

# Configuring Centralized SS for DNS User Guide

## OPERATING INSTRUCTIONS

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# Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
1.1	Prerequisites	1
1.2	Relation Information	2
<b>2</b>	<b>Overview</b>	<b>3</b>
<b>3</b>	<b>New deployment</b>	<b>5</b>
3.1	Preparation	5
3.2	Initializing All IPWorks Systems	5
3.3	Data Migration for Centralized SS	5
3.4	Creating Centralized DNS Server on Primary System	6
<b>4</b>	<b>Primary SS Role Transferring</b>	<b>17</b>
<b>5</b>	<b>Transforming from Existing IPWorks Systems</b>	<b>21</b>
	<b>Reference List</b>	<b>23</b>





# 1 Introduction

This document describes how to use the Configuration Management (CM) function to build a centralized DNS cluster.

## Target Groups

This document is intended for personnel configuring and fine-tuning IPWorks DNS.

## 1.1 Prerequisites

This section states the prerequisites that must be fulfilled.

- Intermediate Linux and UNIX skills
- Concepts, terminologies, and telecommunication abbreviations, such as TCP/IP, packet data networks, and protocol servers
- An Ericsson Command-Line Interface (ECLI) session in Exec mode is in progress.

### 1.1.1 Documents

Before starting this procedure, ensure that the following web site and documents are available:

- For more information about the basics and concepts regarding the configuration management of IPWorks, refer to [IPWorks Configuration Management](#).
- For more information about the objects configured through IPWorks CLI (ipwcli), refer to [IPWorks DNS, ASDNS, ENUM Parameter Description](#).
- For more information about the objects configured through ECLI, refer to [Managed Object Model \(MOM\)](#).
- For more information about how to use the IPWorks CLI, refer to [Command Line Interface User Guide for IPWorks SS](#).

### 1.1.2 Tools

Not applicable.



### 1.1.3 Conditions

Before starting this procedure, the following conditions must apply:

- At least two IPWorks systems installation are completed.
- The value package "Advanced Network Protection" should be ordered to enable this feature.
- The license "FAT 102 3219/10" is required in the license server.

For more information about IPWorks license related information, refer to [License Management](#).

- Storage Server is started.
- DNS server must be initially configured.
- Centralized SS only supports pure DNS with ASDNS.

## 1.2 Relation Information

Trademark information, typographic conventions, and definition and explanation of abbreviations and terminology can be found in the following documents:

- [Trademark Information](#)
- [Typographic Conventions](#)
- [Glossary of Terms and Acronyms](#)



## 2 Overview

Table 1 Configuration Overview

Functionality		Procedure
New deployment	Initializing All IPWorks Systems	See Section 3.2 on page 5
	Data Migration for Centralized SS	See Section 3.3 on page 5
	Creating Centralized DNS Server	See Section 3.4 on page 6
Transferring	Primary SS Role Transferring	See Section 4 on page 17
Transforming	Transforming from Existing IPWorks Systems	See Section 5 on page 21







## 3 New deployment

### 3.1 Preparation

At least two IPWorks are required for centralized SS. One is defined as the primary IPWorks, and the others are for secondary IPWorks. All the zone files are generated from the primary IPWorks, then transferred to the secondary IPWorks.

For IPWorks deployment, refer to [IPWorks Auto Deployment Guideline for KVM - DL380 Gen10](#) [Reference \[14\]](#) (for KVM deployment) or [IPWorks Deployment Guide](#) [Reference \[15\]](#) (for CEE deployment). Make sure IPWorks version is greater than IPWorks 2.2 (include 2.2).

### 3.2 Initializing All IPWorks Systems

Make sure the following configurations are ready to initialize IPWorks system:

1. Storage server initial configuration, refer to section [Storage server initial configuration](#) in document [IPWorks Initial Configuration](#) [Reference \[13\]](#).
2. MySQL NDB cluster initial configuration, refer to section [MySQL NDB cluster initial configuration](#) in document [IPWorks Initial Configuration](#) [Reference \[13\]](#).

