

Network Inventory YANG
Internet-Draft
Intended status: Standards Track
Expires: 1 September 2026

B. Wu
Huawei
S. Belotti
Nokia
J.-F. Bouquier
Vodafone
F. Peruzzini
FiberCop
P. Bedard
Cisco
28 February 2026

A YANG Data Model for Network Inventory Location
draft-ietf-ivy-network-inventory-location-05

Abstract

This document defines a YANG data model for Network Inventory location (e.g., site, room, rack, geo-location data), which provides location information with different granularity levels for inventoried network elements.

Accurate location information is useful for network planning, deployment, and maintenance. However, such information cannot be obtained or verified from the Network Elements themselves. This document defines a location model for network inventory that extends the base inventory with comprehensive location data.

Discussion Venues

This note is to be removed before publishing as an RFC.

Discussion of this document takes place on the Network Inventory YANG Working Group mailing list (inventory-yang@ietf.org), which is archived at <https://mailarchive.ietf.org/arch/browse/inventory-yang/>.

Source for this draft and an issue tracker can be found at <https://github.com/ietf-ivy-wg/network-inventory-location>.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at <https://datatracker.ietf.org/drafts/current/>.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on 1 September 2026.

Copyright Notice

Copyright (c) 2026 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to BCP 78 and the IETF Trust's Legal Provisions Relating to IETF Documents (<https://trustee.ietf.org/license-info>) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Revised BSD License text as described in Section 4.e of the Trust Legal Provisions and are provided without warranty as described in the Revised BSD License.

Table of Contents

1. Introduction	3
1.1. Editorial Note (To be removed by RFC Editor)	3
1.2. Terminology and Notations	4
2. Hierarchical Locations of Network Inventory	4
3. Rack	5
4. Network Inventory Location Tree	7
5. YANG Data model for Network Inventory Location	9
6. Operational Considerations	16
7. Security Considerations	17
8. IANA Considerations	18
9. References	18
9.1. Normative References	18
9.2. Informative References	19
Appendix A. Examples	20
A.1. Non-Rack Deployment: Access Point	20
A.2. Distributed Multi-Chassis Network Element	22
Acknowledgments	25
Contributors	25
Authors' Addresses	25

1. Introduction

NEs can be grouped by location to provide more information for network planning, deployment, and maintenance (e.g., easily locate problematic NEs, optimize network resources, or help planning forecasts). The location can reflect outdoor or indoor information. An indoor location may be represented as a building, room, or other similar organizational structures. Outdoor locations can be walls, poles, or other mount places.

The information about sites, equipment rooms, and other more precise locations is critical, but it cannot be automatically populated and retrieved from network elements (NEs). Instead, it is usually configured manually.

The Network Inventory location model is to record physical locations, such as sites, building, equipment rooms, racks, and so on. Additionally, it includes provisions for physical addresses or geo-location data (geographic coordinates). The location model augments the base network inventory [I-D.ietf-ivy-network-inventory-yang] to enrich NEs with location information.

The Network Inventory location model is classified as a network model (Section 3.5.1 of [I-D.ietf-netmod-rfc8407bis]).

The YANG data model in this document conforms to the Network Management Datastore Architecture (NMDA) defined in [RFC8342].

Note: The NMDA design needs to be revisited once the module is stable per (Section 4.23.2 of [I-D.ietf-netmod-rfc8407bis]).

1.1. Editorial Note (To be removed by RFC Editor)

Note to the RFC Editor: This section is to be removed prior to publication.

This document contains placeholder values that need to be replaced with finalized values at the time of publication. This note summarizes all of the substitutions that are needed.

Please apply the following replacements:

- * XXXX --> the assigned RFC number for this document
- * AAAA --> the assigned RFC number for
[I-D.ietf-ivy-network-inventory-yang]

1.2. Terminology and Notations

The following terms are defined in [RFC7950] and are not redefined here:

- * client
- * server
- * augment
- * data model
- * data node The following terms are defined in [RFC6241] and are not redefined here:
- * configuration data
- * state data The tree diagram used in this document follows the notation defined in [RFC8340].

Also, this document uses terms defined in [I-D.ietf-ivy-network-inventory-yang].

2. Hierarchical Locations of Network Inventory

The "location" list is generalized to support a variety of geographic location, such as sites, rooms, buildings.

