Using the Host Inventory?

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NTT Com Solutions
Takashi Fukushima
When explaining host inventory in Zabbix training, students often ask about usage.

Please tell me how to use the host inventory.
# I always answer:

**Use host inventory for asset management.**

<table>
<thead>
<tr>
<th>Host</th>
<th>Templates</th>
<th>IPNI</th>
<th>Macros</th>
<th>Host inventory</th>
<th>Encryption</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Type</strong></td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td><strong>Type (Full details)</strong></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Name</strong></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Alias</strong></td>
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<td></td>
<td><strong>OS</strong></td>
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<td><strong>OS (Full details)</strong></td>
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<td><strong>OS (Short)</strong></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Serial number A</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Serial number B</strong></td>
<td></td>
</tr>
</tbody>
</table>
# However, there are many items in the host inventory.

- Type
- Type (Full details)
- Name
- Alias
- OS
- OS (Full details)
- OS (Short)
- Serial number A
- Serial number B
- Tag
- Asset tag
- MAC address A
- MAC address B
- Hardware
- Hardware (Full details)
- Software
- Software (Full details)
- Software application A
- Software application B
- Software application C
- Software application D
- Software application E
- URL A
- URL B
- URL C
- Host networks
- Host subnet mask
- Notes
- Chassis
- Model
- HW architecture
- Vendor
- Contract number
- Installer name
- Deployment status
- Date HW purchased
- Date HW installed
- Date HW maintenance expires
- Date HW decommissioned
- etc...
Teacher!
Host inventory has so many fields.

It is very difficult for us to keep them up to date.
# I always answer:

**Zabbix keeps them up to date.**

**Host inventory mode => [ Automatic ]**

Use [ Populates host inventory field ]
# Zabbix4.0 has many items that can update the inventory automatically.

<table>
<thead>
<tr>
<th>Type (Full details)</th>
<th>Name</th>
<th>Alias</th>
<th>OS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>system.hostname</td>
<td>agent.hostname</td>
<td>system.sw.os[name]</td>
</tr>
<tr>
<td>OS (Full details)</td>
<td>system.sw.os[full]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OS (Short)</td>
<td>system.sw.os[short]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serial number A</td>
<td>system.hw.chassis[serial]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serial number B</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Zabbix 4.0 has many items that can update the inventory automatically.

| MAC address A | system.hw.macaddr[eth0] |
| MAC address B | system.hw.macaddr[eth1] |
| Hardware       |                          |
| Hardware (Full details) | system.hw.devices[pci] |
| Software       | system.uname            |
| Software (Full details) | system.sw.packages[,,short] |
# Zabbix 4.0 has many items that can update the inventory automatically.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chassis</strong></td>
<td>system.hw.chassis[full]</td>
</tr>
<tr>
<td><strong>Model</strong></td>
<td>system.hw.chassis[model]</td>
</tr>
<tr>
<td><strong>HW architecture</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Vendor</strong></td>
<td>system.hw.chassis[vendor]</td>
</tr>
<tr>
<td><strong>Contract number</strong></td>
<td></td>
</tr>
</tbody>
</table>
# If you need an item that Zabbix doesn't have, you can make it by yourself

- system.run
- UserParameter
- Loadable

```
implementation by Force!! (^o^) /
```

```
The Force Awakens
```

```
Host network  
Host subnet mask  
Host broadcast address  
OOB interface  
Controller
```
# As a last resort, you can also update manually.

- Software application A  < manual input >
- Software application B  < manual input >
- Software application C  < manual input >
- Software application D  < manual input >
- Software application E  < manual input >
- Contact  < manual input >
- Location  < manual input >
- Location latitude
- Location longitude
Teacher!
I have a question!

OK!
Ask me anything.
# What is latitude and longitude?

Software application A: < manual input >

Software application B: < manual input >

Location latitude

Location longitude

Location: < manual input >
I was in trouble.

I don't know what to do!
I am Takashi Fukushima, your Zabbix Instructor.
From now on, you will speak only when spoken to,
and the first and last words out of your filthy sewers will be "Sir!"
Do you maggots understand that?
back on topic
# Let's think.

- Server machine does not move.
- If you write the location, it is better to write the address.
- The server machine does not know where it is located (latitude and longitude).

Why these inventory fields exist?
# I thought about how to use inventory.

✓ Server machine does not move.
   => No. Some hardware can be moved.
# I thought about how to use inventory.

- If you write the location,
  it is better to write the address.

=> Some locations do not have an address.

For example
  on the road.
# I thought about how to use inventory.

