



Cisco Prime Network Registrar IPAM 8.3 Upgrade Guide

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Contents

1	INTRODUCTION.....	1
1.1	ABOUT THIS GUIDE.....	1
1.2	PLANNING AN IPAM 8.3 UPGRADE.....	2
1.3	IMPORTANT 8.3 UPGRADE PREREQUISITES	5
2	UPGRADING A LINUX EXECUTIVE.....	7
2.1	STEP 1: OBTAIN YOUR IPAM 8.3 LICENSE KEY.....	7
2.2	STEP 2: VERIFY FREE SPACE.....	7
2.3	STEP 3: DOWNLOAD THE UPGRADE PACKAGE.....	8
2.4	STEP 4: EXECUTE THE UPGRADE PACKAGE.....	8
3	UPGRADING A WINDOWS EXECUTIVE.....	9
	STEP 1: OBTAIN YOUR IPAM 8.3 LICENSE KEY	9
	STEP 2: VERIFY FREE SPACE.....	9
	STEP 3: DOWNLOAD THE UPGRADE PACKAGE	10
	STEP 4: EXECUTE THE UPGRADE PACKAGE	10
4	UPGRADING EXECUTIVES RUNNING MYSQL REPLICATION.....	12
4.1	PRELIMINARY STEPS PRIOR TO MYSQL REPLICATION UPGRADE:	12
5	DURING THE UPGRADE	16
6	RESTORING CUSTOM SCRIPTS AND FILES	18
6.1	MYSQL.....	18
6.2	DATABASE CREDENTIALS.....	19
6.3	CUSTOM CALLOUT MANAGER ROUTINES.....	19
6.4	CUSTOM MYSQLEXPORT SCRIPT	19
6.5	CUSTOM DBMOVER SCRIPT.....	20
6.6	CUSTOM PROPERTIES FILES	20
6.7	CUSTOM WEB SECURITY SETTINGS.....	20
6.8	OTHER FILES TO COMPARE.....	20
7	LOGGING INTO THE WEB INTERFACE	21
7.1	BEFORE LOGGING IN.....	21
7.2	LOGGING IN	21

8	UPGRADING IPAM AGENTS	23
8.1	UPGRADE ORDER	23
8.2	AFTER THE AGENT UPGRADE.....	23
9	MANUAL UPGRADE PROCEDURE	24
10	RESTORING ORIGINAL IPAM FILES.....	27
	<i>UNIX Executive.....</i>	<i>27</i>

1 Introduction

1.1 About This Guide

This guide describes the sequence of steps needed to successfully upgrade any version of Cisco Prime Network Registrar between 8.1.1 and 8.1.3.2 to IPAM 8.3 using an automatic upgrade script. You will need to plan this procedure and schedule an outage for your production environment during the upgrade process. Please read this guide thoroughly, and preferably practice this routine in a lab environment before actually beginning the upgrade procedure in the production environment. IPAM strongly suggests following the Automatic Upgrade Procedure described in this document, as long as the production start version of IPAM 8.3 with or without patches. Other start versions/builds may be attempted, but practicing it in a lab environment is strongly encouraged. If the production environment requires a manual upgrade approach, those instructions are also described later in this document.

Note: CPNR IPAM 8.3 and later versions will not support Solaris. Refer to earlier versions of IPAM documents if you want to use IPAM with Solaris support.

The term “INCHOME” will be referenced throughout this document. This is a general representation of the INCHOME environment variable within a terminal or command prompt session. On UNIX it should be interpreted as “\$INCHOME”, and on Windows it should be interpreted as “%INCHOME%”.

\$INCHOME=/opt/incontrol

The directory, “/opt/incontrol”, will be referenced throughout this document because it is the default install location for UNIX operating systems. If IPAM was installed to a non-default location, when referenced, please substitute “/opt/incontrol” with the correct path to the installed IPAM files.

%INCHOME%= C:\Program Files (x86)\Cisco\Cisco Prime Network Registrar IPAM

The directory, “C:\Program Files (x86)\Cisco\Cisco Prime Network Registrar IPAM”, will be referenced throughout this document because it is the default install location for Windows operating systems. If IPAM was installed to a non-default location, when referenced, please substitute “C:\Program Files (x86)\Cisco\Cisco Prime Network Registrar IPAM” with the correct path to the installed IPAM files.

1.2 Planning an IPAM 8.3 Upgrade

To begin planning the upgrade, review the following questions and points:

1. What is gained by upgrading IPAM 8.3?

There are many new features obtained in IPAM 8.3. Some of them include:

- RIR REST Interface - Support for Regional Internet Registry (RIR) REST
- Clone administrators/roles - Provides the ability to clone an administrator or policy.
- Clone containers - Enables the cloning of a container to copy policies to a new container.
- Domain Audit Report - Provides an audit report for domain changes.
- DNS Zone Report - Enable administrators to identify which DNS servers a given zone has been assigned.
- DNS Option Sets - Enables an administrator to define a set of DNS option values.
- DHCP Option/Policy Set Assignment View - Enables viewing for a given option or policy set to which servers, subnets, pools network links, devices and classes it has been assigned.
- Scope specific policy sets - Provides an analogous feature for Scope specific policy sets.
- Show Effective DHCP Policies - Provides an analogous functionality for DHCP policies.
- Option 82 Reporting - Provides the ability to collect DHCPv4 option 82 parameters for ISC and CNR DHCP servers and will be displayed with active lease information.
- BIND 9.10 - Supports BIND version 9.10 with improved geo-DNS. With response rate limiting support, static-stub and redirect zone types.
- DHCPD 4.3 - Supports ISC DHCPD version 4.3, including changes in DDNS update style and support for DHCPv6 client classes and pool options.

