

IPWorks DNS, ASDNS, ENUM Parameter Description

PARAMETER DESCRIPTION

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1 Introduction

This document describes the attributes used by IPWCLI for DNS and ENUM configuration in IPWorks.

Scope

This document covers the following topics:

- Managed Object Model (MOM)
- Managed Object Class Descriptions
- Managed Objects (MO)
- Managed Object Attributes

Target Groups

This document is intended for personnel configuring and fine-tuning the IPWorks. It is assumed that readers of this document are familiar with basic concepts and operations of IPWCLI. For more information, refer to [Command Line Interface User Guide for IPWorks SS](#).

1.1 Related Information

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

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





2 Basic Concept

This section describes the following:

- The Managed Object Model (MOM) concept
- Specific data types
- Specific attributes, for example states
- Conventions

The MOM presents a view of manageable resources in IPWorks, as well as attributes and actions associated with these resources.

An MO is an entity presented to the user for controlling the aspects of a function. The object carries attributes that reflect the behavior of the function.

The MOs are identified by a naming attribute, also called the Relative Distinguished Name (RDN). The ID part of this attribute is defined when the MO is created, and cannot be changed afterwards. A Local Distinguished Name (LDN) is a sequence of RDNs, which forms a unique name within the node.





3 Object Format

This section describes the format used to display information about objects.

Key The key is an identifier of an object. The combination of the key field values must be unique for an object.

Required The required field indicates that the field must be configured, otherwise the CLI generates an error.

— **<Field>**: Field name.

- **Aliases**: The alternative names of a field.
- **Type**: Shows whether this field can contain multiple values by putting them into a separated table in the database.
- **Data Type**: The predefined data type of a field. See Section 3.1 on page 5.
- **Read-only**: If the `readonly` attribute is “yes”, the value of this field cannot be set from the CLI.
- **Enumeration**: If a field has an enumeration attribute, the value of this field is selected from a limited value set. See Section 3.2 on page 6.
- **Description**: The brief description of a field.
- **Examples**: The examples of valid values in a field.

Note: If the field `Partition` is required, unless the user wants to work within a different partition, the partition being worked on does not need to be specified. IPWorks assumes the active partition always. For more information, see the `Partition` section of *IPWorks Configuration Management*.

3.1 Data Types

Address An IPv4 address (in dotted decimal notation) or an IPv6 address. An IPv6 address can be specified using the standard abbreviated forms, but the address is stored in its fully expanded form.

BindTimeValue A numeric value that represents the number of seconds. Operators can enter this value as a numeric value, or use a shorthand notation for specifying times. The basic format is `#w#d#h#m#s`, where `w` (or `W`) is preceded by the number of weeks, `d` (or `D`) by number of days, and so on. A number without units is accepted as the time interval in seconds.



Blob	A large text string. The theoretic maximum size of this data type is 2 GB.
BooleanTrueFalse	A Boolean value that is either true or false. Operators can enter yes/no or 1/0 and they are converted to true/false as appropriate.
DnsName	A domain name with maximum length not exceeding 128 characters.
DnsOption	A DNS configuration option, where each option setting is in the form "option value [value...]". The option and subsequent value are separated by a single space. The "option" is specified by the option tag.
Int16	A 16-bit unsigned integer value, between -32768 and 32767.
IPv4Address	An IPv4 address in dotted decimal notation.
IPv6Address	An IPv6 address, which can be specified using the standard abbreviated forms, but the address is stored in the fully expanded form.
MailboxDnsName	A dnsname in the email address format.
Name	The name of the object.
SRVDnsName	A dnsname that defines the symbolic service name prepended with a '_' (underscore).
UInt8	An 8-bit unsigned integer value, from 0 through 255.
UInt16	A 16-bit unsigned integer value, from 0 through 65535.
UInt32	A 32-bit unsigned integer value.
ZoneId	A string that is a unique identifier for a zone managed by IPWorks. The id consists of the name of the server, followed by a colon (:), followed by the name of the view that contains the zone, followed by a colon (:) followed by the DNS name for the zone. This combination of 3 values is unique for each IPWorks managed zone.
Location	A string defines where the server will run, with the format of IPv4-address/PL-name. This data type is only configured for centralized SS.

3.2 Enumerations

AlgMode	Load, Status, Prefix-match
----------------	----------------------------



FixedZoneType	Hint, Loopback, Localhost, SDB
MasterZoneType	File, Database
MonitorType	Load, Status
RrClass	IN, Hesiod, Chaos, HS
RrType	ANY, A, A6, AAAA, AFSDb, ATMA, CNAME, DNAME, EID, GPOS, HINFO, ISDN, KEY, KX, LOC, MB, MD, MF, MG, MINFO, MR, MX, NAPTR, NIMLOC, NS, NSAP, NSAPPTR, NULL, NXT, PTR, PX, RP, RT, SIG, SOA, SRV, TXT, WKS, X25
RrTypeAsdns	A, AAAA
RrTypeGenRecord	A, AAAA, CNAME, DNAME, NS, PTR
ServParaValue	E2U+pstn:tel, E2U+pstn:sip
View	All existing views stored in the database
ZoneType	Master, Slave, Stub, Forward

3.3 Structures

3.3.1 AINDigits

The AINDigits structure has the element types, as shown in the following table:

Table 1 Element Types of AINDigits

Element Type	Value
Nature of Number	The range is 1, 2, 3, 113, 114, 115, 116, 117, 118, 119. Refer to GR-1299-Core for the meaning of each number.
Numbering Plan	<ul style="list-style-type: none"> 1: ISDN numbering plan 5: private
Presentation restriction indicator	<ul style="list-style-type: none"> 0: presentation allowed 1: presentation restricted (default) 2: number unavailable
Screening indicator	<ul style="list-style-type: none"> 0: no screening 1: passing network screening 2: fail network screening 3: network provided
Digits	Each digit is represented by 4 bits. The range of every digit is 0~9.

The inputting format via CLI is:



AINDigits=nn:xxx:np:x:pres:x:scr:x:dig:xxxxx...

Where:

- nn:xxx represents Nature of Number.
- np:x represents Numbering Plan.
- pres:x represents Presentation restriction indicator. It can be omitted. If it is omitted, system takes the default value.
- scr:x represents Screening indicator.
- dig:xxxxx... represents Digits. If a user wants to provide an AINDigits with 0 digit for Digits part, it can be omitted.

3.3.2

CarrierFormat

According to GR, the data structure of carrier parameters is CarrierFormat which is composed of Carrier Selection and Carrier ID. The Carrier ID is composed of Nature of Carrier, Number of Digits and Digits. The Number of Digits is automatically calculated and does not need to be specified by the user. The following inputting format is used:

Carrier=cs:x:nc:x:dig:xxxx

Where:

- cs:x represents Carrier Selection. Its range is 1~4.
- nc:x represents Nature of Carrier. Its range is 0~6.
- dig:xxxx represents Digits. Its range for every digit is 0~9. The valid count of digits for Digits part is from 0 to 4. If a user wants to input 0 digit, it can be omitted.

3.3.3

gsmSCF

The gsmSCF structure has the element types, as shown in the following table:

Table 2 Element Types of gsmSCF

Element Type	Value
Nature of Number	<ul style="list-style-type: none">• 0: Unknown• 1: International number• 2: National number• 3: Network-specific number• 4: Short number



Element Type	Value
Numbering Plan	<ul style="list-style-type: none">• 0: Unknown• 1: ISDN/telephone numbering plan (E.164/E.163)• 3: Data numbering plan (X.121)• 4: Telex numbering plan• 8: National numbering plan• 9: Private numbering plan• 15: Reserved for extension
Address	An address consists of 1 to 18 digits represented by 4 bits each. The valid values for each digit are 0~9, a, b, c, * and #.

The inputting format via CLI is:

GsmSCFAddress=tn:x:np:xx:dig:xxxxx...

Where:

- tn:x represents Type of Number.
- np:xx represents Numbering Plan.
- dig:xxxxx... represents Address.





4 Managed Objects

For the IMS solution, the following four records are configured.

A Record	An A record maps a hostname into 32-bit IPv4 address.
SRV Record	An SRV record, or service record, is defined in RFC 2782. This type of record is a category of data in DNS specifying information on available services.
NAPTR Record	An NAPTR record, or Naming Authority Pointer record, is relatively new type of DNS record that supports regular expression based rewriting. NAPTR records could be organized in groups, creating sophisticated URI rewriting rules. There are terminal and non-terminal NAPTR records. This type of record is described in details in RFC 3403.
EnumDNSched Record	EnumDNSched Record, or telephone number mapping - IETF have defined a mechanism for converting an e.164 number into an URI, which could be used in IP network environment.

4.1 DNS Objects

This section describes the DNS objects and their fields.

4.1.1 DnsServer

A DnsServer object represents a DNS Server that is running on the network.

Key	Partition, Name
Required	Partition, Name
— Filename	
<ul style="list-style-type: none"> • Type: Single • Description: The name of the configuration file. 	
— Option	
<ul style="list-style-type: none"> • Aliases: ConfigOption, Opt, Cfg • Data Type: DnsOption • Description: Configuration settings specific to this server. 	



— **FixedZone**

- **Description:** The names of any fixed zones that is included in the configuration of the server. Fixed zones are "special" zones that have the same contents in every server and/or view in which they are used. Examples include a hint zone or loopback zone.

— **AsdnsEnabled**

- **Type:** Single
- **Data Type:** BooleanTrueFalse
- **Description:** Indicates whether this server has ASDNS enabled.

— **AclRef**

- **Aliases:** Acl
- **Read-only:** Yes
- **Description:** The names of the Acls that are referenced in the configuration options. This is computed from the configuration option settings and cannot be directly edited.

— **KeyRef**

- **Aliases:** Key
- **Read-only:** Yes
- **Description:** The names of the TSIG keys that are referenced in the configuration options. This is computed from the configuration option settings and cannot be directly edited.

— **Config**

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** The compiled configuration settings specific to this server that is used when it is configured. These are determined from the Option field (and other fields) and cannot be modified directly.

— **AlgServerType**

- **Type:** Single
- **Data Type:** BooleanTrueFalse
- **Description:** Checks if the server is DnsAlgServer.



— AlgAddress

- **Type:** Single
- **Data Type:** IPv6Address
- **Description:** This is a unique identifier for this AlgServer address.

— Name

- **Type:** Single
- **Data Type:** Name
- **Description:** This is a unique identifier for this server. It is not required to be the same as the primary DNS name, but that value can be used.

— Address

- **Type:** Ordered
- **Data Type:** Address
- **Description:** The addresses are used by the Server Manager when it establishes a connection with the central IPWorks database to identify the server object that corresponds to that Server Manager. If they are omitted, that server cannot establish a proper connection. Multiple addresses can be specified for a server. If this is done, the first address in the list is considered the master address and is used as the primary identifying address for the server. When server manager is running, the address cannot be deleted or modified.

Note: When creating dnsserver, ensure that the address is assigned correctly on the cluster internal network.

- **Examples:**

```
192.168.0.1
FE80::1.2.3.4
FE80::0102:0304
FE80:0000:0000:0000:0000:0102:0304
```

Note: When DnsName and Address are assigned to the DNS Server, IPWorks does not automatically create any A and PTR records to bind the name and address together.

— DnsName

- **Type:** Ordered
- **Data Type:** DnsName
- **Description:** It is used in the automatically created Name Server (NS) and Start of Authority (SOA) records for the server's masterzones. This



field must be set when creating the DnsServer object. If the value is not specified, no NS and SOA records are created for masterzones in the server, and they need to be configured manually for each masterzone. If more than one dnsname is specified, the first dnsname in the list (the primary DNS name) is used in the NS and SOA records.

Note: When DnsName and Address are assigned to the DNS Server, IPWorks does not automatically create any A and PTR records to bind the name and address together.

— PrimaryDnsName

- **Type:** Single
- **Data Type:** DnsName
- **Read-only:** Yes
- **Description:** The primary DNS name for the server. This is simply the first name in the list of all DNS names and is used any time the server's DNS name is needed. It cannot be set directly, to change it simply change the DnsName field.

— PrimaryAddress

- **Aliases:** The alternative names of a field.
- **Type:** Single
- **Data Type:** Address
- **Read-only:** Yes
- **Description:** The primary address for the server. This is simply the first address in the list of all addresses and is used any time the server's address is needed. It cannot be set directly, to change it simply change the Address field.

— Implementation

- **Type:** Single
- **Description:** The server software implementation.

— Status

- **Type:** Single
- **Description:** The last known operational status of the server.
- **Read-only:** Yes (available only for DNS Management)

— PostUpdateScript

- **Type:** Single



- **Description:** The name and arguments for a shell script to be run during every update operation performed on the server. The script is run after new configuration files have been exported from the Storage Server and before the server has been reloaded. If an argument is a token enclosed in braces, {token}, symbol substitution is performed on the token before the argument is passed to the script. Possible tokens are: ServerType, ServerIdentifier, ServerDirectory, StorageServerAddress, StorageServerPort, StorageServerUserName, StorageServerPassword, StorageServerPartition. Other arguments are passed directly to the script which must reside in /var/ipworks/scripts or another configured scripts directory. See the Sm.ScriptsDirectory configuration property for the Server Manager.
- **Type**
- **Type:** Single.
 - **Read-only:** Yes
 - **Description:** The type of server that is initialized when the object is created based on the storage class of the object. This is provided primarily for querying purposes.
- **ExportNeeded**
- **Type:** Single
 - **Data Type:** BooleanTrueFalse
 - **Description:** This flag is set to indicate if the data for this server needs to be exported. If set to 'true' it means that the central database contains data that has not yet been exported. If it has no value (or is set to 'false'), then the data in the central database is the same data that the server is providing on the live network.
- **Partition**
- **Type:** Single
 - **Description:** The name of the partition that contains this object.
- **Creationtime**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.
- **Creator**



- **Type:** Single
- **Read-only:** Yes
- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— **InternalData**

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.

— **Format**

- **Type:** Single



- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the servers. The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

— Location

- **Type:** Single
- **Data Type:** Location
- **Description:** If this field is evaluated, it means this DNS server is under an centralized SS. The Location has two types: ProxyLocation and PointerLocation.

ProxyLocation: <IPv4Address>/PL-X

IPv4Address is the MIP_PROV_IP of the secondary SS, PL-X defines which PL is under controlled on the MIP_PROV_IP.

When updating DNS server, the primary SS will transfer the DNS server configuration to the secondary IPWorks, then reload rndc on the PL-X to take effect of the configuration, and make sure the DNS is up on the PL-X.

PointerLocation: <IPv4Address2>/PL-X@<IPv4Address1>/PL-Y

PointerLocation consists of two parts split by @ and using ProxyLocation type. The first part is a kind of pointer, and the second part is the pointed location, which must be an existed ProxyLocation. When updating DNS server, the pointer will transfer the configuration of the pointed location to the pointer, and take effect of the configuration on it.

Note: When creating DnsServer, ensure that the MIP of Location is accessible.

The existed ProxyLocation can not be set as the pointer.

The range of X and Y is from 3 to 12.

For example:

— ProxyLocation: 192.168.0.1/PL-4

— PointerLocation: 192.168.0.2/PL-3@192.168.0.1/PL-4

4.1.2

View

The View object is used for supporting multiple (different) definitions of a zone within DNS. In some cases of DNS configuration, there is no need to use any views.



The classic reason for using views in the DNS configuration is to implement Split DNS (having a zone with different internal and external definitions).

Key Partition, Server, Name

Required Partition, Server, Name

— **Name**

- **Type:** Single
- **Description:** The name of the view.

— **Area**

- **Type:** Single
- **Description:** The name of the area that is associated with this view. This area is used as the source for the resource records in the zones that are declared in this view (unless the zone is explicitly associated with a different area). If it is not specified, the zones in the view are associated with the default area.

— **FixedZone**

- **Type:** Single
- **Description:** The names of any fixed zones that is included in the configuration of the view. Fixed zones are "special" zones that have the same contents in every server and/or view in which they are used.

— **DynamicZoneKey**

- **Type:** Single
- **Description:** The name of the TSIG key that is used to provide security for communications between the Server Manager (SM) and the DNS Server for any dynamic zones in this view. If not specified, a key is generated (even if there are no dynamic zones in the view).

— **DynamicZoneAcl**

- **Type:** Single
- **Description:** The name of the acl that is used to provide security for communications between the Server Manager (SM) and the DNS Server for any dynamic zones in this view. If not specified, an acl is generated (even if there are no dynamic zones in the view).

— **Option**

- **Aliases:** ConfigOption, Opt, Cfg
- **Data Type:** DnsOption



- **Description:** Configuration settings for this view. These settings are used with each server where the view is configured. A value for the `match-clients` option is used with views to specify the clients that use the view. If this is not specified, all clients match the view.

— Class

- **Type:** Single
- **Enumeration:** RrClass
- **Description:** The resource record class for resource records in this view (RFC1035).

— AclRef

- **Aliases:** Acl
- **Read-only:** Yes
- **Description:** The names of the acls that are referenced in the config options. This is computed from the config option settings and cannot be directly edited.

— KeyRef

- **Aliases:** Key
- **Read-only:** Yes
- **Description:** The names of the TSIG keys that are referenced in the config options. This is computed from the config option settings and cannot be directly edited.

— Rank

- **Type:** Single
- **Data Type:** UInt8
- **Description:** This is a numeric value from 0 through 255 that defines the relative preference of this view to the other views for this server. Views with lower values are preferred (this means that in the server these views are checked against incoming requests before views with higher rank). The first view whose `match-clients` option matches the client is used to resolve the client's query. All other views are ignored.

— Config

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes



- **Description:** The compiled configuration settings specific to this view that is used when it is configured. These are determined from the Option field (and other fields) and cannot be modified directly.

— **Partition**

- **Type:** Single
- **Description:** The name of the partition that contains this object.

— **Creationtime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.

— **Creator**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**

- **Type:** Single



- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— InternalData

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.

— Format

- **Type:** Single
- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the server. The value of this field is a template of the text that is inserted into the configuration file for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.1.3 Zones

4.1.3.1 MasterZone

A MasterZone is an object defined within a server which is considered as the master (or primary) authority for the zone.

Key	Partition, Server, View, Name
Required	\$keys

— Area

- **Type:** Single
- **Description:** The name of the area that is associated with this zone. This area is used as the source for most of the resource records in this zone. If it is not specified and only the default area exists, it is set to default. This only applies to non-dynamic zones.



— **DefaultTtl**

- **Type:** Single
- **Data Type:** BindTimeValue
- **Description:** The default 'Time To Live' for the zone.

— **ExportNeeded**

- **Type:** Single
- **Data Type:** BooleanTrueFalse
- **Description:** This flag is set to indicate if the data for this zone needs to be exported. If set to 'true', it means that the central database contains data that has not yet been exported. If it has no value (or is set to 'false'), then the data in the central database is the same data that the server is providing on the live network.

— **SoaSetByUser**

- **Type:** Single
- **Data Type:** BooleanTrueFalse
- **Description:** This flag is set to indicate that the serial number in the SOA record for this zone was explicitly set by a user. If so, then it is not incremented when the zone is exported, even if changes have been made to the zone. Once the zone is exported, this flag is cleared and subsequent changes to the zone results in the SOA serial number being incremented.

— **SourceName**

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The dnsname of the server that is advertised in the SOARecord as the “source” server for this zone. If the value is not specified, the master dnsname for the DNS Server that contains the master zone is used. Setting it to another value, such as the dnsname for a slave server, allows the creation of a hidden master.

— **AuthoritativeName**

- **Data Type:** DnsName
- **Description:** The dnsname of the server that is advertised in NSRecord as authoritative source for this zone. This usually includes all the master and slave DNS servers for the zone. If it is not set, it is initialized to all the dnsnames of the server that contains the masterzone. If SlaveZone objects are created on other servers that correspond to this zone, the dnsnames of these servers are added to the field.



