| | [**Overview**](http://docs.google.com/overview-summary.html) | [**Package**](http://docs.google.com/package-summary.html) | **Class** | [**Use**](http://docs.google.com/class-use/Provider.html) | [**Tree**](http://docs.google.com/package-tree.html) | [**Deprecated**](http://docs.google.com/deprecated-list.html) | [**Index**](http://docs.google.com/index-files/index-1.html) | [**Help**](http://docs.google.com/help-doc.html) | | --- | --- | --- | --- | --- | --- | --- | --- | | | ***Java™ Platform***  ***Standard Ed. 6*** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| [**PREV CLASS**](http://docs.google.com/java/security/ProtectionDomain.html)   [**NEXT CLASS**](http://docs.google.com/java/security/Provider.Service.html) | [**FRAMES**](http://docs.google.com/index.html?java/security/Provider.html)    [**NO FRAMES**](http://docs.google.com/Provider.html)     [**All Classes**](http://docs.google.com/allclasses-noframe.html) |
| SUMMARY: [NESTED](#3znysh7) | [FIELD](#tyjcwt) | [CONSTR](#3dy6vkm) | [METHOD](#1t3h5sf) | DETAIL: FIELD | [CONSTR](#3rdcrjn) | [METHOD](#lnxbz9) |

## **java.security**

Class Provider

[java.lang.Object](http://docs.google.com/java/lang/Object.html)  
 [java.util.Dictionary](http://docs.google.com/java/util/Dictionary.html)<K,V>  
 [java.util.Hashtable](http://docs.google.com/java/util/Hashtable.html)<[Object](http://docs.google.com/java/lang/Object.html),[Object](http://docs.google.com/java/lang/Object.html)>  
 [java.util.Properties](http://docs.google.com/java/util/Properties.html)  
 **java.security.Provider**

**All Implemented Interfaces:** [Serializable](http://docs.google.com/java/io/Serializable.html), [Cloneable](http://docs.google.com/java/lang/Cloneable.html), [Map](http://docs.google.com/java/util/Map.html)<[Object](http://docs.google.com/java/lang/Object.html),[Object](http://docs.google.com/java/lang/Object.html)> **Direct Known Subclasses:** [AuthProvider](http://docs.google.com/java/security/AuthProvider.html)

public abstract class **Provider**extends [Properties](http://docs.google.com/java/util/Properties.html)

This class represents a "provider" for the Java Security API, where a provider implements some or all parts of Java Security. Services that a provider may implement include:

* Algorithms (such as DSA, RSA, MD5 or SHA-1).
* Key generation, conversion, and management facilities (such as for algorithm-specific keys).

Each provider has a name and a version number, and is configured in each runtime it is installed in.

See [The Provider Class](http://docs.google.com/technotes/guides/security/crypto/CryptoSpec.html#Provider) in the "Java Cryptography Architecture API Specification & Reference" for information about how a particular type of provider, the cryptographic service provider, works and is installed. However, please note that a provider can be used to implement any security service in Java that uses a pluggable architecture with a choice of implementations that fit underneath.

Some provider implementations may encounter unrecoverable internal errors during their operation, for example a failure to communicate with a security token. A [ProviderException](http://docs.google.com/java/security/ProviderException.html) should be used to indicate such errors.

The service type Provider is reserved for use by the security framework. Services of this type cannot be added, removed, or modified by applications. The following attributes are automatically placed in each Provider object:

| Name | Value |
| --- | --- |
| Provider.id name | String.valueOf(provider.getName()) |
| Provider.id version | String.valueOf(provider.getVersion()) |
| Provider.id info | String.valueOf(provider.getInfo()) |
| Provider.id className | provider.getClass().getName() |

