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YANG Model for IS-IS Protocol Implementation Conformance Statement
(PICS)
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Abstract

The YANG model in this document is to be used to query an IS-IS Protocol Implementation Conformance Statement (PICS).

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1. Overview

YANG [RFC7950] is a data definition language used to define the contents of a conceptual data store that allows networked devices to be managed using NETCONF [RFC6241]. YANG is proving relevant beyond its initial confines, as bindings to other interfaces (e.g., ReST) and encodings other than XML (e.g., JSON) are being defined. Furthermore, YANG data models can be used as the basis for implementation of other interfaces, such as CLI and programmatic APIs.

Operators may find it useful to know what aspects of a protocol are implemented by a given node in their network. Historically this information has been provided in a Protocol Implementation Conformance Statement (PICS) which is available as an offline document. (An example of PICS for IS-IS can be found in [ISO10589] Section 12.) However, there is no reason why this information could not be provided via YANG - which is what this document defines. This allows an operator to query nodes in real time as to what protocol features are supported. This in turn can assist with avoiding (or at least diagnosing) interoperability problems and/or determining when a feature can be safely deployed.

The YANG modules in this document conform to the Network Management Datastore Architecture (NMDA) [RFC8342].

1.1. Requirements Language

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119] [RFC8174].

2. Tree Diagrams

This document uses the graphical representation of data models defined in [RFC8340].

3. Design of the Model

3.1. IANA IS-IS PICS YANG Module

A new IANA registry will be created for IS-IS PICS, which maintains the list of RFCs that support IS-IS PICS.

Module `iana-isis-pics.yang` is the initial version for IS-IS PICS identity type definitions.

When a new identity is added to the "IS-IS PICS" registry, the `iana-isis-pics` YANG module is updated by IANA.

3.2. IS-IS PICS YANG Module

Module `ietf-isis-pics.yang` is a device model and designed to query a node with IS-IS PICS status.

The leaf-list of "isis-pics" lists all the supported PICS that defined in the `iana-isis-pics` module.

The container "isis-pics-mptlv" is a place holder and meant to be augmented by individual RFC PICS module with multi-part tlv support.

4. IS-IS PICS YANG Trees

4.1. IETF IS-IS PICS YANG Tree

The following figure shows the tree diagram of the ietf-isis-pics module.

```
module: ietf-isis-pics
  +--ro isis-pics
    +--ro supported-isis-pics*   identityref
    +--ro isis-pics-mptlv
```

5. IS-IS PICS YANG Modules

5.1. IANA ISIS PICS YANG Module

```
<CODE BEGINS> file "iana-isis-pics@2024-03-03.yang"
module iana-isis-pics {
  yang-version 1.1;
  namespace "urn:ietf:params:xml:ns:yang:iana-isis-pics";
  prefix iana-isis-pics;
```

```
  organization
    "IANA";
  contact
    "Internet Assigned Numbers Authority
```

```
    Postal: ICANN
           12025 Waterfront Drive, Suite 300
           Los Angeles, CA 90094-2536
           United States of America
    Tel:    +1 310 301 5800
    <mailto:iana@iana.org>;
```

description

"The YANG module defines the identities for IS-IS Protocol Implementation Conformance Statement (PICS).

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This version of this YANG module is part of RFC XXXX
(<https://www.rfc-editor.org/info/rfcXXXX>); see the RFC itself
for full legal notices.";

```
revision 2025-05-05 {
  description
    "Initial Version";
  reference
    "RFC XXXX: YANG Data Model for IS-IS PICS.";
}

identity isis-pics {
  description
    "This identity is used as a base for all ISIS pics defined
    in the 'IS-IS PICS' registry.";
}

}
<CODE ENDS>
```

5.2. IS-IS PICS Module

```
<CODE BEGINS> file "ietf-isis-pics@2025-05-05.yang"
module ietf-isis-pics {
  yang-version 1.1;
  namespace "urn:ietf:params:xml:ns:yang:ietf-isis-pics";
  prefix isis-pics;

  import iana-isis-pics {
    prefix "iana-isis-pics";
  }

  organization
    "IETF LSR - Link State Routing Working Group";
  contact
    "WG Web:  <http://datatracker.ietf.org/wg/lsr>
    WG List:  <mailto:lsr@ietf.org>

    Author:   Yingzhen Qu
              <yingzhen.ietf@gmail.com>
    Author:   Les Ginsberg
              <mailto:ginsberg@cisco.com>
    Author:   Tony Przygienda
              <mailto:prz@juniper.net>
```

Author: Bruno Decraene
<<mailto:bruno.decraene@orange.com>>
Author: Yongqing Zhu
<<mailto:zhuyq8@chinatelecom.cn>>;

description

"The YANG module is used to query an IS-IS implementation for Protocol Implementation Conformance Statement (PICS).

