partition is upgraded, installed with a new level of AIX.
- When hostnames are swapped between 2 partitions.

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### 4.1 Step 1: Removing IBM.ManagedNode Resources on HMC

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On HMC, execute these commands:

```
> /usr/sbin/rsct/bin/rmrsrc -s "Hostname!= ' a" IBM.ManagedNode
> /usr/sbin/rsct/bin/rmcctrl -z
> /usr/sbin/rsct/bin/rmcctrl -Z
```

---

### 4.2 Step 2: Removing IBM.ManagementServer Resource on Partitions

---

As documented in the *IBM Hardware Management Console for pSeries Operations Guide. Service Focal Point*, section *Getting Started*, the following procedure is to be performed on the affected partitions:

```
> /usr/sbin/rsct/bin/rmrsrc -s "Name!=' N" IBM.ManagementServer
> /usr/sbin/rsct/bin/rmcctrl -z
> /usr/sbin/rsct/bin/rmcctrl -A
```

Wait for a few minutes, then checking for IBM.ManagementServer resource(s) by

```
> lsrsrc IBM.ManagementServer
```

```
Resource Persistent Attributes for IBM.ManagementServer
resource 1:
```

```
  Name           = " hmc.yourcompany.com "
  Hostname       = " hmc.yourcompany.com "
  ManagerType    = " HSC "
  LocalHostname = " par_01.company.com "
  NodeNameList   = { "par_01.company.com" }
```

- Verify all HMC resources on the partition.
- Verify that the HMC's **Name** and **Hostname** are correct.

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## **5.0 Appendix 1: Other Useful Tips/Checks**

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### **5.1 To access Linux on the HMC**

To access the xterm on the HMC (Command Line Entry) you will need a PE passcode which can be obtained from IBM support.

To access Linux command line:

1. Log on HMC as “hscpe user (user created by customer)
2. Select “Problem Determination” (In “Service Applications” folder at Release 2.0 and above)
3. Select “ Microcode Maintenance”
4. Enter serial number of HMC and PE password obtained from support
5. Select “Launch xterm shell

---

### **5.2 An Alternate Way to Open an Xterm on HMC**

Yes. From upper left corner, click on “Console” then select “Open Terminal Session” and enter your HMC hostname

---

### **5.3 Use LAN Surveillance to Check Your Network Problem**

In GA3, the LAN Surveillance feature has been added into SFP to alert users if a partition is having a network/hostname setup/RMC authentication problem by reporting a SURVALNC Serviceable Event to the HMC. (Users can have e-mail set up for notification of this type of problems.) You can use “List Serviceable Events” to check for these errors; if there is none, you should not have problem with DLPAR/SF

If you do, please go through the checklist to diagnose/correct the problem.

---

## **5.4 An Quick Way to Verify if the System Network/Hostname is set up Properly**

From the HMC console, select “Server Management”, then expand it to the partition level. Left click on an AIX 520 partition to get the pop-up menu, then select one of the item under “Dynamic Logical Part tion” e.g. Memory); if you get the error messages

```
HMCERRV3DLPAR016: The selected logical partition is not enabled for
dynamic logical partitioning operations
```

There is a good chance that the system is having network/hostname setup problem. Please go through the checklist to diagnose/correct the problem.

This procedure is best to be performed right after the HMC get rebooted.

---

## **5.5 Check Serial Cable Connection Between HMC and CEC**

On HMC:

```
> query_cecs - returns cecname
> get_cec_mode -m cecname - verifies connection to service processor
```

---

## **5.6 Checking for HMC version from ssh**

Use command #hsc versionU

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## **6.0 Appendix 2: Common Questions for RMC/DLPAR**

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Answer for common questions from the field.

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### **6.1 Is There a Relation b/w DLPAR/LparCmdRM and SFP/ServiceRM?**

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No, there is no relation between DLPAR and SFP. They are 2 independent daemons serving 2 different components, however, since they are using the same RMC framework and thus, subjected to the same authentication process as well as the same network/hostname setup.

For DLPAR is only supported on AIX 5.2, AIX 5.1x partitions will be not be initialized for DLPAR. It's correct to assume that if SFP works, DLPAR would work but if DLPAR works, SFP might not be fully functional. To save time, it is advisable that you should verify/get SFP working before verify/get DLPAR working.

---

### **6.2 Authentication & Authorization Process between HMC & Partitions**

---

1. On HMC: DMSRM pushes down the secret key and HMC hostname to NVRAM when it detects a new CEC - this process is repeated every 5 minutes. Each time a HMC is rebooted or DMSRM is restarted, a new key is used.
2. On AIX: CSMAgentRM, through RTAS, reads the key and HMC hostname out from NVRAM. It will then authenticate the HMC.  
  
This process is repeated every 5 minutes on partition to detect new HMC(s) and key changed. A HMC with a new key is treated as a new HMC and will go though the authentication and authorization processes again.
3. On AIX: After authenticating the HMC, CSMAgentRM will contact the DMSRM on HMC to create a ManagedNode resource in order to identify itself as a partition of this HMC. (At the creation time, the ManagedNode' Status attribute will be set to 127.)  
  
CSMAgentRM then creates a compatible ManagementServer resource on AIX.
4. On AIX: After the creation of the ManagedNode and ManagementServer resources on HMC and AIX respectively, CSMAgentRM grants HMC permission to access necessary resource classes on the partition. After the granting HMC permission, CSMAgentRM will change its ManagedNode, on HMC, Status to 1.  
  
(It should be noted that without proper permission on AIX, the HMC would be able to establish a session with the partition but will not be able to query for OS information, DLPAR capabilities, or execute DLPAR command afterward.)
5. On HMC: After the ManagedNode Status changed to 1, LparCmdRM establishes a session with the partition, query for OS information, DLPAR capabilities, notify CIMOM about the DLPAR capabilities of the partition then wait for DLPAR command from users.