**See Also:**[Serialized Form](http://docs.google.com/serialized-form.html#java.security.Provider)

| **Nested Class Summary** | |
| --- | --- |
| static class | [**Provider.Service**](http://docs.google.com/java/security/Provider.Service.html)            The description of a security service. |

| **Field Summary** | |
| --- | --- |

| **Fields inherited from class java.util.**[**Properties**](http://docs.google.com/java/util/Properties.html) |
| --- |
| [defaults](http://docs.google.com/java/util/Properties.html#defaults) |

| **Constructor Summary** | |
| --- | --- |
| protected | [**Provider**](http://docs.google.com/java/security/Provider.html#Provider(java.lang.String,%20double,%20java.lang.String))([String](http://docs.google.com/java/lang/String.html) name, double version, [String](http://docs.google.com/java/lang/String.html) info)            Constructs a provider with the specified name, version number, and information. |

| **Method Summary** | |
| --- | --- |
| void | [**clear**](http://docs.google.com/java/security/Provider.html#clear())()            Clears this provider so that it no longer contains the properties used to look up facilities implemented by the provider. |
| [Enumeration](http://docs.google.com/java/util/Enumeration.html)<[Object](http://docs.google.com/java/lang/Object.html)> | [**elements**](http://docs.google.com/java/security/Provider.html#elements())()            Returns an enumeration of the values in this hashtable. |
| [Set](http://docs.google.com/java/util/Set.html)<[Map.Entry](http://docs.google.com/java/util/Map.Entry.html)<[Object](http://docs.google.com/java/lang/Object.html),[Object](http://docs.google.com/java/lang/Object.html)>> | [**entrySet**](http://docs.google.com/java/security/Provider.html#entrySet())()            Returns an unmodifiable Set view of the property entries contained in this Provider. |
| [Object](http://docs.google.com/java/lang/Object.html) | [**get**](http://docs.google.com/java/security/Provider.html#get(java.lang.Object))([Object](http://docs.google.com/java/lang/Object.html) key)            Returns the value to which the specified key is mapped, or null if this map contains no mapping for the key. |
| [String](http://docs.google.com/java/lang/String.html) | [**getInfo**](http://docs.google.com/java/security/Provider.html#getInfo())()            Returns a human-readable description of the provider and its services. |
| [String](http://docs.google.com/java/lang/String.html) | [**getName**](http://docs.google.com/java/security/Provider.html#getName())()            Returns the name of this provider. |
| [String](http://docs.google.com/java/lang/String.html) | [**getProperty**](http://docs.google.com/java/security/Provider.html#getProperty(java.lang.String))([String](http://docs.google.com/java/lang/String.html) key)            Searches for the property with the specified key in this property list. |
| [Provider.Service](http://docs.google.com/java/security/Provider.Service.html) | [**getService**](http://docs.google.com/java/security/Provider.html#getService(java.lang.String,%20java.lang.String))([String](http://docs.google.com/java/lang/String.html) type, [String](http://docs.google.com/java/lang/String.html) algorithm)            Get the service describing this Provider's implementation of the specified type of this algorithm or alias. |
| [Set](http://docs.google.com/java/util/Set.html)<[Provider.Service](http://docs.google.com/java/security/Provider.Service.html)> | [**getServices**](http://docs.google.com/java/security/Provider.html#getServices())()            Get an unmodifiable Set of all services supported by this Provider. |
| double | [**getVersion**](http://docs.google.com/java/security/Provider.html#getVersion())()            Returns the version number for this provider. |
| [Enumeration](http://docs.google.com/java/util/Enumeration.html)<[Object](http://docs.google.com/java/lang/Object.html)> | [**keys**](http://docs.google.com/java/security/Provider.html#keys())()            Returns an enumeration of the keys in this hashtable. |
| [Set](http://docs.google.com/java/util/Set.html)<[Object](http://docs.google.com/java/lang/Object.html)> | [**keySet**](http://docs.google.com/java/security/Provider.html#keySet())()            Returns an unmodifiable Set view of the property keys contained in this provider. |
| void | [**load**](http://docs.google.com/java/security/Provider.html#load(java.io.InputStream))([InputStream](http://docs.google.com/java/io/InputStream.html) inStream)            Reads a property list (key and element pairs) from the input stream. |
| [Object](http://docs.google.com/java/lang/Object.html) | [**put**](http://docs.google.com/java/security/Provider.html#put(java.lang.Object,%20java.lang.Object))([Object](http://docs.google.com/java/lang/Object.html) key, [Object](http://docs.google.com/java/lang/Object.html) value)            Sets the key property to have the specified value. |
| void | [**putAll**](http://docs.google.com/java/security/Provider.html#putAll(java.util.Map))([Map](http://docs.google.com/java/util/Map.html)<?,?> t)            Copies all of the mappings from the specified Map to this provider. |
| protected  void | [**putService**](http://docs.google.com/java/security/Provider.html#putService(java.security.Provider.Service))([Provider.Service](http://docs.google.com/java/security/Provider.Service.html) s)            Add a service. |
| [Object](http://docs.google.com/java/lang/Object.html) | [**remove**](http://docs.google.com/java/security/Provider.html#remove(java.lang.Object))([Object](http://docs.google.com/java/lang/Object.html) key)            Removes the key property (and its corresponding value). |
| protected  void | [**removeService**](http://docs.google.com/java/security/Provider.html#removeService(java.security.Provider.Service))([Provider.Service](http://docs.google.com/java/security/Provider.Service.html) s)            Remove a service previously added using [putService()](http://docs.google.com/java/security/Provider.html#putService(java.security.Provider.Service)). |
| [String](http://docs.google.com/java/lang/String.html) | [**toString**](http://docs.google.com/java/security/Provider.html#toString())()            Returns a string with the name and the version number of this provider. |
| [Collection](http://docs.google.com/java/util/Collection.html)<[Object](http://docs.google.com/java/lang/Object.html)> | [**values**](http://docs.google.com/java/security/Provider.html#values())()            Returns an unmodifiable Collection view of the property values contained in this provider. |

