StratusLab

Enhancing Grid Infrastructures with Virtualization and Cloud Technologies

Marketplace: Registry for Machine & Disk Images

Making secure machine images for virtualized and cloud infrastructures remains a significant hurdle for wider adoption and use of these technologies. The StratusLab Marketplace lowers this barrier by facilitating the sharing and reuse of existing images.

Benefits

End-Users: Scientists, engineers, and other users of StratusLab cloud infrastructures can browse the Marketplace to find existing images that have the operating systems and applications to run their analyses, saving them the time needed to create their own images.

Image Creators: People creating machine and disk images can publish metadata about them in the Marketplace, making them accessible to a wider audience and soliciting feedback to further improve those images.

Cloud Administrators: Those running cloud infrastructures can use image metadata from the Marketplace to evaluate whether they can trust a particular machine or disk image, banning if necessary, images which do not meet the administrator's requirements.

Image Contents

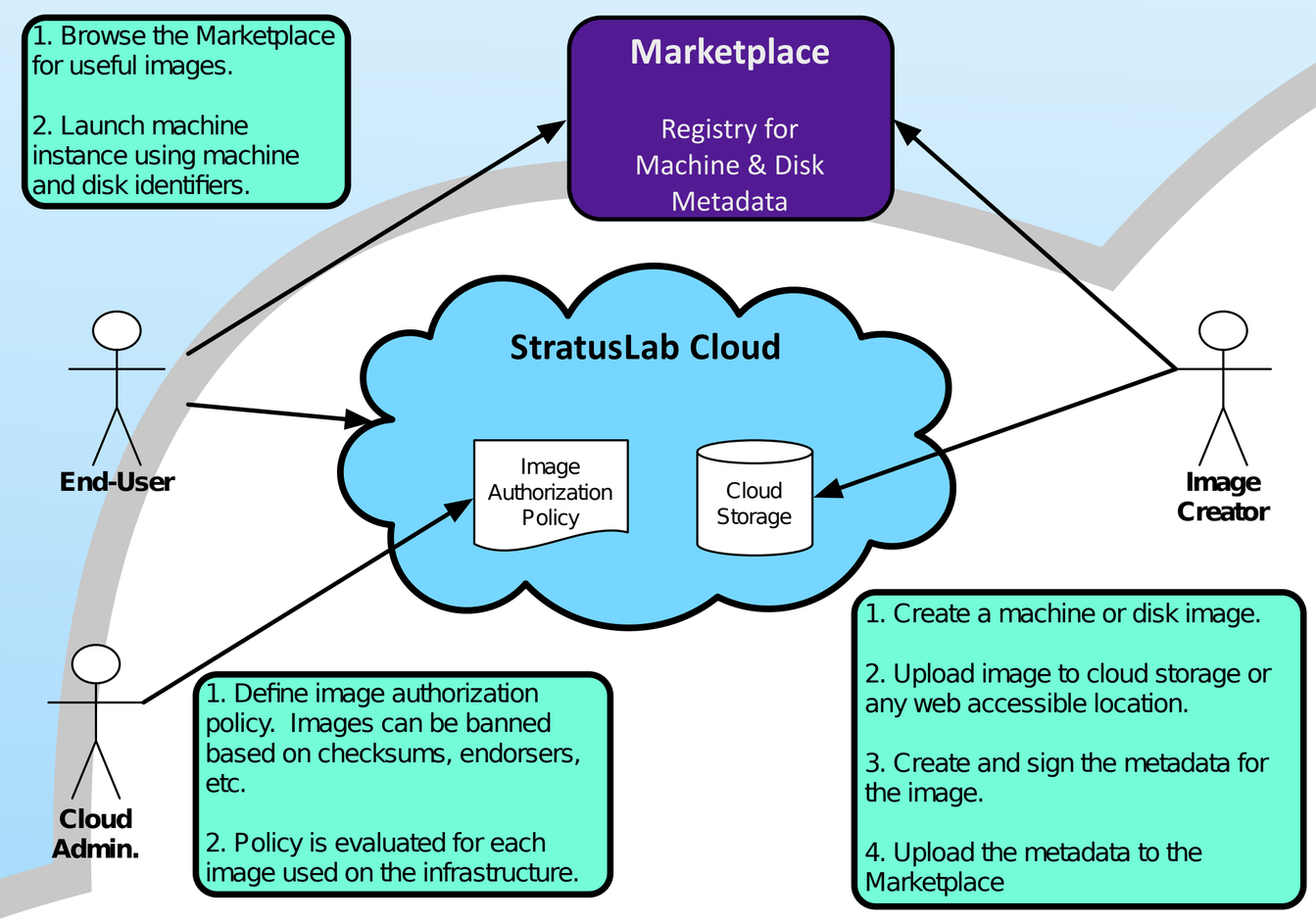
Contents are uploaded into cloud storage or any other web accessible location; the Marketplace does not store the image contents. The link between the metadata and the image is based on the SHA-1 checksum.

