

Distribution XML Reference

allowed-os-versions

Defines OS version requirements. These consist of one or more version ranges, specified as `os-version` elements. The version of the operating system on the target volume must fall into one of these ranges to allow installation.

Attributes

None.

Availability

Available in OS X v10.6.6 and later.

Content

This element can contain the following element:

`os-version` (one or more): The supported OS versions.

app

Identifies an application that must be closed before the package is installed.

Attributes

Attribute name	Type	Description
<code>id</code>	String	<i>Required.</i> The bundle identifier of the application.

Content

None.

auxinfo

Reserved.

background

Defines a background image for the Installer.

Attributes

Requirements: You must provide either the `mime-type` or `uti` attribute. If you provide both, they must be consistent.

Attribute name	Type	Description
alignment	String	<i>Optional.</i> The alignment used to render the background image. Values: center (default), left, right, top, bottom, topleft, topright, bottomleft, and bottomright. Only used by the Installer.
file	String	<i>Required.</i> The filename of an image in the distribution package—for example, <code>background.png</code> or <code>./background.png</code> .
mime-type	String	The standard MIME type of the image.
scaling	String	<i>Optional.</i> The scaling used to render the background image. Values: <code>tofit</code> (default), <code>none</code> , and <code>proportional</code> .
uti	String	The UTI type of the image. This attribute is provided because some file types don't have a MIME type.

Content

None.

bundle

Defines a single bundle. The meaning of this element differs considerably depending on its parent element; see the parent element's documentation for details.

Attributes

Attribute name	Type	Description
CFBundleShortVersionString	String	<i>Optional.</i> The short version string of the bundle, as defined in its <code>Info.plist</code> file.
CFBundleVersion	String	<i>Optional.</i> The bundle's version, as defined in its <code>Info.plist</code> file.
id	String	<i>Required.</i> The identifier of the bundle—that is, the value of <code>CFBundleIdentifier</code> in the bundle's <code>Info.plist</code> file.
path	String	<i>Required.</i> The path at which the bundle is installed, relative to where the package is installed. For example, <code>Applications/Sample.app</code> .
search	Boolean	<i>Optional.</i> Indicates whether to search for the bundle by its identifier if it is not found at the given path. Values: <code>false</code> (default), <code>true</code> . Only valid when this element is a child of a <code>required-bundles</code> element.
BuildVersion	—	<i>Reserved.</i>
SourceVersion	—	<i>Reserved.</i>

Content

None.

bundle-version

Defines the version of the bundles delivered by the parent element. You do not typically specify this element; `productbuild` inserts it from the actual package data when the product archive is created.

Attributes

None.

Availability

Available in OS X v10.6.6 and later.

Content

This element can contain the following elements:

bundle (one or more): The package-relative path and version strings of the bundles installed.

choice

Defines an installation choice of a distribution package.

Attributes

Attribute name	Type	Description
customLocation	Absolute file path	<i>Optional.</i> Specifies the default installation location, within the installation volume, for this choice. Implies that the user can choose a different installation location. If unspecified, the user cannot choose the installation location for this choice.
customLocationAllowAlternateVolumes	Boolean	Optional if <code>customLocation</code> is specified; otherwise, not allowed. Specifies whether the user can choose the installation volume. Values: <code>false</code> (default) indicates that the user can choose a different location than what is given by <code>customLocation</code> but cannot change the volume; <code>true</code> indicates that the user can choose the installation volume and the location on that volume. A value of <code>true</code> is only valid for packages that use the Installer.
description	String, localization key	Required for packages that use the Installer; otherwise, optional. Specifies the description of the installation choice. Localizable.
description-mime-type	String	<i>Optional.</i> The MIME type of the text data in the <code>description</code> attribute. Values: <code>text/plain</code> (default), <code>text/rtf</code> , or <code>text/html</code> .
enabled	Boolean JavaScript expression	<i>Optional.</i> Specifies whether the user can select or deselect this option in the Installer customization pane. If <code>false</code> , or a JavaScript expression that evaluates to <code>false</code> , the choice is dimmed so the user cannot select or deselect it. Re-evaluated as the user interacts with the choice tree, so a choice can be enabled