- DNS64 (CNR 8.3) - Includes the ability to manage multiple DNS64 objects and a new match clients ACL.
- DNS Views Support - Supports configuration of DNS Views for CPNR 8.2 and 8.3.
- ENUM Support - Provides support of ENUM configuration, i.e., NAPTR resource records and e164.arpa domains, for CNR version 8.3.
- Microsoft Server 2012 R2 DHCPv4 - Supports Microsoft 2012 DHCPv4, including failover support. DHCPv6 support is planned for a future release.
- Administrator Preferences - IPAM 8.3 will now “remember” settings on particular screens set by administrators to apply such settings when said screen is redisplayed at a later time.
- Administrator Definition Audit Report - A new audit report enables viewing of administrator definition and policy changes over time.
- SNMPv2 Support - Now supports SNMPv2 communications with Network Elements, in addition to SNMPv1 and v3.

Refer to the Cisco Prime Network Registrar IPAM 8.3 Release notes for the list of fixed bugs in IPAM 8.3. If you have further questions about a particular feature, please contact the Technical Assistance Center."

2. Will all IPAM 8.1.1, 8.1.2 and 8.1.3 systems need to be upgraded to 8.3 at once?

No, you may stagger the upgrade into phases. However, the IPAM Executive server must be the first IPAM system upgraded in your environment. Versions 8.1.1, 8.1.2 and 8.1.3 agents can use the automatic upgrader.

3. How long does the upgrade process take?

For the Executive server, this time will vary based on the size of your data. It is suggested to practice your Executive server upgrade in a lab environment before actually doing so in production. This will give you an accurate estimate of how long the upgrade process will take for the Executive and bring to the surface any problems that may arise during the upgrade.

For Remote Agent systems, the upgrade time is between 5-10 minutes for the uninstall/reinstall phase. Extra time will be required if specific customizations need to be finalized manually.

4. Are there any new special system requirements for running IPAM 8.3?

Only for Executive. As of IPAM 8.3, Tomcat and MySQL require 4 GB of RAM to function at a minimum.

5. What version must I currently be running to begin the automatic upgrade process to IPAM 8.3?

For Executive servers, the oldest version Cisco requires starting from IPAM 8.1.1. If you are running IPAM 8.0, please upgrade it to IPAM 8.1.1. Once you've successfully upgraded to version 8.1.1 or newer then you may continue to upgrade to IPAM to 8.3 automatically. Please feel free to call the Technical Assistance Center for further clarification.

Your current version and build number of IPAM can be located from the Home tab while logged in to the IPAM GUI.

6. How will I upgrade my customizations?

This is covered in the [Restoring Custom Scripts and Files](#) section of this document. Please review that section before you begin the upgrade process. The automatic upgrade process will try to retain some, but not all, of your customizations. If your concerns are still not covered in the section below, please contact the Technical Assistance Center to discuss it further.

7. Can I use the same license key I used for previous IPAM versions?

No. You must obtain a new license key for IPAM 8.3. Call the Cisco Technical Assistance Center (TAC) and ask for the Licensing Team to request a license key that is compatible with IPAM 8.3. For your local Cisco TAC phone number, see the Cisco Worldwide Contacts page at:

http://www.cisco.com/en/US/support/tsd_cisco_worldwide_contacts.html

You will enter the new key upon logging into IPAM 8.3 after a successful upgrade.

8. Supported Platforms

IPAM 8.3 platforms

- Windows Server 2008 (32-bit), Windows 2008 R2 (64-bit), Windows 2012
- Linux - RHEL v5 32bit, RHEL v6 64bit
- Linux - CentOS v6 64bit
- Oracle 11, 12
- MySQL Community Edition 5 (supplied)

IPAM 8.3 browsers

- Internet Explorer 10 and above
- Mozilla Firefox (current version)
- Google Chrome (current version)

1.3 Important 8.3 Upgrade Prerequisites

1. IPAM 8.3 Agents cannot connect to an Executive server running any prior versions of IPAM. The Executive server must be the first component installed or upgraded in your environment.
2. UNIX users, during the upgrade you may need to keep your SSH session alive by pressing any key from inside the session to prevent the session from timing out. This can be addressed before you begin the upgrade by increasing the SSH timeout on the system (and being local to the machine to restart sshd). Or if you're using Putty, review the "Connection" category of the session setup, and change "Seconds between keepalives (0 to turn off)" from 0 to **1200**. If the system's session timeout is greater than 30 minutes, this value will send the keepalive packet every 20 minutes. If the SSH timeout is 20 minutes or lower, then adjust that value accordingly lower, in seconds.
3. Please call the Cisco Technical Assistance Center (TAC) with your scheduled upgrade date, so they are prepared to assist if there are any complications. For your local Cisco TAC phone number, see the Cisco Worldwide Contacts page at:
http://www.cisco.com/en/US/support/tsd_cisco_worldwide_contacts.html.
4. Linux users: The library, libaio.so.1, is required before installing IPAM 8.3 with MySQL. If the library is not present on your system, you will be notified during the installation. Consult your system administrator for more details.
 - a. 64 bit Linux users installing 32 bit IPAM: During the installation of IPAM you may receive the following error:
Error unpacking jar files. The architecture or bitness (32/64) of the bundled JVM might not match your machine.
Installing the following packages on your Linux system will resolve this error:

- glibc.i686, libgcc.i686, libaio.i686, ncurses-libs.i686
5. Oracle users: IPAM 8.3 requires greater access to the database. The IPAM database user (usually incadmin) will need the following performed by sysdba prior to starting the upgrade:
- GRANT create sequence to INCADMIN;
 - Replace INCADMIN above with the actual IPAM database user. See INCHOME/classes/jdbc.properties on your production Executive if you are unsure of this value.