— **ZoneCut**

- **Data Type:** DnsName
- **Read-only:** Yes
- **Description:** A ZoneCut is a name in a zone's namespace where there is delegation to another zone (usually in another nameserver). The values of this field are computed from the NS records in this zone, and can only be edited by editing those records.

— **ParentZone**

- **Aliases:** ParentZones
- **Data Type:** ZoneId
- **Read-only:** Yes
- **Description:** This field is set to the zone id's of the parent zones. A parent zone is a managed zone in the same area that is cut by this zone.

— **IsDynamic**

- **Type:** Single
- **Data Type:** BooleanTrueFalse
- **Description:** Indicates whether this zone is a dynamic zone (a zone that is updated primarily via dynamic DNS updates instead of being manually configured). For details about dynamic zone, refer to the Dynamic Zone and Static Zone section in *IPWorks Configuration Management*. If it is unknown whether the zone is dynamic, set the default value false.

— **IsReverse**

- **Type:** Single
- **Data Type:** BooleanTrueFalse
- **Description:** Indicates whether this zone is a reverse lookup zone.
- **Read-only:** Yes (available only for DNS Management)

— **Filename**

- **Type:** Single
- **Description:** The name of the zone file.

— **MasterZoneType**

- **Type:** Single
- **Enumeration:** MasterZoneType



- **Description:** The name of the zone type.
- **DatabaseName**
 - **Type:** Single
 - **Description:** The name of the zone db.
- **lastUpdateTime**
 - **Type:** Single
 - **Description:** This shows the last time that the DNS Server has been updated with the zone details. It is stored in the following format YYYYMMDDHHMMSSmmmm, HH being in the 24 hr format and mmmm for milliseconds.
- **Server**
 - **Type:** Single
 - **Description:** The server name (its unique identifier).
- **View**
 - **Type:** Single
 - **Enumeration:** View
 - **Description:** The view that contains this zone.
- **Name**
 - **Type:** Single
 - **Data Type:** DnsName
 - **Description:** The name of the zone. This must be a valid DNS name.
- **ZoneId**
 - **Type:** Single
 - **Data Type:** ZoneId
 - **Read-only:** Yes
 - **Description:** The "zone id" for this zone. This is a computed field that is always set to the server name, the view, and the zone name concatenated together (separated by ":"). This serves as a unique identifier for this server zone.
- **ZoneType**
 - **Type:** Single



- **Read-only:** Yes
 - **Enumeration:** ZoneType
 - **Description:** The zone type.
- **Option**
- **Aliases:** ConfigOption, Opt, Cfg
 - **Data Type:** DnsOption
 - **Description:** Configuration setting for this zone specific to this server. These settings appear in the zone's declaration.
- **Class**
- **Type:** Single
 - **Enumeration:** RrClass
 - **Description:** The resource record class for resource records in this zone (RFC1035).
- **AclRef**
- **Aliases:** Acl
 - **Read-only:** Yes
 - **Description:** The names of the acls that are referenced in the configuration options. This is computed from the configuration option settings and cannot be directly edited.
- **KeyRef**
- **Aliases:** Key
 - **Read-only:** Yes
 - **Description:** The names of the TSIG keys that are referenced in the config options. This is computed from the config option settings and cannot be directly edited.
- **Config**
- **Type:** Single
 - **Data Type:** Blob
 - **Read-only:** Yes
 - **Description:** The compiled configuration settings specific to this zone that is used when it is configured. These are determined from the Option field (and other fields) and cannot be modified directly.



— **Partition**

- **Type:** Single
- **Description:** The name of the partition that contains this object.

— **Creationtime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.

— **Creator**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as



printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— InternalData

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.

— Format

- **Type:** Single
- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the servers. The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.1.3.2

SlaveZone

A SlaveZone is a replica of a MasterZone. The master list specifies one or more IP addresses of master servers that the slave contacts to update its copy of the zone.

Key Partition, Server, View, Name

Required \$keys, Source

— Source

- **Type:** Ordered
- **Description:** The IP addresses of the servers that are to be used as the source for the zone transfers to obtain all the resource records that are in this zone. It is usually the master server for the zone, but it can also be the slave server that is considered as a master server for another slave server. This field allows an ordered list of addresses to be specified and if the first address fails, then the next is tried and so on, until a source for the zone is found. The syntax for this field allows the additional information to be specified to associate with each master (such as an alternative port or a TSIGKey or both, to use when contacting the server). If a value is not specified, IPWorks searches all the MasterZones in all the servers for possible sources for the zone.



— **SourcePort**

- **Type:** Single
- **Data Type:** UInt16
- **Description:** The port in the master server that is used for zone transfer between master server and slave server. The default port value is 53.

— **SourceAddress**

- **Data Type:** Address
- **Read-only:** Yes
- **Description:** The IP addresses of the servers that are used as sources for this zone. This is derived from the Source field, but consists only of the addresses, not the rest of the information that is used for defining how the servers communicate, such as the ports and TSIG keys.

— **Filename**

- **Type:** Single
- **Description:** The name of the zone file.

— **Server**

- **Type:** Single
- **Description:** The server name (its unique identifier).

— **View**

- **Type:** Single
- **Enumeration:** View
- **Description:** The views that contains this zone.

— **Name**

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The name of the zone. This must be a valid DNS name.

— **ZoneId**

- **Type:** Single
- **Data Type:** ZoneId
- **Read-only:** Yes



- **Description:** The "zone id" for this zone. This is a computed field that is always set to the server name, the view, and the zone name concatenated together (separated by ":"). This serves as a unique identifier for this server zone.
- **ZoneType**
- **Type:** Single
 - **Read-only:** Yes
 - **Enumeration:** ZoneType
 - **Description:** The zone type.
- **Option**
- **Aliases:** ConfigOption, Opt, Cfg
 - **Data Type:** DnsOption
 - **Description:** Configuration settings for this zone specific to this server. These settings appear in the zone's declaration.
- **Class**
- **Type:** Single
 - **Enumeration:** RrClass
 - **Description:** The resource record class for resource records in this zone (RFC1035).
- **AclRef**
- **Aliases:** Acl
 - **Read-only:** Yes
 - **Description:** The names of the acls that are referenced in the configuration options. This is computed from the configuration option settings and cannot be directly edited.
- **KeyRef**
- **Aliases:** Key
 - **Read-only:** Yes
 - **Description:** The names of the TSIG keys that are referenced in the config options. This is computed from the config option settings and cannot be directly edited.
- **Config**



- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** The compiled configuration settings specific to this zone that is used when it is configured. These are determined from the Option field (and other fields) and cannot be modified directly.

— **Partition**

- **Type:** Single
- **Description:** The name of the partition that contains this object.

— **Creationtime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.

— **Creator**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes



- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— LastModifiedTime

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— InternalData

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.

— Format

- **Type:** Single
- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the servers. The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.1.3.3

FixedZone

A fixed zone represents a special zone whose contents are not directly managed by IPWorks. A fixed zone can be associated with more than one server, or with more than one view within a server. One of the key characteristics of the fixed zone is that its contents are the same for ALL servers.

Key Partition, Name

Required Partition, Name

— Name



- **Type:** Single
- **Description:** The name of the zone. This does not necessarily need to be the same as the DNS name of the zone, but rather can be any name you would like to use to identify this zone. It can be the same as the zonename but there is no compulsion. The name must be unique among all the servers.

— Type

- **Type:** Single
- **Enumeration:** FixedZoneType
- **Description:** The type of fixed zone. The type of the fixed zone determines how it is configured on the servers. It is included in the named.conf file.

— ZoneName

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The name that is used to define the zone in DNS. This is the DNS name for the zone. For certain types of fixed zones (hint, loopback, localhost) this is assigned a default value if one is not specified.

— Contents

- **Type:** Single
- **Data Type:** Blob
- **Description:** This represents the entire zonefile contents, represented as a single string value. If a fixed zone is being created and the zonefile contents are already defined in an external file, the CLI's -load qualifier can be used to import that file's contents into this field.

— Partition

- **Type:** Single
- **Description:** The name of the partition that contains this object.

— Creationtime

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be



specified, and it is recommended that GMT time is used. This field can only be set by the server.

— **Creator**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— **InternalData**

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.



— **Format**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the servers. The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

Note: If fixed zones are not associated with the DNS Server, MasterZone objects for the zones that are commonly implemented as fixed zones can be created, such as the localhost or loopback zones.

4.1.3.4

HintZone

A HintZone object defines the location of the root dns servers that this server should use for queries that it cannot resolve.

Key Partition, Name

Required \$keys

— **Filename**

- **Type:** Single
- **Description:** The name that is used for the zone file.

— **Name**

- **Type:** Single
- **Description:** The name of the zone. This does not necessarily need to be the same as the DNS name of the zone, but rather can be any name you would like to use to identify this zone.

— **Type**

- **Type:** Single
- **Enumeration:** FixedZoneType
- **Description:** The type of fixed zone.

— **ZoneName**

- **Type:** Single
- **Data Type:** DnsName



- **Description:** The name that is used to define the zone in DNS. This is the DNS name for the zone. For certain types of fixed zones (hint, loopback, localhost) this is assigned a default value if one is not specified.
- **Contents**
- **Type:** Single
 - **Data Type:** Blob
 - **Description:** This represents the entire zone file contents, represented as a single string value.
- **Partition**
- **Type:** Single
 - **Description:** The name of the partition that contains this object.
- **Creationtime**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.
- **Creator**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.
- **Description**
- **Type:** Single
 - **Data Type:** Blob
 - **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).
- **LastModifiedBy**
- **Type:** Single
 - **Read-only:** Yes



- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— **InternalData**

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.

— **Format**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the servers. The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.1.3.5

LocalhostZone

An object that defines the standard forward lookup interface for the localhost name (normally 127.0.0.1 for IPv4). IPWorks includes a standard definition for this zone (called localhost) for both IPv4 and IPv6.

Key Partition, Name

Required \$keys

— **Filename**

- **Type:** Single



- **Description:** The name that is used for the zone file.
- **Name**
- **Type:** Single
 - **Description:** The name of the zone. This does not necessarily need to be the same as the DNS name of the zone, but rather can be any name you would like to use to identify this zone.
- **Type**
- **Type:** Single
 - **Enumeration:** FixedZoneType
 - **Description:** The type of fixed zone.
- **ZoneName**
- **Type:** Single
 - **Data Type:** DnsName
 - **Description:** The name that is used to define the zone in DNS. This is the DNS name for the zone. For certain types of fixed zones (hint, loopback, localhost) this is assigned a default value if one is not specified.
- **Contents**
- **Type:** Single
 - **Data Type:** Blob
 - **Description:** This represents the entire zone file contents, represented as a single string value.
- **Partition**
- **Type:** Single
 - **Description:** The name of the partition that contains this object.
- **Creationtime**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.



— **Creator**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— **InternalData**

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.

— **Format**



- **Type:** Single
- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the servers. The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.1.3.6

LoopbackZone

An object that defines the reverse lookup interfaces for the loopback address (127.0.0.1 in DHCPv4). IPWorks includes standard definitions for both IPv4 (called loopback) and IPv6 (called v6loopback).

Key Partition, Name

Required \$keys

— Filename

- **Type:** Single
- **Description:** The name that is used for the zone file.

— Name

- **Type:** Single
- **Description:** The name of the zone. This does not necessarily need to be the same as the DNS name of the zone, but rather can be any name you would like to use to identify this zone.

— Type

- **Type:** Single
- **Enumeration:** FixedZoneType
- **Description:** The type of fixed zone.

— ZoneName

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The name that is used to define the zone in DNS. This is the DNS name for the zone. For certain types of fixed zones (hint, loopback, localhost) this is assigned a default value if one is not specified.

— Contents



- **Type:** Single
- **Data Type:** Blob
- **Description:** This represents the entire zone file contents, represented as a single string value.

— **Partition**

- **Type:** Single
- **Description:** The name of the partition that contains this object.

— **Creationtime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.

— **Creator**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**



- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— InternalData

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.

— Format

- **Type:** Single
- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the servers. The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.1.3.7

ForwardZone

A forward zone can be used in a server to designate that any queries for a specific zone should be forwarded to another server or set of servers.

Key Partition, Server, View, Name

Required \$keys

— Server

- **Type:** Single
- **Description:** The server name (its unique identifier).

— View

- **Type:** Single
- **Enumeration:** View



- **Description:** The view that contains this zone.

— **Name**

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The name of the zone. This must be a valid dnsname. A dnsname to specify the names for which the forwarding is applied. The forwarding is applied to any query for a dnsname that is under this domain.

— **ZoneId**

- **Type:** Single
- **Data Type:** ZoneId
- **Read-only:** Yes
- **Description:** The "zone id" for this zone. This is a computed field that is always set to the server name, the view, and the zone name concatenated together (separated by ":"). This serves as a unique identifier for this server zone.

— **ZoneType**

- **Type:** Single
- **Read-only:** Yes
- **Enumeration:** ZoneType
- **Description:** The zone type.

— **Option**

- **Aliases:** ConfigOption, Opt, Cfg
- **Data Type:** DnsOption
- **Description:** Configuration settings for this zone specific to this server. These settings appear in the zone's declaration.

The **forwarders** option in the **Option** field: This is a list of addresses of DNS servers that can resolve requests for the specified domain. In some situations, an empty forwarders declaration can be specified.

— **Class**

- **Type:** Single
- **Enumeration:** RrClass



- **Description:** The resource record class for resource records in this zone (RFC1035).
- **AclRef**
- **Aliases:** Acl
 - **Read-only:** Yes
 - **Description:** The names of the acls that are referenced in the configuration options. This is computed from the configuration option settings and cannot be directly edited.
- **KeyRef**
- **Aliases:** Key
 - **Read-only:** Yes
 - **Description:** The names of the TSIG keys that are referenced in the config options. This is computed from the config option settings and cannot be directly edited.
- **Config**
- **Type:** Single
 - **Data Type:** Blob
 - **Read-only:** Yes
 - **Description:** The compiled configuration settings specific to this zone that is used when it is configured. These are determined from the Option field (and other fields) and cannot be modified directly.
- **Partition**
- **Type:** Single
 - **Description:** The name of the partition that contains this object.
- **Creationtime**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.
- **Creator**



- **Type:** Single
- **Read-only:** Yes
- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— **InternalData**

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.

— **Format**

- **Type:** Single



- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the servers. The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.1.3.8

StubZone

An object that is similar to a SlaveZone, except that it replicates only the NSRecords and SOARecords of a master zone instead of the entire zone. StubZones are not a standard part of the DNS; they are a feature specific to the BIND implementation.

Key Partition, Server, View, Name

Required \$keys, Source

— Source

- **Type:** Ordered
- **Description:** The IP addresses of the servers that are to be used as the source for zone transfers to obtain all the resource records that are in this zone.

— SourcePort

- **Type:** Single
- **Data Type:** UInt16
- **Description:** The TCP/IP port that is used for zone transfers from the source DNS servers for this zone.

— SourceAddress

- **Data Type:** Address
- **Read-only:** Yes
- **Description:** The IP addresses of the servers that are used as sources for this zone. This is derived from the Source field, but consists only of the addresses, not the rest of the information that is used for defining how the servers communicate, such as the ports and TSIGkeys.

— Filename

- **Type:** Single
- **Description:** The name of the zone file.



— **Server**

- **Type:** Single
- **Description:** The server name (its unique identifier).

— **View**

- **Type:** Single
- **Enumeration:** View
- **Description:** The view that contains this zone.

— **Name**

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The name of the zone. This must be a valid DNS name.

— **ZoneId**

- **Type:** Single
- **Data Type:** ZoneId
- **Read-only:** Yes
- **Description:** The "zone id" for this zone. This is a computed field that is always set to the server name, the view, and the zone name concatenated together (separated by ":"). This serves as a unique identifier for this server zone.

— **ZoneType**

- **Type:** Single
- **Read-only:** Yes
- **Enumeration:** ZoneType
- **Description:** The zone type.

— **Option**

- **Aliases:** ConfigOption, Opt, Cfg
- **Data Type:** DnsOption
- **Description:** Configuration settings for this zone specific to this server. These settings appear in the zone's declaration.

— **Class**



- **Type:** Single
 - **Enumeration:** RrClass
 - **Description:** The resource record class for resource records in this zone (RFC1035).
- **AclRef**
- **Aliases:** Acl
 - **Read-only:** Yes
 - **Description:** The names of the acls that are referenced in the configuration options. This is computed from the configuration option settings and cannot be directly edited.
- **KeyRef**
- **Aliases:** Key
 - **Read-only:** Yes
 - **Description:** The names of the TSIG keys that are referenced in the config options. This is computed from the config option settings and cannot be directly edited.
- **Config**
- **Type:** Single
 - **Data Type:** Blob
 - **Read-only:** Yes
 - **Description:** The compiled configuration settings specific to this zone that is used when it is configured. These are determined from the Option field (and other fields) and cannot be modified directly.
- **Partition**
- **Type:** Single
 - **Description:** The name of the partition that contains this object.
- **Creationtime**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be



specified, and it is recommended that GMT time is used. This field can only be set by the server.

— **Creator**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— **InternalData**

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.



— Format

- **Type:** Single
- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the servers. The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.1.4 DNS Resource Records

4.1.4.1 ARecord

ARecords are used in the DNS to define an address binding for a dnsname. For a given dnsname, it is possible to have multiple ARecords if the dnsname in question has multiple address bindings.

Key Partition, Container, DnsName, Address

Required Partition, Container, DnsName, Address

— Address

- **Type:** Single
- **Data Type:** IPv4Address
- **Description:** The IPv4 address for this A Record.

— DnsName

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The DNS Name

— Ttl

- **Type:** Single
- **Data Type:** BindTimeValue
- **Description:** The resource record 'time to live', or TTL, as specified in RFC1035: a 32 bit signed integer that specifies the time interval that the resource record may be cached before the source of the information should again be consulted. Zero values are interpreted to mean that the resource record can only be used for the transaction in progress, and



should not be cached. If no value is specified, the default TTL for the zone is used.

— **Class**

- **Type:** Single
- **Enumeration:** RrClass
- **Description:** The resource record class (RFC1035), which usually has a value of 'IN', representing a name on the Internet.

— **Type**

- **Type:** Single
- **Enumeration:** RrType
- **Description:** The resource record type, represented as a text mnemonic (RFC1035).

— **RName**

- **Data Type:** DnsName
- **Read-only:** Yes
- **Description:** Other Dns name(s) that are referenced by this resource record in the RDATA. This field is, for the most part, an internal field that is used to simplify managing the cross-references between the DNS names. It cannot be set by an end-user, and is basically just set by the code that manages each resource record. It usually gets its value(s) from other field(s) on the resource record.

— **RData**

- **Type:** Single
- **Read-only:** Yes
- **Description:** A variable length string of octets that describes the resource. The format of this information varies according to the TYPE and CLASS of the resource record.

— **lastModTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** This shows the last modified time (create/modify/delete time) of the resource record.

— **DottedName**



- **Type:** Single
 - **Data Type:** DnsName
 - **Description:** The fully-qualified DNS name (FQDN), including the trailing full-stop, for the owner DNS name for this resource record.
- **Container**
- **Type:** Single
 - **Description:** Identifier for the object that "contains" this resource record. It is either the name of an area OR it is a "zone id".
- **Area**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The name of the area associated with this resource record. This is computed based on the setting of the Container field, and only has a value if the resource record is in an area. If it is a zone-specific resource record, then this field has no value.
- **Zone**
- **Data Type:** DnsName
 - **Read-only:** Yes
 - **Description:** The names of the zones that contain this resource record. This is computed based on the values of the ZoneId field, which is derived from the Container field and the associations between the areas and the server's views and/or zones.
- **ZoneId**
- **Data Type:** ZoneId
 - **Read-only:** Yes
 - **Description:** The ids of the zones that contain this resource record. This is computed based on the setting of the Container field and the associations between the areas and the server's views or zones.
- **IsZoneSpecific**
- **Type:** Single
 - **Data Type:** BooleanTrueFalse
 - **Read-only:** Yes



- **Description:** Indicates whether this resource record is specific to the zone that contains it.

