

IPWorks 2 Network Impact Report

NETW. IMPACT REPORT

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Contents

1	Introduction	1
1.1	Purpose	3
1.2	Related Information	3
2	General Impact	4
2.1	Deployment and Network	4
2.2	Capacity and Performance	5
2.3	Hardware Resource	6
2.4	Implementation	7
2.5	Virtualization Resource	8
2.6	Components	9
2.7	License Management	10
2.8	New Base/Value Package	10
2.9	Update Impact	10
2.10	Obsolete Base/Value Packages	11
2.11	Other Network Elements	11
2.12	Other Impacts	11
3	Interface	12
3.1	Inter-Node Interface	12
3.2	Man-Machine Interface	12
3.3	Machine-to-Machine Interface	13
3.4	Operation and Maintenance	14
3.5	Other Interface Impacts	15
4	Summary of Impacts per Base/Value Packages	15
	Reference List	17





1 Introduction

This Network Impact Report (NIR) describes the changes between IPWorks 2.2 and IPWorks 2.1.

The IPWorks 2.2 is a VNF that can be deployed on CEE/BSP 8100 platform, HP DL380 Gen9, or HP DL380 Gen10 as virtualization.

From IPWorks 2.0, IPWorks VNF is certificated on VMWare 6.5 and certified for NFVi-4 over CEE/HDS.

From IPWorks 2.1, the persistence storage is also supported for deployment on HDS platform.

This document describes how operation is changed in IPWorks 2.2 release on a high level. This document is not intended to list each command, printout, configuration parameter change, as such info is meaningless for a product with a platform change.

The operator is recommended to read this NIR to get an overview of changes in IPWorks 2.2 release. Then, follow the relevant User Guide and Operating Instructions to set up the whole IPWorks 2.2 system.

Table 1 lists Ericsson Software Model based Base Packages and Value Packages till IPWorks 2.2, and shows feature impacts in each release.

Table 1 Base Packages and Value Packages

Base/Value Package (BP & VP)	BP & VP Number	Introduced From	Evolutions	Changes in IPWorks 2.2
Internet DNS Base Package	FAJ 801 0166	IPWorks 1.3	IPWorks 1.6: • Bind uplift	No
DNS Base Package	FAJ 801 0803	IPWorks 1.0	IPWorks 1.3: • Bind uplift IPWorks 1.6: • Bind uplift IPWorks 1.9: • GUI DNS Management	No
ENUM Base Package	FAJ 801 0167	IPWorks 1.0		No
ENUM Front End Base Package	FAJ 801 0735	IPWorks 1.0		No



Base/Value Package (BP & VP)	BP & VP Number	Introduced From	Evolutions	Changes in IPWorks 2.2
AAA Base Package	FAJ 801 0169	IPWorks 1.0: AAA Diameter support.	<p>IPWorks 1.3:</p> <ul style="list-style-type: none">• Subscriber Tracing support in AAA (Diameter) <p>IPWorks 1.6:</p> <ul style="list-style-type: none">• AAA Radius Support• IMEI Check support• Throttling support <p>IPWorks 1.9:</p> <ul style="list-style-type: none">• Subscriber Tracing support (Radius) <p>IPWorks 1.12:</p> <ul style="list-style-type: none">• Emergency control for Wi-Fi (Diameter)	No
AAA Front End Base Package	FAJ 801 0736	IPWorks 1.0: AAA Diameter support.	<p>IPWorks 1.3:</p> <ul style="list-style-type: none">• Subscriber Tracing for AAA Diameter <p>IPWorks 1.6:</p> <ul style="list-style-type: none">• AAA Radius support• IMEI Check support• Throttling support <p>IPWorks 1.9:</p> <ul style="list-style-type: none">• Subscriber Tracing support (Radius)• AAA-FE (PKI) support <p>IPWorks 1.12:</p> <ul style="list-style-type: none">• Emergency Control For Wi-Fi (Diameter)	No
Public Key Authentication	FAJ 801 0165	IPWorks 1.0		No
Wi-Fi Mobility	FAJ 801 0525	IPWorks 1.0		No
IMS Interconnect	FAJ 801 0164	IPWorks 1.0		No