2 Upgrading a Linux Executive

This section describes the steps for upgrading IPAM to version 8.3 on a Linux system.

Before you begin the upgrade procedure, the IPAM services on the Executive and/or Agent system **must be** running. During this procedure the services will be stopped. On an Executive system, the schema will be modified (MySQL and Oracle). A database backup will be saved automatically for local MySQL users. Oracle and remote MySQL users **must** backup their data manually before proceeding because the current data will be modified. Oracle users, you may also want to run “PURGE RECYCLEBIN;” against your IPAM database, prior to the upgrade procedure, to prevent errors during the schema update phase of the upgrade.

2.1 Step 1: Obtain your IPAM 8.3 License Key

Call the Cisco Technical Assistance Center (TAC) and ask for the Licensing Team to request a license key that is compatible with IPAM 8.3. For your local Cisco TAC phone number, see the Cisco Worldwide Contacts page at:

http://www.cisco.com/en/US/support/tsd_cisco_worldwide_contacts.html. After the upgrade completes successfully, upon logging into IPAM 8.3 for the first time, the new 8.3 license key must be entered to access the product. **Your existing keys will not work with version 8.3. Do not proceed without a new 8.3 License Key or your setup will become inaccessible.**

2.2 Step 2: Verify Free Space

The upgrade procedure requires the following amount of free space in order to run successfully:

$$3 \times \text{DB Size} + 5\text{GB}$$

The current DB Size can be obtained using the “du” command, e.g.

```
du -sh /opt/incontrol/mysql/data
3.1G  /opt/incontrol/mysql/data
```

In this example, the database occupies 3.1GB of space, so the total free space required will be 14.3 GB. The value you come up with does not represent the final amount of space used, but only the amount of space needed for upgrade flexibility.

2.3 Step 3: Download the Upgrade Package

Download the upgrader `cpnr_8_3-ipam-<O/S>-upgrader.gtar.gz`, extract the compressed file and copy the 'PNR83Upgrade-<O/S>-8.0.bin' file to the /tmp directory on the system being upgraded. The file is roughly between 600 to 900 MB in size, depending on OS, so ensure that there's enough space in the /tmp directory to hold it. (Replace O/S, XX and # within the filename to the respective operation system, highest available build number and upgrader revision number found on the download site.) Also, you may substitute /tmp with a desired directory location, though /tmp will be referenced throughout these instructions.

2.4 Step 4: Execute the Upgrade Package

Log in as the 'root' user on the Executive or Agent system being upgraded.

Change directories to the /tmp directory, or the directory where you placed the Upgrade Package, e.g.

```
cd /tmp
```

Run the following command to set the InControl environment for the 'root' user:

```
. /opt/incontrol/etc/shrc (Notice the space after the leading dot.)
```

Execute the upgrade script using this command and follow the on-screen instructions.

```
sh PNR83Upgrade-<O/S>-8.0.XX-#.bin
```

Do not terminate the terminal session or press Ctrl-C at any time until the upgrade has passed or failed.

If this is an Agent upgrade, see the [Upgrading IPAM Agents](#) section found later in this document for more information.

For an Executive system, you will be prompted if any of the Database, Schema or Block Integrity checks fail. Use the (R) option repeatedly, up to 5 times, or until there are no issues found. If the repair feature doesn't seem to resolve the problems found, use the (C) option to continue. At this time, there's a high probability that the upgrade may fail if the found errors cause a disturbance upgrading the database. If the upgrade does fail, it will roll back to the original start state. But if the upgrade completes after continuing past any errors found, you will want to run the DatabaseIntegrityChecker, SchemaChecker or BlockCheck utilities manually to discuss found issues with the Technical Assistance Center.

Do not be alarmed of database update exceptions during the upgrade process. Some environments will contain duplicate entries that cause these kinds of errors. Depending on the severity level of the error received, the upgrade will roll back to your previous environment if the upgrade cannot continue. If the upgrade rolls back to the original start state, collect the files /tmp/upgrade-<date-time>.log and /tmp/support.log and provide that information to the Technical Assistance Center.

The automatic upgrade script attempts to carry forward custom scripts and settings though it cannot account for all possibilities. After the upgrade has completed, continue to the [Restoring Custom Scripts and Files](#) section below to verify that all of your custom scripts and settings have been carried forward.

After testing your new InControl environment, you may manually remove any files from /tmp that were not originally there before starting the upgrade. Otherwise, they will be removed during the next system reboot if /tmp was used. Do not remove the /opt/incontrol-<date-time> directory until you are completely satisfied with the upgrade and have successfully run with IPAM 8.3 for a considerable amount of time. This is the backup of your previous version. If space is needed on your system before you are comfortable with deleting the old setup, consider zipping/tarring this directory and moving it off the system, before completely removing it from the system.