— **IsDynamic**

- **Type:** Single
- **Data Type:** BooleanTrueFalse
- **Read-only:** Yes
- **Description:** Indicates whether this resource record is a dynamic resource record. Dynamic resource records are stored in dynamic zones and the DNS Server is considered the authoritative source for such zones (instead of the central database).

— **Partition**

- **Type:** Single
- **Description:** The name of the partition that contains this object.

— **Creationtime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.

— **Creator**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**



- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.
- **LastModifiedTime**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.
- **InternalData**
- **Type:** Single
 - **Data Type:** Blob
 - **Read-only:** Yes
 - **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.
- **Format**
- **Type:** Single
 - **Data Type:** Blob
 - **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the server(s). The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.1.4.2

AAAARecord

AAAARecords are used to define an IPv6 address binding for a dnsname.

Key Partition, Container, DnsName, Address

Required \$keys

— **Address:** Field name.



- **Type:** Single
- **Data Type:** IPv6Address
- **Description:** The IPv6 address for this AAAA Record.

— **DnsName**

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The DNS Name

— **Ttl**

- **Type:** Single
- **Data Type:** BindTimeValue
- **Description:** The resource record 'Time To Live', or TTL, as specified in RFC1035: a 32 bit signed integer that specifies the time interval that the resource record may be cached before the source of the information should again be consulted. Zero values are interpreted to mean that the resource record can only be used for the transaction in progress, and should not be cached. If no value is specified, the default TTL for the zone is used.

— **Class**

- **Type:** Single
- **Enumeration:** RrClass
- **Description:** The resource record class (RFC1035), which usually has a value of 'IN', representing a name on the Internet.

— **Type**

- **Type:** Single
- **Enumeration:** RrType
- **Description:** The resource record type, represented as a text mnemonic (RFC1035).

— **RName**

- **Data Type:** DnsName
- **Read-only:** Yes
- **Description:** Other Dns names that are referenced by this resource record in the RDATA. This field is, usually, an internal field that is used to simplify managing the cross-references between the DNS names. It cannot be set



by an end user, and is set by the code that manages each resource record. It usually gets its values from other fields on the resource record.

— **RData**

- **Type:** Single
- **Read-only:** Yes
- **Description:** A variable length string of octets that describes the resource. The format of this information varies according to the TYPE and CLASS of the resource record.

— **lastModTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** This shows the last modified time (create/modify/delete time) of the resource record.

— **DottedName**

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The fully-qualified DNS name (FQDN), including the trailing full-stop, for the owner DNS name for this resource record.

— **Container**

- **Type:** Single
- **Description:** Identifier for the object that "contains" this resource record. It is either the name of an area OR it is a "zone id".

— **Area**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The name of the area associated with this resource record. This is computed based on the setting of the Container field, and only has a value if the resource record is in an area. If it is a zone-specific resource record, then this field has no value.

— **Zone**

- **Data Type:** DnsName
- **Read-only:** Yes



- **Description:** The names of the zone(s) that contain this resource record. This is computed based on the values of the ZoneId field, which is derived from the Container field and the associations between the areas and the server's views and/or zones.

— **ZoneId**

- **Data Type:** ZoneId
- **Read-only:** Yes
- **Description:** The ids of the zone(s) that contain this resource record. This is computed based on the setting of the Container field and the associations between the areas and the server's views or zones.

— **IsZoneSpecific**

- **Type:** Single
- **Data Type:** BooleanTrueFalse
- **Read-only:** Yes
- **Description:** Indicates whether this resource record is specific to the zone that contains it.

— **IsDynamic**

- **Type:** Single
- **Data Type:** BooleanTrueFalse
- **Read-only:** Yes
- **Description:** Indicates whether this resource record is a dynamic resource record. Dynamic resource records are stored in dynamic zones and the DNS Server is considered the authoritative source for such zones (instead of the central database).

— **Partition**

- **Type:** Single
- **Description:** The name of the partition that contains this object.

— **Creationtime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be



specified, and it is recommended that GMT time is used. This field can only be set by the server.

— **Creator**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— **InternalData**

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.



— **Format**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the servers. The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.1.4.3

CNAMERecord

CNAMERecords are used in the reference on DNS to define a canonical name for a dnsname.

Key Partition, Container, DnsName

Required Partition, Container, DnsName, CName

— **CName**

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The canonical name for the specified DNS name, as specified in RFC 1035.

— **DnsName**

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The DNS Name

— **Ttl**

- **Type:** Single
- **Data Type:** BindTimeValue
- **Description:** The resource record 'Time To Live', or TTL, as specified in RFC1035: a 32 bit signed integer that specifies the time interval that the resource record may be cached before the source of the information should again be consulted. Zero values are interpreted to mean that the resource record can only be used for the transaction in progress, and should not be cached. If no value is specified, the default TTL for the zone is used.

— **Class**



- **Type:** Single
 - **Enumeration:** RrClass
 - **Description:** The resource record class (RFC1035), which usually has a value of 'IN', representing a name on the Internet.
- **Type**
- **Type:** Single
 - **Enumeration:** RrType
 - **Description:** The resource record type, represented as a text mnemonic (RFC1035).
- **RName**
- **Data Type:** DnsName
 - **Read-only:** Yes
 - **Description:** Other Dns name(s) that are referenced by this resource record in the RDATA. This field is, usually, an internal field that is used to simplify managing the cross-references between the DNS names. It cannot be set by an end user, and is set by the code that manages each resource record. It usually gets its values from other fields on the resource record.
- **RData**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** A variable length string of octets that describes the resource. The format of this information varies according to the TYPE and CLASS of the resource record.
- **lastModTime**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** This shows the last modified time (create/modify/delete time) of the resource record.
- **DottedName**
- **Type:** Single
 - **Data Type:** DnsName
 - **Description:** The fully-qualified DNS name (FQDN), including the trailing full-stop, for the owner DNS name for this resource record.



— **Container**

- **Type:** Single
- **Description:** Identifier for the object that "contains" this resource record. It is either the name of an area OR it is a "zone id".

— **Area**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The name of the area associated with this resource record. This is computed based on the setting of the Container field, and only has a value if the resource record is in an area. If it is a zone-specific resource record, then this field has no value.

— **Zone**

- **Data Type:** DnsName
- **Read-only:** Yes
- **Description:** The names of the zones that contain this resource record. This is computed based on the values of the ZoneId field, which is derived from the Container field and the associations between the areas and the server's views and/or zones.

— **ZoneId**

- **Data Type:** ZoneId
- **Read-only:** Yes
- **Description:** The ids of the zones that contain this resource record. This is computed based on the setting of the Container field and the associations between the areas and the server's views or zones.

— **IsZoneSpecific**

- **Type:** Single
- **Data Type:** BooleanTrueFalse
- **Read-only:** Yes
- **Description:** Indicates whether this resource record is specific to the zone that contains it.

— **IsDynamic**

- **Type:** Single
- **Data Type:** BooleanTrueFalse



- **Read-only:** Yes
 - **Description:** Indicates whether this resource record is a dynamic resource record. Dynamic resource records are stored in dynamic zones and the DNS Server is considered the authoritative source for such zones (instead of the central database).
- **Partition**
- **Type:** Single
 - **Description:** The name of the partition that contains this object.
- **Creationtime**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.
- **Creator**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.
- **Description**
- **Type:** Single
 - **Data Type:** Blob
 - **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).
- **LastModifiedBy**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.
- **LastModifiedTime**



- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— **InternalData**

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.

— **Format**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the server(s). The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.1.4.4 HINFORecord

HINFO records are used to acquire general information about a host.

Key Partition, Container, DnsName, Cputype, Opsys

Required Partition, Container, DnsName, Cputype, Opsys

— **Cputype**

- **Type:** Single
- **Description:** A character string which specifies the CPU type (RFC1035).

— **Opsys**

- **Type:** Single
- **Description:** A character string that specifies the operating system type (RFC1035).



— **DnsName**

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The DNS Name

— **Ttl**

- **Type:** Single
- **Data Type:** BindTimeValue
- **Description:** The resource record 'Time To Live', or TTL, as specified in RFC1035: a 32 bit signed integer that specifies the time interval that the resource record may be cached before the source of the information should again be consulted. Zero values are interpreted to mean that the resource record can only be used for the transaction in progress, and should not be cached. If no value is specified, the default TTL for the zone is used.

— **Class**

- **Type:** Single
- **Enumeration:** RrClass
- **Description:** The resource record class (RFC1035), which usually has a value of 'IN', representing a name on the Internet.

— **Type**

- **Type:** Single
- **Enumeration:** RrType
- **Description:** The resource record type, represented as a text mnemonic (RFC1035).

— **RName**

- **Data Type:** DnsName
- **Read-only:** Yes
- **Description:** Other Dns name(s) that are referenced by this resource record in the RDATA. This field is, usually, an internal field that is used to simplify managing the cross-references between the DNS names. It cannot be set by an end user, and is set by the code that manages each resource record. It usually gets its values from other fields on the resource record.

— **RData**

- **Type:** Single



- **Read-only:** Yes
- **Description:** A variable length string of octets that describes the resource. The format of this information varies according to the TYPE and CLASS of the resource record.
- **lastModTime**
 - **Type:** Single
 - **Read-only:** Yes
 - **Description:** This shows the last modified time (create/modify/delete time) of the resource record.
- **DottedName**
 - **Type:** Single
 - **Data Type:** DnsName
 - **Description:** The fully-qualified DNS name (FQDN), including the trailing full-stop, for the owner DNS name for this resource record.
- **Container**
 - **Type:** Single
 - **Description:** Identifier for the object that "contains" this resource record. It is either the name of an area OR it is a "zone id".
- **Area**
 - **Type:** Single
 - **Read-only:** Yes
 - **Description:** The name of the area associated with this resource record. This is computed based on the setting of the Container field, and only has a value if the resource record is in an area. If it is a zone-specific resource record, then this field has no value.
- **Zone**
 - **Data Type:** DnsName
 - **Read-only:** Yes
 - **Description:** The names of the zone(s) that contain this resource record. This is computed based on the values of the ZoneId field, which is derived from the Container field and the associations between the areas and the server's views and/or zones.
- **ZoneId**



- **Data Type:** ZoneId
 - **Read-only:** Yes
 - **Description:** The ids of the zone(s) that contain this resource record. This is computed based on the setting of the Container field and the associations between the areas and the server's views or zones.
- **IsZoneSpecific**
- **Type:** Single
 - **Data Type:** BooleanTrueFalse
 - **Read-only:** Yes
 - **Description:** Indicates whether this resource record is specific to the zone that contains it.
- **IsDynamic**
- **Type:** Single
 - **Data Type:** BooleanTrueFalse
 - **Read-only:** Yes
 - **Description:** Indicates whether this resource record is a dynamic resource record. Dynamic resource records are stored in dynamic zones and the DNS Server is considered the authoritative source for such zones (instead of the central database).
- **Partition**
- **Type:** Single
 - **Description:** The name of the partition that contains this object.
- **Creationtime**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.
- **Creator**
- **Type:** Single
 - **Read-only:** Yes



- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— **InternalData**

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.

— **Format**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the



servers. The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.1.4.5

MXRecord

A MXRecord is a resource record for a DNS name. They define the "mail exchanger" (a system that handles mail) for the specified domain.

Key Partition, Container, DnsName, Preference, Exchange

Required \$keys

— Exchange

- **Type:** Single
- **Data Type:** DnsName
- **Description:** A domain-name which specifies a host willing to act as a mail exchange for the 'owner' DNS name (RFC's 974 and 1035). In addition to normal DNS names, wildcard names (those containing the character '*' in them) may be used for mail routing.

— Preference

- **Type:** Single
- **Data Type:** UInt16
- **Description:** The MX preference for an MX resource record, as specified in RFC1035: An unsigned 16-bit integer which specifies the preference given to this resource record among others with the same 'owner' DNS name. Lower values are preferred.

— DnsName

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The DNS Name

— Ttl

- **Type:** Single
- **Data Type:** BindTimeValue
- **Description:** The resource record 'Time To Live', or TTL, as specified in RFC1035: a 32 bit signed integer that specifies the time interval that the resource record may be cached before the source of the information should again be consulted. Zero values are interpreted to mean that the



resource record can only be used for the transaction in progress, and should not be cached. If no value is specified, the default TTL for the zone is used.

— **Class**

- **Type:** Single
- **Enumeration:** RrClass
- **Description:** The resource record class (RFC1035), which usually has a value of 'IN', representing a name on the Internet.

— **Type**

- **Type:** Single
- **Enumeration:** RrType
- **Description:** The resource record type, represented as a text mnemonic (RFC1035).

— **RName**

- **Data Type:** DnsName
- **Read-only:** Yes
- **Description:** Other Dns name(s) that are referenced by this resource record in the RDATA. This field is, usually, an internal field that is used to simplify managing the cross-references between the DNS names. It cannot be set by an end user, and is set by the code that manages each resource record. It usually gets its values from other fields on the resource record.

— **RData**

- **Type:** Single
- **Read-only:** Yes
- **Description:** A variable length string of octets that describes the resource. The format of this information varies according to the TYPE and CLASS of the resource record.

— **lastModTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** This shows the last modified time (create/modify/delete time) of the resource record.

— **DottedName**



- **Type:** Single
 - **Data Type:** DnsName
 - **Description:** The fully-qualified DNS name (FQDN), including the trailing full-stop, for the owner DNS name for this resource record.
- **Container**
- **Type:** Single
 - **Description:** Identifier for the object that "contains" this resource record. It is either the name of an area OR it is a "zone id".
- **Area**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The name of the area associated with this resource record. This is computed based on the setting of the Container field, and only has a value if the resource record is in an area. If it is a zone-specific resource record, then this field has no value.
- **Zone**
- **Data Type:** DnsName
 - **Read-only:** Yes
 - **Description:** The names of the zones that contain this resource record. This is computed based on the values of the ZoneId field, which is derived from the Container field and the associations between the areas and the server's views and/or zones.
- **ZoneId**
- **Data Type:** ZoneId
 - **Read-only:** Yes
 - **Description:** The ids of the zones that contain this resource record. This is computed based on the setting of the Container field and the associations between the areas and the server's views or zones.
- **IsZoneSpecific**
- **Type:** Single
 - **Data Type:** BooleanTrueFalse
 - **Read-only:** Yes



- **Description:** Indicates whether this resource record is specific to the zone that contains it.

— **IsDynamic**

- **Type:** Single
- **Data Type:** BooleanTrueFalse
- **Read-only:** Yes
- **Description:** Indicates whether this resource record is a dynamic resource record. Dynamic resource records are stored in dynamic zones and the DNS Server is considered the authoritative source for such zones (instead of the central database).

— **Partition**

- **Type:** Single
- **Description:** The name of the partition that contains this object.

— **Creationtime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.

— **Creator**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**



- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.
- **LastModifiedTime**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.
- **InternalData**
- **Type:** Single
 - **Data Type:** Blob
 - **Read-only:** Yes
 - **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.
- **Format**
- **Type:** Single
 - **Data Type:** Blob
 - **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the server(s). The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.1.4.6

NAPTRRecord

NAPTRRecord is a resource record that defines a Naming Authority Pointer for a DNS name, as defined in RFC 2915

Key Partition, Container, DnsName, Order, Preference

Required \$keys, Replacement



— **Order**

- **Type:** Single
- **Description:** The "Order" field, as specified in RFC 2915: A 16-bit unsigned integer specifying the order in which the NAPTR records MUST be processed to ensure the correct ordering of rules. Low numbers are processed before high numbers, and once a NAPTR is found whose rule "matches" the target, the client MUST NOT consider any NAPTRs with a higher value for order (except as noted below for the Flags field).

— **Preference**

- **Type:** Single
- **Description:** The "Preference" field, as specified in RFC 2915: A 16-bit unsigned integer that specifies the order in which NAPTR records with equal "order" values SHOULD be processed, low numbers being processed before high numbers. This is similar to the preference field in an MX record, and is used so domain administrators can direct clients towards more capable hosts or lighter weight protocols. A client MAY look at records with higher preference values if it has a good reason to do so such as not understanding the preferred protocol or service.

— **Flags**

- **Type:** Single
- **Description:** The "Flags" field - UNQUOTED - as specified in RFC 2915: A character-string containing flags to control aspects of the rewriting and interpretation of the fields in the record. Flags are single characters from the set [A-Z0-9]. The case of the alphabetic characters is not significant.

— **Service**

- **Type:** Single
- **Description:** The "Service" field - UNQUOTED - as specified in RFC 2915: Specifies the service(s) available down this rewrite path. It may also specify the particular protocol that is used to talk with a service. A protocol MUST be specified if the flags field states that the NAPTR is terminal. If a protocol is specified, but the flags field does not state that the NAPTR is terminal, the next lookup MUST be for a NAPTR. The client MAY choose not to perform the next lookup if the protocol is unknown, but that behavior MUST NOT be relied upon.

— **Regexp**

- **Type:** Single
- **Description:** The "Regexp" field - UNQUOTED - as specified in RFC 2915: A STRING containing a substitution expression that is applied to the original string held by the client in order to construct the next domain



name to lookup. The grammar of the substitution expression is given in detail in RFC 2915.

— **Replacement**

- **Type:** Single
- **Description:** The "Replacement" field, as specified in RFC 2915: The next NAME to query for NAPTR, SRV, or address records depending on the value of the flags field. This MUST be a fully qualified domain name. Unless and until permitted by future standards action, name compression is not to be used for this field.

— **DnsName**

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The DNS Name

— **Ttl**

- **Type:** Single
- **Data Type:** BindTimeValue
- **Description:** The resource record 'Time To Live', or TTL, as specified in RFC1035: a 32 bit signed integer that specifies the time interval that the resource record may be cached before the source of the information should again be consulted. Zero values are interpreted to mean that the resource record can only be used for the transaction in progress, and should not be cached. If no value is specified, the default TTL for the zone is used.

— **Class**

- **Type:** Single
- **Enumeration:** RrClass
- **Description:** The resource record class (RFC1035), which usually has a value of 'IN', representing a name on the Internet.

— **Type**

- **Type:** Single
- **Enumeration:** RrType
- **Description:** The resource record type, represented as a text mnemonic (RFC1035).

— **RName**



- **Data Type:** DnsName
- **Read-only:** Yes
- **Description:** Other Dns name(s) that are referenced by this resource record in the RDATA. This field is an internal field that is used to simplify managing the cross-references between the DNS names. It cannot be set by an end user, and is set by the code that manages each resource record. It usually gets its values from other fields on the resource record.

— **RData**

- **Type:** Single
- **Read-only:** Yes
- **Description:** A variable length string of octets that describes the resource. The format of this information varies according to the TYPE and CLASS of the resource record.

— **lastModTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** This shows the last modified time (create/modify/delete time) of the resource record.

— **DottedName**

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The fully qualified DNS name (FQDN), including the trailing full-stop, for the owner DNS name for this resource record.

— **Container**

- **Type:** Single
- **Description:** Identifier for the object that "contains" this resource record. It is either the name of an area OR it is a "zone id".

— **Area**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The name of the area associated with this resource record. This is computed based on the setting of the Container field, and only has a value if the resource record is in an area. If it is a zone-specific resource record, then this field has no value.



— **Zone**

- **Data Type:** DnsName
- **Read-only:** Yes
- **Description:** The names of the zones that contain this resource record. This is computed based on the values of the ZoneId field, which is derived from the Container field and the associations between the areas and the server's views and/or zones.