A site represents a general geographic location to group a set of NEs and corresponding inventory components. NEs, racks, equipment rooms, and buildings can be grouped within a site.

A room is a facility, a space for network elements and other equipment (such as servers, storage) with power supply systems, air conditioning system, etc.

Locations can be nested to form a hierarchy. For example, buildings may be within a site, and a room may be within a building.

The "location-type" is defined as a YANG identity to identify the type of an inventory location, which may be site, equipment room, building, etc.

```
+--ro locations
  +--ro location* [id]
    |   +--ro id                string
    |   +--ro uuid?            yang:uuid
    |   +--ro name?            string
    |   +--ro alias?           string
    |   +--ro description?     string
    |   +--ro type?            string
    |   +--ro parent?          -> ../../location/id
    |   +--ro timestamp?       yang:date-and-time
    |   +--ro valid-until?     yang:date-and-time
    |   +--ro physical-address
    |   |   ...
    |   +--ro geo-location
    |   |   ...
    |   +--ro contained-chassis* [chassis-id]
    |   |   ...
```

Figure 1: YANG Subtree of Location

3. Rack

"racks" represent physical equipment racks in which NEs can be installed, which facilitate device maintenance. Through "rack-location", each rack can be assigned to a site or a specific location within a site, such as an equipment room.

Each rack is assigned a unique ID and a name in the context of a facility, e.g. a site. A rack may have some specific attributes, such as appearance-related attributes and electricity-related attributes. The height, depth and width are described by Figure 2 (please consider that the door of the rack is facing the user).

Note: Further discussion is needed to decide whether to separate "racks" from the list of "location".

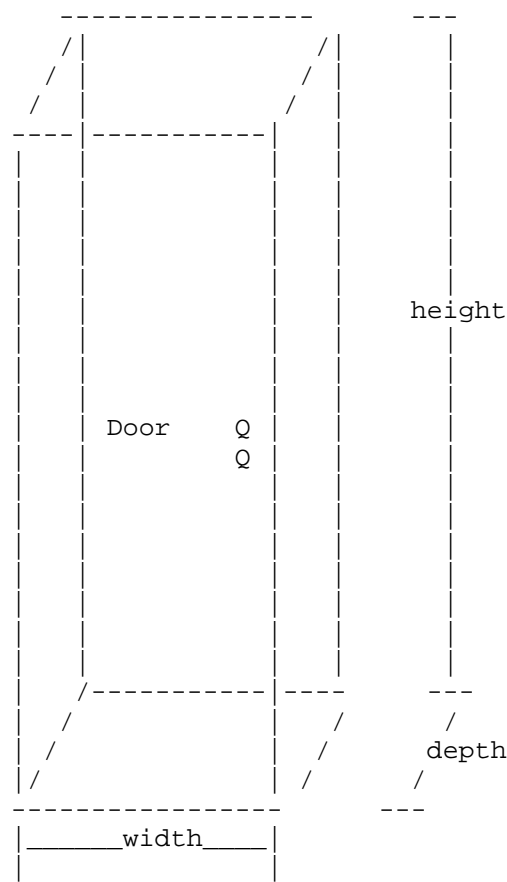


Figure 2: Height, Width and Depth of Rack

The rack attributes include:

```

+--ro racks
  +--ro rack* [id]
    +--ro id string
    +--ro uuid? yang:uuid
    +--ro name? string
    +--ro alias? string
    +--ro description? string
    +--ro rack-location
      | ...
    +--ro height? uint16
    +--ro width? uint16
    +--ro depth? uint16
    +--ro max-voltage? uint16
    +--ro max-allocated-power? uint16
    +--ro contained-chassis* [relative-position]
      | ...
    +--ro timestamp? yang:date-and-time
    +--ro valid-until? yang:date-and-time

```

Figure 3: YANG Subtree of Rack

Max-voltage: the maximum voltage supported by the rack.

