



Mettre en place un logiciel
gratuit de création et de
publication d'alertes PAC

Objectifs d'apprentissage

À l'issue de cette séance de formation, vous pourrez:

- 1) Décrire les éléments requis pour établir une source d'alertes au format PAC (serveur Internet et conteneur Web, logiciels pour l'édition des alertes PAC et la publication du fil de nouvelles)
- 2) Étudier diverses configurations possibles de l'éditeur PAC, dont le choix de l'emplacement des fichiers et la personnalisation de l'affichage
- 3) Analyser la manière d'accorder les autorisations voulues dans le système hôte et d'assurer l'authentification des utilisateurs autorisés

Plan de la présentation

- 204.1 Aperçu de l'outil de création d'alertes PAC
- 204.2 Éléments requis pour mettre en place l'outil
- 204.3 Éditeurs autorisés, modèles d'alertes, fichier RSS, feuille de style, installation de l'éditeur PAC
- 204.4 Configuration locale de l'éditeur PAC



Outil d'édition des alertes PAC (edit.html)



CAP Alert Editor, Session Setup

NOTE: If an alert must be issued in less than one minute, please use your simplified warning method instead of this editor tool.

This tool is for composing alerts in CAP (X.1303) format. You must login to be authenticated in your role as authorized composer or approver of CAP alerts. (An approver is an authorized composer also authorized to publish the CAP alert.) Authentication requires your e-mail address and password.

Language - 2-letter (lowercase) ISO 639-1 code for text in this CAP alert and its Internet news feed.

Status - Is the alert to be published as an **actual** alert or as a test or exercise?

 ▼

Scope - Is the alert to be published as a **public** alert or published as a private or restricted alert?

 ▼

MsgType - Is this a new alert, or an update or cancel of an already issued alert?

 ▼



Outil d'édition des alertes PAC (choix)

Initialize this CAP alert (status: Test, scope: Restricted, msgType: Alert)

This application confirmed or created two file directories, within the designated server directory for the application, now set to null. The directory at c:/cap/en/drafts is for draft CAP alerts and c:/cap/en/alerts is for published CAP alerts.

Select initial values using one of the most recent posted alerts: (c:/cap/en/alerts)

As Posted 2014/03/30 16:34:58	2012-10-28-08-47-32.xml	The tsunami Advisory continues in effect for the coastal areas of California and Oregon from Gualala Point, California (80 miles NW of San Francisco) to Douglas/Lane County Line, Oregon (10 miles SW of Florence).
As Posted 2014/03/24 09:51:03	2011-02-02-08-37-09.xml	Geomagnetic Storm Alert
As Posted 2013/11/21 20:42:18	2013-11-22-01-42-03.xml	Flood warning for Musanze Northern Province, Rwanda
As Posted 2012/08/16 15:04:16	2011-02-02-10-08-30.xml	Flash flood Warning for South Central San Bernardino, Western Riverside, and North Central San Diego Counties in Southwest California

Select initial values using one of the most recent draft alerts: (c:/cap/en/drafts)

Draft as of 2013/11/21 20:42:06	2013-11-22-01-42-03.xml	Flood warning for Musanze Northern Province, Rwanda
Draft as of 2011/02/05 04:07:26	2007-08-15-18-53-48.xml	Flash flood Warning for South Central San Bernardino, Western Riverside, and North Central San Diego Counties in Southwest California
Draft as of 2011/02/05 04:07:26	2011-01-25-04-53-33.xml	Geomagnetic Storm Alert
Draft as of 2011/02/05 04:07:26	2011-01-25-05-06-47.xml	Mount St Helens Volcano Advisory (aviation color code ORANGE)

Show/Hide XML Validate (Google) Save edited alert End this session

identifiant

sender **sent**

status **msgType** **scope**

restriction:

language **category** **responseType**

event:

urgency **severity** **certainty**

onset **expires**

senderName:

[Text templates for headline, description, instruction.](#)

headline

description

identifier
sender **sent**
status **msgType** **scope**
language **category** **responseType**
event:
urgency **severity** **certainty**
onset **expires**
senderName:
[Text templates for headline, description, instruction.](#)
headline