| **Methods inherited from class java.util.**[**Properties**](http://docs.google.com/java/util/Properties.html) |
| --- |
| [getProperty](http://docs.google.com/java/util/Properties.html#getProperty(java.lang.String,%20java.lang.String)), [list](http://docs.google.com/java/util/Properties.html#list(java.io.PrintStream)), [list](http://docs.google.com/java/util/Properties.html#list(java.io.PrintWriter)), [load](http://docs.google.com/java/util/Properties.html#load(java.io.Reader)), [loadFromXML](http://docs.google.com/java/util/Properties.html#loadFromXML(java.io.InputStream)), [propertyNames](http://docs.google.com/java/util/Properties.html#propertyNames()), [save](http://docs.google.com/java/util/Properties.html#save(java.io.OutputStream,%20java.lang.String)), [setProperty](http://docs.google.com/java/util/Properties.html#setProperty(java.lang.String,%20java.lang.String)), [store](http://docs.google.com/java/util/Properties.html#store(java.io.OutputStream,%20java.lang.String)), [store](http://docs.google.com/java/util/Properties.html#store(java.io.Writer,%20java.lang.String)), [storeToXML](http://docs.google.com/java/util/Properties.html#storeToXML(java.io.OutputStream,%20java.lang.String)), [storeToXML](http://docs.google.com/java/util/Properties.html#storeToXML(java.io.OutputStream,%20java.lang.String,%20java.lang.String)), [stringPropertyNames](http://docs.google.com/java/util/Properties.html#stringPropertyNames()) |

| **Methods inherited from class java.util.**[**Hashtable**](http://docs.google.com/java/util/Hashtable.html) |
| --- |
| [clone](http://docs.google.com/java/util/Hashtable.html#clone()), [contains](http://docs.google.com/java/util/Hashtable.html#contains(java.lang.Object)), [containsKey](http://docs.google.com/java/util/Hashtable.html#containsKey(java.lang.Object)), [containsValue](http://docs.google.com/java/util/Hashtable.html#containsValue(java.lang.Object)), [equals](http://docs.google.com/java/util/Hashtable.html#equals(java.lang.Object)), [hashCode](http://docs.google.com/java/util/Hashtable.html#hashCode()), [isEmpty](http://docs.google.com/java/util/Hashtable.html#isEmpty()), [rehash](http://docs.google.com/java/util/Hashtable.html#rehash()), [size](http://docs.google.com/java/util/Hashtable.html#size()) |

| **Methods inherited from class java.lang.**[**Object**](http://docs.google.com/java/lang/Object.html) |
| --- |
| [finalize](http://docs.google.com/java/lang/Object.html#finalize()), [getClass](http://docs.google.com/java/lang/Object.html#getClass()), [notify](http://docs.google.com/java/lang/Object.html#notify()), [notifyAll](http://docs.google.com/java/lang/Object.html#notifyAll()), [wait](http://docs.google.com/java/lang/Object.html#wait()), [wait](http://docs.google.com/java/lang/Object.html#wait(long)), [wait](http://docs.google.com/java/lang/Object.html#wait(long,%20int)) |

| **Constructor Detail** |
| --- |

### Provider

protected **Provider**([String](http://docs.google.com/java/lang/String.html) name,  
 double version,  
 [String](http://docs.google.com/java/lang/String.html) info)