### 3.3 Data Migration for Centralized SS

This section is only available if the installed systems are upgraded from 15B.

First, choose one IPWorks as the primary system. Then migrate the data configuration to the primary system.

#### 3.3.1 DNS Service Migration

For how to get DNS configuration, refer to section [DNS Service Migration](#) in document [Data Migration from IPWorks HP 15B FD1 CP3 to IPWorks 2](#) [Reference \[10\]](#).

The configuration of migrated data is on the primary IPWorks.

#### 3.3.2 Modifying Configuration

To modify the data configuration migrated from IPWorks 15B:

1. Make sure SS is started, and check IPWCLI username and password.

Check whether the ipwcli can be used, and make sure that the username and password are the same on primary and secondary IPWorks systems.



2. Check DNS status on primary and secondary IPWorks systems.

```
#ssh <Username>@<MIP_OAM_IP>
```

```
SC-X:~ # ipw-ctr status all
```

3. Make sure the serviceType is DNS shown in Step 2. Otherwise, configure the serviceType to DNS.

```
SC-X:~ # /opt/com/bin/cliss
```

```
>configure
```

```
(config)>ManagedElement=1,IpworksFunction=1,IpworksCommonRoot=1
```

```
(config-IPworksCommonRoot=1)>serviceType="DNS"
```

```
(config-IPworksCommonRoot=1)>commit
```

```
(IPworksCommonRoot=1)>exit
```

4. Make sure the status of DNS is running in Step 2. Otherwise, start dnsserver.

```
SC-X:~ # ipw-ctr start dns PL-3
```

```
SC-X:~ # ipw-ctr start dns PL-4
```

### 3.3.3 Centralized SS for Migrated DNS

Refer to Section 3.4 on page 6.

## 3.4 Creating Centralized DNS Server on Primary System

Firstly, choose one IPWorks as the primary system, and others as the secondary system(s). Then operate the following sections on primary system to create centralized DNS server.

The Location field can be configured with the following two formats:

— <MIP\_PROV\_IP>/<PL-X>

Using this format, it can transfer the dnsserver configuration to the MIP\_PROV\_IP, then reload rndc to the PL-X if the dnsserver is up on the PL at the same time.

— <MIP\_PROV\_IP2>/<PL-X>@<MIP\_PROV\_IP1>/<PL-Y>

Using this format, it can define a pointer to an existed configuration. The format consists of two parts, which are split by @. The first part is a kind of pointer, and the second part must be an existed location defined with the first format. Update operation will create a link pointing to the configuration of <MIP\_PROV\_IP2>/<PL-X>, then transfer the zip file of configuration to MIP\_PROV\_IP2 and reload the corresponding PL-X with the new configuration.



For DnsServer, X and Y can be different.

For ASDNS Monitor, X and Y must be the same.

Figure 1 shows the overview of centralized SS for DNS, and Figure 2 shows the overview of centralized SS for ASDNS.

