

Tomcat 安装

一、环境部署

(1) java 的安装

检查已安装的 openjdk

```
rpm -qa | grep jdk
```

```
[root@localhost tomcat]# rpm -qa | grep jdk
java-1.8.0-openjdk-headless-1.8.0.262.b10-1.el7.x86_64
java-1.8.0-openjdk-1.8.0.262.b10-1.el7.x86_64
copy-jdk-configs-3.3-10.el7_5.noarch
java-1.7.0-openjdk-1.7.0.261-2.6.22.2.el7_8.x86_64
java-1.7.0-openjdk-headless-1.7.0.261-2.6.22.2.el7_8.x86_64
```

```
rpm -e --nodeps java-1.8.0-openjdk-1.8.0.181-7.b13.el7.x86_64
```

```
rpm -e --nodeps java-1.7.0-openjdk-1.7.0.191-2.6.15.5.el7.x86_64
```

```
rpm -e --nodeps java-1.8.0-openjdk-headless-1.8.0.181-7.b13.el7.x86_64
```

```
rpm -e --nodeps java-1.7.0-openjdk-headless-1.7.0.191-2.6.15.5.el7.x86_64
```

```
[root@localhost tomcat]# rpm -e --nodeps java-1.8.0-openjdk-headless-1.8.0.262.b10-1.el7.x86_64
```

```
[root@localhost tomcat]# rpm -e --nodeps java-1.8.0-openjdk-1.8.0.262.b10-1.el7.x86_64
```

```
[root@localhost tomcat]# rpm -e --nodeps java-1.7.0-openjdk-1.7.0.261-2.6.22.2.el7_8.x86_64
```

```
[root@localhost tomcat]# rpm -e --nodeps java-1.7.0-openjdk-headless-1.7.0.261-2.6.22.2.el7_8.x86_64
```

jre 移动到/usr/local/目录里

```
[root@localhost tomcat]# mv jre-8u341-linux-x64.tar.gz /usr/local/
```

进入/usr/local/ 目录

```
[root@localhost tomcat]# cd /usr/local/
```

```
[root@localhost local]# ll
```

```
total 92756
```

```
drwxr-xr-x. 2 root root      6 Apr 11  2018 bin
```

```
drwxr-xr-x. 2 root root      6 Apr 11  2018 etc
```

```
drwxr-xr-x. 2 root root      6 Apr 11  2018 games
```

```
drwxr-xr-x. 2 root root      6 Apr 11  2018 include
```

```
-rw-r--r--. 1 root root 94978146 May 10 05:46 jre-8u341-linux-x64.tar.gz
```

解压 jre

```
tar -zxvf jdk-8u341-linux-x64.tar.gz
```

```
[root@localhost local]# tar -zxvf jre-8u341-linux-x64.tar.gz
jre1.8.0_341/COPYRIGHT
jre1.8.0_341/LICENSE
jre1.8.0_341/README
jre1.8.0_341/THIRDPARTYLICENSEREADME.txt
jre1.8.0_341/Welcome.html
jre1.8.0_341/bin/jjs
jre1.8.0_341/bin/keytool
jre1.8.0_341/bin/policytool
jre1.8.0_341/bin/servertool
jre1.8.0_341/bin/orbd
jre1.8.0_341/bin/tnameserv
jre1.8.0_341/bin/pack200
jre1.8.0_341/bin/rmid
jre1.8.0_341/bin/rmiregistry
jre1.8.0_341/bin/java
```

注意：若报错原因是压缩包有问题，重新下载一下压缩包就好了。

```
jdk1.8.0_341/jre/lib/amd64/libjfxmedia.so
jdk1.8.0_341/jre/lib/amd64/libjfxwebkit.so
```

```
gzip: stdin: unexpected end of file
tar: Unexpected EOF in archive
tar: Unexpected EOF in archive
tar: Error is not recoverable: exiting now
```

```
[root@localhost jre1.8.0_341]# pwd
/usr/local/jre1.8.0_341
```