This YANG model conforms to the Network Management Datastore Architecture (NMDA) as described in RFC 8342.

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This version of this YANG module is part of RFC XXXX (<https://www.rfc-editor.org/info/rfcXXXX>); see the RFC itself for full legal notices."

reference

"RFC XXXX: YANG Data Model for IS-IS PICS";

revision 2025-05-05 {

description

"Initial Version";

reference

"RFC XXXX: YANG Data Model for IS-IS PICS.";

}

typedef support {

type boolean;

default "false";

description

"When set to True, it means a feature or definition is supported/implemented.";

}

container isis-pics {

config false;

description

"IS-IS Protocol Implementation Conformance Statement (PICS).";

```
leaf-list supported-isis-pics {
  type identityref {
    base iana-isis-pics:isis-pics;
  }
  description
    "List of supported isis pics.";
}

container isis-pics-mptlv {

  description
    "IS-IS Protocol Implementation Conformance Statement (PICS)
    for RFC xxxx: Multi-part TLVs in IS-IS. This container is
    meant to be augmented by RFC PICS module where a TLV is
    defined.";
}
}
}
<CODE ENDS>
```

6. Security Considerations

The YANG modules defined in this document are designed to be accessed via YANG-based management protocols, such as NETCONF [RFC6241] and RESTCONF [RFC8040]. These protocols have to use a secure transport layer (e.g., SSH [RFC4252], TLS [RFC8446], and QUIC [RFC9000]) and have to use mutual authentication.

The Network Configuration Access Control Model (NACM) [RFC8341] provides the means to restrict access for particular NETCONF or RESTCONF users to a preconfigured subset of all available NETCONF or RESTCONF protocol operations and content.

Some of the readable data nodes in the ietf-isis-pics.yang module may be considered sensitive or vulnerable in some network environments. It is thus important to control read access (e.g., via get, get-config, or notification) to these data nodes.

7. IANA Considerations

7.1. Registering YANG Modules

This document registers URIs in the IETF XML registry as defined in [RFC3688]. The following registrations are requested to be made:

```
URI: urn:ietf:params:xml:ns:yang:iana-isis-pics
Registrant Contact: IANA.
XML: N/A, the requested URI is an XML namespace.
```

URI: urn:ietf:params:xml:ns:yang:ietf-isis-pics
Registrant Contact: The IESG.
XML: N/A, the requested URI is an XML namespace.

This document registers the following two YANG module in the "YANG Module Names" registry [RFC6020].

name: iana-isis-pics
namespace: urn:ietf:params:xml:ns:yang:iana-isis-pics
prefix: iana-isis-pics
reference: RFC XXXX

name: ietf-isis-pics
namespace: urn:ietf:params:xml:ns:yang:ietf-isis-pics
prefix: isis-pics
reference: RFC XXXX

7.2. IANA ISIS-PICS Module

This document defines the initial version of the IANA-maintained iana-isis-pics YANG module.

The document requests IANA to create a "IS-IS PICS" registry, and iana-isis-pics YANG module is intended to reflect the the registry.

When a IS-IS PICS moduel is published, it MUST define how a new "identity" statement should be added to the iana-isis-pics module. The following guidlines should be followed.

The name of the "identity" is "isis-pics-" plus the lowercase of the RFC name abbreviation. The "identity" statement should have the following substatements defined:

"base": contains the value of "isis-pics".
"description": contains "The identity for IS-IS PICS support of xxxx.", replace the "xxxx" with the RFC information.
"reference": the corresponding RFC information.

When the iana-isis-pis YANG module is updated, a new "revision" statement must be added in from of the existing revision statements.

8. Acknowledgements

The YANG model was developed using the suite of YANG tools written and maintained by numerous authors.

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