description

instruction

web
image
contact
areaDesc

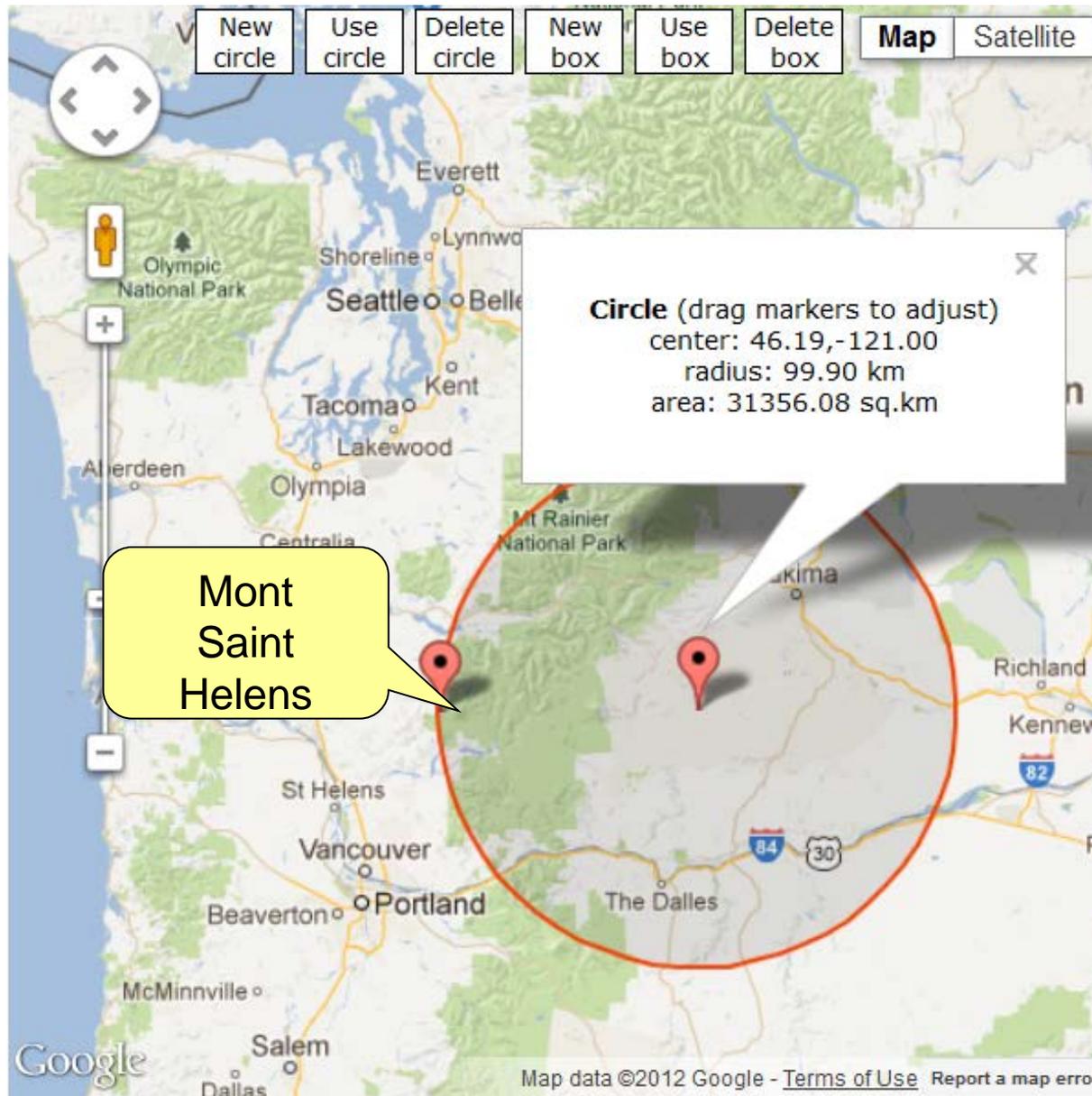
circle

 Circle format: lat,long,span, radius Geocode format: 'type' = 'value'
[Make circle using map](#)

Tracer un cercle sur une carte

```

<?xml version="1.0" encoding="UTF-8" ?>
<cap:alert xmlns:cap="urn:oasis:names:tc:emergency:cap:1.1" >
  <cap:identifier>urn:oid:2.49.0.0.388.0.2014.10.18.13.31.33</cap:identifier>
  <cap:sender>christian@usgs.gov</cap:sender>
  <cap:sent>2014-10-18T13:31:33-00:00</cap:sent>
  <cap:status>Test</cap:status>
  <cap:msgType>Alert</cap:msgType>
  <cap:scope>Public</cap:scope>
  <cap:info>
    <cap:language>en</cap:language>
    <cap:category>Met</cap:category>
    <cap:event>Message from USGS Volcanoes Program</cap:event>
    <cap:responseType>Monitor</cap:responseType>
    <cap:urgency>Expected</cap:urgency>
    <cap:severity>Minor</cap:severity>
    <cap:certainty>Possible</cap:certainty>
    <cap:senderName>USGS Volcanoes Program, Craig Weaver</cap:senderName>
    <cap:headline>Mount St Helens Volcano Advisory (aviation color code ORANGE)
  </cap:headline>
    <cap:description>Current status is Volcano Advisory (Alert Level 2); aviation color code ORANGE: Growth of the new lava dome inside the crater of Mount St. Helens continues, accompanied by low rates of seismicity, low emissions of steam and volcanic gases, and minor production of ash. During such eruptions, changes in the level of activity can occur over days to months. The eruption could intensify suddenly or with little warning and produce explosions that cause hazardous conditions within several miles of the crater and farther downwind. Small lahars could suddenly descend the Toutle River if triggered by heavy rain or by interaction of hot rocks with snow and ice. These lahars pose a negligible hazard below the Sediment Retention Structure (SRS) but could pose a hazard along the river channel upstream.</cap:description>
    <cap:instruction>Wind forecasts from the National Oceanic and Atmospheric Administration (NOAA), coupled with eruption models, show that any ash clouds that rise above the crater rim today would drift principally eastward. Under current eruptive conditions, small, short-lived explosions may produce ash clouds that exceed 30,000 feet in altitude. Ash from such events can travel 100 miles or more downwind.</cap:instruction>
    <cap:web>http://vulcan.wr.usgs.gov/Volcanoes/MSH/Eruption04/</cap:web>
    <cap:contact>Craig Weaver 1-206-553-0627</cap:contact>
    <cap:resource>
      <cap:resourceDesc>Image file</cap:resourceDesc>
      <cap:uri>http://www.fs.fed.us/gpnr/volcanocams/msh/</cap:uri>
    </cap:resource>
    <cap:area>
      <cap:areaDesc>Skamania County, Washington, in the Pacific Northwest region of the United States (96 miles south of Seattle, Washington and 53 miles northeast of Portland, Oregon)</cap:areaDesc>
      <cap:circle>46.2,-122.2 0</cap:circle>
    </cap:area>
  </cap:info>
</cap:alert>
  