#配置 java

vim /etc/profile

#插入以下内容

...

```
export JAVA_HOME=/usr/local/jdk1.8.0_341
export PATH=$JAVA_HOME/bin:$PATH
```

```
export CLASSPATH=.:$JAVA_HOME/lib/dt.jar:$JAVA_HOME/lib/tools.jar
```

```
...
```

```
# /etc/profile

# System wide environment and startup programs, for login setup
# Functions and aliases go in /etc/bashrc

# It's NOT a good idea to change this file unless you know what you
# are doing. It's much better to create a custom.sh shell script in
# /etc/profile.d/ to make custom changes to your environment, as this
# will prevent the need for merging in future updates.
export JAVA_HOME=/usr/local/jre1.8.0_341
export PATH=$JAVA_HOME/bin:$PATH
export CLASSPATH=.:$JAVA_HOME/lib/dt.jar:$JAVA_HOME/lib/tools.jar
pathmunge () {
    case "${PATH}:" in
        *"$@"*)
```

#保存退出后

source /etc/profile

#输入 java -version 查看 java 版本以确认是否安装成功

```
[root@localhost jre1.8.0_341]# java -version
java version "1.8.0_341"
Java(TM) SE Runtime Environment (build 1.8.0_341-b10)
Java HotSpot(TM) 64-Bit Server VM (build 25.341-b10, mixed mode)
```

(2) mysql 的安装 (8.0.28)

#查看并卸载系统自带的 mariadb

rpm -qa | grep mariadb

```
[root@localhost jre1.8.0_341]# rpm -qa | grep mariadb
mariadb-libs-5.5.60-1.el7.x86_64
```

rpm -e mariadb-libs-5.5.60-1.el7.x86_64 --nodeps

```
[root@localhost mysql]# rpm -e mariadb-libs-5.5.60-1.el7.x86_64 --nodeps
```

#官网下载 mysql 所需 rpm 包

<https://downloads.mysql.com/archives/community/>

RPM Package, MySQL Server (mysql-community-server-8.0.28-1.el7.x86_64.rpm)	Dec 18, 2021	451.2M	Download
RPM Package, Client Utilities (mysql-community-client-8.0.28-1.el7.x86_64.rpm)	Dec 18, 2021	52.6M	Download
RPM Package, Client Plugins (mysql-community-client-plugins-8.0.28-1.el7.x86_64.rpm)	Dec 18, 2021	5.7M	Download
RPM Package, Development Libraries (mysql-community-devel-8.0.28-1.el7.x86_64.rpm)	Dec 18, 2021	7.4M	Download
RPM Package, MySQL Configuration (mysql-community-common-8.0.28-1.el7.x86_64.rpm)	Dec 18, 2021	0.6M	Download
RPM Package, Shared Libraries (mysql-community-libs-8.0.28-1.el7.x86_64.rpm)	Dec 18, 2021	4.7M	Download
RPM Package, Compatibility Libraries (mysql-community-libs-compat-8.0.28-1.el7.x86_64.rpm)	Dec 18, 2021	1.2M	Download
RPM Package, Compatibility Libraries (mysql-community-embedded-compat-8.0.28-1.el7.x86_64.rpm)	Dec 18, 2021	22.5M	Download
RPM Package, Test Suite (mysql-community-test-8.0.28-1.el7.x86_64.rpm)	Dec 18, 2021	255.9M	Download
RPM Package, ICU Data Files (mysql-community-icu-data-files-8.0.28-1.el7.x86_64.rpm)	Dec 18, 2021	2.1M	Download

回到桌面的 tomcat 目录

找到 mysql 的 rpm 安装包

```
[root@localhost tomcat]# cd /root/Desktop/tomcat
[root@localhost tomcat]# ls
apache-tomcat-8.5.82.tar.gz
el
logistics.war
mysql-community-client-8.0.28-1.el7.x86_64.rpm
mysql-community-client-plugins-8.0.28-1.el7.x86_64.rpm
mysql-community-common-8.0.28-1.el7.x86_64.rpm
mysql-community-icu-data-files-8.0.28-1.el7.x86_64.rpm
mysql-community-libs-8.0.28-1.el7.x86_64.rpm
mysql-community-server-8.0.28-1.el7.x86_64.rpm
[root@localhost tomcat]#
```

#安装 rpm 包（需按以下顺序，rpm 包之间有依赖关系）

`rpm -ivh mysql-community-common-8.0.28-1.el7.x86_64.rpm`

```
[root@localhost mysql]# rpm -ivh mysql-community-common-8.0.28-1.el7.x86_64.rpm
warning: mysql-community-common-8.0.28-1.el7.x86_64.rpm: Header V4 RSA/SHA256 Signature, key ID 3a79bd29: NOKEY
Preparing...
##### [100%]
Updating / installing...
1:mysql-community-common-8.0.28-1.el7.x86_64.rpm [100%]
```

