

# Exporting Environment Variables to Genesis II Jobs

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## Abstract

Genesis II containers have the ability to add new environment variables to the environment of the jobs that they launch (activities managed by BES containers). These environment variables can either be specified as constants, or they can be specified as dynamically generated at run time by a class that implements an interface.

Exported environment variables are configured using a hierarchy of definition configuration files<sup>1</sup>. The two locations from whence a configuration can be acquired is as part of the construction parameters for a BES resource. This is given priority over, but is unioned with, a similarly formatted configuration file called `$GENII/deployments/$DEPLOYMENT_NAME/configuration/global-bes-config.xml` which is used for all BES containers on a given Genesis II container.

## The Configuration Format

Both sources of configuration use the same XML format as parsed by the `edu.virginia.vcgr.genii.client.bes.envvarexp.EnvironmentExport` Java class. The format of this XML element is given by the XSD in Appendix A.

Environment variables can have one of two categories of value. Constants values are simply string values that are used exactly as they appear in the configuration element. Dynamic values on the other hand are indicated by giving the full name of a Java class that implements the `edu.virginia.vcgr.genii.client.bes.envvarexp.EnvironmentVariableExportValueProvider` interface. Currently, two implementations are provided; `GeniiInstallDirProvider` and `JavaHomeProvider`, both in the `edu.virginia.vcgr.genii.client.bes.envvarexp` package. The former gives the value of the Genesis II install directory from which the container is currently running

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<sup>1</sup> By hierarchical what we mean is that the set of variables exported is the union of a hierarchically arranged group of definitions where the definition of a given variable is preferred by a hierarchy.

while the latter gives the location of the Java home where the Genesis II container is getting its JVM implementation.

## Appendix A: XSD for the Environment Variable Export Configuration

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns="http://vcgr.cs.virginia.edu/GenesisII/bes/environment-export"
  xmlns:env="http://vcgr.cs.virginia.edu/GenesisII/bes/environment-
export"
  targetNamespace="http://vcgr.cs.virginia.edu/GenesisII/bes/environment-
export"
  elementFormDefault="qualified">

  <xsd:complexType name="EnvVarConstantValueExportType">
    <xsd:sequence/>
    <xsd:attribute name="value" type="xsd:string" use="required"/>
  </xsd:complexType>

  <xsd:complexType name="EnvVarDynamicValueExportType">
    <xsd:sequence/>
    <xsd:attribute name="class" type="xsd:string" use="required"/>
  </xsd:complexType>

  <xsd:complexType name="EnvVarExportType">
    <xsd:sequence>
      <xsd:choice>
        <xsd:element name="constant-value"
          type="env:EnvVarConstantValueExportType"/>
        <xsd:element name="dynamic-value"
          type="env:EnvVarDynamicValueExportType"/>
      </xsd:choice>
    </xsd:sequence>
    <xsd:attribute name="name" type="xsd:string" use="required"/>
  </xsd:complexType>

  <xsd:complexType name="EnvironmentExportType">
    <xsd:sequence>
      <xsd:element name="environment-variable"
        type="env:EnvVarExportType"
        minOccurs="0" maxOccurs="unbounded"/>
    </xsd:sequence>
  </xsd:complexType>
</xsd:schema>
```