```





Outil d'édition des alertes PAC (validation)

Show/Hide XML Validate (Google) Save edited alert End this session

identifier

sender sent

status msgType scope

restriction:

language category responseType

event:

urgency severity certainty

onset expires

senderName:

[Text templates for headline, description, instruction.](#)

headline

description

instruction

web

image

contact

areaDesc

circle geocode

Circle format: lat,long<space>radius
[Make circle using map](#)

Geocode format: 'type' = 'value'

google.org Common Alerting Protocol Validator

The [Common Alerting Protocol](#) validator is a free service that checks the syntax of CAP messages and Atom and RSS feeds of CAP messages. It supports CAP v1.0, v1.1 and

Input feed

```
<?xml version="1.0" encoding="UTF-8" ?>
<cap:alert xmlns:cap="urn:oasis:names:tc:emergency:cap:1.1" >
  <cap:identifier>urn:oid:2.49.0.0.388.0.2014.10.18.9.52.55</cap:identifier>
  <cap:sender>echristian@usgs.gov</cap:sender>
  <cap:sent>2014-10-18T09:52:55-00:00</cap:sent>
  <cap:status>Test</cap:status>
  <cap:msgType>Alert</cap:msgType>
  <cap:scope>Restricted</cap:scope>
  <cap:info>
    <cap:language>en</cap:language>
    <cap:category>Met</cap:category>
    <cap:event>Message from USGS Volcanoes Program</cap:event>
    <cap:urgency>Expected</cap:urgency>
    <cap:severity>Minor</cap:severity>
    <cap:certainty>Possible</cap:certainty>
    <cap:senderName>USGS Volcanoes Program, Craig Weaver</cap:senderName>
    <cap:headline>Mount St Helens Volcano Advisory (aviation color code ORANGE)
  </cap:headline>
    <cap:description>Current status is Volcano Advisory (Alert Level 2):
aviation color code ORANGE: Growth of the new lava dome inside the crater of
Mount St. Helens continues, accompanied by low rates of seismicity, low
emissions of steam and volcanic gases, and minor production of ash. During such
eruptions, changes in the level of activity can occur over days to months. The
eruption could intensify suddenly or with little warning and produce explosions
that cause hazardous conditions within several miles of the crater and farther
downwind. Small lahars could suddenly descend the Toutle River if triggered by
heavy rain or by interaction of hot rocks with snow and ice. These lahars pose
a negligible hazard below the Sediment Retention Structure (SRS) but could pose
a hazard along the river channel upstream.</cap:description>
  </cap:info>
  <cap:instruction>Wind forecasts from the National Oceanic and Atmospheric
Administration (NOAA), coupled with eruption models, show that any ash clouds
that rise above the crater rim today would drift principally eastward. Under
current eruptive conditions, small, short-lived explosions may produce ash
clouds that exceed 30,000 feet in altitude. Ash from such events can travel
100 miles or more downwind.</cap:instruction>
  <cap:web>http://vulcan.wr.usgs.gov/Volcanoes/MSH/Eruption04/</cap:web>
  <cap:image>http://www.fs.fed.us/gpntf/volcanocams/msh/</cap:image>
  <cap:contact>Craig Weaver 1-206-553-0627</cap:contact>
  <cap:areaDesc>Skamania County, Washington, in the Pacific Northwest region
of the United States (96 miles south of Seattle, Washington and 53 miles
northeast of Portland, Oregon)</cap:areaDesc>
  <cap:circle>46.2,-122.20</cap:circle>
  <cap:geocode></cap:geocode>
</cap:alert>
```

Type an alert or [upload a file](#).

(Optional) Validate against common CAP profiles:

- [US IPAWS Profile v1.0](#)
- [CAP Canadian Profile v1.0](#)
- [CAP Australian Profile v3.0, Committee S](#)
- [Google Public Alerts CAP v1.0](#)

Validate

Result

Valid!

L'alerte PAC est valide



This draft alert was saved to drafts directory as c:/cap/en/drafts/2014-10-18-09-52-55.xml and is available private
[E-mail the alert to me](#)