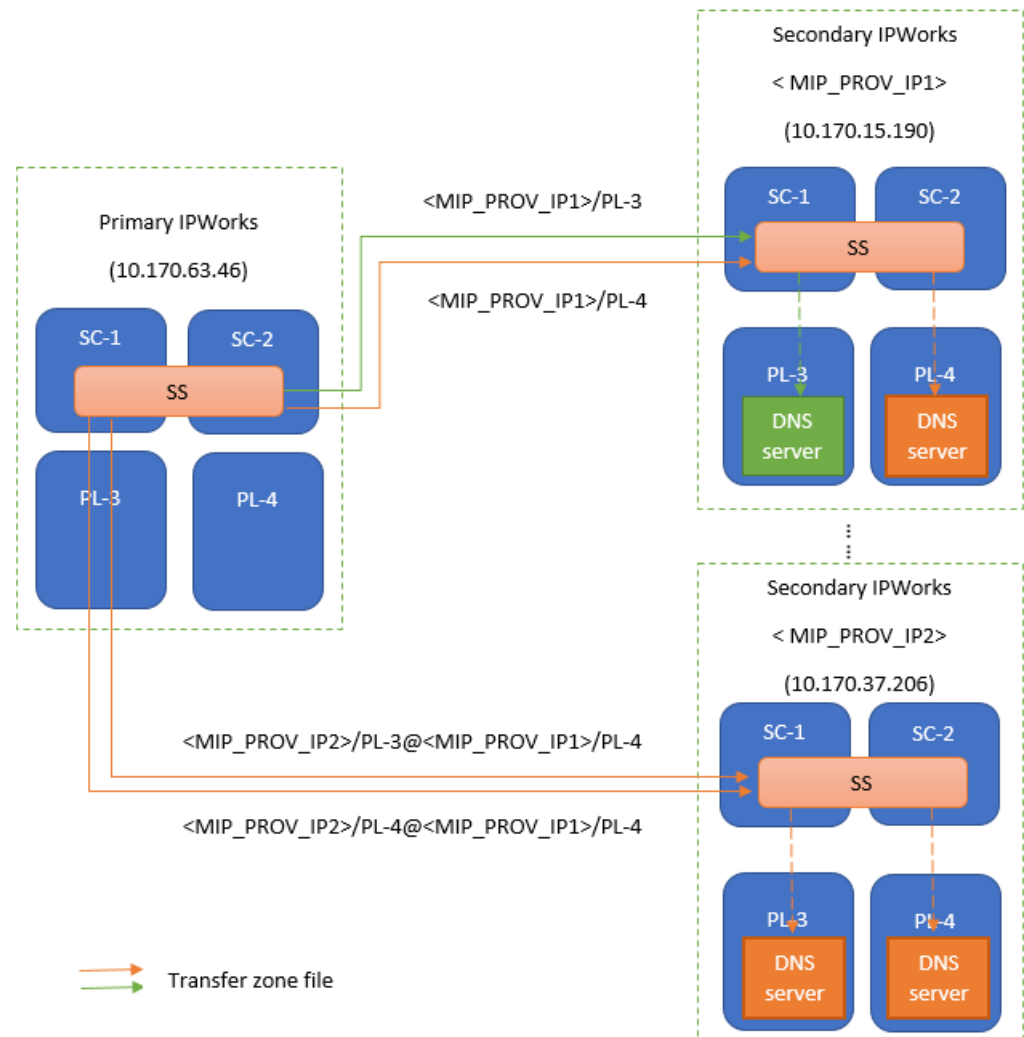


Figure 1 Centralized SS for DNS

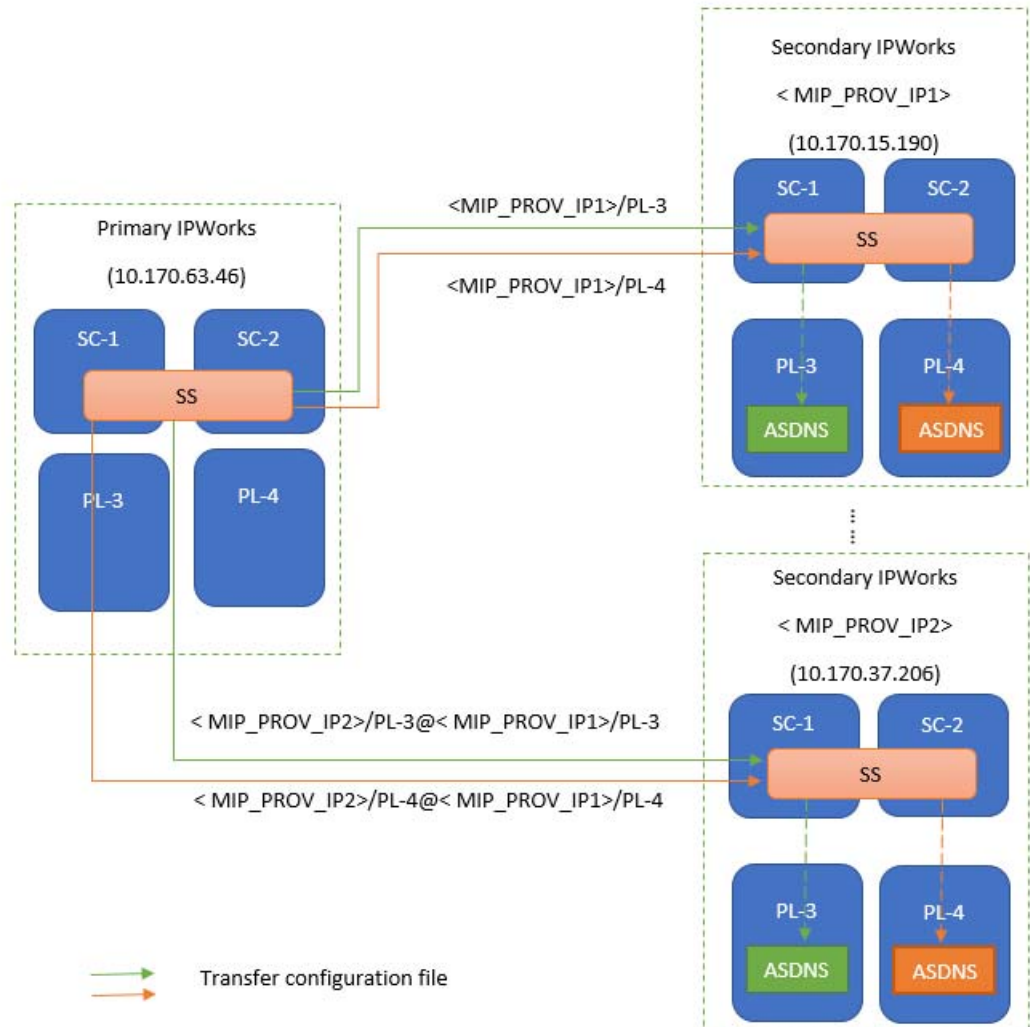


Figure 2 Centralized SS for ASDNS

The configuration of Centralized SS contains the following topics:

- Configure DNS, see Section 3.4.1 on page 8.
- Configure ASDNS Monitor, see Section 3.4.2 on page 11.
- Update DNS Server, see Section 3.4.3 on page 13.
- Update ASDNS Monitor, see Section 3.4.4 on page 15.

### 3.4.1 Configuring DNS

This configuration is only used for centralized SS. DNS Location defines where the DNS server runs.



The configuration of location contains the following topics:

- Section 3.4.1.1 Creating DNS Server with Location on page 9
- Section 3.4.1.2 Creating DNS Server with Location Pointer on page 10

### 3.4.1.1

#### Creating DNS Server with Location

1. Check whether the secondary SS and DNS service are accessible.

```
SC-1:~ # ipwcli -server=<PROV_MIP_IP of secondary
IPWorks> -user=admin -password=*****
```

For example:

```
SC-1:~ # ipwcli -server=10.170.15.190 -user=admin
-password=*****
```

```
IPWorks> exit
```

**Note:** Make sure the user name and password of IPWCLI on primary and secondary IPWorks are the same.

2. Log in to IPWCLI on the primary IPWorks.

```
SC-1:~ # ipwcli -server=<PROV_MIP_IP of primary IPWorks> -user=
admin -password=*****
```

3. Create DNS servers and associate them with related areas by using IPWorks CLI.

```
IPWorks> create dnsserver dns1 -set dnsname=dns1.example.net
;location=10.170.15.190/PL-4
```

```
1 object(s) created.
```

**Note:**

- If the dnsserver existed, the location can be set by using modify command.

```
IPWorks> modify dnsserver dns1 -set location=10.170.
15.190/PL-4
```

- The location can be removed, then the dnsserver is transferred to non-centralized DNS server.