4. Network Inventory Location Tree

Figure 4 provides an overview of the data model for "ietf-ni-location" module.

```

module: ietf-ni-location

augment /nwi:network-inventory:
  +--ro locations
    +--ro location* [id]
      | +--ro id string
      | +--ro uuid? yang:uuid
      | +--ro name? string
      | +--ro alias? string
      | +--ro description? string
      | +--ro type? string
      | +--ro parent? -> ../../location/id
      | +--ro timestamp? yang:date-and-time
      | +--ro valid-until? yang:date-and-time
      | +--ro physical-address
      | | +--ro address? string
      | | +--ro postal-code? string
      | | +--ro state? string
      | | +--ro city? string
      | | +--ro country-code? string

```

```

+--ro geo-location
|   +--ro reference-frame
|   |   +--ro alternate-system?    string
|   |   |       {alternate-systems}?
|   |   +--ro astronomical-body?  string
|   |   +--ro geodetic-system
|   |       +--ro geodetic-datum?    string
|   |       +--ro coord-accuracy?   decimal64
|   |       +--ro height-accuracy?  decimal64
|   +--ro (location)?
|   |   +--:(ellipsoid)
|   |   |   +--ro latitude?        decimal64
|   |   |   +--ro longitude?       decimal64
|   |   |   +--ro height?          decimal64
|   |   +--:(cartesian)
|   |   |   +--ro x?                decimal64
|   |   |   +--ro y?                decimal64
|   |   |   +--ro z?                decimal64
|   +--ro velocity
|   |   +--ro v-north?              decimal64
|   |   +--ro v-east?               decimal64
|   |   +--ro v-up?                 decimal64
|   +--ro timestamp?                yang:date-and-time
|   +--ro valid-until?              yang:date-and-time
+--ro contained-chassis* [chassis-id]
|   +--ro chassis-id                uint32
|   +--ro ne-ref?                    leafref
|   +--ro component-ref?             leafref
+--ro racks
|   +--ro rack* [id]
|   |   +--ro id                    string
|   |   +--ro uuid?                  yang:uuid
|   |   +--ro name?                  string
|   |   +--ro alias?                  string
|   |   +--ro description?            string
|   |   +--ro rack-location
|   |   |   +--ro location-ref?      ni-location-ref
|   |   |   +--ro row-number?        uint32
|   |   |   +--ro column-number?     uint32
|   |   +--ro height?                uint16
|   |   +--ro width?                 uint16
|   |   +--ro depth?                 uint16
|   |   +--ro max-voltage?            uint16
|   |   +--ro max-allocated-power?    uint16
|   |   +--ro contained-chassis* [relative-position]
|   |   |   +--ro relative-position  uint8
|   |   |   +--ro ne-ref?             leafref
|   |   |   +--ro component-ref?      leafref