✓ The server machine does not know where it is located (latitude and longitude)
✓ ⇒ No. There is a GPS receiver.
# Created a mechanism to periodically acquire location information from Windows devices.

- Windows10 can acquire location information by using API.

- At first, I was going to make an application using API. But I had no working time to do it.

- This GPS receiver can get location information via Com port.
# Created a mechanism to periodically acquire location information from Windows devices.

- I used TeraTerm to connect to the GPS receiver via ComPort.
- I created a TeraTerm macro and executed it at regular intervals.
# Data (NMEA0183 format) can be acquired.

```plaintext
$GPGGA,,,,,,0,00,,,M,0.0,M,,0000*48
$GPGSA,A,1,,,,,,,,,,,*1E
$GPRMC,,V,,,,,,,,,,N*53
$GPGGA,,,,,,0,00,,,M,0.0,M,,0000*48
$GPGSA,A,1,,,,,,,,,,,*1E
$GPRMC,,V,,,,,,,,,,N*53
$GPGGA,,,,,,0,00,,,M,0.0,M,,0000*48
$GPGSA,A,1,,,,,,,,,,,*1E
$GPRMC,,V,,,,,,,,,,N*53
$GPGSV,3,1,12,01,00,000,,02,00,000,,03,00,000,,04,00,000,*7C
$GPGSV,3,2,12,05,00,000,,06,00,000,,07,00,000,,08,00,000,*77
```

Sentence is defined by NMEA0183

GPS - NMEA sentence information  [http://aprs.gids.nl/nmea/](http://aprs.gids.nl/nmea/)

Output to text file and monitor with Zabbix log-monitoring item.
# Create a log monitoring item for each Sentences.

<table>
<thead>
<tr>
<th>Name</th>
<th>Triggers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exec getGPS</td>
<td>system.run[C:\work\getGPS\getGPS.bat,nowait]</td>
</tr>
<tr>
<td>GPS Data [GPVTG]</td>
<td>log[C:\work\getGPS\output\gpsdata.log,&quot;GPVTG&quot;]</td>
</tr>
<tr>
<td>GPS Data [GPGGA]</td>
<td>log[C:\work\getGPS\output\gpsdata.log,&quot;GPGGA&quot;]</td>
</tr>
<tr>
<td>GPS Data [GPGSA]</td>
<td>log[C:\work\getGPS\output\gpsdata.log,&quot;GPGSA&quot;]</td>
</tr>
<tr>
<td>GPS Data [GPGSV]</td>
<td>log[C:\work\getGPS\output\gpsdata.log,&quot;GPGSV&quot;]</td>
</tr>
<tr>
<td>GPS Data [GPRMC]</td>
<td>log[C:\work\getGPS\output\gpsdata.log,&quot;GPRMC&quot;]</td>
</tr>
</tbody>
</table>
# Create dependent items.

<table>
<thead>
<tr>
<th>Name ▲</th>
<th>Triggers</th>
<th>Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPS Data [GPGSV]: GPS Data GPGSV[1Carrier/Noise]</td>
<td></td>
<td>gps.GPGSV[1Carrier/Noise]</td>
</tr>
<tr>
<td>GPS Data [GPGSV]: GPS Data GPGSV[1SatelliteAzimuth]</td>
<td></td>
<td>gps.GPGSV[1SatelliteAzimuth]</td>
</tr>
<tr>
<td>GPS Data [GPGSV]: GPS Data GPGSV[1SatelliteElevation]</td>
<td></td>
<td>gps.GPGSV[1SatelliteElevation]</td>
</tr>
<tr>
<td>GPS Data [GPGSV]: GPS Data GPGSV[1SatelliteNum]</td>
<td></td>
<td>gps.GPGSV[1SatelliteNum]</td>
</tr>
<tr>
<td>GPS Data [GPGSV]: GPS Data GPGSV[2Carrier/Noise]</td>
<td></td>
<td>gps.GPGSV[2Carrier/Noise]</td>
</tr>
<tr>
<td>GPS Data [GPGSV]: GPS Data GPGSV[2SatelliteNum]</td>
<td></td>
<td>gps.GPGSV[2SatelliteNum]</td>
</tr>
<tr>
<td>GPS Data [GPGSV]: GPS Data GPGSV[3Carrier/Noise]</td>
<td></td>
<td>gps.GPGSV[3Carrier/Noise]</td>
</tr>
<tr>
<td>GPS Data [GPGSV]: GPS Data GPGSV[3SatelliteAzimuth]</td>
<td></td>
<td>gps.GPGSV[3SatelliteAzimuth]</td>
</tr>
</tbody>
</table>
# Extract necessary data in dependent item settings.