3 Upgrading a Windows Executive

This section describes the steps for upgrading IPAM to version 8.3 on a Windows 2008 system running the IPAM Executive or Agent components.

Before you begin the upgrade procedure, the IPAM services on the Executive and/or Agent system **must be** running. During this procedure the services will be stopped. On an Executive system, the schema will be modified (MySQL and Oracle). A database backup will be saved automatically for local MySQL users. Oracle and remote MySQL users **must** backup their data manually before proceeding because the current data will be modified. Oracle users, you may also want to run “PURGE RECYCLEBIN;” against your IPAM database, prior to the upgrade procedure, to prevent errors during the schema update phase of the upgrade.

Step 1: Obtain your IPAM 8.3 License Key

Contact the Technical Assistance Center for your IPAM 8.3 key by emailing a request to http://www.cisco.com/en/US/support/tsd_cisco_worldwide_contacts.html. After the Executive upgrade completes successfully, upon logging into IPAM 8.3 for the first time, the new 8.3 license key must be entered to access the product. **Your existing keys will not work with version 8.3. Do not proceed without a new 8.3 License Key or your setup will become inaccessible.**

Step 2: Verify Free Space

The upgrade procedure requires the following amount of free space in order to run successfully:

$$3 \times \text{DB Size} + 5\text{GB}$$

The current DB Size can be obtained by navigating Windows Explorer to C:\Program Files (x86)\Cisco\Cisco Prime Network Registrar IPAM \mysql. Right-click on the data directory and select Properties. The displayed Size value is a close estimate to the total database size.

In this example, the database occupies about 1GB of space, so the total free disk space required will be 8 GB. The value you come up with does not represent the final amount of space used, but only the amount of space needed for upgrade flexibility.

Step 3: Download the Upgrade Package

Download the self-extracting windows upgrader file 'cpnr_8_3-ipam-windows-upgrader.exe', extract the file and copy the 'PNR83Upgrade-win(32)-8.0.XX-#.zip' file to the C:\tmp directory on the Windows Executive or Agent system that is being upgraded. The file is roughly 800 MB in size. (Replace XX and # within the filename to the highest available build number and upgrader revision number found on the download site.) Also, you may substitute C:\tmp with a desired directory location, though C:\tmp will be referenced throughout these instructions.

Step 4: Execute the Upgrade Package

Log in as the Administrator, or a user with Administrator level privileges on your Windows Executive. From Windows Explorer go to C:\tmp, and extract the 'PNR83Upgrade-win(32)-8.0.XX-#.zip' file. Its contents should be extracted into the same directory.

Go to Start > Run, and type CMD. Then hold Ctrl+Shift and press Enter to open the command line console as Administrator. Click "Yes" if prompted about Admin level control.

Within the command line console, change the directory to C:\tmp. e.g. `cd C:\tmp`

Execute the upgrade script using this command and follow the on-screen instructions:

`PNR83Upgrade.exe`

Do not terminate the command line console or Ctrl-C within that window at any time until the upgrade has passed or failed.

If this is an Agent upgrade, see the [Upgrading IPAM Agents](#) section found later in this document for more information.

For an Executive system, you will be prompted if any of the Database, Schema or Block Integrity checks fail. Use the (R) option repeatedly, up to 5 times, or until there are no issues found. If the repair feature doesn't seem to resolve the problems found, use the (C) option to continue. At this time, there's a high probability that the upgrade may fail if the found errors cause a disturbance upgrading the database. If the upgrade does fail, it will roll back to the original start state. But if the upgrade completes after continuing past any errors found, you will want to run the DatabaseIntegrityChecker, SchemaChecker or BlockCheck manually to discuss found issues with the TAC.

Do not be alarmed of database update exceptions during the upgrade process. Some environments will contain duplicate entries that cause these kinds of errors. Depending on the severity level of the error received, the upgrade will roll back to your previous environment if the upgrade cannot continue.

If the upgrade rolls back, collect the files C:\tmp\Cisco Prime Network Registrar IPAM upgrade.log and C:\tmp\support.log and provide that information to the Technical Assistance Center team.

The automatic upgrade script attempts to carry forward custom scripts and settings. After the upgrade has completed, continue to the [Restoring Custom Scripts and Files](#) section below to verify that all of your custom scripts and settings have been carried forward.

After testing your new IPAM environment, you may manually remove any files from c:\tmp that were not originally there before starting the upgrade. Otherwise, they will be removed during the next system reboot if c:\tmp was used

Do not remove the C:\tmp* directory until you are completely satisfied with the upgrade and have successfully run with IPAM 8.3 for a considerable amount of time. This is the backup of your previous version. If space is needed on your system before you're comfortable with deleting the old setup, then consider zipping this directory and moving it off the system, before completely removing it from the system.

See the [During the Upgrade](#) section below for more details.

4 Upgrading Executives Running MySQL Replication

Below describes what's needed to upgrade Executives utilizing MySQL Replication.

Before you begin, please arrange a time where users do not need access to the IPAM GUI. This will assure a smooth upgrade of both Executives running MySQL Replication. Since the MySQL database is replaced during an upgrade of IPAM, MySQL Replication will need to be re-initialized again after the upgrade of both Executives. The flow to upgrade Executives running MySQL Replication is to upgrade the Primary Executive first, then the Slave Executive, then initiate MySQL Replication.