— **ZoneId**

- **Data Type:** ZoneId
- **Read-only:** Yes
- **Description:** The ids of the zone(s) that contain this resource record. This is computed based on the setting of the Container field and the associations between the areas and the server's views or zones.

— **IsZoneSpecific**

- **Type:** Single
- **Data Type:** BooleanTrueFalse
- **Read-only:** Yes
- **Description:** Indicates whether this resource record is specific to the zone that contains it.

— **IsDynamic**

- **Type:** Single
- **Data Type:** BooleanTrueFalse
- **Read-only:** Yes
- **Description:** Indicates whether this resource record is a dynamic resource record. Dynamic resource records are stored in dynamic zones and the DNS Server is considered the authoritative source for such zones (instead of the central database).

— **Partition**

- **Type:** Single
- **Description:** The name of the partition that contains this object.

— **Creationtime**

- **Type:** Single



- **Read-only:** Yes
- **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.

— **Creator**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— **InternalData**

- **Type:** Single
- **Data Type:** Blob



- **Read-only:** Yes
 - **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.
- **Format**
- **Type:** Single
 - **Data Type:** Blob
 - **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the servers. The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.1.4.7

NSRecord

The NS resource record states that the named host should be expected to be an authoritative server for the zone starting at the specified 'owner' DNS name.

Key Partition, Container, DnsName, NameServer

Required \$keys

— NameServer

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The Dns name for the NameServer that is authoritative for the zone with the specified DNS name.

— IsCutoff

- **Type:** Single
- **Data Type:** BooleanTrueFalse
- **Read-only:** Yes
- **Description:** Indicates whether this resource record is a cutoff NS record. A cutoff NS record is one that is used to indicate that there is a subzone within a zone that is delegated (usually to another DNS server).

— NeedsGlue

- **Type:** Single
- **Data Type:** BooleanTrueFalse



- **Read-only:** Yes
- **Description:** Indicates whether this NS record needs a glue A record. A glue A record is required for NS records that refer to a DNS server in their rdata that is contained within a subzone of the zone that contains them.

— **DnsName**

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The DNS Name

— **Ttl**

- **Type:** Single
- **Data Type:** BindTimeValue
- **Description:** The resource record 'Time To Live', or TTL, as specified in RFC1035: a 32 bit signed integer that specifies the time interval that the resource record may be cached before the source of the information should again be consulted. Zero values are interpreted to mean that the resource record can only be used for the transaction in progress, and should not be cached. If no value is specified, the default TTL for the zone is used.

— **Class**

- **Type:** Single
- **Enumeration:** RrClass
- **Description:** The resource record class (RFC1035), which usually has a value of 'IN', representing a name on the Internet.

— **Type**

- **Type:** Single
- **Enumeration:** RrType
- **Description:** The resource record type, represented as a text mnemonic (RFC1035).

— **RName**

- **Data Type:** DnsName
- **Read-only:** Yes
- **Description:** Other Dns name(s) that are referenced by this resource record in the RDATA. This field is, usually, an internal field that is used to simplify managing the cross-references between the DNS names. It cannot be set



by an end user, and is set by the code that manages each resource record. It usually gets its values from other fields on the resource record.

— **RData**

- **Type:** Single
- **Read-only:** Yes
- **Description:** A variable length string of octets that describes the resource. The format of this information varies according to the TYPE and CLASS of the resource record.

— **lastModTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** This shows the last modified time (create/modify/delete time) of the resource record.

— **DottedName**

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The fully qualified DNS name (FQDN), including the trailing full-stop, for the owner DNS name for this resource record.

— **Container**

- **Type:** Single
- **Description:** Identifier for the object that "contains" this resource record. It is either the name of an area OR it is a "zone id".

— **Area**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The name of the area associated with this resource record. This is computed based on the setting of the Container field, and only has a value if the resource record is in an area. If it is a zone-specific resource record, then this field has no value.

— **Zone**

- **Data Type:** DnsName
- **Read-only:** Yes



- **Description:** The names of the zone(s) that contain this resource record. This is computed based on the values of the ZoneId field, which is derived from the Container field and the associations between the areas and the server's views and/or zones.

— **ZoneId**

- **Data Type:** ZoneId
- **Read-only:** Yes
- **Description:** The ids of the zones that contain this resource record. This is computed based on the setting of the Container field and the associations between the areas and the server's views or zones.

— **IsZoneSpecific**

- **Type:** Single
- **Data Type:** BooleanTrueFalse
- **Read-only:** Yes
- **Description:** Indicates whether this resource record is specific to the zone that contains it.

— **IsDynamic**

- **Type:** Single
- **Data Type:** BooleanTrueFalse
- **Read-only:** Yes
- **Description:** Indicates whether this resource record is a dynamic resource record. Dynamic resource records are stored in dynamic zones and the DNS Server is considered the authoritative source for such zones (instead of the central database).

— **Partition**

- **Type:** Single
- **Description:** The name of the partition that contains this object.

— **Creationtime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be



specified, and it is recommended that GMT time is used. This field can only be set by the server.

— **Creator**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— **InternalData**

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.



— **Format**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the server(s). The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.1.4.8

SOARecord

SOARecords are used within DNS to define the relationships between different servers for each of the zones that they manage.

Key Partition, Container, DnsName, NameServer

Required Partition, Container, DnsName, NameServer

— **NameServer**

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The DNS name of the name server that is the original or primary source of data for the zone that starts with the 'owner' DNS name.

— **Expire**

- **Type:** Single
- **Data Type:** BindTimeValue
- **Description:** A 32-bit time value that specifies the upper limit on the time interval (in seconds unless followed by another unit) that can elapse before the zone is no longer authoritative (RFC1035).

— **Mailbox**

- **Type:** Single
- **Data Type:** MailboxDnsName
- **Description:** The mailbox of the person responsible for this zone. It is specified in domain name form with the "@" replaced by a "." (RFC1035).

— **Minimum**

- **Type:** Single
- **Data Type:** BindTimeValue



- **Description:** The unsigned 32-bit minimum TTL field (in seconds unless followed by another unit) that is exported with any resource record from this zone (RFC1035).
- **Refresh**
- **Type:** Single
 - **Data Type:** BindTimeValue
 - **Description:** The 32-bit time interval (in seconds unless followed by another unit) before the zone is refreshed (RFC1035).
- **Retry**
- **Type:** Single
 - **Data Type:** BindTimeValue
 - **Description:** The 32-bit time interval (in seconds unless followed by another unit) that elapses before a failed refresh is retried (RFC1035).
- **Serial**
- **Type:** Single
 - **Data Type:** UInt32
 - **Description:** The unsigned 32-bit version number of the original copy of the zone. This value wraps and should be compared using sequence space arithmetic (RFC1035).
- **DnsName**
- **Type:** Single
 - **Data Type:** DnsName
 - **Description:** The DNS Name
- **Ttl**
- **Type:** Single
 - **Data Type:** BindTimeValue
 - **Description:** The resource record 'Time To Live', or TTL, as specified in RFC1035: a 32 bit signed integer that specifies the time interval that the resource record may be cached before the source of the information should again be consulted. Zero values are interpreted to mean that the resource record can only be used for the transaction in progress, and should not be cached. If no value is specified, the default TTL for the zone is used.
- **Class**



- **Type:** Single
- **Enumeration:** RrClass
- **Description:** The resource record class (RFC1035), which usually has a value of 'IN', representing a name on the Internet.

— **Type**

- **Type:** Single
- **Enumeration:** RrType
- **Description:** The resource record type, represented as a text mnemonic (RFC1035).

— **RName**

- **Data Type:** DnsName
- **Read-only:** Yes
- **Description:** Other Dns name(s) that are referenced by this resource record in the RDATA. This field is, usually, an internal field that is used to simplify managing the cross-references between the DNS names. It cannot be set by an end user, and is set by the code that manages each resource record. It usually gets its values from other fields on the resource record.

— **RData**

- **Type:** Single
- **Read-only:** Yes
- **Description:** A variable length string of octets that describes the resource. The format of this information varies according to the TYPE and CLASS of the resource record.

— **lastModTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** This shows the last modified time (create/modify/delete time) of the resource record.

— **DottedName**

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The fully qualified DNS name (FQDN), including the trailing full-stop, for the owner DNS name for this resource record.



— **Container**

- **Type:** Single
- **Description:** Identifier for the object that "contains" this resource record. It is either the name of an area OR it is a "zone id".

— **Area**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The name of the area associated with this resource record. This is computed based on the setting of the Container field, and only has a value if the resource record is in an area. If it is a zone-specific resource record, then this field has no value.

— **Zone**

- **Data Type:** DnsName
- **Read-only:** Yes
- **Description:** The names of the zone(s) that contain this resource record. This is computed based on the values of the ZoneId field, which is derived from the Container field and the associations between the areas and the server's views and/or zones.

— **ZoneId**

- **Data Type:** ZoneId
- **Read-only:** Yes
- **Description:** The ids of the zone(s) that contain this resource record. This is computed based on the setting of the Container field and the associations between the areas and the server's views or zones.

— **IsZoneSpecific**

- **Type:** Single
- **Data Type:** BooleanTrueFalse
- **Read-only:** Yes
- **Description:** Indicates whether this resource record is specific to the zone that contains it.

— **IsDynamic**

- **Type:** Single
- **Data Type:** BooleanTrueFalse



- **Read-only:** Yes
 - **Description:** Indicates whether this resource record is a dynamic resource record. Dynamic resource records are stored in dynamic zones and the DNS Server is considered the authoritative source for such zones (instead of the central database).
- **Partition**
- **Type:** Single
 - **Description:** The name of the partition that contains this object.
- **Creationtime**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.
- **Creator**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.
- **Description**
- **Type:** Single
 - **Data Type:** Blob
 - **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).
- **LastModifiedBy**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.
- **LastModifiedTime**



- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— InternalData

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.

— Format

- **Type:** Single
- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the server(s). The value of this field is a template of the text that should be inserted into the configuration file(s) for this object, where the xml tags embedded in the text will be replaced based on format definitions for those tags.

4.1.4.9

PTRRecord

The PTR resource record(s) for a DNS name. These resource records are used in special domains (such as the INADDR.ARPA domain) to point to some other location in the domain space.

Although PTRRecords are not required by the DNS protocol, they are desirable because they are still widely used. IPWorks provides mechanisms that can be used to configure policies for automatic creation of PTRRecords in the data. These mechanisms are discussed in this section, however it is assumed that the purpose of PTRRecords is understood. If not, refer to an external reference on the DNS for more information.

In some sites, a PTRRecord is created for each ARecord that exists. In others sites PTRRecords are never created. In some it is determined on a per-instance basis. The goal of IPWorks is to support whatever policy an administrator feels is best for their network.



IPWorks never automatically creates a PTRRecord if there is no zone that could contain the record. Therefore, the first thing is to automate the creation of PTRRecords in any situation, that is, the zones must be defined by the user.

The other thing to keep in mind when defining policies for creating PTRRecords is the default product behavior. In many sites, the default behavior may be just what is desired.

1. When an ARecord or AAAARecord is created, the data that would be used to create an associated PTRRecord is calculated. If the resulting dnsname for the PTRRecord is not contained in any managed zone, no attempt is made to create a PTRRecord.
2. If the dnsname for the PTRRecord does fall within a managed zone, the default behavior is to ask the user if a PTRRecord should be created using this data.

The following are strategies that can be used to manage PTRRecords.

— **Configuring a Site-wide PTRRecord Policy**

IPWorks can be configured so that the same policy is made regarding PTRRecords under all situations for a given installation of the product. This is accomplished by modifying properties used to initialize the IPWorks Storage Server.

— **Using Subnets to Manage PTRRecords**

A subnet (or a network) represents a contiguous set of IPv4 addresses. Subnets can be split into other subnets, creating a hierarchy of subnets. In addition, a subnet can be used to configure behavior that should be applied to the addresses in the subnet. If IPv6 is used, the same policies can be applied to prefixes (the IPv6 equivalent of a subnet) throughout the remainder of this section. Any features that apply to subnets, also apply to prefixes.

Since a subnet defines information about the address space, all subnet definitions are applicable only to addresses within a single area. The area to be associated with the subnet should be specified when the subnet is created. If the area is not specified, it defaults to the default area. The area object is a prerequisite for the subnet and therefore must be created before the subnet.

To implement this feature, subnets have a field called `PtrStrategy` that defines how PTRRecords for that subnet are managed. It can have any of the following values:

- **Manual:** They are only created by the user manually.
- **Auto:** IPWorks automatically creates them.
- **Prompt:** IPWorks should prompt the user to see if they want them created.
- **Dynamic:** They will be created using the Dynamic DNS (DDNS) protocol by some external server that allocates the addresses (such as DHCP).



For the management of the records, this has the same effect as setting the value to manual.

- **Generated:** They will be created in the DNS server when the zone is loaded using GenRecords (described in a later section). There will not be any automatic management of the records for this subnet.
- **Delegated:** They will be in a non-standard zone and the standard zone will have CNAMERecords that point to the non-standard zone. This is most often used for subnets with a masklength greater than 24 as defined in RFC 2317. The CNAMERecords will be created in the server using a GenRecord that is defined when the subnet is created. This is discussed in a later section.

— Classless in-addr.arpa Delegation

When managing PTRRecords, there is a special situation for which IPWorks provides special built-in support. This special case is described in RFC 2317 Classless IN-ADDR.ARPA delegation. The special case comes up because the `in-addr.arpa` reverse lookup zone divides the namespace on class A, class B and class C domain boundaries. This becomes problematic when the address space is organized into subnets that are smaller than class C networks because there is no way to delegate the corresponding portion of the reverse lookup zone.

A solution to this problem is presented in RFC 2317. To understand how this solution works, review the RFC.

Key Partition, Container, DnsName, PtrName

Required Partition, Container, DnsName, PtrName

— PtrName

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The DNS name that is pointed to by this PTR record. For reverse lookup records (which most PTR records are) this should be the DNS name that maps to the address defined by the 'owner' DNS name.

— Address

- **Type:** Single
- **Data Type:** Address
- **Description:** The IP address for this PTRRecord.

— DnsName

- **Type:** Single



- **Data Type:** DnsName
- **Description:** The DNS Name

— Ttl

- **Type:** Single
- **Data Type:** BindTimeValue
- **Description:** The resource record 'Time To Live', or TTL, as specified in RFC1035: a 32 bit signed integer that specifies the time interval that the resource record may be cached before the source of the information should again be consulted. Zero values are interpreted to mean that the resource record can only be used for the transaction in progress, and should not be cached. If no value is specified, the default TTL for the zone is used.

— Class

- **Type:** Single
- **Enumeration:** RrClass
- **Description:** The resource record class (RFC1035), which usually has a value of 'IN', representing a name on the Internet.

— Type

- **Type:** Single
- **Enumeration:** RrType
- **Description:** The resource record type, represented as a text mnemonic (RFC1035).

— RName

- **Data Type:** DnsName
- **Read-only:** Yes
- **Description:** Other Dns name(s) that are referenced by this resource record in the RDATA. This field is, usually, an internal field that is used to simplify managing the cross-references between the DNS names. It cannot be set by an end user, and is set by the code that manages each resource record. It usually gets its values from other fields on the resource record.

— RData

- **Type:** Single
- **Read-only:** Yes



- **Description:** A variable length string of octets that describes the resource. The format of this information varies according to the TYPE and CLASS of the resource record.
- **lastModTime**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** This shows the last modified time (create/modify/delete time) of the resource record.
- **DottedName**
- **Type:** Single
 - **Data Type:** DnsName
 - **Description:** The fully qualified DNS name (FQDN), including the trailing full-stop, for the owner DNS name for this resource record.
- **Container**
- **Type:** Single
 - **Description:** Identifier for the object that "contains" this resource record. It is either the name of an area OR it is a "zone id".
- **Area**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The name of the area associated with this resource record. This is computed based on the setting of the Container field, and only has a value if the resource record is in an area. If it is a zone-specific resource record, then this field has no value.
- **Zone**
- **Data Type:** DnsName
 - **Read-only:** Yes
 - **Description:** The names of the zone(s) that contain this resource record. This is computed based on the values of the ZoneId field, which is derived from the Container field and the associations between the areas and the server's views and/or zones.
- **ZoneId**
- **Data Type:** ZoneId



- **Read-only:** Yes
- **Description:** The ids of the zone(s) that contain this resource record. This is computed based on the setting of the Container field and the associations between the areas and the server's views or zones.

— **IsZoneSpecific**

- **Type:** Single
- **Data Type:** BooleanTrueFalse
- **Read-only:** Yes
- **Description:** Indicates whether this resource record is specific to the zone that contains it.

— **IsDynamic**

- **Type:** Single
- **Data Type:** BooleanTrueFalse
- **Read-only:** Yes
- **Description:** Indicates whether this resource record is a dynamic resource record. Dynamic resource records are stored in dynamic zones and the DNS Server is considered the authoritative source for such zones (instead of the central database).

— **Partition**

- **Type:** Single
- **Description:** The name of the partition that contains this object.

— **Creationtime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.

— **Creator**

- **Type:** Single
- **Read-only:** Yes



- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.
- **Description**
- **Type:** Single
 - **Data Type:** Blob
 - **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).
- **LastModifiedBy**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.
- **LastModifiedTime**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.
- **InternalData**
- **Type:** Single
 - **Data Type:** Blob
 - **Read-only:** Yes
 - **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.
- **Format**
- **Type:** Single
 - **Data Type:** Blob
 - **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the



server(s). The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.1.4.10

GenRecord

The GenRecord object is used to define resource records that are generated in a zone when it is loaded by the DNS server. The generated records are not managed by IPWorks, but rather they are created dynamically in the DNS server.

Key Partition, Area, Start, DnsNameTemplate

Required Partition, Area, Start, End, DnsNameTemplate, Type, RDataTemplate

— Start

- **Type:** Single
- **Data Type:** UInt32
- **Description:** The first number that is used in the iteration for generating the records to be inserted into the zonefile.

— End

- **Type:** Single
- **Data Type:** UInt32
- **Description:** The last number that is used in the iteration for generating the records to be inserted into the zonefile.

— Step

- **Type:** Single
- **Data Type:** UInt32
- **Description:** The number defining the size of step between each number used in the iteration. If not defined, a default of 1 is used by the server.

— DnsNameTemplate

- **Type:** Single
- **Description:** This is a template that is used to generate the owner dnsname for each resource record. Any occurrences of the \$ character in the template is replaced by a numeric value during the generation procedure.

— Type

- **Type:** Single



- **Enumeration:** RrTypeGenRecord
 - **Description:** The type of resource records that are generated. The supported types are: PTR, CNAME, DNAME, A, AAAA, NS.
- **RDataTemplate**
- **Type:** Single
 - **Description:** The template used to generate the rdata for the generated resource records. It follows the same replacement rules as the DnsNameTemplate.
- **BaseDnsName**
- **Type:** Single
 - **Data Type:** DnsName
 - **Description:** The base DNS name is used to determine which zone(s) the GenRecord will appear in. It is not necessarily a DNS name that will have resource records associated with it, but it should be as close as possible to the generated DNS names so that the code that computes the zones to contain this GenRecord can use this name as a basis for computation.
- **ZoneId**
- **Data Type:** ZoneId
 - **Read-only:** Yes
 - **Description:** The ids of the zone(s) that contain the DNS name for this record. This is computed based on the associations between the areas and the server's views and/or zones. This is used to determine the servers where the record will be used.
- **Ttl**
- **Data Type:** BindTimeValue
 - **Description:** The resource record “Time To Live”, or TTL, as specified in RFC1035: a 32 bit signed integer that specifies the time interval that the resource record may be cached before the source of the information should again be consulted. Zero values are interpreted to mean that the resource record can only be used for the transaction in progress, and should not be cached. If no value is specified, the default TTL for the zone is used.
- **Area**
- **Type:** Single
 - **Description:** The name of the area that contains this object.