```


++ro timestamp?	yang:date-and-time
++ro valid-until?	yang:date-and-time

Figure 4: Network Inventory Location Tree Structure

5. YANG Data model for Network Inventory Location

The "ietf-ni-location" module uses types defined in [RFC9179], [I-D.ietf-ivy-network-inventory-yang].

```
<CODE BEGINS> file "ietf-ni-location@2026-02-28.yang"
module ietf-ni-location {
  yang-version 1.1;
  namespace "urn:ietf:params:xml:ns:yang:ietf-ni-location";
  prefix nil;

  import ietf-yang-types {
    prefix yang;
    reference
      "RFC 6991: Common YANG Data Types";
  }
  import ietf-network-inventory {
    prefix nwi;
    reference
      "RFC9179: A YANG Data Model for Network Inventory";
  }
  import ietf-geo-location {
    prefix geo;
    reference
      "RFC 9179: A YANG Grouping for Geographic Locations";
  }

  organization
    "IETF Network Inventory YANG (ivy) Working Group";
  contact
    "WG Web:  <https://datatracker.ietf.org/wg/ivy>
     WG List:  <mailto:inventory-yang@ietf.org>

     Editor: Bo Wu
              <lane.wubo@huawei.com>
     Editor: Sergio Belotti
              <sergio.belotti@nokia.com>
     Editor: Jean-Francois Bouquier
              <jeff.bouquier@vodafone.com>
     Editor: Fabio Peruzzini
              <fabio.peruzzini@telecomitalia.it>
     Editor: Phil Bedard
              <phbedard@cisco.com>";
```

```
description
  "This YANG module defines a model for Network Inventory
  location.

  Copyright (c) 2026 IETF Trust and the persons
  identified as authors of the code. All rights reserved.

  Redistribution and use in source and binary forms, with or
  without modification, is permitted pursuant to, and subject
  to the license terms contained in, the Revised BSD License
  set forth in Section 4.c of the IETF Trust's Legal Provisions
  Relating to IETF Documents
  (https://trustee.ietf.org/license-info).

  This version of this YANG module is part of RFC XXXX; see
  the RFC itself for full legal notices.";

revision 2026-02-28 {
  description
    "Initial version";
  reference
    "RFC XXXX: A YANG Data Model for Network Inventory location.";
    //RFC Editor: Please replace XXXX with actual RFC number,
    //update date information and remove this note
}

/* Identities */
/* Typedef */

typedef ni-location-ref {
  type leafref {
    path "/nwi:network-inventory/nil:locations/nil:location"
      + "/nil:id";
  }
  description
    "This type is used by data models that need to reference
    network inventory location.";
}

/* Grouping */

grouping physical-address {
  description
    "Grouping for physical address information.";
  container physical-address {
    description
      "Top-level container for the physical address.";
    leaf address {
```

```
    type string;
    description
        "Specifies an address (number and street).";
}
leaf postal-code {
    type string;
    description
        "Specifies a postal code.";
}
leaf state {
    type string;
    description
        "Specifies a state. This leaf can also be
        used to describe a region for a country that
        does not have states.";
}
leaf city {
    type string;
    description
        "Specifies a city.";
}
leaf country-code {
    type string {
        pattern '[A-Z]{2}';
    }
    description
        "Specifies a country.
        Expressed as ISO ALPHA-2 code.";
}
}
}

grouping locations {
    description
        "Grouping for locations.";
    container locations {
        config false;
        description
            "Container for the location information.";
        list location {
            key "id";
            description
                "List of locations within the network.";
            leaf id {
                type string;
                description
                    "An identifier of the location.";
            }
        }
    }
}
```

```
uses nwi:basic-common-entity-attributes;
leaf type {
  type string;
  description
    "The type of network inventory location, e.g.
    equipment room, building, or site.
    This allows operators to flexibly define custom location
    types (e.g., 'pole', 'roof', 'floor') based on their
    specific network scenarios without requiring model
    extensions. String-based types enable dynamic adaptation
    to heterogeneous organizational naming conventions.";
}
leaf parent {
  type leafref {
    path "../..../location/id";
  }
  description
    "The identifier of the location that physically contains
    this location.";
}
leaf timestamp {
  type yang:date-and-time;
  description
    "Timestamp when the location was recorded.";
}
leaf valid-until {
  type yang:date-and-time;
  description
    "The timestamp for which this location is valid until.
    If unspecified, the location has no specific
    expiration time.";
}
uses physical-address;
uses geo:geo-location;
list contained-chassis {
  key "chassis-id";
  description
    "Chassis directly deployed in this location without rack.
    Also used for distributed chassis components that are
    logically part of a network element but physically
    located.";
  leaf chassis-id {
    type uint32;
    description
      "Unique identifier for this chassis instance in the
      location.";
  }
  leaf ne-ref {
```

```

    type leafref {
      path "/nwi:network-inventory/nwi:network-elements"
        + "/nwi:network-element/nwi:ne-id";
    }
    description
      "Reference to the network element this chassis
       belongs to. Multiple chassis entries may reference
       the same ne-ref for distributed systems.";
  }
  leaf component-ref {
    type leafref {
      path
        "/nwi:network-inventory/nwi:network-elements"
        + "/nwi:network-element[nwi:ne-id=current()/../ne-ref]"
        + "/nwi:components/nwi:component/nwi:component-id";
    }
    description
      "Reference to the specific chassis within the
       network element.";
  }
}
}
uses racks;
}

grouping racks {
  description
    "Grouping for rack attributes.";
  container racks {
    description
      "Top-level container for the list of racks.";
    list rack {
      key "id";
      description
        "List of racks within the inventory (e.g., in an
         equipment room).";
      leaf id {
        type string;
        description
          "An identifier that uniquely identifies the rack.";
      }
      uses nwi:basic-common-entity-attributes;
      container rack-location {
        description
          "The location information of the rack, which comprises
           the location reference, row number, and column number.";
        leaf location-ref {