Outil d'édition des alertes PAC (publication)

identifiant urn:oid:2.49.0.0.388.0.2014.10.18.9.52.55
sender echristian@usgs.gov
sent 2014-10-18T09:52:55-00:00
status Test msgType Alert scope Restricted
restriction civic-authorities
addresses
note
references
language en category Met responseType
event Message from USGS Volcanoes Program
urgency Expected severity Minor certainty Possible
onset expires
senderName: USGS Volcanoes Program, Craig Weaver
headline Mount St Helens Volcano Advisory (aviation color code ORANGE)
description Current status is Volcano Advisory (Alert Level 2); aviation color code ORANGE: Growth of the new lava volcanic gases, and minor production of ash. During such eruptions, changes in the level of activity can occur over conditions within several miles of the crater and farther downwind. Small lahars could suddenly descend the Toutle the Sediment Retention Structure (SRS) but could pose a hazard along the river channel upstream.
instruction Wind forecasts from the National Oceanic and Atmospheric Administration (NOAA), coupled with eruptive eruptive conditions, small, short-lived explosions may produce ash clouds that exceed 30,000 feet in altitude. Ash
web http://vulcan.wr.usgs.gov/Volcanoes/MSH/Eruption04/
image http://www.fs.fed.us/gpnf/volcanocams/msh/
contact Craig Weaver 1-206-553-0627
areaDesc Skamania County, Washington, in the Pacific Northwest
circle 46.2,-122.2 0 geocode polygon
Validate (Google) Publish this approved alert Continue editing this draft alert End this editing session

Publier l'alerte PAC

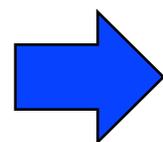


Flux RSS pour des alertes PAC

```
<?xml version="1.0" encoding="UTF-8" ?>
- <rss version="2.0" xmlns:geo="http://www.w3.org/2003/01/geo/wgs84_pos#" xmlns:dc="http://purl.org/dc/elements/1.1/">
- <channel>
  <title>Alerts Issued by ACMAD</title>
  <link>http://www.acmad.org/alerts/rss.xml</link>
  <description>Latest alerts posted by the African Centre of Meteorological Applications for Development</description>
  <dc:publisher>ACMAD (African Centre of Meteorological Applications for Development)</dc:publisher>
  <language>en-us</language>
  <copyright>public domain</copyright>
  <pubDate>Mon, 14 Mar 2011 10:37:11 +0000</pubDate>
  <lastBuildDate>Mon, 14 Mar 2011 10:37:11 +0000</lastBuildDate>
  <docs>http://blogs.law.harvard.edu/tech/rss</docs>
- <image>
  <title>Latest Alerts posted by ACMAD</title>
  <url>http://www.acmad.org/images/acmad.gif</url>
  <link>http://www.acmad.org/alerts/rss.xml</link>
</image>
- <item>
  <title>Mount St Helens Volcano Advisory (aviation color code ORANGE)</title>
  <link>http://www.acmad.org/alerts/20110314092621.xml</link>
  <description>Current status is Volcano Advisory (Alert Level 2); aviation color code ORANGE: Growth of the new lava dome inside the crater of Mount St. Helens continues, accompanied by low rates of seismicity, low emissions of steam and volcanic gases, and minor production of ash. During such eruptions, changes in the level of activity can occur over days to months. The eruption could intensify suddenly or with little warning and produce explosions that cause hazardous conditions within several miles of the crater and farther downwind. Small lahars could suddenly descend the Toutle River if triggered by heavy rain or by interaction of hot rocks with snow and ice. These lahars pose a negligible hazard below the Sediment Retention Structure (SRS) but could pose a hazard along the river channel upstream.</description>
  <author>echristian@wmo.int</author>
  <category>Met</category>
  <guid>http://www.acmad.org/alerts/20110314092621.xml</guid>
  <pubDate>2011-03-14T09:26:21-00:00</pubDate>
</item>
```

Plan de la présentation

204.1 Aperçu de l'outil de création d'alertes PAC



204.2 Éléments requis pour mettre en place l'outil

204.3 Éditeurs autorisés, modèles d'alertes, fichier RSS, feuille de style, installation de l'éditeur PAC

204.4 Configuration locale de l'éditeur PAC

Application Java sur serveur Web

- Visionnement par l'internaute via JSP (pages de serveur Java) comme des formulaires HTML
- Édition d'alertes PAC par formulaire Web avec JavaScript côté client
- Envoi des brouillons d'alertes par le système de courrier électronique (SMTP) du serveur
- Stockage de la version provisoire et finale des alertes dans le système de fichiers du serveur
- Application côté serveur gérée par le serveur hôte et le conteneur Web Tomcat

Éléments requis

- Application d'édition PAC (avec Tomcat + Java)
- Apache Tomcat (avec compilateur Java)
- Compilateur Java