Base/Value Package (BP & VP)	BP & VP Number	Introduced From	Evolutions	Changes in IPWorks 2.2
Advanced Network Protection	FAJ 801 0162	IPWorks 1.0	<p>IPWorks 1.9:</p> <ul style="list-style-type: none"> • Single provisioning for geographical redundancy (ENUM) <p>IPWorks 1.12:</p> <ul style="list-style-type: none"> • Single provisioning for geographical redundancy (Radius AAA) <p>IPWorks 2.1:</p> <ul style="list-style-type: none"> • DHCP geographic redundancy <p>IPWorks 2.2:</p> <ul style="list-style-type: none"> • DNS geographic redundancy 	Minor: Support of DNS geographic redundancy via Centralized Configuration for DNS.
DHCP Base Package	FAJ 801 0984	IPWorks 2.0		No

Note: Native replacement is supported from IPWorks 1.3.

1.1 Purpose

The purpose of this document provides sufficient information at an early stage to Ericsson system operators to help them plan the introduction of new products and upgrades to their networks.

This document is a living document and is subject to change during the development of the new release. Therefore, part of the information may be incomplete or unavailable until General Availability (GA) of the IPWorks 2.2 release.

1.2 Related Information

The following documents include trademark information, typographic conventions, definition, and explanation of abbreviations, and terminology:

- Trademark Information
- Typographic Conventions
- Glossary of Terms and Acronyms



2 General Impact

This section describes the general impact from the introduction of the IPWorks 2.2.

2.1 Deployment and Network

The IPWorks 2.2 is a software delivery that can be deployed as virtualized. For more information about deployment configurations, refer to [IPWorks Technical Description](#).

The IPWorks 2.2 application software is virtualized, which is not bundled with a hardware platform.

Table 2

Orchestrator/Hypervisor	Verified On	Certified On	Comments
CEE	BSP		CEE R8A, CEE R7B with BSP R12.0.1
CEE		HDS	
KVM	HP DL380 Gen9, HP DL380 Gen10		SLES 12 SP2
VMWare		Vmware 6.5	

The overall deployment configuration as virtualized is shown in Figure 1.

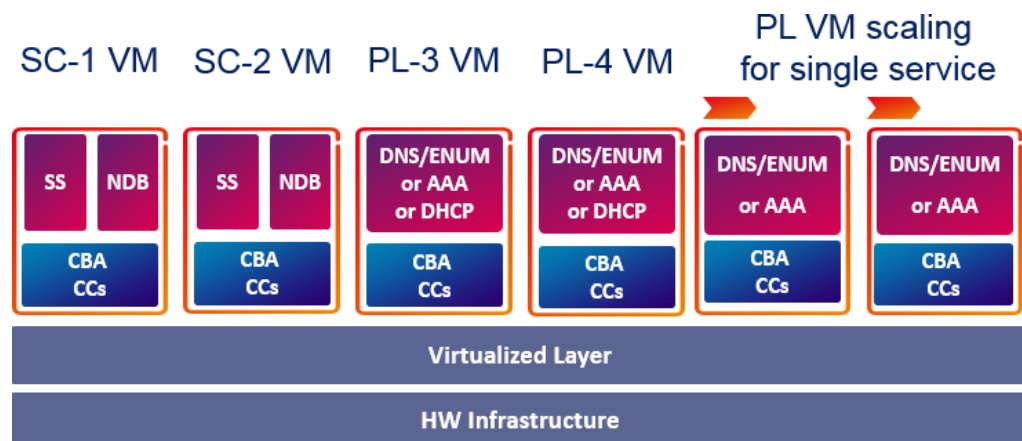


Figure 1 IPWorks VNF Deployment for Single Service with Manual Scalability Support

**Note:**

- IPWorks 2.2 and above supports new hardware infrastructure of HP DL380 Gen10 KVM based deployment.
- IPWorks 2.1 and above supports PL VM scale-out and scale-in only for applications of AAA and ENUM.
- IPWorks 2.0 and above remove the support of mixed configuration (2+2+2 for AAA and DNS/ENUM in one VNF cluster).
- IPWorks 1.0 (and above) does not support VM operations "destroy", "suspend" and "resume" for both SC VM and PL VM.
- IPWorks 2.0 and above support only eVIP static routing (without BFD for CEE deployments, and with/without BFD for KVM based deployments) for signaling and data network. Support of OSPF on signaling and data network is obsoleted. For upgrading to IPWorks 2.0, user needs to follow the CPI Replace OSPF with Static Routing, Reference [10] to reconfigure site routers and IPWorks internal network.