`rpm -ivh mysql-community-client-plugins-8.0.28-1.el7.x86_64.rpm`

```
[root@localhost mysql]# rpm -ivh mysql-community-client-plugins-8.0.28-1.el7.x86_64.rpm
warning: mysql-community-client-plugins-8.0.28-1.el7.x86_64.rpm: Header V4 RSA/SHA256 Signature, key ID 3a79bd29: NOKEY
Preparing...
##### [100%]
Updating / installing...
1:mysql-community-client-plugins-8.0.28-1.el7.x86_64.rpm [100%]
```

`rpm -ivh mysql-community-libs-8.0.28-1.el7.x86_64.rpm`

报错，所以要先删除了 mariadb。

```
[root@localhost mysql]# rpm -ivh mysql-community-libs-8.0.28-1.el7.x86_64.rpm
warning: mysql-community-libs-8.0.28-1.el7.x86_64.rpm: Header V4 RSA/SHA256 Signature, key ID 3a79bd29: NOKEY
error: Failed dependencies:
    mariadb-libs is obsoleted by mysql-community-libs-8.0.28-1.el7.x86_64
```

```
[root@localhost mysql]# rpm -ivh mysql-community-libs-8.0.28-1.el7.x86_64.rpm
warning: mysql-community-libs-8.0.28-1.el7.x86_64.rpm: Header V4 RSA/SHA256 Signature, key ID 3a79bd29: NOKEY
Preparing...                               ##### [100%]
Updating / installing...
 1:mysql-community-libs-8.0.28-1.el7##### [100%]
```

rpm -ivh mysql-community-client-8.0.28-1.el7.x86_64.rpm

```
[root@localhost mysql]# rpm -ivh mysql-community-client-8.0.28-1.el7.x86_64.rpm
warning: mysql-community-client-8.0.28-1.el7.x86_64.rpm: Header V4 RSA/SHA256 Signature, key ID 3a79bd29: NOKEY
Preparing...                               ##### [100%]
Updating / installing...
 1:mysql-community-client-8.0.28-1.el7##### [100%]
```

rpm -ivh mysql-community-icu-data-files-8.0.28-1.el7.x86_64.rpm

```
[root@localhost mysql]# rpm -ivh mysql-community-icu-data-files-8.0.28-1.el7.x86_64.rpm
warning: mysql-community-icu-data-files-8.0.28-1.el7.x86_64.rpm: Header V4 RSA/SHA256 Signature, key ID 3a79bd29: NOKEY
Preparing...                               ##### [100%]
Updating / installing...
 1:mysql-community-icu-data-files-8.0.28-1.el7##### [100%]
```

rpm -ivh mysql-community-server-8.0.28-1.el7.x86_64.rpm

```
[root@localhost mysql]# rpm -ivh mysql-community-server-8.0.28-1.el7.x86_64.rpm
warning: mysql-community-server-8.0.28-1.el7.x86_64.rpm: Header V4 RSA/SHA256 Signature, key ID 3a79bd29: NOKEY
Preparing...                               ##### [100%]
Updating / installing...
 1:mysql-community-server-8.0.28-1.el7##### [100%]
```

#启动 mysql 服务

systemctl start mysqld

```
[root@localhost tomcat]# systemctl start mysqld
```

查看 mysql 状态是否正常

systemctl status mysqld

```
[root@localhost tomcat]# systemctl status mysqld
● mysqld.service - MySQL Server
   Loaded: loaded (/usr/lib/systemd/system/mysqld.service; enabled; ver
   or preset: disabled)
   Active: active (running) since Wed 2023-05-10 21:51:27 EDT; 10s ago
     Docs: man:mysqld(8)
           http://dev.mysql.com/doc/refman/en/using-systemd.html
   Process: 4537 ExecStartPre=/usr/bin/mysqld_pre_systemd (code=exited,
   tatus=0/SUCCESS)
   Main PID: 4613 (mysqld)
     Status: "Server is operational"
    Tasks: 38
   CGroup: /system.slice/mysqld.service
           └─4613 /usr/sbin/mysqld

May 10 21:51:09 localhost.localdomain systemd[1]: Starting MySQL Serv..
May 10 21:51:27 localhost.localdomain systemd[1]: Started MySQL Server.
Hint: Some lines were ellipsized, use -l to show in full.
[root@localhost tomcat]#
```