— **Partition**

- **Type:** Single
- **Description:** The name of the partition that contains this object.

— **Creationtime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.

— **Creator**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as



printable strings, represented as specified in X.208. The time zone must be specified and it is strongly recommended that GMT time be used. This field can only be set by the server.

— InternalData

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.

— Format

- **Type:** Single
- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the servers. The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.1.4.11

SRVRecord

SRVRecord is a resource record for a DNS name that defines the owner name, where the owner name has the format. <service>.<proto> . Name.

Key Partition, Container, DnsName, Priority, Weight, Port, Target

Required \$keys

— DnsName

- **Type:** Single
- **Data Type:** SRVDnsName
- **Description:** The DNS Name consists of srvce.prot.name, for example: _http_tcp.example.com.

— DottedName

- **Type:** Single
- **Data Type:** SRVDnsName



- **Description:** The fully qualified DNS name (FQDN) for SRVrecord, including the trailing dot, for the owner DNS name for this resource record.

— **Priority**

- **Type:** Single
- **Data Type:** UInt16
- **Description:** The priority of this target host. A client MUST attempt to contact the target host with the lowest-numbered priority it can reach; target hosts with the same priority SHOULD be tried in pseudorandom order. The range is 0-65535.

— **Weight**

- **Type:** Single
- **Data Type:** UInt16
- **Description:** This is the load balancing mechanism. When selecting a target host among those that have the same priority, the chance of trying this one first SHOULD be proportional to its weight. The range of this number is 1-65535. Domain administrators are urged to use Weight 0 when there is not any load balancing to do, to make the RR easier to read for humans (less noisy).

— **Port**

- **Type:** Single
- **Data Type:** UInt16
- **Description:** The port on this target host of this service. The range is 0-65535. This is a 16-bit unsigned integer in network byte order. This is often as specified in Assigned Numbers but need not be.

— **Target**

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The domain name of the target host. There MUST be one or more A records for this name. Implementors are urged, but not required, to return the A record(s) in the Additional Data section. Name compression is to be used for this field.

— **DnsName**

- **Type:** Single
- **Data Type:** DnsName



- **Description:** The DNS Name
- **Ttl**
- **Type:** Single
 - **Data Type:** BindTimeValue
 - **Description:** The resource record 'Time To Live', or TTL, as specified in RFC1035: a 32 bit signed integer that specifies the time interval that the resource record may be cached before the source of the information should again be consulted. Zero values are interpreted to mean that the resource record can only be used for the transaction in progress, and should not be cached. If no value is specified, the default TTL for the zone is used.
- **Class**
- **Type:** Single
 - **Enumeration:** RrClass
 - **Description:** The resource record class (RFC1035), which usually has a value of 'IN', representing a name on the Internet.
- **Type**
- **Type:** Single
 - **Enumeration:** RrType
 - **Description:** The resource record type, represented as a text mnemonic (RFC1035).
- **RName**
- **Data Type:** DnsName
 - **Read-only:** Yes
 - **Description:** Other Dns name(s) that are referenced by this resource record in the RDATA. This field is, usually, an internal field that is used to simplify managing the cross-references between the DNS names. It cannot be set by an end user, and is set by the code that manages each resource record. It usually gets its values from other fields on the resource record.
- **RData**
- **Type:** Single
 - **Read-only:** Yes



- **Description:** A variable length string of octets that describes the resource. The format of this information varies according to the TYPE and CLASS of the resource record.

— **lastModTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** This shows the last modified time (create/modify/delete time) of the resource record.

— **DottedName**

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The fully qualified DNS name (FQDN), including the trailing full-stop, for the owner DNS name for this resource record.

— **Container**

- **Type:** Single
- **Description:** Identifier for the object that "contains" this resource record. It is either the name of an area OR it is a "zone id".

— **Area**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The name of the area associated with this resource record. This is computed based on the setting of the Container field, and only has a value if the resource record is in an area. If it is a zone-specific resource record, then this field has no value.

— **Zone**

- **Data Type:** DnsName
- **Read-only:** Yes
- **Description:** The names of the zone(s) that contain this resource record. This is computed based on the values of the ZoneId field, which is derived from the Container field and the associations between the areas and the server's views and/or zones.

— **ZoneId**

- **Data Type:** ZoneId



- **Read-only:** Yes
 - **Description:** The identifier of the zone(s) that contain this resource record. This is computed based on the setting of the Container field and the associations between the areas and the server's views or zones.
- **IsZoneSpecific**
- **Type:** Single
 - **Data Type:** BooleanTrueFalse
 - **Read-only:** Yes
 - **Description:** Indicates whether this resource record is specific to the zone that contains it.
- **IsDynamic**
- **Type:** Single
 - **Data Type:** BooleanTrueFalse
 - **Read-only:** Yes
 - **Description:** Indicates whether this resource record is a dynamic resource record. Dynamic resource records are stored in dynamic zones and the DNS Server is considered the authoritative source for such zones (instead of the central database).
- **Partition**
- **Type:** Single
 - **Description:** The name of the partition that contains this object.
- **Creationtime**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.
- **Creator**
- **Type:** Single
 - **Read-only:** Yes



- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— **InternalData**

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.

— **Format**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the



servers. The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.1.4.12 IncludeRecord

IPWorks supports the \$INCLUDE directive. \$INCLUDE allows inclusion in-situ of an external file containing additional directives. It is typically used to assist in maintenance of larger DNS files, for example, you can distribute the maintenance of individual zone files to clients without exposing the global parameters or other client zones to inspection. This functionality is based on the \$INCLUDE directive supported in BIND 9 and only supports masterzone in IPWorks.

To use this functionality, the IncludeRecord and IncludeFile objects must be created. IncludeRecord is used to define which masterzone uses \$INCLUDE directive; IncludeFile is used to define which file in local disk (persistence storage device, such as HD, CD, or SD) is used for included file. Each IncludeFile describes the content of included file and the alias of the file. The relation key between IncludeRecord and IncludeFile is FileAlias. This field in IncludeRecord represents which file masterzone uses.

For more details about IncludeFile, see Section 4.1.4.13 on page 105. With IncludeRecords, the generated resource records only exist in the DNS Server, which means, they do not exist in the IPWorks database.

There are some additional features that can be used to further customize the inclusion procedure, but they are not discussed here. Online help for the IncludeRecord class may be consulted.

Key Partition, Area, BaseDnsName, FileAlias

Required Partition, Area, BaseDnsName, FileAlias

— FileAlias

- **Type:** Single
- **Description:** This field represents which file masterzone uses for included file.

— ZoneId

- **Type:** Single
- **Data Type:** ZoneId
- **Read-only:** Yes
- **Description:** The IDs of the zones that contain the DNS name for this record. This is computed based on the associations between the areas and the server's views and/or zones. This is used to determine the servers where the record is used.



— **BaseDnsName**

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The base DNS name is used to determine which zone the IncludeRecord appears in. It is not necessarily a DNS name that has resource records associated with it, but it should be as close as possible to the generated DNS names so that the code that computes the zones to contain this IncludeRecord can use this name as a basis for computation.

— **Area**

- **Type:** Single
- **Description:** The name of the area that contains this object.

— **Partition**

- **Type:** Single
- **Description:** The name of the partition that contains this object.

— **Creationtime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time this object was created is based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.

— **Creator**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).



— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— **InternalData**

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.

— **Format**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the servers. The value of this field is a template of the text that should be inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.1.4.13 IncludeFile

An IncludeFile object is used to define which file in disk is used for included file.

Key	FileAlias
------------	-----------



Required	FileAlias, LoadFrom
— FileAlias	<ul style="list-style-type: none">• Type: Single• Description: This field represents which file masterzone uses for included file.
— LoadFrom	<ul style="list-style-type: none">• Type: Single• Description: This field describes the name of included file. To allow IPWorks load the content, this field must be exist in persistence storage device on storage server.
— LastLoadTime	<ul style="list-style-type: none">• Type: Single• Description: Last time the file was loaded into SS.• Read-only: Yes (available only for DNS Management)
— FileContent	<ul style="list-style-type: none">• Type: Single• Data Type: Blob• Read-only: Yes• Description: The binary content of included file.
— FileContent	<ul style="list-style-type: none">• Type: Single• Data Type: Blob• Read-only: Yes• Description: The binary content of included file.
— ExportNeeded	<ul style="list-style-type: none">• Type: Single• Data Type: BooleanTrueFalse• Gen Type: boolean• Description: This flag is set to indicate if the data for this file needs to be exported. If set to <code>true</code> it means that the central database contains data



that has not yet been exported. If it has no value (or is set to `false`), then the data in the central database is the same data that the server is providing on the live network.

— **Creationtime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is strongly recommended that GMT time be used. This field can only be set by the server.

— **Creator**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must



be specified and it is strongly recommended that GMT time be used. This field can only be set by the server.

— **InternalData**

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.

— **Format**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the server(s). The value of this field is a template of the text that should be inserted into the configuration file(s) for this object, where the XML tags embedded in the text will be replaced based on format definitions for those tags.

4.1.5

ACL

An ACL is a named access control list, or address match list that is used to specify sets of incoming clients in the configuration options that are used for controlling the server's security.

Key Partition, Name

Required Partition, Name, MatchList

— **Name**

- **Type:** Single
- **Description:** The name used to refer to the ACL.

— **MatchList**

- **Type:** Single
- **Description:** This is the list of address-matching criteria to associate with the name. It allows the specification of client addresses, networks, TSIGKeys and even refers to other ACLs. For more details see the online help for this field.



— **Server**

- **Description:** The name of the DNS server where this ACL is used.

— **AclRef**

- **Aliases:** Acl
- **Read-only:** Yes
- **Description:** The names of the acls that are referenced by this acl. This is computed from the match list settings and cannot be directly edited.

— **KeyRef**

- **Aliases:** Key
- **Read-only:** Yes
- **Description:** The names of the TSIG keys that are referenced by this acl. This is computed from the matchlist settings and cannot be directly edited.

— **Rank**

- **Type:** Single
- **Data Type:** UInt8
- **Read-only:** Yes
- **Description:** This is a numeric value from 0 through 255 that defines the relative position of this ACL to other ACL's. This is used to determine the order in which the ACL's need to be declared in the configuration files (to make sure that ACL's are always declared before they are referenced).

— **Partition**

- **Type:** Single
- **Description:** The name of the partition that contains this object.

— **Creationtime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.

— **Creator**



- **Type:** Single
- **Read-only:** Yes
- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— **InternalData**

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.

— **Format**

- **Type:** Single



- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the servers. The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.1.6 TSIGKeys

A TSIG Key is used for TSIG-based authentication.

Key Partition, Name

Required Partition, Name, Secret

— Name

- **Type:** Single
- **Description:** The name used to refer to the key.

— Algorithm

- **Type:** Single
- **Read-only:** Yes
- **Description:** The algorithm to use to generate a signature for a packet sent with this key. For IPWorks servers this is always set to HMAC-MD5.

— BitLength

- **Type:** Single
- **Data Type:** UInt16
- **Description:** The number of bits to use when generating the shared secret. The recommended value (and default) for DNS-related security is 128 bits. The value must be from 8 through 512.

— Secret

- **Type:** Single
- **Description:** The base-64 encoded string that represents the key. If a value is not specified, then one is randomly assigned.

— Server

- **Description:** The name of the DNS server where this key is used.

— Partition



- **Type:** Single
- **Description:** The name of the partition that contains this object.

— **Creationtime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.

— **Creator**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must



be specified and it is recommended that GMT time is used. This field can only be set by the server.

— InternalData

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.

— Format

- **Type:** Single
- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the servers. The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.1.7

Area

An area is similar to an OSPF area, in that it is a "virtual container" used for organizing some of the managed objects in IPWorks. An area contains all the objects (such as resource records, DNS names, addresses, and policies) that define a namespace and address-space.

Key Partition, Name

Required Partition, Name

— Name

- **Type:** Single
- **Description:** The name of the area.

— Partition

- **Type:** Single
- **Description:** The name of the partition that contains this object.

— Creationtime

- **Type:** Single



- **Read-only:** Yes
- **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.

— **Creator**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— **InternalData**

- **Type:** Single
- **Data Type:** Blob



- **Read-only:** Yes
 - **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.
- **Format**
- **Type:** Single
 - **Data Type:** Blob
 - **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the servers. The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.1.8

DnsContact

A DNS Server contact object defines the information that is necessary to contact a DNS Server. A single server can have multiple contact objects defined for it. It is also possible for a contact object to be defined for a DNS server that is not managed by IPWorks. DnsContacts can be used in the configuration of a DNS Server (when it needs to contact other servers) or in the configuration of a Monitor.

Key Partition, Name

Required Partition, Name, Address

— **Name**

- **Type:** Single
- **Description:** The name of the contact, which must be unique among all contacts.

— **Server**

- **Type:** Single
- **Description:** The name of the DNS Server, which only has a value if the DnsServer is managed by IPWorks.

— **Address**

- **Type:** Single
- **Data Type:** Address
- **Description:** The IP address that is used to contact the server.

— **Port**



- **Type:** Single
- **Data Type:** UInt16
- **Description:** The TCP/IP port that is used to contact the server.
- **TSIGKey**
 - **Description:** The name of the TSIG keys that are used to encrypt packets that are sent to the server.
- **Option**
 - **Aliases:** ConfigOption, Opt, Cfg
 - **Data Type:** DnsOption
 - **Description:** Configuration settings for this contact. These settings are used with each DNS server where the contact is configured.
- **DnsDeclarer**
 - **Description:** The names of the DNS servers that use this information to contact the server. This information is automatically added to the configuration for each of these servers.
- **DhcpDeclarer**
 - **Description:** The names of the DHCP servers that use this information to contact the server. This information is automatically added to the configuration for each of these servers.
- **MonitorDeclarer**
 - **Description:** The names of the ASDNS Monitors that use this information to contact the server. This information automatically added to the configuration for each of these monitors.
- **Config**
 - **Type:** Single
 - **Data Type:** Blob
 - **Read-only:** Yes
 - **Description:** The compiled configuration settings specific to this contact that is used when it is configured. These are determined from the Option field (and other fields) and cannot be modified directly.
- **Partition**
 - **Type:** Single
 - **Description:** The name of the partition that contains this object.



— **Creationtime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.

— **Creator**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— **InternalData**



- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.

— **Format**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the servers. The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.2 ActiveSelect DNS Objects

This section describes the ASDNS objects and their fields.

4.2.1 ASDNSSite

An ASDNSSite object is used to define a collection of nodes on the network (based on their addresses) that are configured together with ActiveSelect. The nodes in the network are grouped based on the IP addresses of the nodes and this usually reflects either the geographical or topological layout of the network.

Key Partition, Area, Name

Required Partition, Area, Name

— **Name**

- **Type:** Single
- **Description:** This is the only identity of the site.

— **Address**

- **Description:** The addresses of the nodes that are in this site. Each of the values for this field must be either an address, or a range of addresses. Ranges of addresses are specified using the network or mask length notation.



Users can use the keyword **internal** to indicate the O&M IP address of the DNS server and this O&M IP address can be used as the IP address of MonitorResource.

Example:

```
IPWorks> create asdnssite -set name=site1;
address="10.170.3.2 internal 10.0.0.2",
"10.170.23.132 internal 10.0.0.132",
"2012:121::0 internal 10.0.0.121",
"2012:122::0 internal 10.0.0.122"
```

Note: The value of “address” could contain the keyword “internal” to indicate O&M IP address of the monitored nodes. This O&M IP address is configured as the attribute **address** of the object monitorresource. This also provides a way for ASDNS to monitor a node with O&M IP address but return with traffic IP address. The IP address before the keyword: “internal” is traffic IP address which could be returned as query result. The IP address after keyword: “internal” is O&M IP address which could be assigned to the address of monitorresource and never returns as query result.

— ReturnCount

- **Type:** Single
- **Data Type:** Int16
- **Description:** When addresses from this site are being returned in response to a resolver query, this indicates the number of addresses that should be returned. If not specified, then all the addresses are returned.

— Area

- **Type:** Single
- **Description:** The name of the area that contains this object. Since the sites are based on the address space, each site must be defined within the context of a specific area. If it is omitted, the area is assumed to be the default area. If an area is specified, it must be one that exists.

— Partition

- **Type:** Single
- **Description:** The name of the partition that contains this object.

— Creationtime

- **Type:** Single
- **Read-only:** Yes



- **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.

— **Creator**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— **InternalData**

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes



- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.

— Format

- **Type:** Single
- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the servers. The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.2.2

ASDNSPolicy

An ASDNSPolicy object defines a rule for how the DNS Server resolves a query for a domain name that has ActiveSelect enabled. It represents a mapping from one or more source addresses (for a DNS resolver query) to the preferred ActiveSelect sites that should be returned for those addresses. Once the policies are defined, they can be applied to one (or more) domain names by creating ASDNSRecords for those names.

Key Partition, Area, Name

Required Partition, Area, Name, Prefer

— Name

- **Type:** Single
- **Description:** The name of the policy.

— Prefer

- **Type:** Ordered
- **Description:** The site preferences for this policy. This field is an ordered list of "prefer statements". These statements are processed in order by the ActiveSelect code when determining how to resolve a DNS query using ASDNS. The syntax is: [<source-range>] prefer <site1> [<site2> ...] [<failure-strategy>]. <failure-strategy> indicates that if all of the addresses associated with the sites in a prefer are reported as down, one of the following optional keywords is used to specify what behavior will occur:

Optional Keywords	Description
site	The resource records for all sites in the list will be returned.



Optional Keywords	Description
none	No resource records will be returned.
default	All matching resource records in the zone (including the ones not in the preferred sites) will be returned.

— **ReturnCount** (not available for DNS Management)

- **Type:** Single
- **Data Type:** Int16
- **Description:** When this policy is being used to determine the addresses to use in response to a resolver query, this indicates the number of sites who's addresses should be returned if there are no preferences.

— **SiteRef**

- **Aliases:** Site
- **Read-only:** Yes
- **Description:** The names of the sites that are referenced in the prefer statements. This is computed from the actual prefer statements and cannot be directly edited.

— **Area**

- **Type:** Single
- **Description:** The name of the area that contains this object.

Note: If the area is not specified, the default area is taken, if it is the only area available. If more than one area have been created, a prompt arises with a query to choose the area.

— **Partition**

- **Type:** Single
- **Description:** The name of the partition that contains this object.

— **Creationtime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.



— **Creator**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— **InternalData**

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.

— **Format**



- **Type:** Single
- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the servers. The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.2.3 ASDNSRecord

An ASDNSRecord object is used to enable ActiveSelect DNS for a particular DNS name and specify the policy that is used to resolve queries for that dnsname.

Key Partition, Area, Type, DnsName

Required Partition, Area, Type, DnsName, Policy

— **DnsName**

- **Type:** Single
- **Data Type:** DnsName
- **Description:** This is the dnsname that is used to enable ActiveSelect.

— **AlternateDnsName**

- **Data Type:** DnsName
- **Description:** Alternative DNS names that are considered to be aliases of this name (only for ASDNS processing). By defining these names as alternative dnsnames instead of defining separate ASDNSRecords for them, the ActiveSelect processing can combine any data it has for these names, as well as reduce the amount of computation needed, so the ActiveSelect processing is more efficient.

— **Type**

- **Type:** Single
- **Enumeration:** RrTypeAsdns
- **Description:** The resource record type that is checked for addresses to use for ActiveSelect. This must be either "A" or "AAAA". There must be at least one record of the specified type for the specified dnsname that exists when an ASDNSRecord is created.