```

```
    type ni-location-ref;
    description
        "Reference to the location where this rack is placed.";
}
leaf row-number {
    type uint32;
    description
        "Identifies the row within the location where
        the rack is located.";
}
leaf column-number {
    type uint32;
    description
        "Identifies the column within the location where
        the rack is located.";
}
}
leaf height {
    type uint16;
    units "millimeter";
    description
        "Rack height.";
}
leaf width {
    type uint16;
    units "millimeter";
    description
        "Rack width.";
}
leaf depth {
    type uint16;
    units "millimeter";
    description
        "Rack depth.";
}
leaf max-voltage {
    type uint16;
    units "volt";
    description
        "The maximum voltage supported by the rack.";
}
leaf max-allocated-power {
    type uint16;
    units "watts";
    description
        "The maximum allocated power for the rack.";
}
list contained-chassis {
```

```

    key "relative-position";
    description
      "The list of chassis within a rack.";
    leaf relative-position {
      type uint8;
      description
        "Relative position (e.g., U-slot) of chassis within
        the rack.";
    }
    leaf ne-ref {
      type leafref {
        path "/nwi:network-inventory/nwi:network-elements"
          + "/nwi:network-element/nwi:ne-id";
      }
      description
        "Reference to the network element containing
        the chassis component.";
    }
    leaf component-ref {
      type leafref {
        path "/nwi:network-inventory/nwi:network-elements"
          + "/nwi:network-element[nwi:ne-id=current()/.."
          + "/ne-ref]/nwi:components/nwi:component"
          + "/nwi:component-id";
      }
      description
        "The reference to the chassis component within
        the network element and contained by the rack.";
    }
  }
  leaf timestamp {
    type yang:date-and-time;
    description
      "Timestamp when the rack information was recorded.";
  }
  leaf valid-until {
    type yang:date-and-time;
    description
      "The timestamp for which this rack is valid until.
      If unspecified, the rack has no specific
      expiration time.";
  }
}
}
}

augment "/nwi:network-inventory" {
  description

```

```
        "Provides location information for network inventory.";
    uses locations;
}
}
<CODE ENDS>
```

6. Operational Considerations

This model serves as a complement to the base inventory, providing a read-only perspective of network inventory location information known to the controller. It reports the physical locations of network elements and components installed in the network, enabling queries for site, rack, and other location-related information associated with network elements and components.

When used in brownfield scenarios, it is worth noting that existing deployments are based on proprietary inventory OSS solutions, and the migration path is highly dependent on the specific proprietary implementation.

The model is designed based on the controller maintaining authoritative location data through automated tooling, while OSS systems consume this data as read-only operational state. Sources of controller location data may include RFID tooling, geolocation services, as well as manual entry via controller interfaces.

As this data is read-only, the controller does not support OSS modification of controller location records.

OSS systems and other management applications obtain location information via standard YANG retrieval operations (NETCONF, RESTCONF), such as querying network elements associated with a specific site or rack.

In large-scale inventories containing numerous network elements and components, querying location associations can impose a load on the server. To optimize retrieval and avoid overwhelming the server, mechanisms such as RESTCONF or NETCONF pagination should be utilized for queries involving large result sets.

Data quality is indicated through timestamps recording the last update time, as well as an optional expiration time for location validity.

Before using a location for field dispatch or planning, verification is required to ensure at least one of physical-address or geo-location is present, and that the valid-until leaf is either not present or indicates a future time. Once the valid-until time has passed, the location MUST be considered stale and MUST NOT be used for operational purposes.

A parallel "location-planning" container (read-write) may be introduced in future revisions to support intent-based configuration, where OSS provides planning-level location targets. This is outside the scope of the current document.

7. Security Considerations

This section uses the template described in Section 3.7 of [I-D.ietf-netmod-rfc8407bis].

The "ietf-ni-location" YANG module defines a data model that is designed to be accessed via YANG-based management protocols, such as NETCONF [RFC6241] or RESTCONF [RFC8040]. These protocols have to use a secure transport layer (e.g., SSH [RFC6242], 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.

There are a number of data nodes defined in this YANG module that are writable/creatable/deletable (i.e., config true, which is the default). All writable data nodes are likely to be reasonably sensitive or vulnerable in some network environments. Write operations (e.g., edit-config) and delete operations to these data nodes without proper protection or authentication can have a negative effect on network operations. The following subtrees and data nodes have particular sensitivities/vulnerabilities:

'locations': The list may be used to track the set of network elements.

Some of the readable data nodes in this 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. Specifically, the following subtrees and data nodes have particular sensitivities/vulnerabilities:

Since this module identifies locations, authors using this module SHOULD consider any privacy issues that may arise when the data is readable (e.g., customer device locations, etc).

8. IANA Considerations

IANA is requested to register the following URI in the "ns" subregistry within the "IETF XML Registry" [RFC3688]:

URI: urn:ietf:params:xml:ns:yang:ietf-ni-location

Registrant Contact: The IESG.