Constructs a provider with the specified name, version number, and information.

**Parameters:**name - the provider name.version - the provider version number.info - a description of the provider and its services.

| **Method Detail** |
| --- |

### getName

public [String](http://docs.google.com/java/lang/String.html) **getName**()

Returns the name of this provider.

**Returns:**the name of this provider.

### getVersion

public double **getVersion**()

Returns the version number for this provider.

**Returns:**the version number for this provider.

### getInfo

public [String](http://docs.google.com/java/lang/String.html) **getInfo**()

Returns a human-readable description of the provider and its services. This may return an HTML page, with relevant links.

**Returns:**a description of the provider and its services.

### toString

public [String](http://docs.google.com/java/lang/String.html) **toString**()

Returns a string with the name and the version number of this provider.

**Overrides:**[toString](http://docs.google.com/java/util/Hashtable.html#toString()) in class [Hashtable](http://docs.google.com/java/util/Hashtable.html)<[Object](http://docs.google.com/java/lang/Object.html),[Object](http://docs.google.com/java/lang/Object.html)> **Returns:**the string with the name and the version number for this provider.

### clear

public void **clear**()

Clears this provider so that it no longer contains the properties used to look up facilities implemented by the provider.

First, if there is a security manager, its checkSecurityAccess method is called with the string "clearProviderProperties."+name (where name is the provider name) to see if it's ok to clear this provider. If the default implementation of checkSecurityAccess is used (that is, that method is not overriden), then this results in a call to the security manager's checkPermission method with a SecurityPermission("clearProviderProperties."+name) permission.

**Specified by:**[clear](http://docs.google.com/java/util/Map.html#clear()) in interface [Map](http://docs.google.com/java/util/Map.html)<[Object](http://docs.google.com/java/lang/Object.html),[Object](http://docs.google.com/java/lang/Object.html)>**Overrides:**[clear](http://docs.google.com/java/util/Hashtable.html#clear()) in class [Hashtable](http://docs.google.com/java/util/Hashtable.html)<[Object](http://docs.google.com/java/lang/Object.html),[Object](http://docs.google.com/java/lang/Object.html)> **Throws:** [SecurityException](http://docs.google.com/java/lang/SecurityException.html) - if a security manager exists and its [SecurityManager.checkSecurityAccess(java.lang.String)](http://docs.google.com/java/lang/SecurityManager.html#checkSecurityAccess(java.lang.String)) method denies access to clear this provider**Since:** 1.2

### load

public void **load**([InputStream](http://docs.google.com/java/io/InputStream.html) inStream)  
 throws [IOException](http://docs.google.com/java/io/IOException.html)

Reads a property list (key and element pairs) from the input stream.

**Overrides:**[load](http://docs.google.com/java/util/Properties.html#load(java.io.InputStream)) in class [Properties](http://docs.google.com/java/util/Properties.html) **Parameters:**inStream - the input stream. **Throws:** [IOException](http://docs.google.com/java/io/IOException.html) - if an error occurred when reading from the input stream.**See Also:**[Properties.load(java.io.Reader)](http://docs.google.com/java/util/Properties.html#load(java.io.Reader))

### putAll

public void **putAll**([Map](http://docs.google.com/java/util/Map.html)<?,?> t)

Copies all of the mappings from the specified Map to this provider. These mappings will replace any properties that this provider had for any of the keys currently in the specified Map.