— **Policy**

- **Type:** Single



- **Description:** The name of the ASDNS Policy that defines the dynamic preferences the server uses when applying ActiveSelect to this name. Only one ASDNSPolicy can be associated with a given dnsname and the policy must be created before the ASDNSRecord (which also requires the sites that have been referenced in the policy) is created.
- **TSIGKey**
- **Type:** Single
 - **Description:** The name of the TSIG key that is used by monitors that are reporting status or load information for the resource.
- **ZoneId**
- **Data Type:** ZoneId
 - **Read-only:** Yes
 - **Description:** The ids of the zones that contain the DNS name for this record. This is computed based on the associations between the areas and the server's views and/or zones. This is used to determine the servers where the ASDNS record is used.
- **Area**
- **Type:** Single
 - **Description:** The name of the area that contains this object.
- **Partition**
- **Type:** Single
 - **Description:** The name of the partition that contains this object.
- **Creationtime**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.
- **Creator**
- **Type:** Single
 - **Read-only:** Yes



- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— **InternalData**

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.

— **Format**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the



server(s). The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.2.4

Monitor

A Monitor object represents an ActiveSelect monitor that is running on the network. The ActiveSelect Monitor is used to track the status or load or both the information for systems on the network that are ActiveSelect enabled (these are called monitored resources). The Monitor tracks the status of the resources and reports it to the DNS servers that are authoritative for the resource's dnsnames. Those servers then use this information to apply ActiveSelect rules when resolving queries.

Key Partition, Name

Required Partition, Name

— Filename

- **Type:** Single
- **Description:** The name of the configuration file.

— Option

- **Aliases:** ConfigOption, Config, Opt, Cfg
- **Type:** Single
- **Data Type:** DnsOption
- **Description:** Configuration settings specific to this server.

— Name

- **Type:** Single
- **Data Type:** Name
- **Description:** This is a unique identifier for this server. It can be the same as the dnsname.

— Address

- **Type:** Ordered
- **Data Type:** Address
- **Description:** The addresses are used by the Server Manager when it establishes a connection with the central IPWorks database to identify the Monitor object that corresponds to that Server Manager. Connections may not be established correctly if the monitor's omitted. Multiple



addresses can be specified, the first address in the list is considered as the primary address and is used as the primary identifying address for the Monitor. When server manager is running, the address cannot be deleted but can be modified.

- **Examples:**

```
192.168.0.1  
FE80::1.2.3.4  
FE80::0102:0304  
FE80:0000:0000:0000:0000:0102:0304
```

- **DnsName**

- **Type:** Ordered
- **Data Type:** DnsName
- **Description:** The DNS names for the server. During the configuration of this server, If more than one dnsname is specified, the first dnsname in the list is used as the primary dnsname.

- **PrimaryDnsName**

- **Type:** Single
- **Data Type:** DnsName
- **Read-only:** Yes
- **Description:** The primary DNS name for the server. This is simply the first name in the list of all DNS names and is used any time the server's DNS name is needed. It cannot be set directly, to change it simply change the DnsName field.

- **PrimaryAddress**

- **Aliases:** The alternative names of a field.
- **Type:** Single
- **Data Type:** Address
- **Read-only:** Yes
- **Description:** The primary address for the server. This is simply the first address in the list of all addresses and is used any time the server's address is needed. It cannot be set directly, to change it simply change the Address field.

- **Implementation**

- **Type:** Single



- **Description:** The server software implementation.
- **Status**
- **Type:** Single
 - **Description:** The last known operational status of the server.
- **PostUpdateScript**
- **Type:** Single
 - **Description:** The name and arguments for a shell script to be run during every update operation performed on the server. The script is run after new configuration files have been exported from the Storage Server and before the server has been reloaded. If an argument is a token enclosed in braces, {token}, symbol substitution is performed on the token before the argument is passed to the script. Possible tokens are: ServerType, ServerIdentifier, ServerDirectory, StorageServerAddress, StorageServerPort, StorageServerUserName, StorageServerPassword, StorageServerPartition. Other arguments are passed directly to the script which must reside in /var/ipworks/scripts or another configured scripts directory. See the Sm.ScriptsDirectory configuration property for the Server Manager.
- **Type**
- **Type:** Single.
 - **Read-only:** Yes
 - **Description:** The type of server that is initialized when the object is created based on the storage class of the object. This is provided primarily for querying purposes.
- **ExportNeeded**
- **Type:** Single
 - **Data Type:** BooleanTrueFalse
 - **Description:** This flag is set to indicate if the data for this server needs to be exported. If set to 'true' it means that the central database contains data that has not yet been exported. If it has no value (or is set to 'false'), then the data in the central database is the same data that the server is providing on the live network.
- **Partition**
- **Type:** Single
 - **Description:** The name of the partition that contains this object.
- **Creationtime**



- **Type:** Single
- **Read-only:** Yes
- **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.

— **Creator**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— **InternalData**

- **Type:** Single



- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.

— Format

- **Type:** Single
- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the servers. The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

— Location

- **Type:** Single
- **Data Type:** Location
- **Description:** If this field is evaluated, it means this monitor is under centralized SS. The Location has two types: ProxyLocation and PointerLocation.

ProxyLocation: <IPv4Address>/PL-X

IPv4Address is the MIP_PROV_IP of the secondary SS, PL-X defines which PL is under controlled on the MIP_PROV_IP.

When updating monitor, the primary SS will transfer the monitor configuration to the secondary IPWorks, then restart ASDNS on the PL-X to take effect of the configuration.

PointerLocation: <IPv4Address2>/PL-X@<IPv4Address1>/PL-X

PointerLocation consists of two parts split by @ and using ProxyLocation type. The first part is a kind of pointer, and the second part is the pointed location, which must be an existed ProxyLocation. When updating monitor, the pointer will transfer the configuration of the pointed location to the pointer and take effect of the configuration on it.

Note: The range of X is from 3 to 12.

For example:

— ProxyLocation: 10.170.37.206/PL-3

— PointerLocation: 10.170.15.190/PL-3@10.170.37.206/PL-3



4.2.5 MonitorMethod

A MonitorMethod object defines information about how a MonitorScript is invoked. This includes information, such as which parameters to pass to the script, how they are passed and how often the script runs. This is defined as a separate object from the MonitorScript because it allows to use the same script to perform different types of monitoring.

Key Partition, Name

Required Partition, Name, Filename

— Name

- **Type:** Single
- **Description:** The name of the method.

— Type

- **Type:** Single
- **Enumeration:** MonitorType
- **Description:** This should be set to either status (the default) or load. Monitoring for status only includes up or down information when reported to the DnsServer. Monitoring for load includes a numeric measure that can be used to assess how busy the resource is.

— Filename:

- **Type:** Single
- **Description:** The name of the script that is used to perform the monitoring. This is a "MonitorScript" object that has already been defined.

— Interval:

- **Type:** Single
- **Data Type:** BindTimeValue
- **Description:** The frequency (in seconds) with which the monitor script is run to collect load information. The default value is 5 seconds.

— Threshold:

- **Type:** Single
- **Description:** The value that is to be considered as the "100% loaded" threshold for a monitored resource. If the monitor script returns a value that exceeds (or equals) the threshold value, then that resource is considered to be fully loaded. Note that this is only used when the monitor method type is LOAD.



- **Argument:**
 - **Aliases:** arg, args, arguments
 - **Type:** Ordered
 - **Description:** This defines values that are passed to the script as command-line parameters when it is executed.
- **Environment:**
 - **Aliases:** env
 - **Description:** This defines values that are passed to the script as environment variables when it is executed.
- **ProtocolConfig:**
 - **Type:** Single
 - **Data Type:** Blob
 - **Read-only:** Yes
 - **Description:** The compiled configuration settings specific to this monitor method's protocol declaration. This is determined from the Filename, Argument, and Environment fields and cannot be modified directly.
- **Declarer:**
 - **Description:** The names of the ASDNS Monitors that use this method.
- **Partition**
 - **Type:** Single
 - **Description:** The name of the partition that contains this object.
- **Creationtime**
 - **Type:** Single
 - **Read-only:** Yes
 - **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.
- **Creator**
 - **Type:** Single
 - **Read-only:** Yes



- **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— **InternalData**

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.

— **Format**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the



server(s). The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.2.6 MonitorResource

A MonitorResource object defines a resource on the network that is monitored by an ActiveSelect Monitor.

Key Partition, Monitor, Name

Required Partition, Monitor, Name, Address, ReportContact, Method

— **Monitor:**

- **Type:** Single
- **Description:** The name of the monitor that tracks the status of the resource. This object must have been created before creating the MonitorResource object.

— **Name:**

- **Type:** Single
- **Description:** The name of the resource.

— **Address:**

- **Type:** Single
- **Data Type:** Address
- **Description:** The address of the monitored resource. This is the address that is used to locate the resource records in the DNS servers that are updated with status/load information.

— **DnsName:**

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The DNS Name of the monitored resource. If not specified, then the reported status/load information is assumed by the DNS servers to apply to all resource records with the IP Address for this resource. If this IS specified, then only the resource records with this name and the resource's IP Address is updated.

— **Port:**

- **Type:** Single



- **Data Type:** UInt16
- **Description:** The TCP/IP port that is used to monitor the resource. If specified, this overrides the value defined in the monitor method associated with this resource.
- **Method:**
 - **Type:** Single
 - **Description:** The name of the monitor method that is used to collect the status or load information for this resource. This must exist before creating the MonitorResource.
- **ReportContact:**
 - **Description:** The names of the "DnsContact" objects (called the DnsContact) that define which DNS Servers receive the collected status/load information for this resource, and how it is sent. ReportContact objects must exist before creating the MonitorResource object.
- **Prerequisite:**
 - **Description:** The names of other resources that this resource's load or status depends upon. These resources must also be monitored by this monitor instance.
- **Partition**
 - **Type:** Single
 - **Description:** The name of the partition that contains this object.
- **Creationtime**
 - **Type:** Single
 - **Read-only:** Yes
 - **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.
- **Creator**
 - **Type:** Single
 - **Read-only:** Yes
 - **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.



— **Description**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).

— **LastModifiedBy**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.

— **LastModifiedTime**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified and it is recommended that GMT time is used. This field can only be set by the server.

— **InternalData**

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.

— **Format**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the servers. The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.



4.2.7 MonitorScript

A MonitorScript object represents the shell script run by a Monitor when it is trying to determine the status or load or both the information for a resource being monitored. IPWorks has two predefined MonitorScripts that can be developed or used.

The two predefined MonitorScripts includes one that uses PING to determine a resource's availability (status); it cannot measure any load information for a resource. The second script uses SNMP and can be used to determine status or load for a resource, if the measure of the load is available as an SNMP statistic.

MonitorScripts can also be customized to monitor a resource. If the script determines that the service is available, it returns an exit status of zero. If the script determines that the service is unavailable, it returns a non-zero exit status and write any error text (describing the failure condition) to standard output (stdout). If there are different types of failure conditions, these are distinguished with different (non-zero) exit status and different error text written to standard output.

If the script is used with monitoring methods to also report load, it must report this load by writing out an integer or floating point number (in ASCII) to standard output (stdout) only if the service is available (exit status of 0). The reported load is compared to the threshold (see the threshold option for the monitor statement, refer to the Configuring MonitorMethods section in [Configure DNS and ENUM](#)) to determine whether the service is overloaded or not.

Customized scripts can be written so that it accepts arguments (either on the command line, or by setting environment variables). Different monitoring methods can be used with the same script and each method can be configured to send information to the script.

Note: If the mechanism is being used where the MonitorScript is passed the IP address of the system to monitor and the resources are being monitored with IPv6 addresses, it must be ensured that the script can handle the standard IPv6 address formats.

Key	Filename
------------	----------

Required	Filename
-----------------	----------

— **Filename:**

- **Type:** Single
- **Description:** The name of the file where the script is written.

— **Contents:**

- **Type:** Single
- **Data Type:** Blob



- **Description:** The actual text of the script that is executed to collect the monitoring information.
- **Creationtime**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The time this object was created, based on the LDAPv3 "createTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must be specified, and it is recommended that GMT time is used. This field can only be set by the server.
- **Creator**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The creator of this object, based on the LDAPv3 "creatorsName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.
- **Description**
- **Type:** Single
 - **Data Type:** Blob
 - **Description:** This attribute contains a human-readable description of the object, based on the X.500 "description" attribute (RFC2256).
- **LastModifiedBy**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The last modifier of this object, based on the LDAPv3 "modifiersName" attribute (RFC2252). The value is a distinguished name. This field can only be set by the server.
- **LastModifiedTime**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The time object was last modified, based on the LDAPv3 "modifyTimestamp" attribute (RFC2252). Values are encoded as printable strings, represented as specified in X.208. The time zone must



be specified and it is recommended that GMT time is used. This field can only be set by the server.

— **InternalData**

- **Type:** Single
- **Data Type:** Blob
- **Read-only:** Yes
- **Description:** This is used for keeping track of internal data that is specific to this object. The value for this field is managed as a single string that has the same format as a Java properties file.

— **Format**

- **Type:** Single
- **Data Type:** Blob
- **Description:** This can be used to define the object-specific CONF format. The CONF format is the format that is used to configure this object in the servers. The value of this field is a template of the text that is inserted into the configuration files for this object, where the XML tags embedded in the text is replaced based on format definitions for those tags.

4.3 ENUM Objects

This section describes the ENUM objects that can be configured through IPWorks CLI.

4.3.1 AINLNPDData

An AINLNPDData object holds configuration data that applies for each ENUM number series to facilitate the AIN event message for LNP and format the response from external legacy database. The object is used in the process of the NP queries and responses.

Key ProtocolSettingName

Required ProtocolSettingName

— **ProtocolSettingName:**

- **Type:** Single
- **Description:** A user-friendly name for AIN setting, it can be set to any alphanumeric string and maximum length is 20.

— **TranslationType:**



- **Type:** Single
 - **Description:** Provides the information used in the SCCP level. If the user does not input any value, system will take 11 (LNP) as the default value. Data range is 0 - 254.
- **ServiceParameter:**
- **Type:** Single
 - **Description:** Provides the service parameter value to construct the response for external legacy database query. If operator does not offer this value, system uses the default value. The regexp parameter of the NAPTRRecord in the ENUM reply is formatted according to this parameter value and the format is compliant with RFC 4769.
 - E2U+pstn:tel (default)

For example, the reply format of the NAPTRRecord is NAPTR 10 100 "u" "E2U+pstn:tel" "!^.*\$!tel:+86-212-208-9690;npdi;rn=+86-212-208-9691!".
 - E2U+pstn:sip

For example, the reply format of the NAPTRRecord is NAPTR 10 100 "u" "E2U+pstn:sip" "!^.*\$!sip:+86-212-208-9690;npdi;rn=+86-212-208-9691@ex.com;user=phone!".
- **Domain:**
- **Type:** Single
 - **Description:** It configures the domain name that is used in the ENUM reply. It is useful only when **serviceparameter** is E2U+pstn:sip. It can be any domain name string.
- **CallingPartyId:**
- **Type:** Single
 - **Description:** Provides the DN of the calling party. Its data structure is AINDigits, and the valid count of digits for Digits part is from 3 to 15. It must be used with **chargenumber** and **jurisdictioninformation** together.
- **ChargeNumber:**
- **Type:** Single
 - **Description:** Provides the AIN of the calling party. Its data structure is AINDigits, and the valid count of digits for Digits part is from 0 to 10. It must be used with **callingpartyid** and **jurisdictioninformation** together.
- **JurisdictionInformation:**



- **Type:** Single
- **Description:** Identifies the switch of the calling party. Its maximum length is 6. It must be used with **chargenumber** and **callingpartyid** together.

— **TriggerCriteriaType:**

- **Type:** Single
- **Description:** Indicates the type of event that causes a trigger to occur. For LNP, only accepts 37 as valid value. And if user does not input any value, system will take 37 as the default value.

4.3.2

AINNode

This object holds AIN configuration data to be used by the ENUM server on calling site when generating AIN queries that are to be sent to the external SS7 database.

Key EnumServerId, AINUserId, LocalSSN, LocalSPC

Required EnumServerId, AINUserId, LocalSSN, LocalSPC, BearerCapability, NPSSwitch

— **AINUserId:**

- **Type:** Single
- **Description:** Provides a ten-digit identifier for an AIN user.

— **BearerCapability:**

- **Type:** Single
- **Description:** IPWorks shall set value of the BearerCapability field of the Info_Analyzed message. The recommended type to use is 'speech'(0).

— 0: speech (default)

— 1: f31kHzaudio

— 3: b56kbps

— 4: b64kbps

Note: 2: f7kHzaudio, 5: packetModeData, 6: multiRate are not used in AIN. For more information about this parameter, refer to GR-1299-CORE, AINGR: Switch - Service Control Point (SCP)/Adjunct Interface.

— **EnumServerId:**

- **Type:** Single



- **Description:** The identifier of the ENUM Server which this configuration will be set to. It is a primary key. The value is 1 or 2.
- **LocalSSN:**
 - **Type:** Single
 - **Description:** Provides the local subsystem number. The valid value range is 2~254.
- **LocalSPC:**
 - **Type:** Single
 - **Description:** Provides the local signaling point code. The valid value range is 0~16777215.
- **NPSwitch:**
 - **Type:** Single
 - **Description:** Indicates the NP function using this type of protocol is enabled or disabled.
1: enable
0: disable (default)

4.3.3

AIN TollFreeData

An AINTollFreeData contains AIN configuration data for each ENUM number series. The object is used in the process of the TollFree queries and responses.

Key	ProtocolSettingName
Required	ProtocolSettingName, TranslationType, ChargeNumber, ChargepartyStationType, Carrier, Lata (Local Access and Transport Area)

- **ProtocolSettingName:**
 - **Type:** Single
 - **Description:** A user-friendly name for AIN setting, it can be set to any alphanumeric string and maximum length is 20.
- **TranslationType:**
 - **Type:** Single
 - **Description:** Provides the information used in the SCCP level. Data range is 0~254



— **ServiceParameter:**

- **Type:** Single
- **Enumeration:** ServParaValue
- **Description:** Provides the service parameter value to construct the response for external legacy database query. If the operator does not offer this value, the system uses the default value. The regexp parameter of the NAPTRRecord in the ENUM reply is formatted according to this parameter value and the format is compliant with RFC 4694 and RFC 4769.

— E2U+pstn:tel (default)

For example, the reply format of the NAPTRRecord is NAPTR 10 100 "u" "E2U+pstn:tel" "!^.*\$!tel:+1-800-123-1234;cic=+1-1234!".

— E2U+pstn:sip

For example, the reply format of the NAPTRRecord is NAPTR 10 100 "u" "E2U+pstn:sip" "!^.*\$!sip:+1-800-123-1234;npdi;rn=+1-800-123-1235@ex.com;user=phone!".

— **Domain:**

- **Type:** Single
- **Description:** Configures the domain name which is used in ENUM reply. It is only useful when **serviceparameter** is E2U+pstn:sip. It could be any domain name string.

— **CallingPartyId:**

- **Type:** Single
- **Description:** Provides the DN of the calling party. The data structure is AINDigits, and the valid count of digits for Digits part is from 3 to 15.

— **ChargeNumber:**

- **Type:** Single
- **Description:** Provides the AIN of the calling party. The data structure is AINDigits, and the valid count of digits for Digits part is from 0 to 10.

— **TriggerCriteriaType:**

- **Type:** Single
- **Description:** Indicates the type of event that caused a trigger to occur.
 - 4: nap (default)



— 5: napNxx

For TollFree, the only valid values are 4 or 5.

— **ChargepartyStationType:**

- **Type:** Single
- **Description:** Indicates the calling station type used for toll free terminal. Data range is 0~99.

— **Carrier:**

- **Type:** Single
- **Description:** This parameter is sent to provide the carrier selection information and the primary carrier identification to which a call was routed. Its data structure is CarrierFormat.

— **Lata:**

- **Type:** Single
- **Description:** The data structure of Local Access and Transport Area (LATA) is AINDigits, and the valid count of digits for Digits part is from 0 to 3.