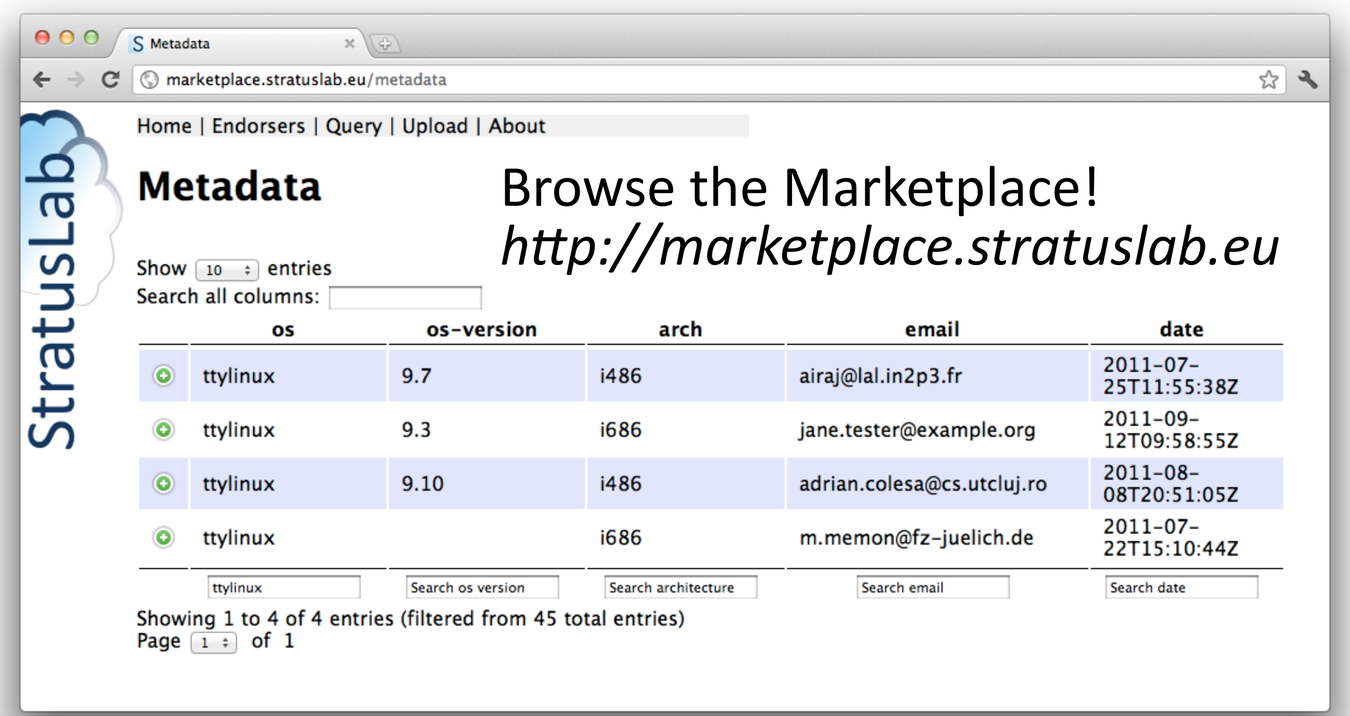
Image Metadata

Existing standards have been used to provide a lightweight, extensible metadata format that allows searching and selection based on a variety of attributes. (See example below.)