**Specified by:**[putAll](http://docs.google.com/java/util/Map.html#putAll(java.util.Map)) in interface [Map](http://docs.google.com/java/util/Map.html)<[Object](http://docs.google.com/java/lang/Object.html),[Object](http://docs.google.com/java/lang/Object.html)>**Overrides:**[putAll](http://docs.google.com/java/util/Hashtable.html#putAll(java.util.Map)) in class [Hashtable](http://docs.google.com/java/util/Hashtable.html)<[Object](http://docs.google.com/java/lang/Object.html),[Object](http://docs.google.com/java/lang/Object.html)> **Parameters:**t - mappings to be stored in this map**Since:** 1.2

### entrySet

public [Set](http://docs.google.com/java/util/Set.html)<[Map.Entry](http://docs.google.com/java/util/Map.Entry.html)<[Object](http://docs.google.com/java/lang/Object.html),[Object](http://docs.google.com/java/lang/Object.html)>> **entrySet**()

Returns an unmodifiable Set view of the property entries contained in this Provider.

**Specified by:**[entrySet](http://docs.google.com/java/util/Map.html#entrySet()) in interface [Map](http://docs.google.com/java/util/Map.html)<[Object](http://docs.google.com/java/lang/Object.html),[Object](http://docs.google.com/java/lang/Object.html)>**Overrides:**[entrySet](http://docs.google.com/java/util/Hashtable.html#entrySet()) in class [Hashtable](http://docs.google.com/java/util/Hashtable.html)<[Object](http://docs.google.com/java/lang/Object.html),[Object](http://docs.google.com/java/lang/Object.html)> **Returns:**a set view of the mappings contained in this map**Since:** 1.2 **See Also:**[Map.Entry](http://docs.google.com/java/util/Map.Entry.html)

### keySet

public [Set](http://docs.google.com/java/util/Set.html)<[Object](http://docs.google.com/java/lang/Object.html)> **keySet**()

Returns an unmodifiable Set view of the property keys contained in this provider.

**Specified by:**[keySet](http://docs.google.com/java/util/Map.html#keySet()) in interface [Map](http://docs.google.com/java/util/Map.html)<[Object](http://docs.google.com/java/lang/Object.html),[Object](http://docs.google.com/java/lang/Object.html)>**Overrides:**[keySet](http://docs.google.com/java/util/Hashtable.html#keySet()) in class [Hashtable](http://docs.google.com/java/util/Hashtable.html)<[Object](http://docs.google.com/java/lang/Object.html),[Object](http://docs.google.com/java/lang/Object.html)> **Returns:**a set view of the keys contained in this map**Since:** 1.2

### values

public [Collection](http://docs.google.com/java/util/Collection.html)<[Object](http://docs.google.com/java/lang/Object.html)> **values**()

Returns an unmodifiable Collection view of the property values contained in this provider.

**Specified by:**[values](http://docs.google.com/java/util/Map.html#values()) in interface [Map](http://docs.google.com/java/util/Map.html)<[Object](http://docs.google.com/java/lang/Object.html),[Object](http://docs.google.com/java/lang/Object.html)>**Overrides:**[values](http://docs.google.com/java/util/Hashtable.html#values()) in class [Hashtable](http://docs.google.com/java/util/Hashtable.html)<[Object](http://docs.google.com/java/lang/Object.html),[Object](http://docs.google.com/java/lang/Object.html)> **Returns:**a collection view of the values contained in this map**Since:** 1.2

### put

public [Object](http://docs.google.com/java/lang/Object.html) **put**([Object](http://docs.google.com/java/lang/Object.html) key,  
 [Object](http://docs.google.com/java/lang/Object.html) value)

Sets the key property to have the specified value.

First, if there is a security manager, its checkSecurityAccess method is called with the string "putProviderProperty."+name, where name is the provider name, to see if it's ok to set this provider's property values. If the default implementation of checkSecurityAccess is used (that is, that method is not overriden), then this results in a call to the security manager's checkPermission method with a SecurityPermission("putProviderProperty."+name) permission.