* Name: GPS Data GPGSV[TotalSatellites]

Type: Dependent item

* Key: gps.GPGSV[TotalSatellites]

* Master item: Template_GPS_Agent: GPS Data [GPGSV]

Type of information: Character

Preprocessing steps:

<table>
<thead>
<tr>
<th>Name</th>
<th>Parameters</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular expression</td>
<td>(.*)</td>
<td>Remove</td>
</tr>
</tbody>
</table>
# The actual data looks like this.

<table>
<thead>
<tr>
<th>GPS Device</th>
<th>Timestamp</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>gispizero-01</td>
<td>2019-09-10 12:36:01</td>
<td>52.471</td>
</tr>
<tr>
<td></td>
<td>2019-09-10 12:36:01</td>
<td>35.682074454</td>
</tr>
<tr>
<td></td>
<td>2019-09-10 12:36:01</td>
<td>35.682074454</td>
</tr>
<tr>
<td></td>
<td>2019-09-10 12:36:01</td>
<td>35.682074454</td>
</tr>
<tr>
<td></td>
<td>2019-09-10 12:36:01</td>
<td>35.682059723</td>
</tr>
<tr>
<td></td>
<td>2019-09-10 12:36:01</td>
<td>35.682059723</td>
</tr>
<tr>
<td></td>
<td>2019-09-10 12:36:01</td>
<td>35.682059702</td>
</tr>
<tr>
<td></td>
<td>2019-09-10 12:36:01</td>
<td>35.682059702</td>
</tr>
<tr>
<td></td>
<td>2019-09-10 12:36:01</td>
<td>35.682059702</td>
</tr>
<tr>
<td></td>
<td>2019-09-10 12:36:01</td>
<td>35.682059702</td>
</tr>
</tbody>
</table>
# I got location data. So I want to use it for something.

I am the most famous map in the world
# If KML is created, the route can be displayed on GoogleMap.

```xml
<?xml version="1.0" encoding="UTF-8"?>
<kml xmlns="http://www.opengis.net/kml/2.2">
<Document>
  <name>Tokyo.kml</name>
  <Style id="line-A52714-4000-nodesc-normal">
    <LineStyle>
      <color>ff1427a5</color>
      <width>4</width>
    </LineStyle>
  </Style>
  <Placemark>
    <name>Tokyo</name>
    <styleUrl>#line-A52714-4000-nodesc</styleUrl>
    <LineString>
      <tessellate>1</tessellate>
      <coordinates>
        139.756058,35.676502,17
        139.756058,35.676498,17
        139.756058,35.676495,17
        139.756058,35.676487,17
        139.755875,35.676556,16
        139.755341,35.6768,16
        139.754745,35.677052,16
      </coordinates>
    </LineString>
  </Placemark>
</Document>
</kml>
```

List of longitude / latitude

[ KML Documentation Introduction ]
https://developers.google.com/kml/documentation/
Udon prefecture
Use case
Use case

# If Zabbix agent for iOS or Android was created...
Use case

# We can find the lost device.
# We also prototyped a compact device.

GPS receiver

Raspberry Pi

Power bank
Use case

# Zabbix4.0 Proxy appliance for the Japanese market.

Provided by Zabbix Japan LLC.

https://enterprise.zabbix.co.jp/products/zp1400
Use case

# We modified the ZabbixProxy appliance to fit in the car.

Change chassis
Add GPS Module
Add LTE Module

Thanks to Zabbix Japan LLC.
# If you put this appliance in a TV broadcast vehicle...
Use case

# If you put this appliance in a pumpkin carriage...
# You will find her without using crystal shoes.
# What I want to do.

- Google Map can import local KML files as well as KML dynamically generated by CGI.

  -> Create a CGI that generates KML from history data and assign GoogleMap to the host screen.

  -> I want to be able to specify the time and draw the travel history for a specific period on the MAP.
# What I want to do.

- Windows10 can acquire location information by using API. I would like to change this tool to use API.
  
  I really want this tool to be a Loadable-module. However, Loadable-modules does not work for Windows agents.

- I am single. I want to marry a nice woman like cinderella.
Maybe everyone is wondering.

- For example, InfluxDB can manage location information more easily than Zabbix.

  Yes. I also fully agree with your opinion.

However, To speak at Zabbix Summit, I had to use Zabbix.

I wanted to speak at Zabbix Summit.

In spite of I can hardly speak English.
# Questions and requests to Zabbix SIA

- **Question**
  -> What assumptions did you make when determining inventory items?

- **Requests**
  -> Please be able to customize inventory items freely.
Thank you so much for your kind attention.