XML: N/A; the requested URI is an XML namespace.

IANA is requested to register the following YANG module in the "YANG Module Names" subregistry [RFC6020] within the "YANG Parameters" registry.

Name: ietf-ni-location

Maintained by IANA? N

Namespace: urn:ietf:params:xml:ns:yang:ietf-ni-location

Prefix: nil

Reference: RFC XXXX

9. References

9.1. Normative References

[I-D.ietf-ivy-network-inventory-yang]

Yu, C., Belotti, S., Bouquier, J., Peruzzini, F., and P. Bedard, "A Base YANG Data Model for Network Inventory", Work in Progress, Internet-Draft, draft-ietf-ivy-network-inventory-yang-14, 5 February 2026, <<https://datatracker.ietf.org/doc/html/draft-ietf-ivy-network-inventory-yang-14>>.

[RFC3688] Mealling, M., "The IETF XML Registry", BCP 81, RFC 3688, DOI 10.17487/RFC3688, January 2004, <<https://www.rfc-editor.org/rfc/rfc3688>>.

[RFC6020] Bjorklund, M., Ed., "YANG - A Data Modeling Language for the Network Configuration Protocol (NETCONF)", RFC 6020, DOI 10.17487/RFC6020, October 2010, <<https://www.rfc-editor.org/rfc/rfc6020>>.

[RFC6241] Enns, R., Ed., Bjorklund, M., Ed., Schoenwaelder, J., Ed., and A. Bierman, Ed., "Network Configuration Protocol (NETCONF)", RFC 6241, DOI 10.17487/RFC6241, June 2011, <<https://www.rfc-editor.org/rfc/rfc6241>>.

- [RFC6242] Wasserman, M., "Using the NETCONF Protocol over Secure Shell (SSH)", RFC 6242, DOI 10.17487/RFC6242, June 2011, <<https://www.rfc-editor.org/rfc/rfc6242>>.
- [RFC7950] Bjorklund, M., Ed., "The YANG 1.1 Data Modeling Language", RFC 7950, DOI 10.17487/RFC7950, August 2016, <<https://www.rfc-editor.org/rfc/rfc7950>>.
- [RFC8040] Bierman, A., Bjorklund, M., and K. Watsen, "RESTCONF Protocol", RFC 8040, DOI 10.17487/RFC8040, January 2017, <<https://www.rfc-editor.org/rfc/rfc8040>>.
- [RFC8341] Bierman, A. and M. Bjorklund, "Network Configuration Access Control Model", STD 91, RFC 8341, DOI 10.17487/RFC8341, March 2018, <<https://www.rfc-editor.org/rfc/rfc8341>>.
- [RFC8342] Bjorklund, M., Schoenwaelder, J., Shafer, P., Watsen, K., and R. Wilton, "Network Management Datastore Architecture (NMDA)", RFC 8342, DOI 10.17487/RFC8342, March 2018, <<https://www.rfc-editor.org/rfc/rfc8342>>.
- [RFC8446] Rescorla, E., "The Transport Layer Security (TLS) Protocol Version 1.3", RFC 8446, DOI 10.17487/RFC8446, August 2018, <<https://www.rfc-editor.org/rfc/rfc8446>>.
- [RFC9000] Iyengar, J., Ed. and M. Thomson, Ed., "QUIC: A UDP-Based Multiplexed and Secure Transport", RFC 9000, DOI 10.17487/RFC9000, May 2021, <<https://www.rfc-editor.org/rfc/rfc9000>>.
- [RFC9179] Hopps, C., "A YANG Grouping for Geographic Locations", RFC 9179, DOI 10.17487/RFC9179, February 2022, <<https://www.rfc-editor.org/rfc/rfc9179>>.

9.2. Informative References

- [I-D.ietf-ccamp-network-inventory-yang]
Yu, C., Belotti, S., Bouquier, J., Peruzzini, F., and P. Bedard, "A YANG Data Model for Network Hardware Inventory", Work in Progress, Internet-Draft, draft-ietf-ccamp-network-inventory-yang-02, 9 July 2023, <<https://datatracker.ietf.org/doc/html/draft-ietf-ccamp-network-inventory-yang-02>>.
- [I-D.ietf-netmod-rfc8407bis]
Bierman, A., Boucadair, M., and Q. Wu, "Guidelines for Authors and Reviewers of Documents Containing YANG Data

Models", Work in Progress, Internet-Draft, draft-ietf-netmod-rfc8407bis-28, 5 June 2025, <<https://datatracker.ietf.org/doc/html/draft-ietf-netmod-rfc8407bis-28>>.