**Specified by:**[put](http://docs.google.com/java/util/Map.html#put(K,%20V)) in interface [Map](http://docs.google.com/java/util/Map.html)<[Object](http://docs.google.com/java/lang/Object.html),[Object](http://docs.google.com/java/lang/Object.html)>**Overrides:**[put](http://docs.google.com/java/util/Hashtable.html#put(K,%20V)) in class [Hashtable](http://docs.google.com/java/util/Hashtable.html)<[Object](http://docs.google.com/java/lang/Object.html),[Object](http://docs.google.com/java/lang/Object.html)> **Parameters:**key - the property key.value - the property value. **Returns:**the previous value of the specified property (key), or null if it did not have one. **Throws:** [SecurityException](http://docs.google.com/java/lang/SecurityException.html) - if a security manager exists and its [SecurityManager.checkSecurityAccess(java.lang.String)](http://docs.google.com/java/lang/SecurityManager.html#checkSecurityAccess(java.lang.String)) method denies access to set property values.**Since:** 1.2 **See Also:**[Object.equals(Object)](http://docs.google.com/java/lang/Object.html#equals(java.lang.Object)), [Hashtable.get(Object)](http://docs.google.com/java/util/Hashtable.html#get(java.lang.Object))

### remove

public [Object](http://docs.google.com/java/lang/Object.html) **remove**([Object](http://docs.google.com/java/lang/Object.html) key)

Removes the key property (and its corresponding value).

First, if there is a security manager, its checkSecurityAccess method is called with the string "removeProviderProperty."+name, where name is the provider name, to see if it's ok to remove this provider's properties. If the default implementation of checkSecurityAccess is used (that is, that method is not overriden), then this results in a call to the security manager's checkPermission method with a SecurityPermission("removeProviderProperty."+name) permission.

**Specified by:**[remove](http://docs.google.com/java/util/Map.html#remove(java.lang.Object)) in interface [Map](http://docs.google.com/java/util/Map.html)<[Object](http://docs.google.com/java/lang/Object.html),[Object](http://docs.google.com/java/lang/Object.html)>**Overrides:**[remove](http://docs.google.com/java/util/Hashtable.html#remove(java.lang.Object)) in class [Hashtable](http://docs.google.com/java/util/Hashtable.html)<[Object](http://docs.google.com/java/lang/Object.html),[Object](http://docs.google.com/java/lang/Object.html)> **Parameters:**key - the key for the property to be removed. **Returns:**the value to which the key had been mapped, or null if the key did not have a mapping. **Throws:** [SecurityException](http://docs.google.com/java/lang/SecurityException.html) - if a security manager exists and its [SecurityManager.checkSecurityAccess(java.lang.String)](http://docs.google.com/java/lang/SecurityManager.html#checkSecurityAccess(java.lang.String)) method denies access to remove this provider's properties.**Since:** 1.2

### get

public [Object](http://docs.google.com/java/lang/Object.html) **get**([Object](http://docs.google.com/java/lang/Object.html) key)

**Description copied from class:** [**Hashtable**](http://docs.google.com/java/util/Hashtable.html#get(java.lang.Object)) Returns the value to which the specified key is mapped, or null if this map contains no mapping for the key.

More formally, if this map contains a mapping from a key k to a value v such that (key.equals(k)), then this method returns v; otherwise it returns null. (There can be at most one such mapping.)

**Specified by:**[get](http://docs.google.com/java/util/Map.html#get(java.lang.Object)) in interface [Map](http://docs.google.com/java/util/Map.html)<[Object](http://docs.google.com/java/lang/Object.html),[Object](http://docs.google.com/java/lang/Object.html)>**Overrides:**[get](http://docs.google.com/java/util/Hashtable.html#get(java.lang.Object)) in class [Hashtable](http://docs.google.com/java/util/Hashtable.html)<[Object](http://docs.google.com/java/lang/Object.html),[Object](http://docs.google.com/java/lang/Object.html)> **Parameters:**key - the key whose associated value is to be returned **Returns:**the value to which the specified key is mapped, or null if this map contains no mapping for the key**See Also:**[Hashtable.put(Object, Object)](http://docs.google.com/java/util/Hashtable.html#put(K,%20V))

### keys

public [Enumeration](http://docs.google.com/java/util/Enumeration.html)<[Object](http://docs.google.com/java/lang/Object.html)> **keys**()

**Description copied from class:** [**Hashtable**](http://docs.google.com/java/util/Hashtable.html#keys()) Returns an enumeration of the keys in this hashtable.