Éditeur PAC

Tomcat

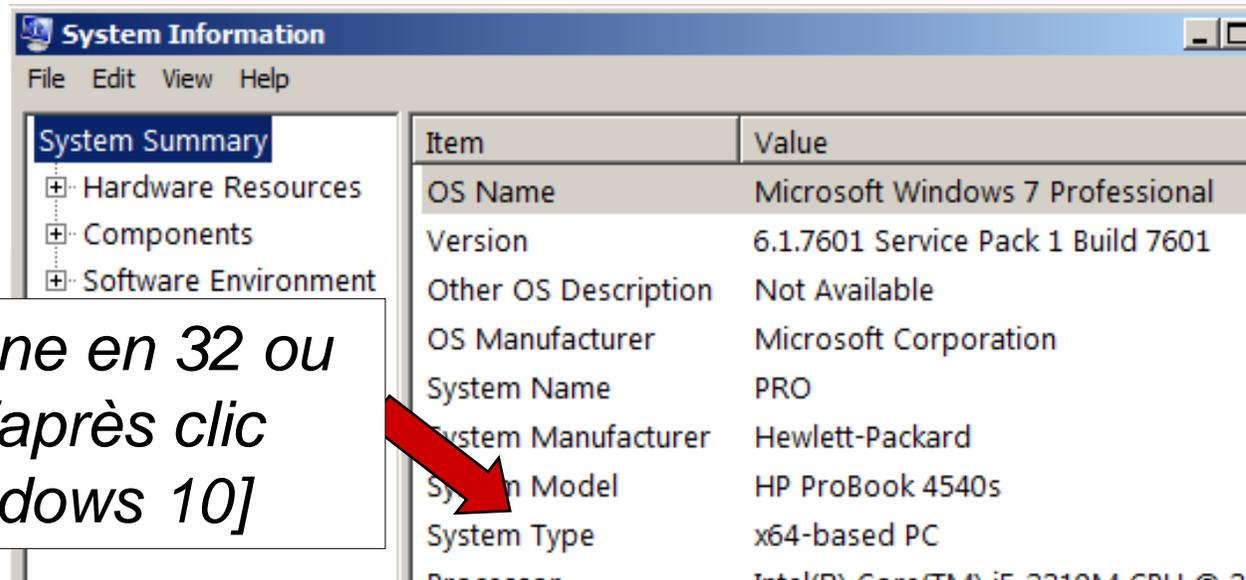
Compilateur Java

Facultatif

- IDE Eclipse
- Tomcat comme serveur dans Eclipse



Installer Java (étape 1)



*Pour savoir si le PC fonctionne en 32 ou 64 bits, exécuter **msinfo32** [après clic droit sur Démarrer dans Windows 10]*

- Le kit JDK (développement Java) se trouve dans le répertoire CAP Jump Start /Java ou à [cette URL](#)
- Choisissez le bon fichier d'exécution pour l'ordinateur («...-i586.exe» pour 32 bits, «...-X64.exe» pour 64 bits)
- Exécuter le fichier .exe en tant qu'administrateur
- ATTENDRE... (délai de confirmation), accepter toutes les valeurs par défaut, fermer quand l'installation est terminée

Apache Tomcat (étape 2)

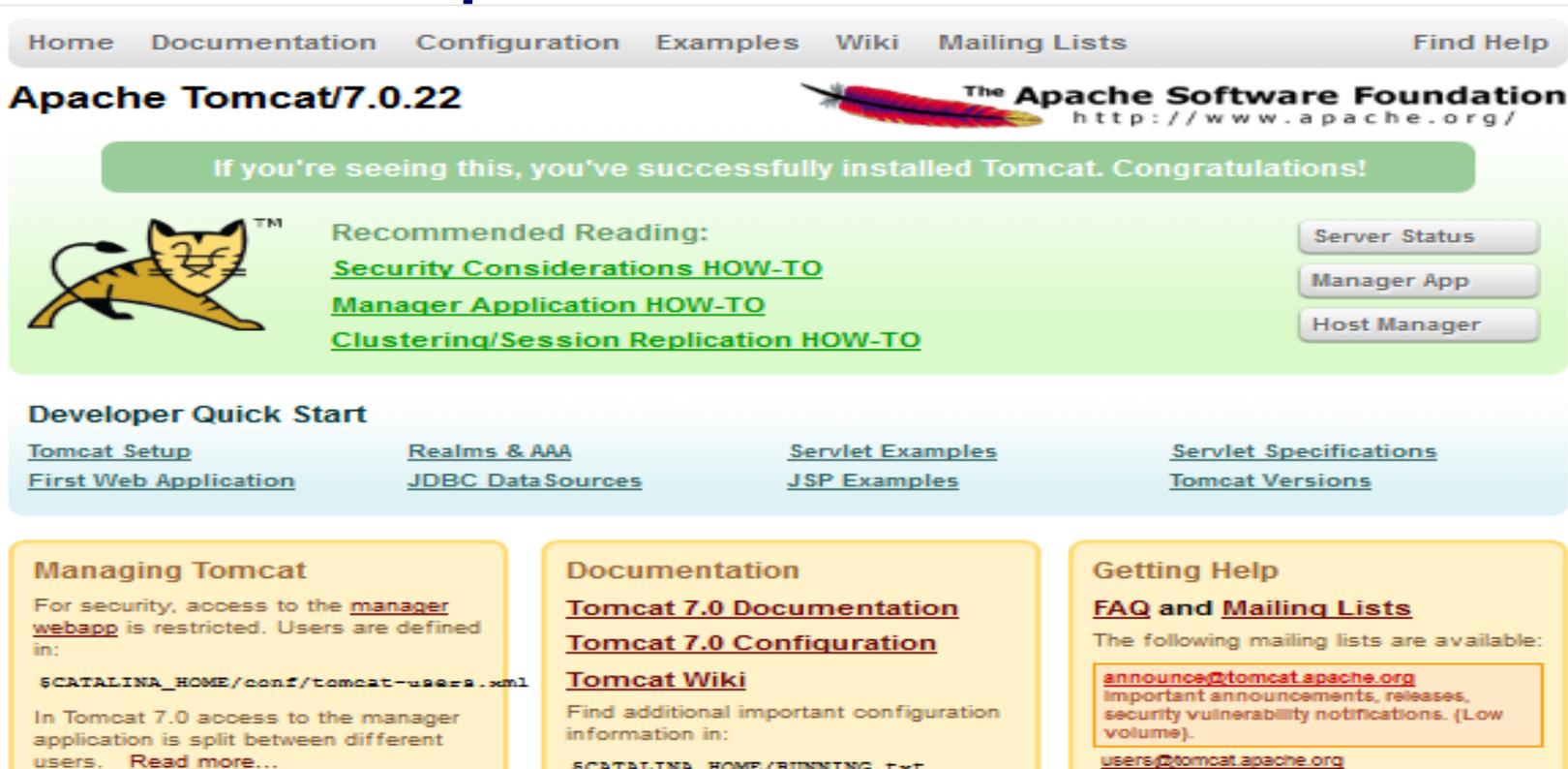
- Il est possible que Tomcat soit déjà sur l'ordinateur: pour le savoir, cliquer sur le bouton Démarrer, faire une recherche de «Services» et regarder si Apache Tomcat figure dans les services installés
- Si ce n'est pas le cas, l'installer à partir du fichier.exe qui se trouve dans le répertoire CAP Jump Start /Tomcat ou à [cette URL](#))
- Cliquer avec le bouton droit sur le fichier .exe et lancer l'exécution en tant qu'administrateur