2.2 Capacity and Performance

This section describes the capacity and performance of Standard configuration.

The detail subscriber/session capacity for IPWorks 2.2 release measured on certificated hardware is described in [IPWorks 2 Characteristics](#).

2.2.1 Subscriber Capacity

This section describes the subscriber and session capacity of the IPWorks 2.0 to IPWorks 2.2 (Standard configuration).

Table 3 Subscriber Capacity

Components	IPWorks 2.2 (Standard)	IPWorks 2.1 (Standard)	IPWorks 2.0 (Standard)
EPC AAA (Active Session)	4,000,000	4,000,000	4,000,000
PKI Authentication (Device)	20,000,000	20,000,000	20,000,000
PKI Authentication (Active Session)	10,000,000	10,500,000	10,500,000
AAA Basic (Subscriber)	8,000,000	8,000,000	8,000,000
Wi-Fi AAA (Active Session)	4,000,000	4,000,000	4,000,000
DNS (Resource Record)	2,000,000	2,000,000	2,000,000
ENUM (NAPTR Record)	24,000,000 48,000,000 (only for KVM based deployment on HP Gen10)	24,000,000	24,000,000



Components	IPWorks 2.2 (Standard)	IPWorks 2.1 (Standard)	IPWorks 2.0 (Standard)
DHCP (lease number)	5,000,000	5,000,000	5,000,000
N/A: Not Applicable			

Note: Capacity for Native Deployments using HP Gen10 is added/adapted from IPWorks 2.2. For more details about the subscriber/session capacity, refer to [IPWorks 2 Characteristics](#).

2.2.2 Network Performance

This section describes the general impact of network performance in IPWorks 2.2 (Standard), compared with previous releases of IPWorks.

Table 4 Processing Capacity

Performance	Type	IPWorks 2.2 (Standard Configuration)	IPWorks 2.1 (Standard Configuration)	IPWorks 2.0 (Standard Configuration)
ENUM Monolithic (CEE)	Traffic	38,000 TPS	37,000 TPS	37,000 TPS
DNS IPv4 Traffic (CEE)	Traffic	70,000 TPS	55,000 TPS	55,000 TPS
DNS Create (CEE)	Provisioning	65 QPS	65 QPS	65 QPS
DNS Modify (CEE)	Provisioning	63 QPS	63 QPS	39 QPS
DNS Delete (CEE)	Provisioning	69 QPS	69 QPS	47 QPS
ENUM Create (CEE)	Provisioning	148 QPS	140 QPS	118 QPS
ENUM Modify (CEE)	Provisioning	90 QPS	89 QPS	77 QPS
ENUM Delete (CEE)	Provisioning	92 QPS	92 QPS	78 QPS
Non-SM user Modify (CEE)	Provisioning	90 QPS	90 QPS	82 QPS
Non-SIM user Delete (CEE)	Provisioning	90 QPS	90 QPS	83 QPS
Radius AAA user Modify (CEE)	Provisioning	85 QPS	85 QPS	65 QPS
Radius AAA user Delete (CEE)	Provisioning	85 QPS	85 QPS	71 QPS

Note: For the Compact and Single Server deployments on native HP DL380 Gen9 with KVM, the performances in regarding to the items in the above table are not fully tested, it is assumed that they are not lower than that of above listed.

2.3 Hardware Resource

IPWorks 2.2 is a software-only delivery. It is verified on two kinds of deployment: CEE cloud and native HP DL380 Gen9/Gen10 server. Refer to [Reference Hardware Requirement for KVM Deployment](#).