4.3.4 CountryCode

This object holds standard international country codes for transforming international number to national number before ENUM query via external legacy database.

Key ccode

Required ccode

— **ccode:**

- **Type:** Single
- **Description:** Provide Country Code, and accepts only numeric country codes without blanks.

4.3.5 DestNode

A DestNode object represents information about Logical Destinations in the IP Telephony network.

The EnumDNsched objects and EnumDN objects may be configured to point to common DestNode which provides information about the common algorithm that will be used to generate the response to the ENUM query. The simplest DestNode



type identifies a `RtgSchedule` object that identifies a list of call Servers that may be used to route the call.

Key `destNodeName`

Required `destNodeName,type`

— **destNodeName:**

- **Type:** Single
- **Description:** Name for this Logical Destination. The maximum length is 20.

— **type:**

- **Type:** Single
- **Description:** The type of this Logical Destination. The destnodes of types of Route by Location/Originating Line Identity (OLI) and Time of Day allow alternative algorithms to be selected for the call, depending on call parameters such as the originating location. If no alternative is found then the default `RtgSchedule` associated with this `DestNode` is used.
- 0: Routing Schedule - The associated routing schedule object provides the list of Call Servers that may be used to route the call.
- 1: Route by location - The associated `RouteByOrigin` class is searched for an entry that matches the originating location in the ENUM request. If found then this indicates the alternative `DestNode` that is used to determine the call routing.
- 2: Route by OLI - The associated `RouteByOrigin` class is searched for an entry that matches the Originating Line Identity in the ENUM request. If found then this indicates the alternative `DestNode` that is used to determine the call routing.
- 3: Route by OLI alias - This option allows an OLI alias to be used to route the call. If selected, the OLI in this query is used to find the OLI alias by searching in the `EnumDnRange` table using OLI as a key. The OLI alias found in this way is compared with the `RouteByOrigin` entries associated with this `DestNode`.
- 4: Time of Day - Allows calls to be routed differently depending on the time of day. The associated `RouteByTOD` objects are used to determine whether an alternative `DestNode` should be used to determine the routing.
- 5: Send to BIND - The ENUM query is passed to BIND to determine the ENUM response to be returned.
- 6: IN Trigger - This call is handled by using the Intelligent Network (IN). The routing for this call is determined by making an INAP request. This



includes the IN Service parameters associated with this DestNode, which are included in the TXT record.

- 7: NP Trigger using AIN protocol for LNP - This call is forwarded to external legacy database over AIN protocol for LNP.
- 8: NP Trigger using AIN protocol for TollFree - This call is forwarded to external legacy database over AIN protocol for TollFree.
- 9: NP Trigger using MAP protocol - This call is forwarded to the external legacy database over MAP protocol.
- 10: NP Trigger using INAP protocol - This call is forwarded to the external legacy database over INAP protocol.

— **rtgSched:**

- **Type:** Single
- **Description:** The Routing Schedule for this DestNode, which provides the list of Call Servers that may be used to route this call.

— **minDigits:**

- **Type:** Single
- **Description:** The minimum number of digits which should be signalled for this destination. May be provided for DestNode types 0 to 4.

— **maxDigits:**

- **Type:** Single
- **Description:** The maximum number of digits which should be signalled for this destination. May be provided for DestNode types 0 to 4.

— **INSvcId1:**

- **Type:** Single
- **Description:** The first IN Service ID to be used in the IN service request.

— **INSvcId2:**

- **Type:** Single
- **Description:** The second IN Service ID to be used in the IN service request.

— **INSvcId3:**

- **Type:** Single
- **Description:** The third IN Service ID to be used in the IN service request.

— **INSvcId4:**



- **Type:** Single
- **Description:** The fourth IN Service ID to be used in the IN service request.
- **propBlocking:**
 - **Type:** Single
 - **Description:** Indicates the rate at which calls to this call server should be proportionally blocked (0 to 100%). Default = 0: no calls are blocked.
- **ProtocolSettingName:**
 - **Type:** Single
 - **Description:** A user-friendly name for AIN, MAP or INAP setting. It can be set to any alphanumeric string. (Mandatory if the **type** parameter is in the range 7~10, otherwise Optional)
- **digitManipMode**
 - **Type:** Single
 - **Description:** Indicates if and how the dialled digits information in the SIP URI should be manipulated for calls associated with this DestNode.
 - 0: No Manipulation
 - 1: Insert left, delete left
 - 2: Insert left, delete right.
 - 3: Insert right, delete left.
 - 4: Insert right, delete right.
- **digitDeleteCount**
 - **Type:** Single
 - **Description:** The number of digits to delete.
- **insertDigits**
 - **Type:** Single
 - **Description:** Up to 22 digits to be inserted.

4.3.6 EnumAcl

EnumAcl stands for the ENUM Access Control List (ACL), which is a set of client source IP addresses allowed or blocked, or both, to access the specific ENUM View(s). An EnumAcl object can be used in different views and servers.



Key	AclId
Required	AclId, AclName, MatchList
— AclId:	<ul style="list-style-type: none"> • Type: Single • Description: The identifier of the ENUM ACL (1-65535). A value of 0 is reserved for future use.
— AclName:	<ul style="list-style-type: none"> • Type: Single • Description: The name of the EnumAcl. It is recommended that the name be unique.
— MatchList:	<ul style="list-style-type: none"> • Type: Single • Description: This is the list of address-matching criteria to associate with the name. It allows the specification of client addresses or networks. The following syntax is used for defining an ENUM ACL: <ul style="list-style-type: none"> — {10.0.0.1; 10.0.0.2; 12.0.0.1/24;} — Everybody has access: {any;} — Nobody has access: {none;} or { } <p>Elements can be negated with a leading exclamation mark ('!'), such as !10.0.0.1 and !12.0.0.1/24, but it is invalid for {any;}, {none;}, or { }.</p> <p>Loopback address 127.0.0.1 is also defined first if the client wants to use the loopback address to access the server.</p>

4.3.7

EnumDnRange

An EnumDnRange object represents a range of directory numbers. This object allows a destination node or a call server to be identified within the range of directory numbers. The associated objects are DestNode and CallServer. ENUM requests associated with all calls to numbers in the range are processed using the data of these associated objects.

EnumDnRange also provides NAPTRRecords for endpoints with IP connections to the network like EnumDnSched. The difference is that the EnumDnSched object contains the complete (neither sub- nor super-) set of dialed digits that identify an endpoint in the network, while EnumDnRange contains the super-set of it.

Accordingly EnumDnRange has two types of configuration: one is for NP which associates with fields destnode, callserver or olialias; the other is for NAPTRRecord,



which associates with the fields NaptrFlags, NaptrOrder, NaptrPreference, NaptrService and NaptrTxt.

An EnumDnRange object can only have one type of configuration, either for NP or for NAPTRRecord. Therefore, if an EnumDnRange object is configured with fields NaptrFlags, NaptrOrder, NaptrPreference, NaptrService, NaptrTxt, it cannot be configured with fields destnode, callserver, olialias, and vice versa.

If an EnumDnRange is configured for NAPTRRecord.

- In the CLI view, each instance of the EnumDnRange corresponds to one NAPTRRecord. Each instance has different values for NaptrFlags, NaptrOrder, NaptrPreference, NaptrService and NaptrTxt parameters. All instances with the same series URI are combined into a set. Each set has a maximum of five such instances.
- In the CLI view, the NaptrFlags, NaptrOrder, NaptrPreference, NaptrService and NaptrTxt fields are treated as part of the key of the EnumDnRange object. This means that to identify an instance of EnumDnRange on the CLI, the user must specify the value for each of these fields in addition to the series URI string (for example, 441012341234.e164.ipstelco.com or 4.3.2.1.4.3.2.1.0.1.4.4.e164.ipstelco.com), and the combination of all six values must be unique.

Key rrflag, updateLevel, viewId, enumZoneId, enumDnRange

Required enumZoneId, enumDnRange

— **enumZoneId:**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The Context (e.g. e164) and upper domains (e.g. ipstelco.com). The ID of the EnumZone to which the EnumDnRange belongs. It is generated automatically.

— **viewId:**

- **Type:** Single
- **Description:** The ID of the view with which the EnumDnRange is associated. This view must be related to the EnumZone to which the EnumDnRange belongs. This field is used to implement the split namespace for EnumDnRange.

— **enumDnRange:**

- **Type:** Single
- **Description:** The DN range in the digital form. For example, if DN range 44123 is in an EnumZone e164.ipstelco.com, it indicates that the object



provides common information for all numbers with URIs that end with `.3.2.1.4.4.e164.iptelco.com`. It is generated automatically.

— **scope**

- **Type:** Single
- **Description:** The specified number range of EnumDnRange. The format is `<Start Number>~<End Number>`. For example, an EnumDnRange `3.2.1.e164.iptelco.com` is in the EnumZone `e164.iptelco.com` and the scope is set to `3241~5233`. It indicates that the object provides common information for all numbers from `1233241` to `1235233`.

— **rrflag:**

- **Type:** Single
- **Read-only:** Yes
- **Description:** The RR flag.

— **updateLevel:**

- **Type:** Single
- **Description:** The Update Level Number.

— **destNode:**

- **Type:** Single
- **Description:** The DestNode that provides common routing information for this DN range.

— **callServer:**

- **Type:** Single
- **Description:** The CallServer for this DN range.

— **oliAlias:**

- **Type:** Single
- **Description:** A label for all Originating Line Identities (OLIs) in this DnRange. Used for routing based upon origin. One or more DnRanges can be labelled with a given alias. It is then possible to specify route by OLIalias information with DestNodes to indicate that an alternative DestNode that should be used to create the ENUM response for calls from this range of directory numbers.

— **minDigits:**

- **Type:** Single



- **Read-only:** Yes
 - **Description:** The minimum number of digits that are required to produce a valid response to the ENUM request. This allows an ENUM response to be generated with a TXT record indicating the number of digits required before it is possible to identify the unique destination for this call.
- **maxDigits:**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** The maximum number of digits that are valid for this DN range. If more digits are present then the terminating digits will be truncated before searching for possible enumDnSched entries. This avoids misrouting calls through failing to find the correct enumDnSched object.
- **propBlocking:**
- **Type:** Single
 - **Read-only:** Yes
 - **Description:** Indicates the rate at which calls to this call server should be proportionally blocked (0 to 100 percent). Default = 0: no calls are blocked.
- **naptrFlags:**
- **Type:** Single
 - **Description:** A text string denoting the type of entry. The first character, `n` or `r`, denotes the type of naptrTxt. The second character, empty or `U`, determines the value that the ENUM Server returns for the NAPTR Flags field in response. The valid values for naptrFlags are shown as follows:
 - `n`: naptrTxt is a Regular expression, and NAPTR Flags field is an empty string.
 - `nU`: naptrTxt is a Regular expression, and NAPTR Flags field is a URI.
 - `r`: naptrTxt is a Replacement string, and NAPTR Flags field is an empty string.
 - `d`: reserved for some future features.
 - `c`: reserved for some future features.
- **naptrOrder:**
- **Type:** Single



- **Description:** A 16-bit unsigned integer that indicates the order that NAPTR records should be processed, low numbers being processed before high numbers. The administrator should normally provision the same value of Order for all NAPTR resource records for a given DN.
- **naptrPreference:**
- **Type:** Single
 - **Description:** A value used to derive the value of NAPTR Preference for slot 1 depending on the type of entry in this slot. This field is NULL for an unused slot.
- **naptrService:**
- **Type:** Single
 - **Description:** The value to be returned in the NAPTR Service field for slot 1. This field is NULL for an unused slot, a Call Server entry or a DestNode entry.
- **naptrTxt:**
- **Type:** Single
 - **Description:** The text for slot 1, depending on the type of entry defined by the naptrFlags parameter:
 - If the value of naptrFlags is n or nU, this field is the regular expression that the ENUM Server returns for the NAPTR Regexp field in response.
 - If the value of naptrFlags is r, this field is the domain name that the ENUM Server returns for the NAPTR Replacement field in response.

4.3.8 EnumDnSched

An EnumDnSched object provides the entry point for routing calls to an e.164 directory number, and also provides NAPTRRecords for endpoints with IP connections to the network.

The EnumDnSched object contains the complete (neither sub- nor super-) set of dialed digits that identify an endpoint in the network.

In the CLI view, each instance of the EnumDnSched corresponds to one NAPTRRecord. Each instance has different values for NaptrFlags, NaptrOrder, NaptrPreference, NaptrService and NaptrTxt parameters. All instances with the same series URI are combined into a set. Each set has a maximum of five such instances.

In the CLI view, the NaptrFlags, NaptrOrder, NaptrPreference, NaptrService and NaptrTxt fields are treated as part of the key of the EnumDnSched object. This means that to identify an instance of EnumDnSched on the



CLI, the user must specify the value for each of these fields in addition to the EnumDn string (for example, 441012341234.e164.ipitelco.com or 4.3.2.1.4.3.2.1.0.1.4.4.e164.ipitelco.com), and the combination of all six values must be unique.

Key	updateLevel, enumZoneId, enumDn
Required	enumZoneId, enumDn, updateLevel, naptrFlags, naptrOrder, naptrPreference, naptrTxt
— enumZoneId:	
<ul style="list-style-type: none">• Type: Single• Read-only: Yes• Description: Optional: The Id of an ENUM Zone which identifies the DNS Zone of which the EnumDN associated with.	
— enumDn:	
<ul style="list-style-type: none">• Type: Single• Description: The e164 Directory Number of the object. This should be full URI, including the associated EnumZone component. The EnumZone component must match the enumzoneId if specified. The CLI supports an alternative syntax where the directory number can be specified in conventional Directory Number format, ie in reverse order without the dots.	
— updateLevel:	
<ul style="list-style-type: none">• Type: Single• Read-only: Yes• Description: The Update Level number, indicates whether this record is part of BulkProvisioning. The updateLevel is 0, indicates this record is not part of BulkProvisioning.	
— updateType:	
<ul style="list-style-type: none">• Type: Single• Read-only: Yes• Description: A number in the range 1 - 3 indicating the type of bulk provisioning update, or zero if the record is not part of a bulk provisioning update.	
— propBlocking:	
<ul style="list-style-type: none">• Type: Single	



- **Description:** Indicates the rate at which calls to this directory number should be proportionally blocked (0 to 100 percent). Default = 0: no calls are blocked
- **Txt:**
 - **Type:** Single
 - **Description:** Reserved for possible future use to hold a TXT resource record associated with the DN. The default setting is an empty string.
- **naptrFlags:**
 - **Type:** Single
 - **Description:** A text string denoting the type of entry. The first character, `n` or `r`, denotes the type of `naptrTxt`. The second character, empty or `U`, determines the value that the ENUM Server returns for the NAPTR Flags field in response. The valid values for `naptrFlags` are shown as follows:
 - `n`: `naptrTxt` is a Regular expression, and NAPTR Flags field is an empty string.
 - `nU`: `naptrTxt` is a Regular expression, and NAPTR Flags field is a URI.
 - `r`: `naptrTxt` is a Replacement string, and NAPTR Flags field is an empty string.
- **naptrOrder:**
 - **Type:** Single
 - **Description:** A 16-bit unsigned integer that indicates the order that NAPTR records should be processed, low numbers being processed before high numbers. The administrator should normally provision the same value of Order for all NAPTR resource records for a given DN.
- **naptrPreference:**
 - **Type:** Single
 - **Description:** A value used to derive the value of NAPTR Preference for slot 1 depending on the type of entry in this slot. This field is NULL for an unused slot.
- **naptrService:**
 - **Type:** Single
 - **Description:** The value to be returned in the NAPTR Service field for slot 1. This field is NULL for an unused slot, a Call Server entry or a DestNode entry.
- **naptrTxt:**



- **Type:** Single
- **Description:** The text for slot 1, depending on the type of entry defined by the NaptrFlags parameter
 - If the value of naptrFlags is n or nU, this field is the regular expression that the ENUM Server returns for the NAPTR Regexp field in response.
 - If the value of naptrFlags is r, this field is the domain name that the ENUM Server returns for the NAPTR Replacement field in response.
- **naptrFlags2:**
 - **Type:** Single
 - **Read-only:** Yes
 - **Description:** The NaptrFlags for the second slot.
- **naptrOrder2:**
 - **Type:** Single
 - **Read-only:** Yes
 - **Description:** The NaptrOrder for the second slot.
- **naptrPreference2:**
 - **Type:** Single
 - **Read-only:** Yes
 - **Description:** The NAPTR preference for the second slot.
- **naptrService2:**
 - **Type:** Single
 - **Read-only:** Yes
 - **Description:** The Naptr Service for the second slot.
- **naptrTxt2:**
 - **Type:** Single
 - **Read-only:** Yes
 - **Description:** The Naptr Text for the second slot.
- **naptrFlags3:**
 - **Type:** Single



- **Read-only:** Yes
- **Description:** The NaptrFlags for the third slot.
- **naptrOrder3:**
 - **Type:** Single
 - **Read-only:** Yes
 - **Description:** The NaptrOrder for the third slot.
- **naptrPreference3:**
 - **Type:** Single
 - **Read-only:** Yes
 - **Description:** The NAPTR preference for the third slot.
- **naptrService3:**
 - **Type:** Single
 - **Read-only:** Yes
 - **Description:** The Naptr Service for the third slot.
- **naptrTxt3:**
 - **Type:** Single
 - **Read-only:** Yes
 - **Description:** The Naptr Text for the third slot.
- **naptrFlags4:**
 - **Type:** Single
 - **Read-only:** Yes
 - **Description:** The NaptrFlags for the fourth slot.
- **naptrOrder4:**
 - **Type:** Single
 - **Read-only:** Yes
 - **Description:** The NaptrOrder for the fourth slot.
- **naptrPreference4:**
 - **Type:** Single



- **Read-only:** Yes
- **Description:** The NAPTR preference for the fourth slot.
- **naptrService4:**
 - **Type:** Single
 - **Read-only:** Yes
 - **Description:** The Naptr Service for the fourth slot.
- **naptrTxt4:**
 - **Type:** Single
 - **Read-only:** Yes
 - **Description:** The Naptr Text for the fourth slot.
- **naptrFlags5:**
 - **Type:** Single
 - **Read-only:** Yes
 - **Description:** The NaptrFlags for the fifth slot.
- **naptrOrder5:**
 - **Type:** Single
 - **Read-only:** Yes
 - **Description:** The NaptrOrder for the fifth slot.
- **naptrPreference5:**
 - **Type:** Single
 - **Read-only:** Yes
 - **Description:** The NAPTR preference for the fifth slot.
- **naptrService5:**
 - **Type:** Single
 - **Read-only:** Yes
 - **Description:** The Naptr Service for the fifth slot.
- **naptrTxt5:**
 - **Type:** Single



- **Read-only:** Yes
 - **Description:** The Naptr Text for the fifth slot.
- **TTL:**
- **Type:** Single
 - **Read-only:** Yes
 - **Data Type:** BindTimeValue
 - **Description:** The resource record 'time to live', or TTL, as specified in RFC 1035: a 32 bit signed integer that specifies the time interval that the resource record may be cached before the source of the information is again consulted. Zero values are interpreted to mean that the resource record can only be used for the transaction in progress, and should not be cached. If no value is specified, the default TTL for the zone is used.

4.3.9

EnumNSRecord

The EnumNSRecord is for future use.

Key serverID, nameserver, dnsname

Required dnsname, serverID, nameserver

— **dnsname:**

- **Type:** Single
- **Data Type:** DnsName
- **Description:** NSRecord domain name

— **serverID:**

- **Type:** Single
- **Description:** The ENUM server which the NSRecord belongs to

— **nameserver:**

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The Dns name for the NameServer that is authoritative for the zone with the specified DNS name.