**Overrides:**[keys](http://docs.google.com/java/util/Hashtable.html#keys()) in class [Hashtable](http://docs.google.com/java/util/Hashtable.html)<[Object](http://docs.google.com/java/lang/Object.html),[Object](http://docs.google.com/java/lang/Object.html)> **Returns:**an enumeration of the keys in this hashtable.**See Also:**[Enumeration](http://docs.google.com/java/util/Enumeration.html), [Hashtable.elements()](http://docs.google.com/java/util/Hashtable.html#elements()), [Hashtable.keySet()](http://docs.google.com/java/util/Hashtable.html#keySet()), [Map](http://docs.google.com/java/util/Map.html)

### elements

public [Enumeration](http://docs.google.com/java/util/Enumeration.html)<[Object](http://docs.google.com/java/lang/Object.html)> **elements**()

**Description copied from class:** [**Hashtable**](http://docs.google.com/java/util/Hashtable.html#elements()) Returns an enumeration of the values in this hashtable. Use the Enumeration methods on the returned object to fetch the elements sequentially.

**Overrides:**[elements](http://docs.google.com/java/util/Hashtable.html#elements()) in class [Hashtable](http://docs.google.com/java/util/Hashtable.html)<[Object](http://docs.google.com/java/lang/Object.html),[Object](http://docs.google.com/java/lang/Object.html)> **Returns:**an enumeration of the values in this hashtable.**See Also:**[Enumeration](http://docs.google.com/java/util/Enumeration.html), [Hashtable.keys()](http://docs.google.com/java/util/Hashtable.html#keys()), [Hashtable.values()](http://docs.google.com/java/util/Hashtable.html#values()), [Map](http://docs.google.com/java/util/Map.html)

### getProperty

public [String](http://docs.google.com/java/lang/String.html) **getProperty**([String](http://docs.google.com/java/lang/String.html) key)

**Description copied from class:** [**Properties**](http://docs.google.com/java/util/Properties.html#getProperty(java.lang.String)) Searches for the property with the specified key in this property list. If the key is not found in this property list, the default property list, and its defaults, recursively, are then checked. The method returns null if the property is not found.

**Overrides:**[getProperty](http://docs.google.com/java/util/Properties.html#getProperty(java.lang.String)) in class [Properties](http://docs.google.com/java/util/Properties.html) **Parameters:**key - the property key. **Returns:**the value in this property list with the specified key value.**See Also:**[Properties.setProperty(java.lang.String, java.lang.String)](http://docs.google.com/java/util/Properties.html#setProperty(java.lang.String,%20java.lang.String)), [Properties.defaults](http://docs.google.com/java/util/Properties.html#defaults)

### getService

public [Provider.Service](http://docs.google.com/java/security/Provider.Service.html) **getService**([String](http://docs.google.com/java/lang/String.html) type,  
 [String](http://docs.google.com/java/lang/String.html) algorithm)

Get the service describing this Provider's implementation of the specified type of this algorithm or alias. If no such implementation exists, this method returns null. If there are two matching services, one added to this provider using [putService()](http://docs.google.com/java/security/Provider.html#putService(java.security.Provider.Service)) and one added via [put()](http://docs.google.com/java/security/Provider.html#put(java.lang.Object,%20java.lang.Object)), the service added via [putService()](http://docs.google.com/java/security/Provider.html#putService(java.security.Provider.Service)) is returned.

**Parameters:**type - the type of [service](http://docs.google.com/java/security/Provider.Service.html) requested (for example, MessageDigest)algorithm - the case insensitive algorithm name (or alternate alias) of the service requested (for example, SHA-1) **Returns:**the service describing this Provider's matching service or null if no such service exists **Throws:** [NullPointerException](http://docs.google.com/java/lang/NullPointerException.html) - if type or algorithm is null**Since:** 1.5

### getServices

public [Set](http://docs.google.com/java/util/Set.html)<[Provider.Service](http://docs.google.com/java/security/Provider.Service.html)> **getServices**()

Get an unmodifiable Set of all services supported by this Provider.