2.4 Implementation

An overview of the changes in IPWorks application is highlighted as in list below:

Table 5

VNF Release	Changes
IPWorks 2.2	<p>[New] Support of centralized configuration for DNS service, included in Advanced Network Protection VP.</p> <p>[New] Support of Scale-in and Scale-out workflow for CEE (not including integration with ECM).</p> <p>[New] Support of HP DL380 Gen10 for KVM deployment.</p>
IPWorks 2.1	<p>[New] Support of persistent storage for HDS deployments.</p> <p>[New] Date migration from IPWorks 15B FD1 to IPWorks 2.2 for DHCPv4 service.</p> <p>[Modified] Advanced Network Protection for DHCPv4 service.</p>
IPWorks 2.0	<p>[New] Support of DHCPv4 service.</p> <p>[New] IPWorks VNF certified on Vmware.</p> <p>[New] Support of workflow for instantiation and termination.</p> <p>[Obsolete] CEE Extended configuration (2+2+2) configuration.</p> <p>[Obsolete] OSPF routing for eVIP for new installation.</p>
IPWorks 1.12	[New] function Emergency Control for Wi-Fi.
IPWorks 1.9	<p>[New] AAA-FE support for PKI authentication</p> <p>[New] Local read support</p> <p>[New] GUI for DNS management</p> <p>[New] Single provisioning for geographic redundancy (ENUM) included in Advanced Network Protection</p>
IPWorks 1.6	<p>[New] Trusted Wi-Fi Support for Radius AAA service</p> <p>[New] IMEI check support for Diameter AAA service</p> <p>[New] SWx throttling support for Diameter AAA service</p>
IPWorks 1.3	<p>[New] Support of Internet DNS</p> <p>[New] Support of native deployments on HP DL380 G9</p>
IPWorks 1.0	[New] Base release for IPWorks VNF, contains DNS, ENUM, IMS Interconnect, Untrusted Wi-Fi Calling AAA, Public Key Authentication, Wi-Fi Mobility, and Advanced Network Protection.

**Note:**

- All IPWorks VNF releases are software-only products, which are independent on Virtualization/Cloud Infrastructure and hardware platform without limitation.
- IPWorks 1.3 and above are certificated on native HP DL380 Gen9 hardware. Auto installation also certificates on this hardware platform.
- All IPWorks VNF releases are delivered as HOT format with QCOW2 images, thus installation procedure has changed accordingly. Refer to IPWorks Deployment Guide, IPWorks Auto Deployment Guideline for KVM - DL380 Gen9, or IPWorks Auto Deployment Guideline for KVM - DL380 Gen10 for details.

2.5 Virtualization Resource

This section describes the minimum memory and vCPU required for implementing a new revision of IPWorks.

The minimum Virtualization resources does not change since IPWorks 2.0 release.

Table 6 shows the changes of resource requirements for AAA/DNS/ENUM services between IPWorks 2.0 and earlier IPWorks releases which is still valid for IPWorks 2.2:

Table 6 Virtualization Resource Requirement Comparison Between IPWorks 2.0 or above and IPWorks 1.12 for AAA/DNS/ENUM

Virtualization Platform	Deployment Type	VM Node	vCPUs	Memory (GB)
CEE/BSP	Compact	SC	2	4
		PL	2	6 (IPWorks 2.0 or above) 4 (IPWorks 1.12)
Native HP with KVM (HP Gen9)	Single Server	SC	6	18 (IPWorks 2.0 or above) 20 (IPWorks 1.12)
		PL	8	6 (IPWorks 2.0 or above) 4 (IPWorks 1.12)

Table 7 shows the resource requirements for the DHCP service which is introduced from IPWorks 2.0 release:



Table 7 Virtualization Resource Requirement for DHCPv4 Service

Virtualization Platform	Deployment Type	VM Node	vCPUs	Memory (GB)	Hard Disk (GB)
CEE/BSP	Standard	SC	8	8	280
		PL	8	16	None
	Compact	SC	2	4	75
		PL	2	6	None
Native HP with KVM (HP Gen9)	Basic	SC	8	8	280
		PL	8	16	None
	Single Server	SC	6	8	75
		PL	8	16	none

Table 8 shows the resource requirements for all the DNS, ENUM, AAA and DHCP services for Native Deployments using HP Gen10 (for maiden installation only), which is valid from IPWorks 2.2.