4. Verify the information of the DNS servers.

```
IPWorks> list dnsserver
[DnsServer dns1]
Partition: active
Name: dns1
```



```
Location: 10.170.15.190/PL-4
DnsName: dns1.example.net
PrimaryDnsName: dns1.example.net
Filename: named.conf
AlgServerType: false
ExportNeeded: true
```

#### 5. Show status.

Because centralized SS does not support DNSSM, IPWorks needs to use command to get real-time status.

For example:

```
IPWorks>select dnsserver dns1
Selected 1 object(s).
IPWorks>show status
Running
```

```
IPWorks>list dnsserver dns1
[DnsServer dns1]
Partition: active
Name: dns1
Location: 10.170.15.190/PL-4
DnsName: dns1.iptelco.com
PrimaryDnsName: dns1.iptelco.com
Filename: named.conf
AlgServerType: false
Status: [CentralizedServer 10.170.15.190/PL-4] On 08/23/18 at 15:31:27 serv
ExportNeeded: true
```

#### 6. For other DNS configurations, refer to section Configuring DNS in document Configure DNS and ENUM.

### 3.4.1.2 Creating DNS Server with Location Pointer

Make sure the pointed dnsserver is defined. Otherwise, refer to section Section 3.4.1.1 Creating DNS Server with Location on page 9 to create the pointed dnsserver.

```
IPWorks> create dnsserver dns2 -set location=10.170.37.206/PL-3@
10.170.15.190/PL-4
```

1 object(s) created.



```
IPWorks> list dnsserver dns2
```

```
[DnsServer dns2]
  Partition: active
  Name: dns2
  Location: 10.170.37.206/PL-3@10.170.15.190/PL-4
  Filename: named.conf
  AlgServerType: false
  ExportNeeded: true
  ...
```

```
IPWorks> show status dnsserver dns2
```

```
Running
```

```
IPWorks>list dnsserver dns2
```

```
[DnsServer dns2]
  Partition: active
  Name: dns2
  Location: 10.170.37.206/PL-3@10.170.15.190/PL-4
  Filename: named.conf
  AlgServerType: false
  Status: [CentralizedServer 10.170.37.206/PL-3] On 09/07/18 at 10:55:06 serve
  ExportNeeded: true
```

#### Note:

- The symbol @ splits the location into two parts, the second part must be an existed configuration, and cannot be the pointer.
- Only the location field is required to be configured in this scenario. All the configuration will reuse the pointed dnsserver configuration. For location definition, refer to section DnsServer in document IPWorks DNS, ASDNS, ENUM Parameter Description.
- The ExportNeeded always sets to true because the pointer can not get the real-time status of the pointed DNS server.

### 3.4.2 Configuring ASDNS Monitor

If the monitor is configured for the secondary SS. The configuration of Location field in the following examples is only required for centralized SS.

The configuration of location contains the following topics:

- Section 3.4.2.1 Configuring ASDNS Monitor with Location on page 12
- Section 3.4.2.2 Configuring ASDNS Monitor with Location Pointer on page 13



### 3.4.2.1 Configuring ASDNS Monitor with Location

For example to create ASDNS monitor:

```
IPWorks> create monitor mon1 -set dnsname=dns1.example.
com;location=10.170.15.190/PL-3
1 object(s) created.
IPWorks>list
[Monitor mon1]
  Partition: active
  Name: mon1
  Location: 10.170.15.190/PL-3
  DnsName: dns1.example.com
  Filename: asdnsmon.conf
  Type: Monitor
  ExportNeeded: true
```

For example to show status of ASDNS monitor:

```
IPWorks>show status
Running
IPWorks>list
[Monitor mon1]
  Partition: active
  Name: mon1
  Location: 10.170.15.190/PL-3
  DnsName: dns1.example.com
  Filename: asdnsmon.conf
  Type: Monitor
  Status: [CentralizedServer 10.170.15.190/PL-3] On 09/06/18 at 17:26:24 server
  ExportNeeded: true
```

For example to configure dnscontact:

When creating monitor, if the Address field is not configured, dnscontact must be added manually. Otherwise, the creation of monitorresource will fail. When configuring dnscontact, make sure that the Address value is the internal IP of PL-X defined in Location.

```
IPWorks> create dnscontact -set name=dns1;server=dns1;address=169
.254.100.3
```

For other ASDNS configurations, refer to section Configure DNS in document Configure DNS and ENUM.