#查看 mysql 初始密码

cat /var/log/mysqld.log | grep password

```
Hint: Some lines were ellipsized, use -l to show in full.
[root@localhost tomcat]# cat /var/log/mysqld.log |grep password
2023-05-11T01:51:19.467676Z 6 [Note] [MY-010454] [Server] A temporary pa
ssword is generated for root@localhost: 0UiqilVra3+.
```

#进入 mysql 修改密码并配置远程登录（密码需包含大小写、数字、特殊字符、长度至少为 8）

mysql -uroot -p #根据提示输入密码

修改 mysql root 的密码

```
alter user 'root'@'localhost' identified with mysql_native_password by 'WAsj+666';
```

```
mysql> alter user 'root'@'localhost' identified with mysql_native_password by 'WAsj+666';
Query OK, 0 rows affected (0.04 sec)
```

进入 mysql 数据库

use mysql;

```
mysql> use mysql;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
```

mysql root 账户设置可以远程登录。

update user set host='%' where user='root';

```
mysql> update user set host='%' where user='root';  
Query OK, 1 row affected (0.00 sec)  
Rows matched: 1  Changed: 1  Warnings: 0
```

刷新权限

flush privileges;

```
mysql> flush privileges;  
Query OK, 0 rows affected (0.00 sec)
```

#配置完成可用 heidisql 查看远程连接能否成功

firewall-cmd --query-port=3306/tcp

firewall-cmd --zone=public --add-port=3306/tcp --permanent

firewall-cmd --reload

```
[root@localhost tomcat]# firewall-cmd --query-port=3306/tcp  
no  
[root@localhost tomcat]# firewall-cmd --add-port=3306/tcp --permanent  
success  
[root@localhost tomcat]# firewall-cmd --reload  
success  
[root@localhost tomcat]# █
```

(3) Tomcat 安装

安装包放到/usr/local/里

```
[root@localhost tomcat]# mv apache-tomcat-8.5.82.tar.gz /usr/local/
```

解压文件:

进入/usr/local/目录

cd /usr/local/

tar -zxvf apache-tomcat-8.5.82.tar.gz

```

drwxr-xr-x. 2 root root 4096 Apr 11 2018 src
[root@localhost local]# tar -zxvf apache-tomcat-8.5.82.tar.gz
apache-tomcat-8.5.82/conf/
apache-tomcat-8.5.82/conf/catalina.policy
apache-tomcat-8.5.82/conf/catalina.properties
apache-tomcat-8.5.82/conf/context.xml
apache-tomcat-8.5.82/conf/jaspic-providers.xml
apache-tomcat-8.5.82/conf/jaspic-providers.xsd
apache-tomcat-8.5.82/conf/logging.properties
apache-tomcat-8.5.82/conf/server.xml
apache-tomcat-8.5.82/conf/tomcat-users.xml
apache-tomcat-8.5.82/conf/tomcat-users.xsd
apache-tomcat-8.5.82/conf/web.xml
apache-tomcat-8.5.82/bin/
apache-tomcat-8.5.82/lib/
apache-tomcat-8.5.82/logs/
apache-tomcat-8.5.82/temp/
apache-tomcat-8.5.82/webapps/
apache-tomcat-8.5.82/webapps/ROOT/
apache-tomcat-8.5.82/webapps/ROOT/WEB-INF/
apache-tomcat-8.5.82/webapps/docs/
apache-tomcat-8.5.82/webapps/docs/WEB-INF/
apache-tomcat-8.5.82/webapps/docs/annotationapi/
apache-tomcat-8.5.82/webapps/docs/api/
apache-tomcat-8.5.82/webapps/docs/appdev/
apache-tomcat-8.5.82/webapps/docs/appdev/sample/
apache-tomcat-8.5.82/webapps/docs/appdev/sample/docs/