Installer Apache Tomcat

- Accepter toutes les valeurs par défaut pour: «Choose Components», «Configuration», chemin vers l'environnement JRE installé à l'étape 1 et «Choose Install Location»
- Cliquer sur «Finish» quand l'installation est terminée

Tomcat (installé et lancé)

<http://localhost:8080/>

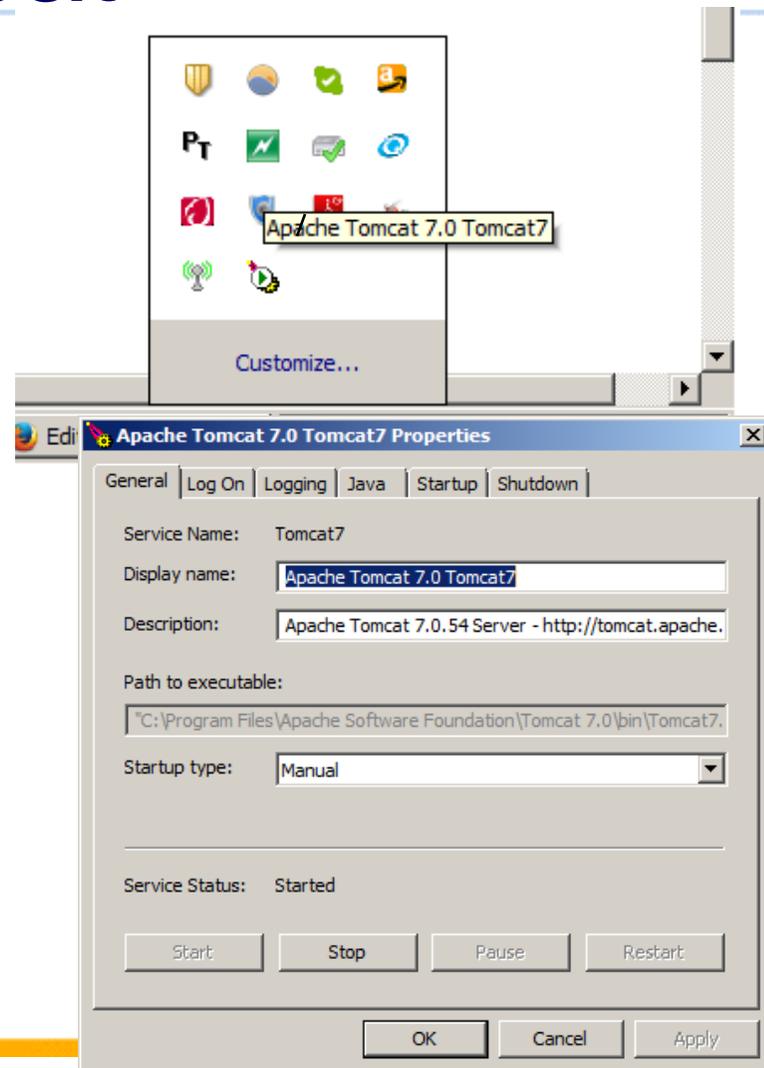
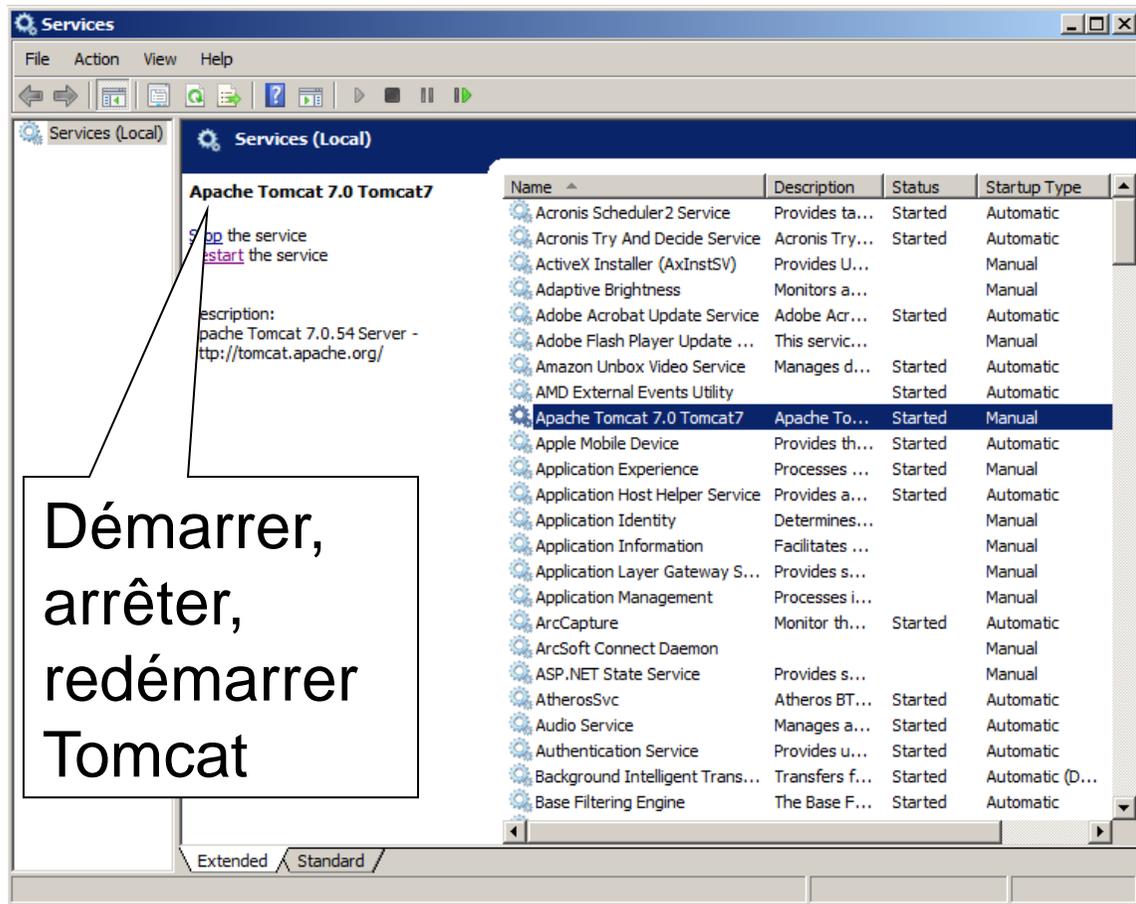