### 3.4.2.2 Configuring ASDNS Monitor with Location Pointer

Make sure the pointed ASDNS monitor is defined. Otherwise, refer to Section 3.4.2.1 on page 11 to create the pointed ASDNS monitor.

```
IPWorks> create monitor dns1mon -set dnsname=indns1.example.net
-set location=<PROV_MIP_IP2>/PL-X@<PROV_MIP_IP1>/PL-Y
```

Make sure that X and Y must be the same.

For example:

```
IPWorks> create monitor mon2 -set dnsname=dns2.example.com;location
=10.170.37.206/PL-3@10.170.15.190/PL-3
```

1 object(s) created.

```
IPWorks> list monitor mon2
```

```
[Monitor mon2]
  Partition: active
  Name: mon2
  Location: 10.170.37.206/PL-3@10.170.15.190/PL-3
  DnsName: dns2.example.com
  Filename: asdnsmon.conf
  Type: Monitor
  ExportNeeded: true
```

```
IPWorks>show status
```

Running

```
IPWorks>list
```

```
[Monitor mon1]
  Partition: active
  Name: mon1
  Location: 10.170.15.190/PL-3
  DnsName: dns1.example.com
  Filename: asdnsmon.conf
  Type: Monitor
  Status: [CentralizedServer 10.170.15.190/PL-3] On 09/06/18 at 17:26:24 ser
  ExportNeeded: true
```

#### Note:

- Only Location field is required to be configured. For location definition, refer to section Monitor in document IPWorks DNS, ASDNS, ENUM Parameter Description.
- The ExportNeeded always sets to true because the pointer cannot get the real-time status of the pointed DNS server.



### 3.4.3 Updating DNS Server

When updating a DNS server, which is under centralized SS, the change will run on the MIP and the corresponding PL-X defined in Location.

For example:

```
IPWorks> list dnsserver
[DnsServer dns2]
  Partition: active
  Name: dns2
  Location: 10.170.37.206/PL-3@10.170.15.190/PL-4
  Filename: named.conf
  AlgServerType: false
  ExportNeeded: true
[DnsServer dns1]
  Partition: active
  Name: dns1
  Location: 10.170.15.190/PL-4
  DnsName: dns1.test.com
  PrimaryDnsName: dns1.test.com
  Filename: named.conf
  AlgServerType: false
  ExportNeeded: true
```

#### Updating DNS Server with Location

```
IPWorks> update dnsserver dns1
Exported configuration for [DnsServer dns1]
tar file successfully: /home/ipworks/etc/CentralSS/10.170.15.190/PL-4/dns.tar
transfer file successfully: /home/ipworks/etc/CentralSS/10.170.15.190/PL-4/
unzipfile file successfully: /home/ipworks/etc/ShadowSS/PL-4/dns.tar.gz
reload server successfully.
update successfully.
```

#### Updating DNS Server with Location Pointer

In this example, a single DNS Server is defined.

```
IPWorks> update dnsserver dns2
Exported configuration for [DnsServer dns1]
tar file successfully: /home/ipworks/etc/CentralSS/10.170.37.206/PL-3/dns.tar
transfer file successfully: /home/ipworks/etc/CentralSS/10.170.37.206/PL-3/
unzipfile file successfully: /home/ipworks/etc/ShadowSS/PL-3/dns.tar.gz
reload server successfully.
update successfully.
```



In the example, dns2 uses dns1 configuration, when updating dns2, primary ss will generate the configuration of dns1, and the configuration will be transferred to dns2 (10.170.37.206/PL-3).