```

||

查看当前目录文件。

```

[root@localhost local]# ll
total 103120
drwxr-xr-x. 9 root root      220 May 10 22:02 apache-tomcat-8.5.82
-rw-r--r--. 1 root root 10610025 May  8 02:23 apache-tomcat-8.5.82.tar.
z
drwxr-xr-x. 2 root root      6 Apr 11 2018 bin
drwxr-xr-x. 2 root root      6 Apr 11 2018 etc
drwxr-xr-x. 2 root root      6 Apr 11 2018 games
drwxr-xr-x. 2 root root      6 Apr 11 2018 include
drwxr-xr-x. 7 root root    224 May 10 21:27 jre1.8.0_341
-rw-r--r--. 1 root root 94978146 May 10 05:46 jre-8u341-linux-x64.tar.g
drwxr-xr-x. 2 root root      6 Apr 11 2018 lib
drwxr-xr-x. 2 root root      6 Apr 11 2018 lib64
drwxr-xr-x. 2 root root      6 Apr 11 2018 libexec
drwxr-xr-x. 2 root root      6 Apr 11 2018 sbin
drwxr-xr-x. 5 root root     49 Jan 28 05:47 share
drwxr-xr-x. 2 root root      6 Apr 11 2018 src

```

#启动 tomcat

进入/usr/local/apache-tomcat-8.5.82/bin 目录

cd /usr/local/apache-tomcat-8.5.82/bin

查看文件

||

```
[root@localhost bin]# ll
total 808
-rw-r--r--. 1 root root 34376 Mar 28 2017 bootstrap.jar
-rw-r--r--. 1 root root 15073 Mar 28 2017 catalina.bat
-rwxr-xr-x. 1 root root 22443 Mar 28 2017 catalina.sh
-rw-r--r--. 1 root root 1647 Mar 28 2017 catalina-tasks.xml
-rw-r--r--. 1 root root 24283 Mar 28 2017 commons-daemon.jar
-rw-r--r--. 1 root root 204944 Mar 28 2017 commons-daemon-native.tar.gz
-rw-r--r--. 1 root root 2040 Mar 28 2017 configtest.bat
-rwxr-xr-x. 1 root root 1922 Mar 28 2017 configtest.sh
-rwxr-xr-x. 1 root root 7888 Mar 28 2017 daemon.sh
-rw-r--r--. 1 root root 2091 Mar 28 2017 digest.bat
-rwxr-xr-x. 1 root root 1965 Mar 28 2017 digest.sh
-rw-r--r--. 1 root root 3430 Mar 28 2017 setclasspath.bat
-rwxr-xr-x. 1 root root 3547 Mar 28 2017 setclasspath.sh
-rw-r--r--. 1 root root 2020 Mar 28 2017 shutdown.bat
-rwxr-xr-x. 1 root root 1902 Mar 28 2017 shutdown.sh
-rw-r--r--. 1 root root 2022 Mar 28 2017 startup.bat
-rwxr-xr-x. 1 root root 1904 Mar 28 2017 startup.sh
-rw-r--r--. 1 root root 40852 Mar 28 2017 tomcat-juli.jar
-rw-r--r--. 1 root root 399836 Mar 28 2017 tomcat-native.tar.gz
-rw-r--r--. 1 root root 4057 Mar 28 2017 tool-wrapper.bat
-rwxr-xr-x. 1 root root 5061 Mar 28 2017 tool-wrapper.sh
-rw-r--r--. 1 root root 2026 Mar 28 2017 version.bat
-rwxr-xr-x. 1 root root 1908 Mar 28 2017 version.sh
```

./startup.sh

```
[root@localhost bin]# ./startup.sh
Using CATALINA_BASE: /usr/local/apache-tomcat-8.5.82
Using CATALINA_HOME: /usr/local/apache-tomcat-8.5.82
Using CATALINA_TMPDIR: /usr/local/apache-tomcat-8.5.82/temp
Using JRE_HOME: /usr/local/jdk1.8.0_341
Using CLASSPATH: /usr/local/apache-tomcat-8.5.82/bin/bootstrap.jar:/usr/local/apache-tomcat-8.5.82/bin/tomcat-juli.jar
Using CATALINA_OPTS:
Tomcat started.
```

