

# Marketplace & Image Metadata

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## Machine image creation is a barrier to cloud adoption

- Creating virtual machine images is time-consuming
- Ensuring that machines are secure and correct is difficult
- Sharing existing machines lowers this barrier

## Marketplace facilitates sharing of images

- Registry of metadata for machine & disk images
- Image contents are kept in cloud, grid, or web storage

## Benefits

- End-users: browse and use existing images for their analyses
- Creators: publicize their work and attract larger user base
- Cloud Admins.: Use metadata to evaluate trustworthiness of images

## REST interface

- Exposes a simple HTTP-based REST interface
- Easy to program against in all languages

## Web interface

- REST interface also allows browsing via a web browser
- Signed entries can also be uploaded via the browser

## Endpoint:

- In your ~/.stratuslab/stratuslab-user.cfg:  
`marketplace_endpoint = http://cloud-lal.stratuslab.eu:8081`



http://marketplace.stratuslab.eu/metadata

Home | Endorsers | Query | Upload | About

## Metadata

Show 10 entries

Search all columns:

	os	os-version	arch	email	date
	CentOS	5.5	x86_64	Konstantin.Skaburskas@cern.ch	2011-05-25T10:35:54Z
	centos	5.5	x86_64	vfloros@admin.grnet.gr	2011-05-06T08:59:26Z
	CentOS	6.0	i386	adrian.colesa@cs.utcluj.ro	2011-08-08T20:50:31Z
	CentOS	5.5	x86_64	vfloros@admin.grnet.gr	2011-04-21T10:12:45Z
	CentOS	5.5	x86_64	christophe.blanchet@ibcp.fr	2011-05-24T08:14:15Z
	CentOS	6.0	i386	adrian.colesa@cs.utcluj.ro	2011-08-08T20:50:44Z
	CentOS	5.6	x86_64	tru@pasteur.fr	2011-07-26T16:09:41Z
	centos	5.5	x86_64	Konstantin.Skaburskas@cern.ch	2011-04-11T08:23:30Z
	centos	5.5	x86_64	christophe.blanchet@ibcp.fr	2011-06-09T11:37:04Z
	CentOS	5.5	x86_64	christophe.blanchet@ibcp.fr	2011-05-24T08:47:20Z

Search os  Search os version  Search architecture  Search email  Search date

Showing 1 to 10 of 42 entries

Page  of 5

# Metadata Entries Search



S http://marketplace.stratuslab.eu/metadata

Home | Endorsers | Query | Upload | About

## Metadata

Show 10 entries  
Search all columns: tty

os	os-version	arch	email	date
ttylinux	9.7	i486	airaj@lal.in2p3.fr	2011-07-25T11:55:38Z
<p>Description: Identifier: LwcRbwCalYSysY1wftQdAj6Bwoi URL: <a href="http://appliances.stratuslab.eu/images/base/ttylinux-9.7-i486-base/1.3/ttylinux-9.7-i486-base-1.3.img.gz">http://appliances.stratuslab.eu/images/base/ttylinux-9.7-i486-base/1.3/ttylinux-9.7-i486-base-1.3.img.gz</a></p> <p><a href="#">More...</a></p>				
ttylinux	9.10	i486	adrian.colesa@cs.utcluj.ro	2011-08-08T20:51:05Z
ttylinux		i686	m.memon@fz-juelich.de	2011-07-22T15:10:44Z

Search os    Search os version    Search architecture    Search email    Search date

Showing 1 to 3 of 3 entries (filtered from 42 total entries)  
Page 1 of 1

# Metadata Entry details



Home | Endorsers | Query | Upload | About

## Metadata

### LwcRbwCalYSysY1wftQdAj6Bwoi

**type:** base  
**kind:** machine  
**format:** raw  
**endorser:** [airaj@lal.in2p3.fr](mailto:airaj@lal.in2p3.fr)  
**os:** ttylinux v9.7 i486  
**version:** 1.3  
**created:** 2011-07-25T11:53:03Z  
**valid:** 2012-01-19T11:53:03Z  
**hypervisor:** kvm  
**publisher:** StratusLab  
**bytes:** 8955295  
MD5 45db398602780cca79156823ccb491d8  
SHA-1 bc1c45bc026a5612cac635c1fb507408fa070a22  
**checksum:** SHA-256 fb2ec8242e59cc2523370240472b063d32af139621acf91e9cd89aeb70531fcf  
SHA-512  
99c6db15968fdb3d2961b50000bf9cc3a326798df2a935b8b4dc32afef79e920bf74d618dc446186f311c0472683155f1d8e27516292836f  
**location:** <http://appliances.stratuslab.eu/images/base/ttylex-9.7-i486-base/1.3/ttylex-9.7-i486-base-1.3.img.gz>

## Image metadata

- Must conform to a defined schema
- Uses the RDF-XML format
- Must be cryptographically signed with a (grid) certificate
- Must contain image ID and checksums to make connection to image
- May contain location elements with image content URL(s)

## Typical Marketplace workflow:

- Create image from scratch or based on existing image
- Upload the image to cloud, grid, or web storage area
- Create the metadata for the image
- Sign the metadata with your (grid) certificate
- Upload the signed metadata to the Marketplace

**Creating an image is a time consuming process...**

**Cheat (!) and just copy ttylinux image from appliance repository:**

- See link on agenda page:  
[https://www.egi.eu/indico/contributionDisplay.py?  
contribId=65&confId=452](https://www.egi.eu/indico/contributionDisplay.py?contribId=65&confId=452)

## Uploading of image

- Skip this for now: image already exists in the appliance repository.
- Normally, it would be transferred to cloud, grid, or web storage.
- Images must be accessible via http(s) at the moment.
- Location URL(s) would usually be part of the metadata.