**Note:** The DNS on PL-X must be started, otherwise, the update operation will fail.

### 3.4.4 Updating ASDNS Monitor

If a monitor is configured with Location field, the change will run on the MIP and the corresponding PL-X defined in Location when updating the monitor.

For example:

```
IPWorks> list monitor
[Monitor mon1]
  Partition: active
  Name: mon1
  Location: 10.170.15.190/PL-3
  DnsName: dns1.example.com
  Filename: asdnsmon.conf
  Type: Monitor
  Status: [CentralizedServer 10.170.15.190/PL-3] On 09/06/18 at 17:26:24 ser
  ExportNeeded: true
[Monitor mon2]
  Partition: active
  Name: mon2
  Location: 10.170.37.206/PL-3@10.170.15.190/PL-3
  DnsName: dns2.example.com
  Filename: asdnsmon.conf
  Type: Monitor
  Status: [CentralizedServer 10.170.37.206/PL-3] On 09/06/18 at 17:38:03 ser
  ExportNeeded: true
```

### Updating ASDNS Monitor with Location

```
IPWorks> update monitor mon1
Exported [MonitorScript pingmonitor]
Exported configuration for [Monitor mon1]
The configuration files are packed successfully to /home/ipworks/etc/Central
The configuration files are transferred successfully to 10.170.15.190:/home/
The configuration files are unpacked successfully to 10.170.15.190:/home/ipw
Service is reloaded successfully
Update successfully
```



## Updating ASDNS Monitor with Location Pointer

```
IPWorks> update monitor mon2
Exported [MonitorScript pingmonitor]
Exported configuration for [Monitor mon2] using configuration of [Monitor mon1]
The configuration files are packed successfully to /home/ipworks/etc/CentralSS/
The configuration files are transferred successfully to 10.170.37.206:/home/ipw
The configuration files are unpacked successfully to 10.170.37.206:/home/ipwork
Service is reloaded successfully
Update successfully
```



## 4 Primary SS Role Transferring

This section introduces how to transfer the primary SS role.

1. Perform User Data backup on the primary SS, refer to [Create Backup](#) for details.

**Note:** For User Data backup, make sure that the backup includes MySQL data.

2. Extract the backup file on the primary SS and get the ipworks database dump file.

- a. Navigate to the backup directory.

```
SC-1:~ # cd /cluster/ipwbrf/backup/ndb_backup
```

- b. Unzip the backup file.

```
SC-1:~ # tar -xvf ndb_backup.tar.gz
```

```
SC-1:~ # gzip -d ipworks_dump.gz
```

```
SC-1:~ # ls -lrt
```

```
ndb_backup.metadata
ndb_backup.md5sum
conf
mysql
local
imm
pmjob
license
mysql_user_dump.sql
ipworks_dump
ipw_prov_aaa_dump.gz
ipw_enum_dump.gz
ipw_dhcp_dump.gz
ndb_backup.tar.gz
```

**Note:** The directory and the `ndb_backup.tar.gz` file are generated when creating User Data backup.

3. Export the ipworks database dump file to the target host (the secondary SS), for example:

```
SC-1:~ # scp ipworks_dump root@10.170.15.130:/cluster/
```

4. Source data into NDB on the secondary SS.



Make sure the NDB and SS are already initialized before executing the source command.