[RFC8340] Bjorklund, M. and L. Berger, Ed., "YANG Tree Diagrams", BCP 215, RFC 8340, DOI 10.17487/RFC8340, March 2018, <<https://www.rfc-editor.org/rfc/rfc8340>>.

Appendix A. Examples

This section provides example usages of the Network Inventory Location model for two common deployment scenarios: a non-rack-mounted Access Point and a distributed multi-chassis network element.

A.1. Non-Rack Deployment: Access Point

This example illustrates a typical edge deployment scenario where a Wi-Fi Access Point (AP) is mounted directly to a ceiling without a rack enclosure.

The location hierarchy is as follows:

```
Site: Foo-Enterprise-Campus
└── Building: Building-A
    ├── Floor: Floor-2
        └── Room: Corridor-East (corridor area)
            └── AP directly ceiling-mounted (no rack)
```

The following shows the location data instance:

```
{
  "ietf-ni-location:locations": {
    "location": [
      {
        "id": "Foo-Enterprise-Campus",
        "uuid": "550e8400-e29b-41d4-a716-446655440000",
        "name": "Foo Enterprise Campus",
        "type": "site",
        "timestamp": "2026-01-15T08:30:00Z"
      },
      {
        "id": "Building-A",
        "uuid": "550e8400-e29b-41d4-a716-446655440001",
        "name": "Building A",
        "type": "building",
        "parent": "Foo-Enterprise-Campus",
        "timestamp": "2026-01-15T08:30:00Z"
      }
    ]
  }
}
```

```
    },
    {
      "id": "Floor-2",
      "uuid": "550e8400-e29b-41d4-a716-446655440002",
      "name": "Floor 2",
      "type": "floor",
      "parent": "Building-A",
      "timestamp": "2026-01-15T08:30:00Z"
    },
    {
      "id": "Corridor-East",
      "uuid": "550e8400-e29b-41d4-a716-446655440003",
      "name": "East Corridor",
      "alias": "Corridor-2F-East",
      "description": "East corridor on Floor 2, AP deployment area",
      "type": "corridor",
      "parent": "Floor-2",
      "timestamp": "2026-01-15T08:30:00Z",
      "valid-until": "2030-12-31T23:59:59Z",
      "physical-address": {
        "address": "123 Foo Street, Floor 2 East Corridor",
        "postal-code": "12345",
        "state": "Foo-State",
        "city": "Foo-City",
        "country-code": "ZZ"
      },
      "geo-location": {
        "reference-frame": {
          "astronomical-body": "earth",
          "geodetic-system": {
            "geodetic-datum": "WGS-84",
            "coord-accuracy": 5.0,
            "height-accuracy": 10.0
          }
        },
        "ellipsoid": {
          "latitude": 40.7128,
          "longitude": -74.0060,
          "height": 15.0
        },
        "velocity": {
          "v-north": 0.0,
          "v-east": 0.0,
          "v-up": 0.0
        },
        "timestamp": "2026-01-15T08:30:00Z",
        "valid-until": "2030-12-31T23:59:59Z"
      },
    },
  ],
```

```

        "contained-chassis": [
            {
                "chassis-id": 1,
                "ne-ref": "AP-Corridor-East-01",
                "component-ref": "chassis-1"
            }
        ]
    },
    "racks": []
}

```

A.2. Distributed Multi-Chassis Network Element

This example illustrates a distributed deployment where a single logical network element (NE-1, a stack switch) spans multiple physical locations. The three chassis of the stack switch are located in separate telecommunications rooms on different floors, interconnected via stacking cables. The location hierarchy is as follows:

```

Site: Foo-DC
├── Location: Room-101 (First Floor Telecom Room)
│   ├── Rack: Rack-101-A
│   │   └── U10: NE-1 chassis-1 (Master switch)
│   └── Location: Room-201 (Second Floor Telecom Room)
│       ├── Rack: Rack-201-B
│       │   └── U15: NE-1 chassis-2 (Stack member)
│       └── Location: Room-301 (Third Floor Telecom Room)
│           ├── Rack: Rack-301-C
│           │   └── U20: NE-1 chassis-3 (Stack member)
└──