		or disabled based on the state of other choices. Default value is <code>true</code> .
<code>id</code>	<code>String</code>	<i>Required.</i> Unique identifier of the installation choice, used to bind this element to the <code>line</code> element that determines its position in the installation-choice hierarchy. Must match the <code>choice</code> attribute of exactly one <code>line</code> element.
<code>selected</code>	<code>Boolean</code> <code>JavaScript expression</code>	<i>Optional.</i> Specifies whether this option is selected or deselected for installation. If <code>false</code> , or a JavaScript expression that evaluates to <code>false</code> , the choice will not be installed. In general, you should not declare this attribute on a choice that is visible and enabled, because it can interfere with the user's selections. Default value is <code>true</code> .
<code>start_enabled</code>	<code>Boolean</code>	<i>Optional.</i> Specifies whether this option is initially enabled in the Installer customization pane. Values: <code>true</code> (default), or <code>false</code> .
<code>start_selected</code>	<code>Boolean</code>	<i>Optional.</i> Specifies whether this option is initially selected or deselected for installation. Values: <code>true</code> (default), or <code>false</code> .
<code>start_visible</code>	<code>Boolean</code>	<i>Optional.</i> Specifies whether this option is initially visible in the Installer customization pane. Values: <code>true</code> (default), or <code>false</code> .
<code>title</code>	<code>String</code> , <code>localization key</code>	<i>Required.</i> Specifies the title of the installation choice. Localizable.
<code>visible</code>	<code>Boolean</code> <code>JavaScript expression</code>	<i>Optional.</i> Specifies whether this option is visible in the Installer customization pane. If <code>false</code> , or a JavaScript expression that evaluates to <code>false</code> , the choice is hidden from the user. Default value is <code>true</code> . Avoid making choices appear and disappear while the user is interacting with the installation process. This provides a poor user experience.
<code>bundle</code>	-	<i>Reserved.</i>
<code>customLocationIsSelfContained</code>	-	<i>Reserved.</i>
<code>tooltip</code>	-	<i>Reserved.</i>
<code>versStr</code>	-	<i>Reserved.</i>

Content

This element can contain the following element:

pkg-ref (zero or more): The choice's packages. You should only associate packages with a choice that has no subchoices (as defined by the hierarchy of line elements).

choices-outline

Defines the installation-choice hierarchy of a distribution package.

Attributes

Attribute name	Type	Description
ui	-	<i>Reserved.</i>

Content

This element can contain the following element:

line (one or more): The top-level installation choices.

conclusion

Specifies text that is displayed by Installer at the end of the installation process.

Attributes

Requirements: You must provide either the `mime-type` or `uti` attribute. If you provide both, they must be consistent.

Attribute name	Type	Description
file	String	<i>Required.</i> The filename of the conclusion file in the distribution package—for example, <code>conclusion.rtf</code> .

mime-type	String	The MIME-type specifier for the data contained in the file.
uti	String	The UTI-type specifier for the data contained in the file.
language	-	<i>Reserved.</i>

Content

None.

domains

Indicates what domains the package may be installed into. If this element is not present, `enable_anywhere` is `true`, `enable_currentUserHome` is `false`, and `enable_localSystem` is `true`.

Attributes

Attribute name	Type	Description
<code>enable_anywhere</code>	Boolean JavaScript expression	<i>Required.</i> If <code>true</code> , or a JavaScript expression that evaluates to <code>true</code> , the product can be installed at the root of any volume, including nonsystem volumes. Otherwise, it cannot be installed at the root of a volume.
<code>enable_currentUserHome</code>	Boolean JavaScript expression	<i>Required.</i> If <code>true</code> , or a JavaScript expression that evaluates to <code>true</code> , the product can be installed into the current user's home directory. Otherwise, it cannot be installed in the current user's home directory. A home directory installation is done as the current user (not as <code>root</code>), and it cannot write outside of the home directory. You should enable this only if the product can be installed in the user's home directory and be completely functional from that location.
<code>enable_localSystem</code>	Boolean JavaScript expression	<i>Required.</i> If <code>true</code> , or a JavaScript expression that evaluates to <code>true</code> , the product can be installed into the root directory. This attribute should usually be <code>true</code> unless the product can be installed only to the user's home directory.