If the MySQL Replication upgrade cannot be performed immediately after the first upgrade, you can continue normal practice against the Primary Executive until such time you can apply Replication again. Just be aware that you are running without database replication until then.

Follow the instructions below for Executive upgrades on both the Primary and Slave Executives. When finished upgrading both systems, please refer to section 2 of the Cisco Prime Network Registrar IPAM Replication User Guide to apply MySQL Replication to IPAM 8.3 to entirely complete the upgrade process.

The following sections need to be followed to ensure a successful upgrade of Executives with MySQL Replication:

Preliminary Steps prior to MySQL Replication Upgrade

- Upgrading the Primary Executive
- Upgrading the Secondary Executive
- Initialization of MySQL Replication after Upgrade

4.1 Preliminary Steps Prior to MySQL Replication Upgrade:

Stopping Replication:

- Login as incadmin.

- Stop the replication process on the Primary Executive
 - # /opt/incontrol/etc/replmon stop
- Stop the monitoring between each database by performing the steps below first on the Primary, then repeat the same steps on the Secondary Executive:
 - # cd /opt/incontrol/mysql/bin
 - # ./mysql -uroot -pincr00t
 - > stop slave;
 - > reset slave;
 - > exit;

You are now ready to begin the Executive upgrades.

Upgrading the Primary Executive

Follow the instructions in this document for [Upgrading a Linux Executive](#) to perform an IPAM 8.3 Upgrade on the Primary Executive.

Once you have finished the upgrade and have logged in, applied an 8.0 License Key, and have verified the data within the IPAM Web Browser, you are ready to move onto upgrading the Secondary Executive.

Upgrading the Secondary Executive

Configuring the Backup Database to be Read/Write:

Login as incadmin. Change directories to /opt/incontrol/etc.

- Run the following to verify that only MySQL is the only process running.
 - # ./incstatus
- To remove the read_only status from the database, perform the following:
 - # cd /opt/incontrol/mysql
 - # vi my.cnf
 - Comment out the “read_only” line by placing a “#” in front of this parameter.
 - Save the file.

- Restart the MySQL Database:

Linux Users:

- # cd /opt/incontrol/etc
- # ./incontrol restart

Upgrading the Secondary Executive

Follow the instructions in this document for [Upgrading a Linux Executive](#) to perform an IPAM 8.3 Upgrade on the Secondary Executive.

Initialization of MySQL Replication after Upgrade Prior to initializing:

Before you begin setting up replication again, access the my.cnf file on both the Primary and Secondary systems and verify that the replication parameters are commented out under the following heading:

Replication Settings

If not, comment out the Replication parameters and restart mysql. Running the set up scripts will add them back in.

You are now ready to initialize MySQL Replication.

Initializing:

For complete instructions, obtain and follow the instructions in the IPAM 8.3 Replication Guide to initiate MySQL Replication on both Executives. Below is a short list of steps to point out what is needed to reset MySQL Replication on your systems, but using the Replication Guide is highly recommended.

- **On the Primary Executive**
 - Run 'prepmaster.sh' from /opt/incontrol/etc/support
 - Copy out the output line at the end of the process.
 - Using scp, copy the dbforrepl.sql file to /tmp on the Backup Executive.
- **On the Secondary Executive**
 - In the directory /opt/incontrol/etc/support, run 'prepslave.sh'
 - Example:
 - ./prepslave.sh -l mysql-bin.000001 -s 3041 -h 10.0.0.100 -d /tmp/dbforrepl.sql

- **On the Primary Executive**
 - In the directory /opt/incontrol/etc/support, run 'connect_to_passive.sh'
 - Example:
 - ./connect_to_passive.sh -l mysql-bin.000001 -s 3041 -h 10.0.0.101
 - In /opt/incontrol/etc, perform the following:
 - # cp incstatus incstatus.primary
 - # cp default.incontrol default.incontrol.primary
 - Copy these two “.primary” files to the Secondary under /opt/incontrol/etc.

5 During the Upgrade

At this time a local database backup occurs automatically. The current IPAM file structure is saved and IPAM 8.3 is installed. The database updates are then applied, which may take some time to complete, especially in larger environments. Monitor this phase closely as database updates are the main reason why an upgrade could fail.

The Automatic Upgrade for IPAM 8.3 will also perform the following database functions before attempting the actual upgrade:

DatabaseIntegrityCheck

A Database Integrity Check is performed to identify foreign key and ID cooperation throughout the database. If the Upgrade detects a problem, you will be prompted to review and attempt repairing those problems found. The check and repair process must be repeated as necessary until zero problems are found. If you've reached 5 repair attempts you may contact the Technical Assistance Center. If the repair feature doesn't seem to resolve the problems found, use the (C) option to continue. At this time, there's a high probability that the upgrade may fail if the found errors cause a disturbance upgrading the database.

BlockCheck

A Block Check is performed to identify discrepancies in the block structure of IPAM. If the Upgrade detects a problem, you will be prompted to review and attempt repairing those problems found. The check and repair process must be repeated as necessary until zero problems are found. If you've reached 5 repair attempts, contact the Technical Assistance Center and do not continue the upgrade.

SchemaChecker

A new utility, Schema Checker, is also executed to identify inconsistent table and column structures, as well as foreign key and index applied throughout the database.

Unfortunately, problems found in this phase cannot be fixed automatically. If differences are found in the Schema Report, use the (S) option to display the report. The report is broken down into three sections: Errors, Warnings and Informational.