```

The following shows the location data instance:

```

{
  "ietf-ni-location:locations": {
    "location": [
      {
        "id": "Foo-DC",
        "name": "Foo Data Center",
        "type": "site",
        "timestamp": "2026-01-15T08:00:00Z"
      },
      {
        "id": "Room-101",

```

```
    "name": "First Floor Telecom Room",
    "type": "room",
    "parent": "Foo-DC",
    "timestamp": "2026-01-15T08:00:00Z",
    "contained-chassis": []
  },
  {
    "id": "Room-201",
    "name": "Second Floor Telecom Room",
    "type": "room",
    "parent": "Foo-DC",
    "timestamp": "2026-01-15T08:00:00Z",
    "contained-chassis": []
  },
  {
    "id": "Room-301",
    "name": "Third Floor Telecom Room",
    "type": "room",
    "parent": "Foo-DC",
    "timestamp": "2026-01-15T08:00:00Z",
    "contained-chassis": []
  }
],
"racks": {
  "rack": [
    {
      "id": "Rack-101-A",
      "uuid": "660e8400-e29b-41d4-a716-446655440010",
      "name": "Rack A Room 101",
      "rack-location": {
        "location-ref": "Room-101",
        "row-number": 1,
        "column-number": 1
      },
      "height": 2200,
      "width": 600,
      "depth": 1200,
      "max-voltage": 240,
      "max-allocated-power": 8000,
      "contained-chassis": [
        {
          "relative-position": 10,
          "ne-ref": "NE-1",
          "component-ref": "chassis-1"
        }
      ]
    },
    {
      "timestamp": "2026-01-15T10:00:00Z",
      "valid-until": "2028-01-15T10:00:00Z"
    }
  ]
}
```

```
    },
    {
      "id": "Rack-201-B",
      "uuid": "660e8400-e29b-41d4-a716-446655440011",
      "name": "Rack B Room 201",
      "rack-location": {
        "location-ref": "Room-201",
        "row-number": 2,
        "column-number": 1
      },
      "height": 2200,
      "width": 600,
      "depth": 1200,
      "max-voltage": 240,
      "max-allocated-power": 8000,
      "contained-chassis": [
        {
          "relative-position": 15,
          "ne-ref": "NE-1",
          "component-ref": "chassis-2"
        }
      ],
      "timestamp": "2026-01-15T10:00:00Z",
      "valid-until": "2028-01-15T10:00:00Z"
    },
    {
      "id": "Rack-301-C",
      "uuid": "660e8400-e29b-41d4-a716-446655440012",
      "name": "Rack C Room 301",
      "rack-location": {
        "location-ref": "Room-301",
        "row-number": 3,
        "column-number": 1
      },
      "height": 2200,
      "width": 600,
      "depth": 1200,
      "max-voltage": 240,
      "max-allocated-power": 8000,
      "contained-chassis": [
        {
          "relative-position": 20,
          "ne-ref": "NE-1",
          "component-ref": "chassis-3"
        }
      ],
      "timestamp": "2026-01-15T10:00:00Z",
      "valid-until": "2028-01-15T10:00:00Z"
    }
  ]
}
```



```
    }  
  ]  
}  
}
```

Acknowledgments

The authors would like to thank the authors and contributors of [I-D.ietf-ccamp-network-inventory-yang] to trigger this work. During the discussion of base Network Inventory (NI) model, it is agreed that the definition of the equipment room and rack can be a separate location model and support manual configuration, while the NI model aggregates the inventory data of the Network Elements (NEs) on the network. Usually the information about sites or equipment rooms is not detectable by network controller and configured manually.

The authors wish to thank Mohamed Boucadair and many others for their helpful comments and suggestions.

Contributors

Italo Busi
Huawei Technologies
Email: italo.busi@huawei.com

Chaode Yu
Huawei
Email: yuchaode@huawei.com

Authors' Addresses

Bo Wu
Huawei
Email: lana.wubo@huawei.com

Sergio Belotti
Nokia
Email: sergio.belotti@nokia.com

Jean-Francois Bouquier
Vodafone
Email: jeff.bouquier@vodafone.com

Fabio Peruzzini
FiberCop
Email: fabio.peruzzini@fibercop.com

Phil Bedard
Cisco
Email: phbedard@cisco.com