## Use stratus-build-metadata for creating metadata:

```
$ stratus-build-metadata \
--author='your name' \
--os=ttylinux \
--os-version=9.7 \
--os-arch=i486 \
--version=1.3 \
ttylinux-9.7-i486-base-1.3.img.gz
```

## Look at the contents of the file:

- Identifier is based on SHA-1 checksum and looks like "LwcRbwCaIYSysY1wftQdAj6Bwoi"
- Checksums ensure that downloaded images match the metadata
- Empty endorser element and no signature element
- Normal file would have location elements(<slterms:location>...<slterms:location>);
- Edit ttylinux-9.7-i486-base-1.3.xml to define image location
- <dcterms:compression> element is empty, so fill it.

## Try to validate the unsigned metadata file:

- There is no signature so the file should not be valid

```
$ stratus-validate-metadata ttylinux-9.7-i486-base-1.3.xml
Invalid: ttylinux-9.7-i486-base-1.3.xml
no signature
```

## Sign the contents of the file with a grid certificate:

- `ttylinux-9.7-i486-base-1.3.xml` → `ttylinux-9.7-i486-base-1.3.xml.orig`
- `ttylinux-9.7-i486-base-1.3.xml` contains endorser and signature elements

```
$ stratus-sign-metadata \
--p12-cert grid.p12 \
--p12-password xxxxxxx \
ttylinux-9.7-i486-base-1.3.xml

Manifest file successfully signed: ttylinux-9.7-i486-base-1.3.xml

$ stratus-validate-metadata ttylinux-9.7-i486-base-1.3.xml
Valid: ttylinux-9.7-i486-base-1.3.xml
```

## File can be uploaded via the command line:

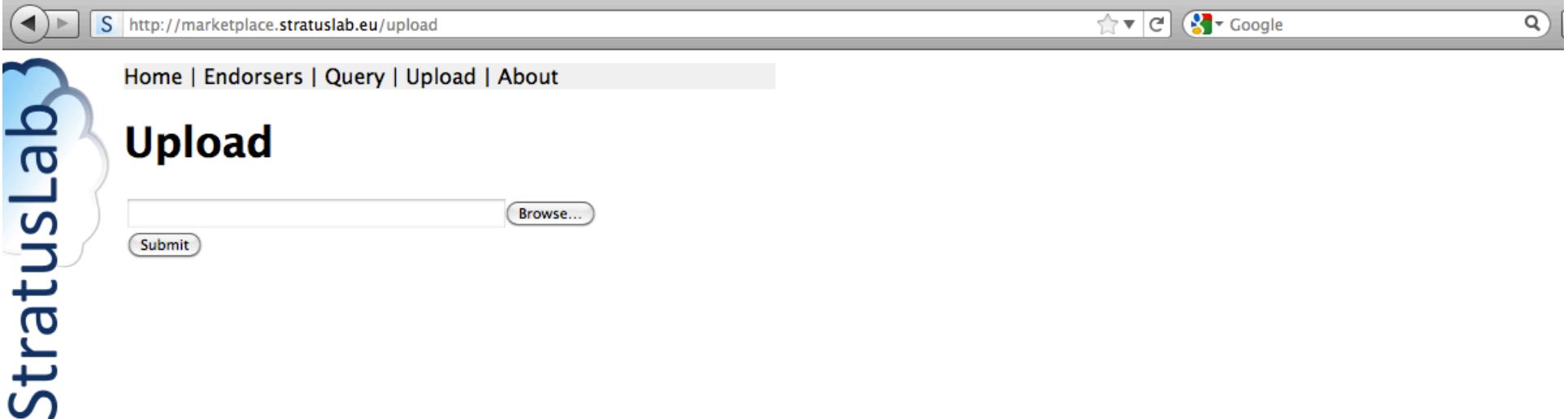
- stratus-upload-metadata

```
$ stratus-upload-metadata \
ttylinux-9.7-i486-base-1.3.xml
```

```
http://cloud-lal.stratuslab.eu:8081/metadata/LwcRbwCaIYSysY1wftQdAj6Bwoi/email address/
2011-09-13T09:58:54Z
```

**Note: Depending on the configuration of the server, it may validate the email address in the metadata description before it is made visible.**

# Web Upload of Metadata



A screenshot of a web browser showing the StratusLab metadata upload interface. The URL in the address bar is <http://marketplace.stratuslab.eu/upload>. The page title is "Upload". On the left, there is a vertical blue cloud icon with the text "StratusLab" inside it. The main content area has a light gray background. At the top, there is a navigation bar with links: Home | Endorsers | Query | Upload | About. Below the navigation bar, the word "Upload" is displayed in a large, bold, black font. Underneath "Upload", there is a file input field with the placeholder "Browse..." and a "Submit" button below it.

## Pass the URL for metadata entry when starting instance.

- stratus-run-instance `LwcRbwCaIYSysY1wftQdAj6Bwoi`
- Use normal machine lifecycle to control machine.

## StratusLab cloud will validate image before running it:

- stratus-policy-image: invokes site policy to determine if the referenced image can be used; includes endorser white lists, checksum black lists, etc.

## May want to invalidate an image:

- stratus-deprecate-metadata
- deprecates an image and gives a reason

```
$ stratus-deprecate-metadata \
--reason="JUST FOR FUN" \
--p12-cert=/Users/loomis/.globus/cert.p12 \
--p12-password=XXXXXX \
$TTYLINUX_ID
```

```
http://cloud-lal.stratuslab.eu:8081/metadata/LwcRbwCaIYSysY1wftQdAj6Bwoi/loomis@lal.in2p3.fr/
2011-09-21T14:52:43Z
```

Try running the image; what happens?

Put back standard Marketplace endpoint!

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