Table 8 Virtualization Resource Requirement for DNS, ENUM, AAA and DHCPv4 Services with Native Deployment on HP Gen10

Virtualization Platform	Deployment Type	VM Node	vCPUs	Memory (GB)	Hard Disk (GB)
Native HP with KVM (HP Gen10 only)	Basic	SC	22	80	280
		PL	22	32	None
	Single Server	SC	10	40	140
		PL	12	16	None

For the accurate information on memory and hard disk requirement for each virtual machine, refer to [IPWorks 2 Characteristics](#).

2.6 Components

2.6.1 3PPs

Table 9 lists all 3PPs with versions included in IPWorks 2.2 releases.

Table 9 3PPs Included In IPWorks

3PP Name	IPWorks 2.2	IPWorks 2.1	IPWorks 2.0
MySQL CGE	7.4.12	7.4.12	7.4.12
MySQL Connector/J - JDBC	5.1.16	5.1.16	5.1.16
JRE	8u152	8u152	8u152
ISC BIND	9.9.9	9.9.9	9.9.9
Apache Axis2/Java	1.6.2	1.6.2	1.6.2



3PP Name	IPWorks 2.2	IPWorks 2.1	IPWorks 2.0
Apache Log4j	1.2.15	1.2.15	1.2.15
ISC DHCP	4.3.5	4.3.5	4.3.5

2.6.2 CBA Common Components

Table 10 lists all CBA Common Components with versions included in IPWorks 2.2 releases.

Table 10 CBA Common Components Included in IPWorks 2.2

Component Name	IPWorks 2.2	IPWorks 2.1	IPWorks 2.0
COM	7.5	7.5	7.5
CoreMW	4.7	4.5	4.5
eVIP	3.6	3.6	3.5
LDEwS	4.5	4.5	4.4
License Manager	6.4	6.4	6.3
SS7 CAF	6.4	6.3	6.3
JAVA O&M	4.1	4.1	4.0
SEC	2.6	2.6	2.5
C-Diameter	2.2	2.2	2.1
Trace	3.6	3.6	3.5
Trace-EA	3.5	3.5	3.5

2.7 License Management

No impact.

2.8 New Base/Value Package

Table 11 New Base/Value Package

Package Name	Package Number	Description	Available In
Advanced Network Protection	FAJ 801 0162	Add support of DNS service.	IPWorks 2.2

2.9 Update Impact

IPWorks 2.2 supports following update paths:



Table 12

From Base of	Via	To	Comment	Rollback
IPWorks 15B FD1	X	IPWorks 2.2	Maiden installation plus data migration.	Reinstall of IPWorks 15B then restore backup.
IPWorks 1.12 (2+2 configuration without OSPF)	X	IPWorks 2.2		Supported
Other IPWorks 1.12 configurations	IPWorks 2.0	IPWorks 2.2	Upgrade first to IPWorks 2.0 in order to change eVIP routing and/or obsolete 2+2+2 configuration.	Supported
IPWorks 2.0	X	IPWorks 2.2		Supported
IPWorks 2.1	X	IPWorks 2.2		Supported

Note:

- SS7 related traffic will have around 30 seconds disturbance due to SS7CAF limitation.
- From IPWorks 15B FD1 to IPWorks 2.2: this path supports with maiden installation plus data migration for AAA, DNS, DHCP, and ENUM services.
- From IPWorks 1.12 to IPWorks 2.0 and above: one-step upgrade is performed which requires cluster reboot. As a result, traffic disturbances may be experienced
- For CEE deployments, it is once observed that upgrading CEE from CEE R8A to CEE R8B can cause MySQL data node fail to start. Refer to section [Data Node Can Not Start Up During CEE Upgrade](#) in [Emergency Recovery Procedure for IPWorks](#) recover if meet this fault.

2.10 Obsolete Base/Value Packages

Not applicable.

2.11 Other Network Elements

ENM 18.3 is required to support the counters, alarms in IPWorks 2.2 release.

2.12 Other Impacts

Not applicable.



3 Interface

This section describes interface changes between the existing and new revisions of the product.

3.1 Inter-Node Interface

The changes to the inter-node interfaces are listed in Table 13.

The description of impact is as follows:

- **No Impact** means that the new version can be installed without affecting other nodes.
- **Minor Impact** means that there are changes, but with extra configuration the previous behavior can be kept.
- **Major Impact** implies that the change has made an interface backwards incompatible.
- **New Interface** indicates that the interface did not exist in the previous revision.
- **Obsolete** means that the interface no longer exists.