— **TTL:**

- **Type:** Single



- **Data Type:** BindTimeValue
- **Description:** Time to live of this NSRecord

4.3.10 EnumServer

The EnumServer object is used to hold ENUM Server configuration data.

Key enumServerId

Required enumServerId

— **enumServerId:**

- **Type:** Single
- **Description:** The identifier of the ENUM server. The valid value is 1 or 2.

— **defaultMTU:**

- **Type:** Single
- **Description:** The size of the MTU is to be assumed if there is no OPT RR in a DNS query. Default setting is 1500 (equivalent to a maximum UDP payload of 1472 bytes).

Note: If a truncated error occurs, change the value to a larger one.

— **dnsname:**

- **Type:** Single
- **Data Type:** DnsName
- **Description:** The server name of the ENUM server.

— **defaultNaptrOrder:**

- **Type:** Single
- **Description:** The default value to use for the NAPTR Order field in UserSchedOpt. (0-255) Default = 100.

4.3.11 EnumSOARecord

The EnumSOARecord is used for DNS Negative Cache.

Key serverID, dnsname

Required dnsname, serverID, nameserver

— **dnsname:**



- **Type:** Single
 - **Data Type:** DnsName
 - **Description:** The domain name of the SOARecord
- **serverID:**
- **Type:** Single
 - **Description:** The server which the SOARecord belongs to
- **nameserver:**
- **Type:** Single
 - **Data Type:** DnsName
 - **Description:** The DNS name of the name server that is the original or primary source of data for the zone that starts with the 'owner' DNS name.
- **mailbox:**
- **Type:** Single
 - **Data Type:** MailboxDnsName
 - **Description:** The mailbox of the person responsible for this zone. It is specified in domain name form with the "@" replaced by a "." (RFC1035).
- **serial:**
- **Type:** Single
 - **Data Type:** UInt32
 - **Description:** The unsigned 32 bit version number of the original copy of the zone. This value wraps and should be compared using sequence space arithmetic (RFC1035).
- **refresh:**
- **Type:** Single
 - **Data Type:** BindTimeValue
 - **Description:** The 32 bit time interval (in seconds unless followed by another unit) before the zone should be refreshed (RFC1035).
- **retry:**
- **Type:** Single
 - **Data Type:** BindTimeValue



- **Description:** The 32 bit time interval (in seconds unless followed by another unit) that should elapse before a failed refresh should be retried (RFC1035).

— **expire:**

- **Type:** Single
- **Data Type:** BindTimeValue
- **Description:** A 32 bit time value that specifies the upper limit on the time interval (in seconds unless followed by another unit) that can elapse before the zone is no longer authoritative (RFC1035).

— **minimum:**

- **Type:** Single
- **Data Type:** BindTimeValue
- **Description:** The unsigned 32 bit minimum TTL field (in seconds unless followed by another unit) that should be exported with any resource record from this zone (RFC1035).

— **TTL:**

- **Type:** Single
- **Data Type:** BindTimeValue
- **Description:** Time to live of this SOARecord

4.3.12 EnumView

An EnumView object provides an access control mechanism for a defined set of ENUM Zones. The EnumView can also be used together with EnumDnRange to implement split namespace.

Key	ViewId
Required	ViewId, ViewName, Rank

— **ViewId:**

- **Type:** Single
- **Description:** The identifier of the ENUM View (1-65535). A value of 0 is reserved for future use.

— **ViewName:**

- **Type:** Single



- **Data Type:** Name
- **Description:** The name of the ENUMView.
- **Rank:**
 - **Type:** Single
 - **Description:** The priority order of the view (1-65535). A value of 0 is reserved for future use.

A rank has to be defined when creating an ENUM View. The rank value must be unique. The rank defines the priority of the operator defined views that are to be searched. The lower the rank value, the higher priority the view has. It is recommended to choose numbers like 100, 200, and 300 for the rank, so newly created views can have flexibility in defining the priority order.
- **AclId:**
 - **Type:** Single
 - **Description:** The id of the EnumAcl that is used to provide security for EnumZone in this EnumView. Only zero or one ENUM ACL can be defined per ENUM view. If a view has an ACL, the ACL must be created first. A view without an ACL has the default behavior of blocking all access attempts. The default setting is NULL.
- **ServerIdList:**
 - **Type:** Single
 - **Description:** The id list of the EnumServer that contains this EnumView. If there are more than one server id, all the id (integer) shall only be separated by comma, like this: 1, 2. Default setting is NULL.

4.3.13

EnumZone

The top level domains (for example, e164.ipitelco.com) hosted by the ENUM Server.

Key enumZoneId

Required enumZoneId, enumZoneName

— **enumZoneId:**

- **Type:** Single
- **Description:** The identifier of the ENUM Zone (1-65535). A value of 0 is reserved for future use.

— **enumZoneName:**



- **Type:** Single
- **Description:** This is the domain name for the ENUM Zone. The EnumZoneName is expected to take the form .e164.ip.telco.com, but is not mandatory. Any valid domain name can be used. Names in the format .6.4.e164.ip.telco.com are interpreted as a subdivision of a larger .e164 domain. The ENUM Server still expects to be provisioned with the full e.164 form of the telephone number even if this form of domain name has been used.

— **InDefaultView:**

- **Type:** Single
- **Data Type:** BooleanTrueFalse
- **Read-only:** Yes
- **Description:** Indicates whether this zone is managed by the default view. This field is read-only to operator and maintained by the system. The default setting is True.
 - True - yes
 - False - no

— **DefaultTtl**

- **Type:** Single
- **Data Type:** BindTimeValue
- **Description:** The default 'time to live' for the zone. If this parameter is not used, then it is recommended to set its default value as 0.

4.3.14

EnumZVRel

ENUM Zone View Relationship (EnumZVRel) defines the relationship between an ENUM Zone and an ENUM View.

Key ZoneId, ViewId

Required ZoneId, ViewId

— **ZoneId:**

- **Type:** Single
- **Description:** The zone id of the ENUM Zone (1-65535).

— **ViewId:**

- **Type:** Single



- **Description:** The view id of the ENUM View (1-65535).

— **Description:**

- **Type:** Single
- **Description:** Description for this ENUM Zone and View Relationship. The default setting is NULL.

4.3.15

INAPData

The INAPData object holds configuration data that applies for each ENUM number series to facilitate the INAP event message and format the response to ENUM client.

Key ProtocolSettingName

Required ProtocolSettingName , AddressName

— **ProtocolSettingName:**

- **Type:** Single
- **Description:** A user-friendly name for INAP setting, it can be set to any alphanumeric string and maximum length is 20.

— **AddressName:**

- **Type:** Single
- **Description:** A user-friendly name for INAP SCCP setting, it can be set to any alphanumeric string and maximum length is 20.

— **ServiceParameter:**

- **Type:** Single
- **Enumeration:** ServParaValue
- **Description:** Provides the service parameter value to construct the response for external legacy database query. If operator does not offer this value, system uses the default value. The reply format is compliant with RFC 4769.

- E2U+pstn:tel (default)

For example, the reply format of the NAPTRRecord is NAPTR 10 100 "u" "E2U+pstn:tel" "!^.*\$!tel:+86-212-208-9690;npdi;rn="+86-212-208-9691!".

- E2U+pstn:sip



For example, the reply format of the NAPTRRecord is NAPTR 10 100 "u" "E2U+pstn:sip" "!^.*\$!sip:+86-212-208-9690;npdi;rn="+86-212-208-9691@ex.com;user=phone!".

— **Domain:**

- **Type:** Single
- **Description:** Configures the domain name which is used in ENUM reply. It is only useful when serviceparameter is E2U+pstn:sip. It could be any domain name string.

4.3.16

INAPNode

The INAPNode object holds INAP configuration data to be used by the ENUM server on calling site when generating INAP queries that are to be sent to external SS7 database.

Key EnumServerId

Required EnumServerId, ServiceKey, LocalSSN, LocalSPC

— **ServiceKey:**

- **Type:** Single
- **Description:** Configures the service key element for Initial Detection Trigger message. The valid value should be in the range 0~2147483647.

— **InternationalFormat:**

- **Type:** Single
- **Description:** Indicates the number formats for INAP and SCCP layers (0~3).
 - 0: using national format for both INAP and SCCP layers (default)
 - 1: using national format for INAP layer while international format for SCCP layer
 - 2: using international format for INAP layer while national format for SCCP layer
 - 3: using international format for both INAP and SCCP layers

— **EnumServerId:**

- **Type:** Single
- **Description:** The identifier of the ENUM Server which this configuration will be set to. The valid value is 1 or 2.



- **LocalSSN:**
 - **Type:** Single
 - **Description:** Provides the local subsystem number. The valid value range is 2~254.
- **LocalSPC:**
 - **Type:** Single
 - **Description:** Provides the local signaling point code. The valid value range is 0~16777215.
- **nationalprefix:**
 - **Type:** Single
 - **Description:** The national prefix. It must be configured if NPDB has a special prefix for National Significant Number. The national prefix is a string and the maximum length is two.
- **NPSwitch:**
 - **Type:** Single
 - **Description:** Indicates the NP function using this type of protocol is enabled or disabled.

1: enable

0: disable (default)
- **AddressName:**
 - **Type:** Single
 - **Description:** A user-friendly name for INAP SCCP setting, it can be set to any alphanumeric string and maximum length is 20.

4.3.17

MAPData

This object holds configuration data that applies for each ENUM number series to facilitate the MAP event message and format the response to ENUM client.

Key	ProtocolSettingName
Required	ProtocolSettingName and TranslationType

— **ProtocolSettingName:**

- **Type:** Single



- **Description:** A user-friendly name for INAP setting, it can be set to any alphanumeric string and maximum length is 20.

— **TranslationType:**

- **Type:** Single
- **Description:** Provides the information used in the SCCP level. Data range is 0~254.

— **ServiceParameter:**

- **Type:** Single
- **Enumeration:** ServParaValue
- **Description:** Provides the service parameter value to construct the response for external legacy database query. If operator does not offer this value, system uses the default value.

— E2U+pstn:tel (default)

The reply format is compliant with RFC 4769. For example, the reply format of the NAPTRRecord is NAPTR 10 100 "u" "E2U+pstn:tel" "!^.*\$!tel:+86-212-208-9690;npdi;rn="+86-212-208-9691!".

— E2U+pstn:sip

Refer to **replyformat** in this object.

— **ReplyFormat:**

- **Type:** Single
- **Description:** Configures which type of format will be used in the reply when serviceparameter is set as E2U+pstn:sip.

— 1: using format one.

<MSISDN>;npdi; rn=<RN>@<sipNpDomain>;user=phone

— 2: using format two.

- If IMSI is present in ATI ack,

<MSISDN>;npdi; rn=<RN>@ <subdomain>.<MNC>.<MCC>.3gpp network.org;user=phone

- If IMSI is not present in ATI ack,

— If sipNpDomain is configured,

<MSISDN>;npdi; rn=<RN>@<sipNpDomain>;user=phone

— If sipNpDomain is not configured,



`<MSISDN>;npdi;rn=<RN>@<subdomain>;user=phone`

where:

- `<MSISDN>` is the msisdn number that is received in ATI ack MNP Info result part if present, or else the original msisdn.

Besides, if the `<MSISDN>` from ATI ack does not include the Contry Code, IPWorks will prefix `<MSISDN>` with the configured Country Code as the `<MSISDN>` in the reply.

- `<subdomain>` and `<sipNpDomain>` are subdomain and sipnpdomain in this record respectively.
- `<MCC>` and `<MNC>` are obtained from the IMSI in ATI ack MNP Info result part.
- `<RN>` is the routing number in ATI ack MNP Info result part.

For example, `NAPTR 10 100 "u" "E2U+pstn:sip" "!^.*$!sip:+86-212-208-9690;npdi;rn="+86-212-208-9691@ims.mnc001.mcc234.3gppnetwork.org;user=phone!"`

— **SubDomain:**

- **Type:** Single
- **Description:** Specifies the sub-domain of ENUM reply. It is only useful when `serviceparameter` is `E2U+pstn:sip` and `replyformat` is set to 2. It can be set to any domain name string or null. When it is set to null, the reply will not contain the sub-domain part.

— **SipNpDomain:**

- **Type:** Single
- **Description:** Specifies the domain name of ENUM reply. It is only useful when `serviceparameter` is `E2U+pstn:sip` and `replyformat` is set to 1. It could be any domain name string.

4.3.18

MAPNode

The MAPNode object holds MAP configuration data to be used by the ENUM server on calling site when generating MAP queries that are to be sent to external SS7 database.

Key EnumServerId

Required EnumServerId, GsmScfAddress, LocalSSN, LocalSPC

— **GsmScfAddress:**

- **Type:** Single



- **Description:** The gsmSCF address. It should be in international E.164 number format. The range is 3~20 digits. For more information about the structure gsmSCF, see Section 3.3.3 on page 8.

— **InternationalFormat:**

- **Type:** Single
- **Description:** Indicates the number formats for MAP and SCCP layers (0~3).
 - 0: using national format for both MAP and SCCP layers (default)
 - 1: using national format for MAP layer while international format for SCCP layer
 - 2: using international format for MAP layer while national format for SCCP layer
 - 3: using international format for both MAP and SCCP layers

Note: The calling party address of SCCP message is the same to the called party address of SCCP message. That means:

- If the value of calling party address is National, then the value of called party address is National.
- If the value of calling party address is International, then the value of called party address is International.

— **EnumServerId:**

- **Type:** Single
- **Description:** The identifier of the ENUM Server which this configuration will be set to. The valid value is 1 or 2.

— **LocalSSN:**

- **Type:** Single
- **Description:** Provides the local subsystem number. The valid value range is 2~254.

— **LocalSPC:**

- **Type:** Single
- **Description:** Provides the local signaling point code. The valid value range is 0~16777215.

— **nationalprefix:**

- **Type:** Single



- **Description:** The national prefix. It must be configured if NPDB has a special prefix for National Significant Number. The national prefix is a string and the maximum length is two.

— **NPSwitch:**

- **Type:** Single
- **Description:** Indicates the NP function using this type of protocol is enabled or disabled.
1: enable
0: disable (default)

4.3.19

EnumOperator

The `EnumOperator` object holds the operator configuration data to be used by the ENUM server.

Key: OperatorName

Required: OperatorName, OperatorMCC, OperatorMNC, and OperatorType

— **OperatorName**

- **Type:** single
- **Description:** Indicates a user-friendly name of the operator.

— **OperatorMCC:**

- **Type:** single
- **Description:** Indicates a Mobile Country Code (MCC) of the operator, specifying the specific country where the operator is locating.

— **OperatorMNC:**

- **Type:** single
- **Description:** Indicates a Mobile Network Code (MNC) of the operator, specifying the specific network where the operator belongs.

— **OperatorType:**

- **Type:** single
- **Description:** Indicates the service capability of the operator. The value of OperatorType is one of the following:
 - 0: Indicates a local operator



- 1: Indicates an external operator who is not participating in the RCSe service
- 2: Indicates an external operator who is participating in the RCSe service
- **Serviceparameter:**
 - **Type:** single
 - **Description:** Use the value of this attribute to construct the response for external legacy database query.

The value of `ServiceParameter` is either `E2U+pstn:tel` (default value) or `E2U+pstn:sip`. The constructed response format varies based on the `ServiceParameter` value in specific scenarios. For details, refer to the section [Configuring RCSe Interconnect](#) in [Configure DNS and ENUM](#).
- **Subdomain:**
 - **Type:** single
 - **Description:** Configures the subdomain of the ENUM response. This attribute value can be set to any domain name string. The default value is `ims`.

Note: Only if the value of `ServiceParameter` is set as `E2U+pstn:sip`, the attribute `Subdomain` takes effect; otherwise, the attribute `Subdomain` does not impact the function of `EnumOperator` object.

4.3.20 EnumClientRealm

The `EnumClientRealm` object is to distinguish the original eTier2 ENUM server as three categories: a local, nation, or international eTier2 server.

Key: Name

Required: LocalClients, NationalClients, and InternationalClients

— **Name:**

- **Type:** single
- **Description:** The name of the `EnumClientRealm` object. The default value is `clientrealm`.

— **LocalClients:**

- **Type:** single
- **Description:** Indicates the IP address range of local clients.

— **NationalClients:**



- **Type:** single
- **Description:** Indicates the IP address range of national clients.

— **InternationalClients:**

- **Type:** single
- **Description:** Indicates the IP address range of international clients.

Note: The IP address range of attribute `LocalClients`, `NationalClients`, or `InternationalClients` consists of one of the following specific items:

- Client IP address: such as `10.170.15.10` or `!10.170.15.10`.
 - `10.170.15.10`: Indicates a specific IP included in the Client IP address list.
 - `!10.170.15.10`: Indicates a specific IP excluded in the Client IP address list.
- Special value of IP address with only two options, either "any" or "none".
- Subnetwork: such as `10.170.0.0/16` or `!10.150.1.0/8`.
 - `10.170.0.0/16`: Indicates a specific subnetwork included in the Client IP address list.
 - `!10.150.1.0/8`: Indicates a specific subnetwork excluded in the Client IP address list.

4.3.21

SCCPAddress

The `SCCPAddress` object holds INAP configuration data to be used in SCCP layer when generating query/response.

Key: AddressName

Required: AddressName , GlobalTitleIndicator

— **AddressName:**

- **Type:** Single
- **Description:** A user-friendly name for INAP SCCP setting, it can be set to any alphanumeric string and maximum length is 20.

— **GlobalTitleIndicator:**

- **Type:** Single
- **Description:** Provides the GlobalTitleIndicator information used in the SCCP level. Data range is 0~4:



- 0: no global title included
- 1: global title includes nature of address indicator only
- 2: global title includes translation type only
- 3: global title includes translation type, numbering plan and encoding scheme
- 4: global title includes translation type, numbering plan, encoding scheme and nature of address indicator
- **TranslationType:**
 - **Type:** Single
 - **Description:** Provides the TranslationType information used in the SCCP level. Data range is 0~255.
- **SPC:**
 - **Type:** Single
 - **Description:** Provides the SPC information used in the SCCP level. Data range is 0~65535.
- **SSN:**
 - **Type:** Single
 - **Description:** Provides the SSN information used in the SCCP level. Data range is 0~255.
- **NumberingPlan:**
 - **Type:** Single
 - **Description:** Provides the NumberingPlan information used in the SCCP level. Data range is 0~15.
 - 0: unknown
 - 1: ISDN / Telephony Numbering Plan (Rec. E.164, E.163)
 - 2: Generic Numbering Plan
 - 3: Data Numbering Plan (Rec. X.121)
 - 4: Telex Numbering Plan (Rec F.69)
 - 5: Maritime Mobile Numbering Plan (Rec. E.210, E.211)
 - 6: Land Mobile Numbering Plan (Rec. E.212)
 - 7: ISDN / Mobile Numbering Plan (Rec. E.214)



- 8~13: spare
- 14: private network or network-specific numbering plan
- 15: reserved
- **NatureOfAddress:**
 - **Type:** Single
 - **Description:** Provides the NatureOfAddress information used in the SCCP level. Data range is 0~255.
 - 0: unknown
 - 1: Subscriber number
 - 2: Reserved for national use
 - 3: National significant number
 - 4: International number
 - 5~255: spare
- **Number:**
 - **Type:** Single
 - **Description:** Provides the information used in the SCCP level. Parameter for the digits of address part. The count of digits is from 1 to 18, and the valid values are: 0~9, a, b, c, *, # .
- **PointCodeIndicator:**
 - **Type:** Single
 - **Description:** Provide the Point Code Indicator information used in the SCCP level. Data range: 0~1.
 - 0: no Point Code included
 - 1: Point Code included





Reference List

- [1] Trademark Information
- [2] Glossary of Terms and Acronyms
- [3] Typographic Conventions
- [4] Command Line Interface User Guide for IPWorks SS
- [5] Configure DNS and ENUM