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**ITU-T**

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**X.1528.3**

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SERIES X: DATA NETWORKS, OPEN SYSTEM  
COMMUNICATIONS AND SECURITY

Cybersecurity information exchange – Vulnerability/state  
exchange

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**Common platform enumeration dictionary**

Recommendation ITU-T X.1528.3



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# Recommendation ITU-T X.1528.3

## Common platform enumeration dictionary

### Summary

Recommendation ITU-T X.1528.3 defines the common platform enumeration (CPE) dictionary specification. The CPE dictionary specification is a part of a stack of CPE specifications that support a variety of use cases relating to information technology (IT) product description and naming. An individual CPE dictionary is a repository of IT product names, with each name in the repository identifying a unique class of IT product in the world. This specification defines the semantics of the CPE Dictionary data model and the rules associated with CPE dictionary creation and management. This Recommendation also defines and explains the requirements that IT products and services, including CPE dictionaries, must meet to claim compliance with this Recommendation. This is achieved by listing the relevant clauses of the NIST Interagency Report 7697 Common Platform Enumeration: Name Matching Specification version 2.3 and showing whether they are normative or informative.

### History

Edition	Recommendation	Approval	Study Group
1.0	ITU-T X.1528.3	2012-09-07	17

## FOREWORD

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The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

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As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at <http://www.itu.int/ITU-T/ipr/>.

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## Introduction

Common platform enumeration (CPE) is a structured method of describing and identifying classes of applications, operating systems, and hardware devices present in an enterprise's computing assets. CPE can be used as a source of information for enforcing and verifying information technology (IT) management policies relating to these assets, such as vulnerability, configuration, and remediation policies. IT management tools can collect information about installed products, identify products using their CPE names, and use this structured information to help make fully or partially automated decisions regarding the assets.

CPE consists of several modular specifications. Combinations of the specifications work together in layers to perform various functions. This specification, CPE Dictionary, defines a structured method for creating and managing CPE dictionaries. A dictionary is a repository of CPE names and metadata associated with the names. Each CPE name in the dictionary identifies a single class of IT product in the world. The word "class" here signifies that the object identified is not a physical instantiation of a product on a system, but rather the abstract model of that product. Although organizations may use a CPE name to represent either a single product class or a set of multiple product classes, a CPE dictionary stores only bound forms of well-formed CPE names (WFNs) that identify a single product class, not a set of product classes. These single product-class WFNs in bound form are referred to as identifier names. An example of a WFN and its bound forms is shown below for a fictitious product.

### WFN:

```
wfn: [part="o", vendor="xyz", product="visualizer_enterprise_suite", version="4\2\3", update="beta", edition=NA, language=NA, sw_edition="demo_version", target_sw=NA, target_hw="x64", other=NA]
```

### WFN bound to a URI:

```
cpe:/o:xyz:visualizer_enterprise_suite:4.2.3:beta:~~demo_version~~x64~~
```

### WFN bound to a formatted string:

```
cpe:2.3:o:xyz:vsualizer_enterprise_suite:4.2.3:beta:-:-:demo_version:-:x64:-
```

# Recommendation ITU-T X.1528.3

## Common platform enumeration dictionary

### 1 Scope

This Recommendation defines the common platform enumeration (CPE) dictionary specification. This includes formally defining the concept of a CPE dictionary, the rules and policies relating to dictionary instantiation and management, and the data model that represents all dictionary concepts and relationships. This Recommendation also establishes the concept of an official CPE dictionary, as well as the process for how organizations can extend the official CPE dictionary using extended CPE dictionaries.

As this Recommendation defines these specifications by listing the relevant clauses of the NIST Interagency Report 7697 Common Platform Enumeration: Dictionary Specification version 2.3 and showing whether they are normative or informative, all other versions are out of the scope of this Recommendation as are all CPE specifications other than CPE dictionary. Operational guidelines, such as suggested processes for submitting new entries to a dictionary, are also out of the scope of this Recommendation.

### 2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

[NISTIR 7697] NIST Interagency Report 7697, *Common Platform Enumeration: Dictionary Specification Version 2.3, August 2011.*

### 3 Definitions

#### 3.1 Terms defined elsewhere

None.

#### 3.2 Terms defined in this Recommendation

None.

### 4 Abbreviations and acronyms

CPE	Common Platform Enumeration
NIST	National Institute of Standards and Technology
NISTIR	NIST Interagency Report
URI	Uniform Resource Identifier
WFN	Well-formed CPE Name

## 5 Conventions

The following terms are considered equivalent:

- In ITU use of the word 'shall' and 'must' and their negatives are considered equivalent.
- In ITU use of the word 'shall' is equivalent to the NISTIR use of the word 'MUST'.
- In ITU use of the phrase 'shall not' is equivalent to the NISTIR use of the term 'MUST NOT'.