Table 13 Inter-Node Interface Changes

Interface	Protocol	Impact	Description of Changes

3.2 Man-Machine Interface

Table 14 lists all the MMI changes in IPWorks 2.2 release compared with IPWorks 2.1 releases.

The description of impact is as follows:

- **No Impact** means that the new version can be installed without affecting other nodes.
- **Minor Impact** means that there are changes, but with extra configuration the previous behavior can be kept.
- **Major Impact** implies that the change has made an interface backwards incompatible.
- **New Interface** indicates that the interface did not exist in the previous revision.



— **Obsolete** means that the interface no longer exists.

Table 14 Man-Machine Interface Changes

Interface	Nodes	Protocol	Impact / Description of Changes from IPWorks 2.1 to IPWorks 2.2
ECLI			No impact on interface usage. New configuration parameters for DHCP v4 service.
ipw-ctr			Minor: Sqlnodemgr and SS become correlated. Texts output adjusted accordingly.
Trace CLI			No impact.
DNS GUI			Minor: GUI to improve user experience.
ipwcli			Minor: [Only if Centralized Configuration for DNS is activated] New attribute format for CLI command create dnserver . Modified output of CLI command update dnserver .

3.3 Machine-to-Machine Interface

Table 15 lists all the Machine-to-Machine Interface changes in IPWorks 2.2 release compared with IPWorks 2.1 release.

Table 15 Machine-to-Machine Interface Changes

Interface	Nodes	Protocol	Impact / Description of Changes from IPWorks 2.1 to IPWorks 2.2
COM NETCONF Interface	OSS ENM	NETCONF	No Impact
IPW SNMP Interface	OSS/ENM	SNMP	No Impact
EDA CLI Interface	PG	SSH/CLI	No Impact

For different version of Operations Support Systems (OSS), the version of IPWorks viewed from OSS is different. See Table 16 for details:

Table 16 IPWorks Version Viewed from OSS

IPWorks Version	IPWorks Version Viewed from OSS 18A	IPWorks Version Viewed from OSS 17B
IPWorks 1.0	IPWorks 1.0	IPWorks 1.0
IPWorks 1.3	IPWorks 1.3	IPWorks 1.3
IPWorks 1.6	IPWorks 1.6	IPWorks 1.3
IPWorks 1.9	IPWorks 1.9	IPWorks 1.3
IPWorks 1.12	IPWorks 1.9	IPWorks 1.3
IPWorks 2.0 and above	IPWorks 1.9	IPWorks 1.3

For different version of Ericsson Network Manager (ENM), the version of IPWorks viewed from ENM is different. See Table 17 for details:



Table 17 IPWorks Version Viewed from ENM

IPWorks Version	IPWorks Version Viewed from ENM 18.3 (+Release Independency)	IPWorks Version Viewed from ENM 18.1	IPWorks Version Viewed from ENM 18A	IPWorks Version Viewed from ENM 17B
IPWorks 1.0	IPWorks 1.0	IPWorks 1.0	IPWorks 1.0	-
IPWorks 1.3	IPWorks 1.3	IPWorks 1.3	IPWorks 1.3	IPWorks 1.3
IPWorks 1.6	IPWorks 1.6	IPWorks 1.6 ⁽¹⁾	IPWorks 1.6 ⁽¹⁾	IPWorks 1.3
IPWorks 1.9	IPWorks 1.9	IPWorks 1.9	IPWorks 1.9	IPWorks 1.3
IPWorks 1.12	IPWorks 1.12 ⁽¹⁾	IPWorks 1.9	IPWorks 1.9	IPWorks 1.3
IPWorks 2.0	IPWorks 2.0	IPWorks 1.9	IPWorks 1.9	IPWorks 1.3
IPWorks 2.1	IPWorks 2.1	IPWorks 1.9	IPWorks 1.9	IPWorks 1.3
IPWorks 2.2	IPWorks 2.2	IPWorks 1.9	IPWorks 1.9	IPWorks 1.3

(1) IPWorks release is treat-as according to NBC rules. No complete JFT for this release against ENM.