If you are concerned with the Schema Report results, you may choose to (E) Exit the Upgrade at this time. Contact the Technical Assistance Center to provide and discuss the Schema Report, which can be found in /tmp or C:\tmp.

If you are not concerned with the Schema Report results, you may choose (C) to Continue with the problems found by the SchemaChecker. If the Upgrader fails applying new database schema changes, it will stop and restore the setup to the original IPAM state before the Upgrade was attempted.

6 Restoring Custom Scripts and Files

If your IPAM 8.1.1, 8.1.2 or 8.1.3 environment was customized in any way, you'll need to go through some areas in 8.3 to make sure that the settings were carried forward after the upgrade. The upgrader is designed to handle common changes, but it's still best to verify all of your customizations manually for continuity.

If you used the Automatic upgrader, review the end of the upgrade-`<timestamp>.log` file in the directory where you launched the upgrade (`/tmp` or `C:\tmp`). This log file will recommend files which it believes are different than the default setup. If it states "Additional action may be required", it is up to you to make the final determination if the differences are still needed in the new IPAM version, and then make those modifications manually, if desired. **Do not** overwrite any new files with its backup copy. Since some default IPAM files have changed slightly between versions, this check filter may pick up those differences and can likely be ignored if you do not remember making changes to a particular file. If you are unsure, please contact the Technical Assistance Center.

After the upgrade, check your new IPAM 8.3 file structure for filenames that end with -`<timestamp>`. These files are from your IPAM 8.1.1, 8.1.2 or 8.1.3 environment where IPAM suspect's customizations were made. They have been copied to the new structure to allow for easy comparison. Once you've finished reviewing these files and finalizing your customizations into the new version of the file, feel free to remove the file(s) containing "-`<timestamp>`" in the name under the `/opt/incontrol` or `C:\Program Files (x86)\Cisco\Cisco Prime Network Registrar IPAM` structure. On Unix, a complete backup of your IPAM 8.1.1, 8.1.2 or 8.1.3 files can be found under the `/opt/incontrol-<timestamp>` directory. On Windows, the upgrader will only retain the DNS config and zone files and IPAM config and properties files in `C:\tmp\backup-<timestamp>`.

For those who have upgraded manually, you will need to compare any custom files from the IPAM 8.1.1, 8.1.2 or 8.1.3 backup directory that you created.

6.1 MySQL

If you've made any customizations to your MySQL database in your old environment, you will have to verify those same changes in your new installation. The upgrade script attempts to carry your changes forward, but the version of MySQL has changed from 5.6.17 to 5.6.28. Verify the contents of the `my.cnf` file found under `/opt/incontrol/mysql` or `C:\Program Files (x86)\Cisco\Cisco Prime Network Registrar IPAM \mysql` and enter any changes in the new

my.cnf file that are desired. **Do not** overwrite this file with the backup copy. Also, you may need to confirm your original customizations to the new format of the file.

Any customizations to MySQL that were made dynamically and not via the my.cnf/my.ini file will have to be done again on the new MySQL database if they are still desired. This procedure is not recommended. All database configurations should be made in the my.cnf file. Before the upgrade, you may use the 'SHOW STATUS;' command in MySQL to compare the differences between the output and what's defined in the my.cnf file.

6.2 Database Credentials

If your database resides on a separate system from the Executive server system, or if you've changed the database username and password for the IPAM database from its default value, then you will need to modify INCHOME/classes/jdbc.properties. Again, the automatic upgrade script attempts to carry forward these changes. Compare the old version of this file with the new version, and if the values are different, make sure the new file is modified to retain your old values. The parameter names may be slightly different. **Do not** overwrite this file with the backup copy.

6.3 Custom Callout Manager Routines

If you had configured Callout Manager to execute a script when a specific function takes place, then you may need to restore those scripts.

If your custom scripts resided under the IPAM directory tree, the automatic upgrade will try carrying them forward to your new IPAM 8.3 Installation.

Verify the new INCHOME/callout_manager.properties. Make changes as necessary. **Do not** overwrite this file with the backup copy. The backup copy of this file will be helpful for restoring which functions you had previously set, as well as the path locations to the custom scripts being called. Those custom scripts should be copied from the backup directory to the new installation directory, if they were not copied automatically.

After callout_manager.properties has been modified, double-check the new **Tools > System > Policies and Options** menu in IPAM 8.3 to make sure the desired callout policies are still enabled.

6.4 Custom mysqllexport script

You may have modified your old /opt/incontrol/etc/mysqllexport.sh file (on UNIX only) to be more specific to your environment. Compare the old version of this file with the new version and, if they are different, make sure the new file is modified to conform to your old settings. **Do not** overwrite this file with the backup copy.

6.5 Custom dbmover script

You may have modified your old `/opt/incontrol/etc/dbmover.sh` (on UNIX only) file to be more specific to your environment. Compare the old version of this file with the new version, and if they are different, make sure the new file is modified to conform to your old settings.

Do not overwrite this file with the backup copy.

Customizations to the old `dbmover-wrapper.sh` script would need to be moved over to the new file version as well. **Do not** overwrite this file with the backup copy.

We highly recommend implementing the MySQL Replication disaster solution, as support for dbmover is planned to be phased out.