#需在服务器的安全组规则打开 8080 端口

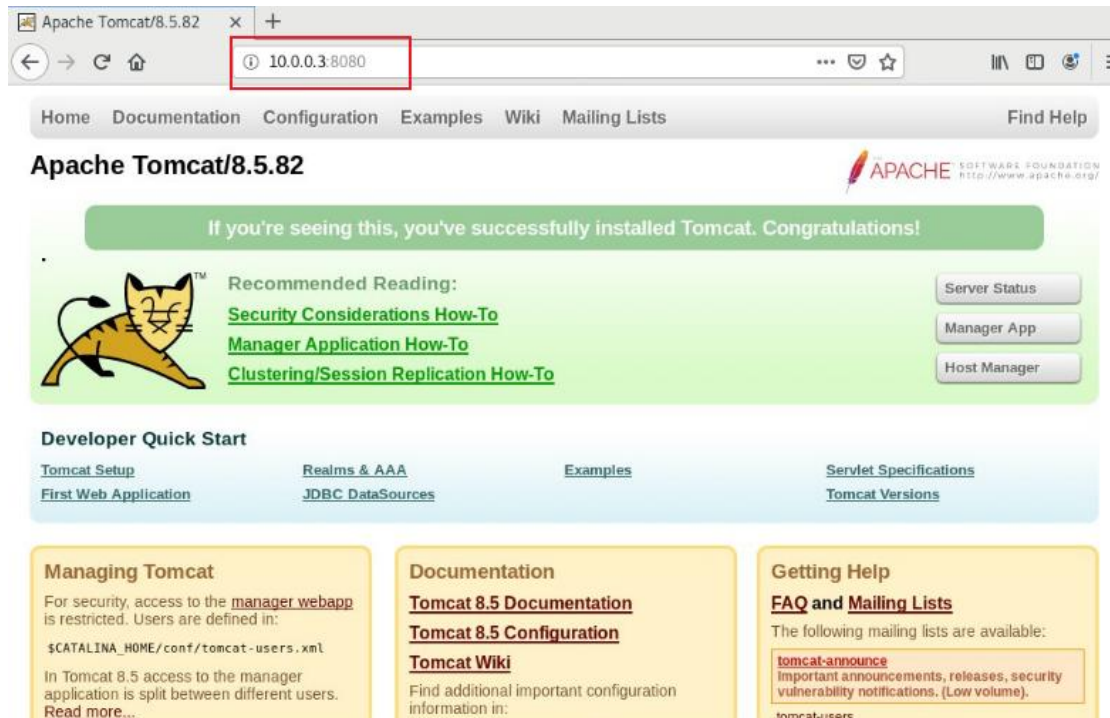
firewall-cmd --query-port=8080/tcp

firewall-cmd --add-port=8080/tcp --permanent

firewall-cmd --reload

```
[root@localhost webapps]# firewall-cmd --query-port=8080/tcp
no
[root@localhost webapps]# firewall-cmd --add-port=8080/tcp --permanent
success
[root@localhost webapps]# firewall-cmd --reload
success
[root@localhost webapps]# firewall-cmd --query-port=8080/tcp
yes
```

#访问 address:8080



二、Tomcat JSP Examples 页面

在确保 tomcat 和 mysql 服务开启的情况下，在网页访问
address:8080/项目名



JSP 2.0 Examples

Expression Language

Basic Arithmetic

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SimpleTag Handlers and JSP Fragments

Hello World Tag

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Book Example

 [Execute](#)

 [Source](#)

Tag Files

Hello World Tag File

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Panel Tag File

 [Execute](#)

 [Source](#)

Display Products Example

 [Execute](#)

 [Source](#)

JSP 2.0 Expression Language - Basic Comparisons

This example illustrates basic Expression Language comparisons. The following comparison operators are supported:

- Less-than (< or lt)
- Greater-than (> or gt)
- Less-than-or-equal (<= or le)
- Greater-than-or-equal (>= or ge)
- Equal (== or eq)
- Not Equal (!= or ne)

Numeric

EL Expression	Result
<code>\${1 < 2}</code>	true
<code>\${1 lt 2}</code>	true
<code>\${1 > (4/2)}</code>	false
<code>\${1 gt (4/2)}</code>	false
<code>\${4.0 >= 3}</code>	true
<code>\${4.0 ge 3}</code>	true
<code>\${4 <= 3}</code>	false
<code>\${4 le 3}</code>	false
<code>\${100.0 == 100}</code>	true
<code>\${100.0 eq 100}</code>	true
<code>\${(10*10) != 100}</code>	false
<code>\${(10*10) ne 100}</code>	false