Content

None.

installation-check

Specifies whether the installation host meets the distribution's system requirements. The installation check passes if the script returns `true`, any RAM requirements are met, and any graphics requirements are met.

Attributes

Attribute name	Type	Description
script	Boolean JavaScript expression	<p><i>Optional.</i> Specifies whether the requirements are met. If <code>true</code> (default), or a Boolean JavaScript expression that evaluates to <code>true</code>, the installation proceeds, subject to the other checks.</p> <p>If the script evaluates to <code>false</code>, it must also set <code>my.result.type</code> and <code>my.result.message</code> to indicate the severity of the problem and provide a message to display. If <code>my.result.type</code> is <code>Warning</code>, the installation may be allowed to proceed after informing the user.</p>

Content

This element can contain the following elements:

- ram (zero or one): The required RAM.
- required-graphics (zero or one): The GPU requirements.

installer-gui-script

The root element of the distribution definition. All other elements in the distribution definition file are children of this element.

Attributes

Attribute name	Type	Description
minSpecVersion	Integer	<i>Required.</i> The schema version of a distribution file. Use <code>1</code> for the version used prior to OS X v10.6.6, or <code>2</code> after that.
maxSpecVersion	-	<i>Reserved.</i>
verifiedSpecVersion	-	<i>Reserved.</i>

Content

This element can contain the following elements:

- background (zero or one)
- choice (one or more)
- choices-outline (exactly one)
- conclusion (zero or one)
- domains (zero or one)
- installation-check (zero or one)
- license (zero or one)
- locator (zero or more)
- options (zero or one)
- pkg-ref (one or more)
- product (zero or one)
- readme (zero or one)
- script (zero or one)
- title (exactly one)
- volume-check (zero or one)
- welcome (zero or one)

license

Specifies text that is displayed by Installer during the installation process.

Attributes

Requirements: You must provide either the `mime-type` or `uti` attribute. If you provide both, they must be consistent.

Attribute name	Type	Description
file	String	<i>Required.</i> The filename of the welcome file in the distribution package—for example, <code>welcome.rtf</code> .
mime-type	String	The MIME-type specifier for the data contained in the file.
uti	String	The UTI-type specifier for the data contained in the file.
auto	—	<i>Reserved.</i>
language	—	<i>Reserved.</i>
sla	—	<i>Reserved.</i>

Content

None.

line

Defines where a choice fits into the installation-choice hierarchy of a distribution package.

Attributes

Attribute name	Type	Description
choice	String	<p><i>Required.</i> Identifies the installation choice associated with this node of the installation-choice hierarchy of a distribution package. The value must match the ID of a <code>choice</code> element. See <code>choice</code>.</p> <p>Do not reference the same ID from more than one <code>line</code> element, not even from different installation-choice hierarchies; if you do so, the behavior is undefined.</p>

Content

This element can contain the following element:

`line` (zero or more): The subchoices of this choice.

localization

Reserved.

locator

Defines a search rule for finding software that is already installed on the system.

Attributes

None.

Content

This element can contain the following element:

search (one or more): The search rule.

must-close

Identifies applications that must be closed before the package is installed.

Applications are considered only if the package that contains this element has been selected for installation.

Attributes

None.

Content

This element can contain the following element:

app (one or more): The applications.

options

Specifies the installation properties of a package within the distribution.

Attributes

Attribute name	Type	Description
allow-external-scripts	Boolean	<i>Optional.</i> Specifies whether the <code>run</code> and <code>runOnce</code> JavaScript functions can be executed. Values: <code>false</code> (default) or <code>true</code> . For information about these functions, see System in <i>Installer JavaScript Reference</i> .
customize	String	<i>Optional.</i> Specifies whether the user can customize the installation by selecting or deselecting installation choices. Values: <code>allow</code> (default) gives the user an opportunity to customize the installation, <code>always</code> presents the customization view automatically. <code>never</code> does not provide access to the customization view.
hostArchitectures	String	<i>Optional.</i> A comma-separated list of supported architecture codes. Valid codes are <code>i386</code> , <code>x86_64</code> , and <code>ppc</code> . Note that <code>i386</code> matches both 32-bit and 64-bit systems, but <code>x86_64</code> matches only 64-bit systems.
mpkg	String	<i>Optional.</i> Identifies a package (<code>pkg-ref</code> element) whose