6.6 Custom properties files

You may have modified some of the properties files for the IPAM services. The upgrade script attempts to carry these changes forward. If those changes are still desired, you should compare the old files with the new files to see what was customized. If they are different, make sure the new file(s) conforms to your old settings. **Do not** overwrite these files with the backup copies.

6.7 Custom web security settings

If you've modified your Tomcat environment to use HTTPS instead of the default HTTP, then you will need to configure `INCHOME/tomcat/conf/server.xml` again. Note that Tomcat was upgraded to Version 7 as part of the upgrade. You should compare the old file with the new one to see what was changed. If they are different, make sure the new file conforms to your old settings. **Do not** overwrite this file with the backup copy.

6.8 Other files to compare

If you use External Authentication, see **Tools > System > Policies and Options** in IPAM to make sure your script is set correctly, then make sure that script actually exists in the correct location.

`$INCHOME/conf/gssLogin.conf`

`$INCHOME/conf/*.keystore`

`$INCHOME/tomcat/conf/*.keystore`

`$INCHOME/etc/cli/cli.properties`

7 Logging into the Web Interface

7.1 Before Logging In

Before logging into the Web Interface for the first time, it is mandatory to clear your browser cache, especially from any client that has accessed previous versions of IPAM on an Executive which is now running IPAM 8.3. Otherwise, random GUI level errors will be seen. Some cases it may seem like data is missing. These errors are resolved by clearing old browser cache. Please note, if you have the IPAM URL saved as a favorite within your browser, when clearing browser cache in IE be sure to uncheck 'Preserve Favorites website data'.

Also note, it is not recommended to access IPAM through a proxy server, as this may cause some users to experience issues after an upgrade if the proxy server caches IPAM web pages. Proxy configuration for the web browser should ensure that accessing the hostname/IP address of the IPAM Executive should bypass the proxy.

It is also suggested to restart all of the IPAM services. This is done automatically during the Automatic Upgrade Routine.

- On UNIX, run this command as incadmin:

```
/opt/incontrol/etc/incontrol restart
```

- On Windows, use the Windows Services. Stop all services beginning with “Cisco Prime Network Registrar IPAM”, along with MySQL and Tomcat. Then start them.
 - Starting order: MySQL, Tomcat Cisco Prime Network Registrar IPAM*

7.2 Logging In

Open a supported web browser and enter:

```
http://{IP or resolvable hostname of your Executive}:8080/incontrol
```

```
Example: http://10.20.30.100:8080/incontrol
```

Give Tomcat about 2 minutes or so to finish initializing for the first time after install, and shortly after that the login screen will appear. If the login page takes longer than expected to appear, enter the URL again and try once more. If there is still a problem, contact the Technical Assistance Center.

Enter the incadmin username, and your incadmin password used in prior versions. By default this value is 'incadmin'. If you have lost your incadmin password, please contact the Technical Assistance Center for assistance.

The very first time you successfully login to the Web Interface, you will be prompted for your 8.3 license. Enter the key and click Submit, and you will be prompted to login once again. At that time, your IPAM 8.3 Executive is ready to go!

8 Upgrading IPAM Agents

Linux users, see the “[Upgrading a Linux Executive](#)” section and Windows users see the “[Upgrading a Windows Executive](#)” section found earlier in this document for instructions to automatically upgrade IPAM Agents and begin on Step 3. The same upgrade package file is used on Agents as was used on the Executive server, except a database procedure is not performed.

8.1 Upgrade Order

Once the Executive is on IPAM 8.3, it does not matter if you upgrade your DNS or DHCP server(s) Agents to 8.3.

8.2 After the Agent upgrade

Be aware that the Automatic upgrader stores your previous version backup in /opt/incontrol-<timestamp>. Your custom files and scripts that resided in your IPAM 8.1.1 8.1.2 or 8.1.3 directory structure can now be located in /opt/incontrol-<timestamp>, if needed.

9 Manual Upgrade Procedure

Though Cisco strongly suggests using the Automatic Upgrade Procedure, in some cases it is not desired or feasible. Especially for environments that are running on OS platforms that are no longer supported with IPAM, such as Red Hat 3 and 4, or Windows 2003.

If you're using this section because the IPAM Executive is moving to a new supported OS, it is suggested to first install the IPAM 8.3 Executive software on the new OS. For full installation details, please refer to the Cisco Prime Network Registrar IPAM Installation Guide.

Be sure to make a safe database backup of your current, production IPAM environment.

Local database users: Install IPAM as usual, allowing MySQL to install on the system. Then copy the database backup of your production environment on to the new system.

After IPAM 8.3 has completed installing, stop all IPAM services, except for MySQL. From a command prompt/terminal session login to mysql as incadmin, drop the inconcontrol database, create a new inconcontrol database, use the inconcontrol database, and then source your database backup file.

Remote MySQL or Oracle users: Before installing, be sure to stop the production IPAM services on your current IPAM Executive. On the remote database server, leave the database running. While installing IPAM 8.3 on the new system, be sure to provide the remote database details. Do not start the IPAM Services at the end of the install.

Now that your IPAM 8.3 environment has been installed and is pointing to the old data/database, and none of the IPAM services are running, open a command prompt/terminal session. Navigate to INCHOME/etc/support. All of the following commands will be executed from this start directory.

Note:

8.1.1 users – Use “DatabaseChecks-5.0.xml” in the command below

8.1.2 & 8.1.3 users – Use “DatabaseChecks.xml” in the command below

You do not need to repeat this command with different filename versions in succession. Only the filename that matches the current version of the database is needed to continue.