The screenshot shows the Apache Tomcat 7.0.22 installation page. At the top, there is a navigation bar with links for Home, Documentation, Configuration, Examples, Wiki, Mailing Lists, and Find Help. Below the navigation bar, the page title is "Apache Tomcat/7.0.22" and the Apache Software Foundation logo is displayed. A green banner reads: "If you're seeing this, you've successfully installed Tomcat. Congratulations!". To the left of the banner is the Tomcat logo (a yellow cat). To the right of the banner are three buttons: "Server Status", "Manager App", and "Host Manager". Below the banner, there is a "Recommended Reading" section with three links: "Security Considerations HOW-TO", "Manager Application HOW-TO", and "Clustering/Session Replication HOW-TO". Below this is a "Developer Quick Start" section with four links: "Tomcat Setup", "First Web Application", "Realms & AAA", "JDBC DataSources", "Servlet Examples", "JSP Examples", "Servlet Specifications", and "Tomcat Versions". At the bottom, there are three yellow boxes: "Managing Tomcat" (with a code snippet for tomcat-users.xml), "Documentation" (with links to Tomcat 7.0 Documentation, Tomcat 7.0 Configuration, and Tomcat Wiki), and "Getting Help" (with links to FAQ and Mailing Lists, and a list of mailing lists).

Pour plus d'informations sur la configuration et l'exécution de Tomcat: <http://tomcat.apache.org>



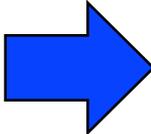
Démarrer, arrêter, redémarrer Tomcat



Plan de la présentation

204.1 Aperçu de l'outil de création d'alertes PAC

204.2 Éléments requis pour mettre en place l'outil

 204.3 Éditeurs autorisés, modèles d'alertes, fichier RSS, feuille de style, installation de l'éditeur PAC

204.4 Configuration locale de l'éditeur PAC



Accorder les autorisations de composition/approbation PAC (étape 3)

```
<tomcat-users>  
  <role rolename="manager-gui"/>  
  <user username="tomcat" password="tomcat" roles="manager-gui" />  
  <role rolename="composer-cap"/>  
  <user username="composer@email.com" password="test" roles="composer-cap" />  
  <role rolename="approver-cap"/>  
  <user username="approver@email.com" password="secret" roles="approver-cap" />  
</tomcat-users>
```

Faire une copie du fichier Jump Start \Tomcat\tomcat-users.xml dans **C:\Program Files\Apache Software Foundation\Tomcat 8.5\conf\tomcat-users.xml**



Installer les fichiers de modèles (étape 4)

- Copier de CAP Jump Start /CAP Editor/cap vers c:/cap (incluant les sous-répertoires /en/alerts et /en/drafts)
- L'éditeur PAC a besoin de l'autorisation d'écriture pour ces fichiers et répertoires
- L'éditeur PAC trouve ces fichiers grâce aux paramètres de configuration (étape 8) :
 - param-name: capDraftsDirectoryName
 - param-name: capAlertsDirectoryName



Personnaliser le fichier RSS (étape 5)