3.4 Operation and Maintenance

3.4.1 Configuration Management

IPWorks configuration data are presented as a set of Management Objects (MOs), their relationships are described in a [Managed Object Model \(MOM\)](#). The MOM is exposed through the Ericsson NETCONF interface and the ECLI, and provides a consistent view of the configuration and state data.

- Those commands and printouts in ECLI are listed in [Ericsson Command-Line Interface](#).
- How to use the NETCONF interface is described in [Ericsson NETCONF Interface](#).
- IPWorks configuration is described in [IPWorks Configuration Management](#).
- All IPWorks provisioning and configuration parameters are listed in:
 - [IPWorks DNS, ASDNS, ENUM Parameter Description](#)
 - [IPWorks DHCP Parameter Description](#)
 - [IPWorks AAA Parameter Description](#)



3.4.2 Fault Management

Fault Management is changed in following way:

- Alarms supported in IPWorks 2.2 are listed in IPWorks Alarm List and IPWorks Alarm List for DL380 Host Management.

3.4.3 Performance Management

No impact.

3.4.4 Backup and Restore

No impact.

3.4.5 Others

Not applicable.

3.5 Other Interface Impacts

Not applicable.

4 Summary of Impacts per Base/Value Packages

This section summarizes the impact per feature when the feature is turned on.

The description of impact is as follows:

- **Major Impact** means that the Base/Value Package has done an incompatible change so that another node requires an update.
- **Minor Impact** means that the Base/Value Package has caused changes that affect other nodes, but with extra configuration, the previous behavior can be kept.
- **No Impact** means that the Base/Value Package has no impact on the system.

A summary of impacts per Base/Value Package is shown in Table 18.



Table 18 Summary of Impacts IPWorks 2.2

Base/Value Packages	Impact	Properties	Base/Value Package Number	Comments
	IPWorks 2.2	Basic or Value Package		
IPWorks Base DNS	No Impact	Base	FAJ 801 0803	
IPWorks Base ENUM Classic	No Impact	Base	FAJ 801 0167	
IPWorks Base ENUM Layered	No Impact	Base	FAJ 801 0735	
IPWorks Base AAA Classic	No Impact	Base	FAJ 801 0169	
IPWorks Base AAA Layered	No Impact	Base	FAJ 801 0736	
IMS Interconnect (Value Package)	No Impact	Value	FAJ 801 0164	
Advanced Network Protection (Value Package)	Minor Impact	Value	FAJ 801 0162	Add support of geographic redundancy for DNS service.
IPWorks Internet DNS Base Package Support	No Impact	Base	FAJ 801 0166	
DHCPv4 Base Package Support	No Impact	Base	FAJ 801 0984	



Reference List

Ericsson Documents

- [1] Trademark Information
- [2] Typographic Conventions
- [3] Glossary of Terms and Acronyms
- [4] IPWorks Technical Description
- [5] IPWorks Network Connectivity Overview
- [6] IPWorks Deployment Guide, 21/1553-AVA 901 33/2 Uen
- [7] IPWorks Auto Deployment Guideline for KVM - DL380 Gen9, 19/1553-AVA 901 33/2 Uen
- [8] IPWorks Auto Deployment Guideline for KVM - DL380 Gen10, 39/1553-AVA 901 33/2 Uen
- [9] IPWorks 2+2+2 Split and Upgrade Instruction, 2/153 72-AVA 901 33/3 Uen
- [10] Replace OSPF with Static Routing, 4/1553-AVA 901 33/3 Uen
- [11] Ericsson Command-Line Interface
- [12] IPWorks Configuration Management
- [13] IPWorks 2 Characteristics
- [14] Ericsson NETCONF Interface
- [15] IPWorks DNS, ASDNS, ENUM Parameter Description
- [16] IPWorks AAA Parameter Description
- [17] IPWorks DHCP Parameter Description
- [18] Managed Object Model (MOM)
- [19] IPWorks Measurement List
- [20] Performance Management Report File Format
- [21] Performance Management
- [22] Fault Management



- [23] IPWorks Alarm List
- [24] Backup and Restore
- [25] IPWorks Auto Health Check
- [26] Install License Key File
- [27] License Management
- [28] IPWorks Trace User Guide
- [29] Trace Command Line Interface (CLI) Reference, 1/1540-APR 901 0500/3
Uen