Standards

XML (W3C)
XML Signature (W3C)
RDF-XML (W3C)
Dublin Core Metadata (DCMI)





```
<rdf:RDF
  xmlns:dcterms="http://purl.org/dc/terms/"
  xmlns:ex="http://example.org/"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:slreq="http://mp.stratuslab.eu/slreq#"
  xmlns:slterms="http://mp.stratuslab.eu/slterms#"
  xml:base="http://mp.stratuslab.eu/">

  <rdf:Description rdf:about="#MMZu9WvwKIro-rtBQfDk4PsKO7_">

    <dcterms:identifier>MMZu9WvwKIro-rtBQfDk4PsKO7_</dcterms:identifier>
    <slreq:bytes>100</slreq:bytes>
    <slreq:checksum rdf:parseType="Resource">
      <slreq:algorithm>SHA-1</slreq:algorithm>
      <slreq:value>c319bbd5afc0a22ba3eaed0507c39383ec28eeff</slreq:value>
    </slreq:checksum>

    <slreq:endorsement rdf:parseType="Resource">
      <created xmlns="http://purl.org/dc/terms/">2011-03-25T21:25:07Z</create
      <endorser xmlns="http://mp.stratuslab.eu/slreq#" rdf:parseType="Resourc
        <email>loomis@lal.in2p3.fr</email>
        <subject>CN=Charles Loomis,OU=LAL,O=CNRS,C=FR,O=GRID-FR</subject>
        <issuer>CN=GRID2-FR,O=CNRS,C=FR</issuer>
      </endorser>
    </slreq:endorsement>

    <dcterms:type>machine</dcterms:type>
    <dcterms:valid>2011-07-23T10:59:42Z</dcterms:valid>
    <dcterms:publisher>StratusLab</dcterms:publisher>

    <dcterms:title>linux-with-my-apps</dcterms:title>
    <dcterms:description>A 32-bit ttylinux...</dcterms:description>
    <slterms:serial-number>0</slterms:serial-number>
    <slterms:version>1.0</slterms:version>

    <slterms:hypervisor>kvm</slterms:hypervisor>
    <slterms:inbound-port>443</slterms:inbound-port>
    <slterms:outbound-port>25</slterms:outbound-port>
    <slterms:icmp>8</slterms:icmp>

    <slterms:os>ttylinux</slterms:os>
    <slterms:os-version>9.7</slterms:os-version>
    <slterms:os-arch>i486</slterms:os-arch>

    <ex:other-info>additional metadata</ex:other-info>
    <ex:yet-more>still more info</ex:yet-more>
    <ex:relatedImages rdf:parseType="Resource">
      <dcterms:identifier>MMZu9WvwKIro-rtBQfDk4PsKO7_</dcterms:identifier>
      <dcterms:identifier>NMZu9WvwKIro-rtBQfDk4PsKO7_</dcterms:identifier>
    </ex:relatedImages>
  </rdf:Description>

  <Signature xmlns="http://www.w3.org/2000/09/xmldsig#">
    <SignedInfo>
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      <SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"
      <Reference URI="">
        <Transforms>
          <Transform Algorithm="http://www.w3.org/2000/09/xmldsig#..."/>
        </Transforms>
        <DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
        <DigestValue>go6VR...</DigestValue>
      </Reference>
    </SignedInfo>
    <SignatureValue>NrTJFF...</SignatureValue>
    <KeyInfo>
      <X509Data>...
        <X509Certificate>...</X509Certificate>
      </X509Data>
    </KeyInfo>
  </Signature>

</rdf:RDF>
```


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