**Returns:**an unmodifiable Set of all services supported by this Provider**Since:** 1.5

### putService

protected void **putService**([Provider.Service](http://docs.google.com/java/security/Provider.Service.html) s)

Add a service. If a service of the same type with the same algorithm name exists and it was added using [putService()](http://docs.google.com/java/security/Provider.html#putService(java.security.Provider.Service)), it is replaced by the new service. This method also places information about this service in the provider's Hashtable values in the format described in the  [Java Cryptography Architecture API Specification & Reference](http://docs.google.com/technotes/guides/security/crypto/CryptoSpec.html) .

Also, if there is a security manager, its checkSecurityAccess method is called with the string "putProviderProperty."+name, where name is the provider name, to see if it's ok to set this provider's property values. If the default implementation of checkSecurityAccess is used (that is, that method is not overriden), then this results in a call to the security manager's checkPermission method with a SecurityPermission("putProviderProperty."+name) permission.

**Parameters:**s - the Service to add **Throws:** [SecurityException](http://docs.google.com/java/lang/SecurityException.html) - if a security manager exists and its [SecurityManager.checkSecurityAccess(java.lang.String)](http://docs.google.com/java/lang/SecurityManager.html#checkSecurityAccess(java.lang.String)) method denies access to set property values. [NullPointerException](http://docs.google.com/java/lang/NullPointerException.html) - if s is null**Since:** 1.5

### removeService

protected void **removeService**([Provider.Service](http://docs.google.com/java/security/Provider.Service.html) s)

Remove a service previously added using [putService()](http://docs.google.com/java/security/Provider.html#putService(java.security.Provider.Service)). The specified service is removed from this provider. It will no longer be returned by [getService()](http://docs.google.com/java/security/Provider.html#getService(java.lang.String,%20java.lang.String)) and its information will be removed from this provider's Hashtable.

Also, if there is a security manager, its checkSecurityAccess method is called with the string "removeProviderProperty."+name, where name is the provider name, to see if it's ok to remove this provider's properties. If the default implementation of checkSecurityAccess is used (that is, that method is not overriden), then this results in a call to the security manager's checkPermission method with a SecurityPermission("removeProviderProperty."+name) permission.

**Parameters:**s - the Service to be removed **Throws:** [SecurityException](http://docs.google.com/java/lang/SecurityException.html) - if a security manager exists and its [SecurityManager.checkSecurityAccess(java.lang.String)](http://docs.google.com/java/lang/SecurityManager.html#checkSecurityAccess(java.lang.String)) method denies access to remove this provider's properties. [NullPointerException](http://docs.google.com/java/lang/NullPointerException.html) - if s is null**Since:** 1.5

| | [**Overview**](http://docs.google.com/overview-summary.html) | [**Package**](http://docs.google.com/package-summary.html) | **Class** | [**Use**](http://docs.google.com/class-use/Provider.html) | [**Tree**](http://docs.google.com/package-tree.html) | [**Deprecated**](http://docs.google.com/deprecated-list.html) | [**Index**](http://docs.google.com/index-files/index-1.html) | [**Help**](http://docs.google.com/help-doc.html) | | --- | --- | --- | --- | --- | --- | --- | --- | | | ***Java™ Platform***  ***Standard Ed. 6*** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| [**PREV CLASS**](http://docs.google.com/java/security/ProtectionDomain.html)   [**NEXT CLASS**](http://docs.google.com/java/security/Provider.Service.html) | [**FRAMES**](http://docs.google.com/index.html?java/security/Provider.html)    [**NO FRAMES**](http://docs.google.com/Provider.html)     [**All Classes**](http://docs.google.com/allclasses-noframe.html) |
| SUMMARY: [NESTED](#3znysh7) | [FIELD](#tyjcwt) | [CONSTR](#3dy6vkm) | [METHOD](#1t3h5sf) | DETAIL: FIELD | [CONSTR](#3rdcrjn) | [METHOD](#lnxbz9) |

[Submit a bug or feature](http://bugs.sun.com/services/bugreport/index.jsp)

For further API reference and developer documentation, see [Java SE Developer Documentation](http://docs.google.com/webnotes/devdocs-vs-specs.html). That documentation contains more detailed, developer-targeted descriptions, with conceptual overviews, definitions of terms, workarounds, and working code examples.

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