- a. Log on to the target host.
- b. Import data to database, for example:

```
SC-1:~ # mysql -P 3307 -h ipw_sql
```

```
mysql> use ipworks
```

```
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A
Database changed
```

```
mysql> source /cluster/ipworks_dump
```

5. Check active SS and restart it, for example:

```
SC-1:~ # ipw-ctr status all
```

```
on SC-1 :
    ss                is running as standby role.
    sqlnodemgr        is running as standby role.
on SC-2 :
    ss                is running as active role.
    sqlnodemgr        is running as active role.
on PL-3 :
    dns                is running.
    dnssm              is down.
    asdns              is down.
    asdnssm            is down.
on PL-4 :
    dns                is running.
    dnssm              is down.
    asdns              is down.
    asdnssm            is down.
```

```
SC-1:~ # ipw-ctr restart SS SC-2
```

```
Stop ss ==> success.
Start ss ==> success.
```

6. Clear the data in database of the previous primary SS.

For consistency, it is recommended to delete the data on the previous primary SS after the role transferring is verified with no problem.



Make sure keep the working backup in a separated storage of IPWorks clusters.

- a. Delete all DNS servers by IPWCLI command below and select “yes” for all the output asking.

```
IPWorks> delete dnserver
```

- b. Delete all ASDNS servers by IPWCLI command below and select “yes” for all the output asking.

```
IPWorks> delete monitor
```







## 5 Transforming from Existing IPWorks Systems

For example, we have 6 separated IPWorks systems, and want to transform them to be a centralized cluster, then we define the process “transforming”.

To transform from the existing IPWorks systems:

1. Choose one IPWorks as the primary system, and others as the secondary system(s).
2. Modify dnsserver with Location field.
  - a. Log in to the primary SS, and add location for the dnsserver which is deployed on the primary system.

For example:

```
IPWorks> list dnsserver
[DnsServer dns1]
  Partition: active
  Name: dns1
  Address: 169.254.100.3
  PrimaryAddress: 169.254.100.3
  DnsName: dns1.iptelco.com
  PrimaryDnsName: dns1.iptelco.com
  Filename: named.conf
  AlgServerType: false
  Status: On 09/11/18 at 17:47:35 server is 'running'
  ExportNeeded: false
[DnsServer dns2]
  Partition: active
  Name: dns2
  Address: 169.254.100.4
  PrimaryAddress: 169.254.100.4
  DnsName: dns2.iptelco.com
  PrimaryDnsName: dns2.iptelco.com
  Filename: named.conf
  AlgServerType: false
  Status: On 09/11/18 at 17:47:14 server is 'running'
  ExportNeeded: false

IPWorks> modify dnsserver dns1 -set location=10.170.15.190/PL-3
Working on 1 object(s).
1 object(s) were updated.
IPWorks> update dnsserver dns1
IPWorks> modify dnsserver dns2 -set location=10.170.15.190/PL-4
Working on 1 object(s).
1 object(s) were updated.

IPWorks> update dnsserver dns2
```

- b. Create dnsserver with Location Pointer (on the primary system) for all other IPWorks system(s) that are chosen as secondary SS.

For example:



```
IPWorks> create dnsserver dns3 -set location=10.170.37.206/PL-3@10.170.15.190/PL-3
IPWorks> update dnsserver dns3
IPWorks> create dnsserver dns4 -set location=10.170.37.206/PL-4@10.170.15.190/PL-4
IPWorks> update dnsserver dns4
```

### 3. Backup user data with MYSQL data.



## Reference List

- [1] Trademark Information
- [2] Typographic Conventions
- [3] Glossary of Terms and Acronyms
- [4] IPWorks Configuration Management
- [5] IPWorks DNS, ASDNS, ENUM Parameter Description
- [6] Managed Object Model (MOM)
- [7] Command Line Interface User Guide for IPWorks SS
- [8] Ericsson Command-Line Interface User Guide
- [9] Configure DNS and ENUM
- [10] Data Migration from IPWorks HP 15B FD1 CP3 to IPWorks 2
- [11] License Management
- [12] Create Backup
- [13] IPWorks Initial Configuration, 5/1553-AVA 901 33/3
- [14] IPWorks Auto Deployment Guideline for KVM - DL380 Gen10, 39/1553-AVA 901 33/3
- [15] IPWorks Deployment Guide, 21/1553-AVA 901 33/3