Database Integrity

UNIX:

```
./DatabaseIntegrityChecker.sh -f DatabaseChecks-xy.xml -d /opt/incontrol/tmp -o  
/opt/incontrol/tmp/DBICout.txt -e /opt/incontrol/tmp/DBICerr.txt -u incadmin -p  
incadmin
```

Windows:

```
DatabaseIntegrityChecker.cmd -f DatabaseChecks-xy.xml -d C:\tmp -o  
C:\tmp\DBICout.txt -e C:\tmp\DBICerr.txt -u incadmin -p incadmin
```

Summary:

You should see similar Database Integrity Check results, with 0 failed checks before you continue.

```
Integrity checks run: 168  
Integrity checks passed: 168  
Integrity checks failed: 0
```

If the above output has more than zero failed checks, rerun the last command again, but append a -r at the end of the command. This should auto repair the problems found. If the -r option does not work after 5 to 10 attempts, contact the Technical Assistance Center for further assistance. **DO NOT CONTINUE WITH THE UPGRADE UNTIL THE CHECKS FAILED VALUE IS ZERO**, or the data has been determined safe by TAC to continue the upgrade.

Block Integrity

UNIX:

```
./BlockCheck.sh -u incadmin -p incadmin -b 0
```

Windows:

```
BlockCheck.cmd -u incadmin -p incadmin -b 0
```

Summary:

You should see the following Block Integrity Check results before you continue to the next step.

```
BlockIntegrityCheck completed.  
Total Problems Found: 0
```

If the above output has more than zero failed checks, rerun the last command, but append a “-r -l” at the end of the command. This should auto repair the problems found. If the -r -l option does not work after 5 to 10 attempts, contact the TAC for further assistance. **DO NOT CONTINUE WITH THE UPGRADE UNTIL THE TOTAL PROBLEMS FOUND VALUE IS ZERO**, or the data has been determined safe by TAC to continue the upgrade.

Schema Check

UNIX:

```
./SchemaChecker.sh -f /opt/incontrol/tmp
```

Windows:

```
SchemaChecker.cmd -f “C:\Program Files (x86)\Cisco\Cisco Prime Network  
Registrar IPAM\tmp”
```

Additional info:

-f = The output directory for the report file. The output filename is SchemaReport.txt

Summary:

After the command completes, review the report found in INCHOME/tmp. If any details appear below the "ERRORS" section toward the top of the report, contact the TAC and provide the report file when opening a ticket. If the report starts with "WARNINGS" or "INFORMATIONAL", you may contact the TAC, but you may also continue the upgrade without an immediate response. There is not an automatic fix option for this script. A custom repair script will need to be provided by TAC once they have reviewed the report.

Database Schema Updates

UNIX:

Logged in as the 'incadmin' system user, from /opt/incontrol/etc/support, run this command:

```
./UpgradeSchema.sh
```

Windows:

Logged in as 'Administrator' or a user with equal privileges, open a command prompt. From C:\Program Files (x86)\Cisco\Cisco Prime Network Registrar IPAM\etc\support, run this command:

```
UpgradeSchema.cmd
```

Summary:

This script will apply all required schema updates, including BIND dictionary updates, against the IPAM database from its current version to the latest version of 8.0. No errors should occur during this time. If so, please contact the TAC to discuss the problem further.

Once this script completes successfully, local MySQL users should stop MySQL first. Then all users, start all IPAM 8.3 Executive services.

Continue to the [Logging into the Web Interface](#) section earlier in this document to finalize the upgrade.

10 Restoring Original IPAM Files

If there is a need to restore IPAM to the version you were running prior to attempting the IPAM 8.3 upgrade, you will need to perform the following steps.

When using the method below, your MySQL data will also be restored, but only to the point where your upgrade began. Oracle database users, contact your DBA for assistance with restoring your original database backup, after your original IPAM files have been restored.

UNIX Executive

- As the incadmin user, stop the IPAM services.

```
/opt/incontrol/etc/incontrol stop
```

- Double check all services are stopped:

```
ps -ef | grep inc
```

If this command lists any processes running for IPAM, then stop or kill those processes.

- In the /opt directory, make note of a sub-directory called “incontrol-”, followed by some numbers. For example, incontrol-20160217112456. This number is a date/time stamp of when your upgrade was executed. If you have more than one occurrence of a time stamped sub-directory, this means an upgrade was attempted more than once. You’ll likely want to use the youngest directory, since that was your most recent starting point.

- As the root user, rename your current /opt/incontrol directory to /opt/incontrol-80.

```
mv /opt/incontrol /opt/incontrol-80
```

- As the root user, rename your original time stamped sub-directory to /opt/incontrol

```
mv /opt/incontrol-20160217112456 /opt/incontrol
```

-This setup will restore all original files, including any customizations you may have had defined, and have not touched since the 8.3 upgrade occurred.

Oracle users: Restore your original IPAM backup by following the above steps. After your Oracle DBA has restored your 8.1.1, 8.1.2 or 8.1.3 data on the Database server, you may then start your InControl services on the restored Executive system.

As the incadmin user, start the IPAM services.

```
/opt/incontrol/etc/incontrol start
```

- Give the services a few moments to be started, and then try logging into your IPAM web interface and confirm that you're now back to your original start version.
- Test the functionality of the product to ensure you're back to a working state.