Personnaliser la copie de **c:/cap/en/alerts/rss.xml**

```
<title>Latest alerts from Servicio Nacional de Meteorología e  
Hidrología del Perú (SENAMHI)</title>
```

```
<link>http://www.serviciometeorologico.gob.ec/cap/en/alerts/rs  
s.xml</link>
```

```
<description>This feed lists the most recent alerts posted by  
Servicio Nacional de Meteorología e Hidrología del Perú  
(SENAMHI)</description>
```

```
<language>en</language>
```

```
<copyright>public domain</copyright>
```



Personnaliser la feuille de style (étape 6)

Personnaliser **c:/cap/en/senamhi-cap-en-style.xsl**

```
<title>
```

```
<xsl:value-of select="*[local-name()='info'][1]/  
  *[local-name()='headline']" />
```

```
Alerts Issued by Servicio Nacional de Meteorología  
e Hidrología del Perú (SENAMHI)</title>
```

```
...
```

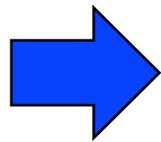
```
<meta name="country" content="Peru" />
```

Installer l'application d'édition PAC (étape 7)

- Mettre le fichier WAR à l'emplacement d'installation Tomcat, dans le répertoire /webapps/
- NOTE: Si l'application a déjà été exécutée, sauvegarder le fichier «web.xml» personnalisé (à l'étape 8)
- Redémarrer Tomcat
- Tomcat établit l'application à partir du fichier WAR de l'éditeur PAC
- Rechercher la page d'accueil de l'application <http://localhost:8080/org.cap.editor.en.jsp>

Plan de la présentation

- 204.1 Aperçu de l'outil de création d'alertes PAC
- 204.2 Éléments requis pour mettre en place l'outil
- 204.3 Éditeurs autorisés, modèles d'alertes, fichier RSS, feuille de style, installation de l'éditeur PAC



- 204.4 Configuration locale de l'éditeur PAC



Configuration locale (étape 8)

Fichier de configuration [répertoire d'installation Tomcat]
C:\Program Files\Apache Software Foundation\Tomcat 8.5\
webapps\org.cap.editor.en.jsp\WEB-INF\web.xml

param-name	param-value
alertingAuthorityLogoUrl	http://www.serviciometeorologico.gob.ec/wp-content/uploads/INAMHI.png
alertingAuthorityOid	urn:oid:2.49.0.1.218.0
alertingAreaDefaultLatLng	-1.4,-78.4
alertingAreaDefaultZoom	7
capDraftsDirectoryName	c:/cap/en/drafts
capDraftsPrivateUrlStub	http://www.serviciometeorologico.gob.ec/cap/en/drafts



Configuration locale (répertoires)

param-name	param-value
capAlertsStylesheetHref	http://www.serviciometeorologico.gob.ec/cap/en/senamhi-cap-en-style.xsl
capAlertsDirectoryName	c:/cap/en/alerts
capAlertsRssFileName	c:/cap/en/alerts/rss.xml
capAlertsPublicUrlStub	http://www.serviciometeorologico.gob.ec/cap/en/alerts
capAlertsRssItemLimit	50
capSchemaFileName	c:/cap/schema-1-2.xsd
capExternalValidationUrl	https://cap-validator.appspot.com/validate
capAlertHubUrl	https://alert-hub.appspot.com/publish

Différentes langues

- Copier «org.cap.editor.en.jsp» dans Tomcat webapps et le renommer (org.cap.editor.es.jsp pour l'espagnol, p. ex.)
- Modifier le fichier web.xml dans le nouveau répertoire de l'éditeur PAC sous Tomcat webapps
- Modifier le fichier rss.xml en fonction de la langue
- Modifier la feuille de style en fonction de la langue
- Faire un double des répertoires /cap/en/alerts et /cap/en/drafts (cap/es/alerts et cap/es/drafts, p. ex.)
- Arrêter et redémarrer Tomcat pour lancer la nouvelle application d'édition PAC

- L'application peut être exécutée et réinstallée n'importe quand
- Le système de fichiers permet de retirer ou d'ajouter directement des fichiers d'essai
- Il est possible de personnaliser l'intitulé, la description et les instructions en modifiant le fichier [textTemplates.html](#)
(Note: Des modèles en allemand, espagnol, français et Papiamento sont disponibles [ici](#))

Récapitulation des points clés

- Exemple d'outil de création d'alertes au format PAC
- Éléments requis pour établir une source d'alertes PAC
- Configuration locale de l'éditeur PAC

Qu'avez-vous appris?

- 1) Décrire les éléments requis pour établir une source d'alertes PAC (serveur Internet et conteneur Web, logiciels pour l'édition des alertes PAC et la publication du fil de nouvelles)
- 2) Étudier diverses configurations possibles de l'éditeur PAC, dont le choix de l'emplacement des fichiers et la personnalisation de l'affichage
- 3) Analyser la manière d'accorder les autorisations voulues dans le système hôte et d'assurer l'authentification des utilisateurs autorisés

Références en ligne

- [Ressources sur le PAC \(PrepareCenter.Org\)](#)
- [Applications du PAC dans les pays](#)
- [Vidéo de l'IFRC sur le PAC \(10 minutes\)](#)
- Cours de formation sur le PAC – me contacter
Eliot Christian eliot.j.christian@gmail.com