		installation operations must be performed as part of the installation of this distribution. Deprecated.
require-scripts	Boolean	<i>Optional.</i> Indicates whether the distribution uses JavaScript code. Values: <code>true</code> (default) or <code>false</code> . If this value is <code>false</code> , all attributes whose value may be a JavaScript expression must be set to either <code>true</code> or <code>false</code> . Available in OS X v10.6.6 and later.
rootVolumeOnly	Boolean	<i>Optional.</i> Specifies whether the user can choose an installation volume other than the boot volume. Values: <code>true</code> or <code>false</code> . Deprecated. Use domains instead.
type	-	<i>Reserved.</i>
visibleOnlyForPredicate	-	<i>Reserved.</i>

Content

None.

os-version

Defines a range of supported OS versions.

This element is designed for you to use a specific OS version number for the `min` attribute, and a major OS version number for the `before` attribute. The expectation is that you will know an exact minimum version but not an exact major version. This keeps you from having to guess the last minor revision before the next major revision, as you would have to do if the `before` attribute were inclusive.

Attributes

Attribute name	Type	Description
before	String	<i>Optional.</i> The maximum allowed version (exclusive). If the OS version is greater than or equal to this version, installation will be disallowed (unless the OS falls in the range of another <code>os-version</code> element). If no value is given, there is no upper bound on the range—any version newer than the minimum is allowed.
min	String	<i>Required.</i> The minimum allowed version (inclusive). If the OS is less than this version, installation will be disallowed (unless the OS falls in the range of another <code>os-version</code> element).

Content

None.

pkg-ref

References a component package that can be installed.

Attributes

Attribute name	Type	Description
active	Boolean JavaScript expression	<p><i>Optional.</i> Indicates whether the package is installed. Values: <code>true</code> (default), <code>false</code>.</p> <p>If <code>false</code>, or a JavaScript expression that evaluates to <code>false</code>, the package is not installed, even if its associated choice was selected.</p> <p>This provides an additional way to activate and deactivate packages. It overrides the setting on the parent element.</p>
auth	String	<p>Defines the authorization level needed to install this package. Values: <code>none</code> or <code>root</code>.</p> <p>Deprecated. The installation domain determines the necessary authorization level.</p>
id	String	<p><i>Required.</i> Uniquely identifies a component package within a distribution package—for example, <code>com.apple.TextEdit.pkg</code>. The value of this attribute is usually the same as the component package's identifier, but it is not required to be the same.</p> <p>If there are multiple <code>pkg-ref</code> elements with the same ID, their attributes will be collapsed together as if they were specified with a single element. In particular, a <code>pkg-ref</code> element with only an ID can be used inside of a <code>choice</code> element to bind that choice to a <code>pkg-ref</code> that is more fully defined elsewhere in the distribution file.</p>
installKBytes	Integer	<p><i>Optional.</i> Specifies the size of the package's payload in kilobytes.</p> <p>You typically omit this attribute because <code>productbuild</code> sets it from the actual package when the product archive is created.</p>
onConclusion	String	<p><i>Optional.</i> Specifies the action to take after the installation has finished. Values, from lowest to highest: <code>None</code> (default), <code>RequireLogout</code>, <code>RequireRestart</code>, or <code>RequireShutdown</code>.</p> <p>The Installer takes the highest value from all enabled packages and requires the associated action.</p>

onConclusionScript	String	<i>Optional.</i> A JavaScript expression that evaluates to one of the string values expected for <code>onConclusion</code> . If this attribute is present, any <code>onConclusion</code> attribute is ignored. Available in OS X v10.7 and later.
version	String	<i>Required.</i> Specifies the version of the package's payload. You typically omit this attribute because <code>productbuild</code> will set it from the actual package when the product archive is created.
archiveKBytes	-	<i>Reserved.</i>
packageIdentifier	-	<i>Reserved.</i>

Content

Required. A URL specifying the location of the installation package to which this element refers. Typically, you specify a simple filename and `productbuild` adjusts the URL as needed when the product archive is created. If you define multiple `pkg-ref` elements with the same ID, exactly one of them should have text content.