NOTE – In the NISTIR use of the words 'shall' and 'must' (in lower case) are used for informative text.

## 6 Dictionary specification

This clause defines the specification for common platform enumeration (CPE) name matching. It provides direct references to NIST Interagency Report 7697 Common Platform Enumeration: Dictionary Specification version 2.3 through alignment of the clauses with the section numbers such that clause 6.x aligns with [NISTIR 7697] section x with matching titles.

### 6.1 Introduction

[b-NISTIR 7697] section 1 is informative.

### 6.2 Definitions and abbreviations

[b-NISTIR 76967] section 2 is informative.

### 6.3 Relationship to existing specifications and standards

[b-NISTIR 7697] section 3 is informative.

### 6.4 Conformance

[b-NISTIR 7697] section 4 is informative.

### 6.5 CPE dictionary data model

[NISTIR 7697] section 5 is normative.

#### 6.5.1 The <cpe\_dict:cpe-list> element

[NISTIR 7697] section 5.1 is normative.

#### 6.5.2 The <cpe\_dict:generator> element

[NISTIR 7697] section 5.2 is normative.

#### 6.5.3 The <cpe\_dict:cpe-item> element

[NISTIR 7697] section 5.3 is normative.

#### 6.5.4 The <cpe\_dict\_ext:cpe23-item> element

[NISTIR 7697] section 5.4 is normative.

#### 6.5.5 The <cpe\_dict\_ext:provenance-record> element

[NISTIR 7697] section 5.5 is normative.

### **6.5.6 The <cpe\_dict\_ext:deprecation> element**

[NISTIR 7697] section 5.6 is normative.

### **6.5.7 Extension points**

[NISTIR 7697] section 5.7 is normative.

## **6.6 Dictionary creation and maintenance**

[NISTIR 7697] section 6 is normative.

### **6.6.1 Acceptance criteria**

[NISTIR 7697] section 6.1 is normative.

#### **6.6.1.1 Logical values and special characters**

[NISTIR 7697] section 6.1.1 is normative.

#### **6.6.1.2 CPE name completeness**

[NISTIR 7697] section 6.1.2 is normative.

#### **6.6.1.3 CPE name uniqueness**

[NISTIR 7697] section 6.1.3 is normative.

### **6.6.2 CPE dictionary deprecation process**

[NISTIR 7697] section 6.2 is normative.

### **6.6.3 CPE dictionary provenance data**

[NISTIR 7697] section 6.3 is normative.

### **6.6.4 CPE dictionary management documents**

[NISTIR 7697] section 6.4 is normative.

#### **6.6.4.1 Dictionary content management and decisions document**

[NISTIR 7697] section 6.4.1 is normative.

#### **6.6.4.2 Dictionary process management document**

[NISTIR 7697] section 6.4.2 is normative.

## **6.7 Dictionary use**

[NISTIR 7697] section 7 is normative.

### **6.7.1 Identifier lookup**

[NISTIR 7697] section 7.1 is normative.

### **6.7.2 Dictionary searching**

[NISTIR 7697] section 7.2 is normative.

### **6.7.3 Use of deprecated identifier names**

[NISTIR 7697] section 7.3 is normative.

## **6.8 CPE dictionary operations and pseudocode**

[NISTIR 7697] section 8 is normative.

### **6.8.1 Operations on a CPE dictionary**

[NISTIR 7697] section 8.1 is normative.

#### **6.8.1.1 Function `get_cpe_items(d)`**

[NISTIR 7697] section 8.1.1 is normative.

#### **6.8.1.2 Function `get_cpe_item_wfn(item)`**

[NISTIR 7697] section 8.1.2 is normative.

#### **6.8.1.3 Function `get(w,a)`**

[NISTIR 7697] section 8.1.3 is normative.

#### **6.8.1.4 Function `is_deprecated(item)`**

[NISTIR 7697] section 8.1.4 is normative.

#### **6.8.1.5 Function `getitem(list, index)`**

[NISTIR 7697] section 8.1.5 is normative.

#### **6.8.1.6 Function `strlen(s)`**

[NISTIR 7697] section 8.1.6 is normative.

#### **6.8.1.7 Function `substr(s,b,e)`**

[NISTIR 7697] section 8.1.7 is normative.

### **6.8.2 Acceptance criteria pseudocode**

[NISTIR 7697] section 8.2 is normative.

### **6.8.3 Dictionary use pseudocode**

[NISTIR 7697] section 8.3 is normative.



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