This element can contain the following elements:

`must-close` (zero or one): The application(s) to be closed before installing this package.

`bundle-version` (zero or one): The bundle version.

`relocate` (zero or more): The information to support relocatable bundles.

To provide a `must-close` element, add a separate `pkg-ref` element with the same ID to contain the `must-close` element. For example:

```
<pkg-ref id="abc">x.pkg</pkg-ref>
<pkg-ref id="abc">
  <must-close>
    <app id="com.example.MyApp"/>
  </must-close>
</pkg-ref>
```

product

Defines a top-level product identifier and version. Used for distributing via the App Store.

Attributes

Attribute name	Type	Description

id	String	<i>Required.</i> The top-level product identifier. The value should be the same as the bundle identifier of the contained application.
version	String	<i>Required.</i> The version string for the top-level product. The value should be the same as the short version string of the contained application.

Availability

Available in OS X v10.6.6 and later.

Content

None.

ram

Specifies the minimum amount of RAM that the system must have.

Attributes

Attribute name	Type	Description
min-gb	String	<i>Required.</i> The minimum required RAM in gigabytes. (Consistent with how sizes are displayed in OS X v10.6 and later, a gigabyte is defined as 10^9 bytes, not 2^{30} bytes.)

Availability

Available in OS X v10.6.6 and later.

Content

None.

readme

Specifies text that is displayed by Installer during the installation process.

Attributes

Requirements: You must provide either the `mime-type` or `uti` attribute. If you provide both, they must be consistent.

Attribute name	Type	Description
<code>file</code>	String	<i>Required.</i> The filename of the readme file in the distribution package. For example, <code>readme.rtf</code> .
<code>mime-type</code>	String	The MIME-type specifier for the data contained in the file.
<code>uti</code>	String	The UTI-type specifier for the data contained in the file.
<code>language</code>	-	<i>Reserved.</i>

Content

None.

relocate

Describes a relocatable bundle. Relocatable bundles allow the user to install an upgrade in the same path as the current version. The path is located by the `search` element whose ID is specified by the `search-id` attribute. The bundle is specified by the child `bundle` element. For example, application bundles are typically relocatable.

Attributes

Attribute name	Type	Description
<code>search-id</code>	String	<i>Required.</i> Specifies the ID of the <code>search</code> element whose results are applied to the bundle that is this element's child element. If the search returns <code>false</code> , the relocate does nothing. If the search returns an array of results, the first result is used.

Content

This element can contain the following element:

bundle (exactly one): The bundle (within the package) that will be installed at the path. The only required attribute for this `bundle` element is its ID.

required-bundles

Specifies bundles that must be already installed on the system.

If the child `bundle` element has a version specified, this is interpreted as the minimum supported version for that bundle. It may also have its `search` attribute set to `true`, indicating that the bundle should be located by its identifier if it doesn't exist at the specified path.

Attributes

Attribute name	Type	Description
<code>all</code>	Boolean	<i>Optional.</i> Values: <code>true</code> (default) to require all of the specified bundles, or <code>false</code> to require at least one of them.
<code>description</code>	String, localization key	<i>Optional.</i> A description of the required bundles, displayed to the user if the requirement is not met.

Content

This element can contain the following element:

`bundle` (one or more): The required bundles.

required-cl-device

Specifies requirements that must be met by at least one OpenCL device.

Attributes

None.

Availability

Available in OS X v10.7 and later.

Content

The predicate, as a string. For details about the predicate format, see the [productbuild man page](#).

To prevent characters in the predicate from being interpreted by the XML parser, mark it as CDATA content.

required-gl-renderer

Specifies requirements that must be met by at least one OpenGL hardware renderer.

Attributes

None.

Availability

Available in OS X v10.6.8 and later.

Content

The predicate, as a string. For details about the predicate format, see *Specifying required OpenGL capabilities for the Mac App Store* and the [productbuild man page](#).

To prevent characters in the predicate from being interpreted by the XML parser, mark it as CDATA content.

required-graphics

Specifies GPU requirements.

Attributes

Attribute name	Type	Description
description	String, localization key	<i>Optional.</i> A description of the graphics requirement. Localizable. If no description is specified, a generic message is used. It is generally best to use the generic message unless the requirements are very straightforward.
single-device	Boolean	<i>Optional.</i> Values: <code>false</code> (default) to allow the OpenCL and OpenGL requirements to be met by different devices, or <code>true</code> to require a single device to simultaneously meet both requirements.

Content

This element can contain the following elements:

- required-cl-device (zero or one): The OpenCL requirements.
- required-gl-renderer (zero or one): The OpenGL requirements.

script

Defines a set of JavaScript functions.

Attributes

Attribute name	Type	Description
language	-	<i>Reserved.</i>

Content

JavaScript code, typically the definition of functions called from attributes of other elements.

To prevent characters in the script from being interpreted by the XML parser, mark it as CDATA content:

```
<script>
<![CDATA[
// ... JavaScript ...
]]>
</script>
```

If you choose not to mark your script as CDATA content, you must take great care to properly escape all characters that have special meaning in XML markup.

search

Defines a search rule for finding installed software. The result should be used by another search rule or bound to a bundle via a `relocate` element.

Attributes

Attribute name	Type	Description

<code>id</code>	String	<i>Required.</i> Uniquely identifies the search; used in the <code>search-id</code> attribute of other elements to reference this search.
<code>script</code>	String	Required if <code>type</code> is <code>script</code> ; otherwise, not allowed. A JavaScript expression that evaluates to <code>false</code> , a path as a string, or an array of paths. If it returns an array of paths, the first one is the preferred path. This expression can be a function call, but the called function must be defined in the child <code>script</code> element.
<code>search-id</code>	String	Optional if <code>type</code> is <code>component</code> ; otherwise, not allowed. The ID of another search. The other search is performed, and its results further filtered by removing those results that don't match the version strings given by the child <code>bundle</code> element. This allows the other search to be qualified for certain values of <code>CFBundleShortVersionStrings</code> or <code>CFBundleVersions</code> .
<code>search-path</code>	String	Optional if <code>type</code> is <code>component</code> ; otherwise, not allowed. A path to a bundle. If there is a bundle at this path that matches the version string of this element's child <code>bundle</code> element, then the path is used as the search result.
<code>type</code>	String	<i>Required.</i> Indicates the type of the search. Valid values are: <code>component</code> Search for a bundle on disk that matches the identifier and version strings given by the child <code>bundle</code> element. By default, the Installer uses Launches Services to perform the search, and it searches only the volume that the user selected as the installation target. The <code>search-id</code> and <code>search-path</code> attributes modify this behavior. <code>script</code> Search by evaluating the JavaScript code contained in the <code>script</code> attribute.

Content

This element must contain exactly one of the following elements:

`bundle`: The bundle for a component search.

`script`: The script for a script search.

strings

Reserved.

tag

Reserved.

tags

Reserved.

title

Defines the title of the product.

Attributes

None.

Content

The title or a localization key used to look up the title.

volume-check

Specifies whether a particular volume meets the distribution's volume requirements. All of the tests in the `script` attribute and the child elements must pass.

Attributes

Attribute name	Type	Description
script	Boolean JavaScript expression	<p><i>Required.</i> Specifies whether the requirements for installing on a particular volume are met.</p> <p>If the script evaluates to <code>false</code>, it must also set <code>my.result.type</code> and <code>my.result.message</code> to indicate the severity of the problem and provide a message to display.</p> <p>The property <code>my.target.mountpoint</code> contains the mount point of the volume being checked.</p>

Content

This element can contain the following elements:

- allowed-os-versions (zero or one): The versions of the OS to accept on the target volume.
- required-bundles (zero or one): The bundles that must already be present.

welcome

Specifies text that is displayed by Installer at the beginning of the installation process.

Attributes

Requirements: You must provide either the `mime-type` or `uti` attribute. If you provide both, they must be consistent.

Attribute name	Type	Description
<code>file</code>	String	<i>Required.</i> The filename of the welcome file in the distribution package—for example, <code>welcome.rtf</code> .
<code>mime-type</code>	String	The MIME-type specifier for the data contained in the file.
<code>uti</code>	String	The UTI-type specifier for the data contained in the file.
<code>language</code>	—	<i>Reserved.</i>

Content

None.