

# Working with C++test on a Headless Linux Machine

1. Upload C++test to a directory on the headless Linux host, e.g.:  
`scp ./cpptest_9.4.0.36_linux.tar.gz devtest@10.10.34.89:/tmp/cpptest/cpptest_9.4.0.36_linux.tar.gz`
2. Log into the headless Linux host and navigate to the directory where C++test should be installed, e.g.:  
`ssh devtest@10.10.34.89`  
`cd /tmp/cpptest`
3. Unpack and launch the default C++test installer, e.g.  
`tar xzf cpptest_9.4.0.36_linux.tar.gz`  
`./cpptest_9.4.0.36_linux.sh`

```
devtest@ubuntujeos:/tmp/cpptest$ #3 Install C++test on the headless Linux host
devtest@ubuntujeos:/tmp/cpptest$ ls -l
total 462988
-rw-r--r-- 1 devtest devtest 474094135 May 23 08:17 cpptest_9.4.0.36_linux.tar.gz
devtest@ubuntujeos:/tmp/cpptest$ tar xzf cpptest_9.4.0.36_linux.tar.gz
devtest@ubuntujeos:/tmp/cpptest$ ./cpptest_9.4.0.36_linux.sh
Select installation language:

  1. English
  2. Japanese
  3. Chinese (Simplified)

Please enter proper index (1/2/3) [1]
```

4. Accept the defaults when prompted (recommended) or modify as needed. C++test and Parasoft Test will be installed:

```
Parasoft C++test 9.4
Copyright (C) 1997-2012 by Parasoft Corporation
Technical support is available at:
  E-mail:    cpptestsupport@parasoft.com
  Web:      http://www.parasoft.com
  Telephone: (626) 305-0041
  Fax:      (626) 305-9048

Please enter Parasoft C++test 9.4 install location or 'q' to quit.
(default is /tmp/cpptest/parasoft/cpptest/9.4)

Checking package integrity...
OK
Installing...

C++test requires Parasoft Test to be installed.
Parasoft Test provides common infrastructure shared across various Parasoft products deployed in your environment.
Setup will install Parasoft Test.

Press <Enter>

devtest@ubuntujeos:/tmp/cpptest$ #4 Setting up license - preparing local settings file
devtest@ubuntujeos:/tmp/cpptest$ ls -l
total 926308
-rwxr-xr-x 1 devtest devtest 474418218 May 22 04:02 cpptest_9.4.0.36_linux.sh
-rw-r--r-- 1 devtest devtest 474094135 May 23 08:17 cpptest_9.4.0.36_linux.tar.gz
-rw-r--r-- 1 devtest devtest 354 May 24 02:52 install.log
drwxr-xr-x 4 devtest devtest 4096 May 24 02:51 parasoft
-rw-r--r-- 1 devtest devtest 334 May 24 03:08 settings
drwxr-xr-x 3 devtest devtest 4096 May 24 02:55 workspace
devtest@ubuntujeos:/tmp/cpptest$
devtest@ubuntujeos:/tmp/cpptest$ cat settings
cpptest.license.use_network=false
cpptest.license.local.password=PARASOFT_8EC19D4DF494C7CBE3C39620758C019FD60BE6A6801EA5667D98E94CCE3077A9
442F7DFC62D2ED8312FCA40A8BF9E427CDD517F08D50BA994B697C3894108005_CAD318BED110E3AC7CE7CE532A1F9EA67E0D68B
41718452A3EC4E719AC2C716C9D60AC7AE065C374714F2078EE6D8BD59C02676FD3FAE90BF55CFC050D4BB4DB
```

## Setting Up the C++test License

The license can be set as either a local license or through a license server.

### Local License

1. Obtain the machine ID. You can run a simple command to accomplish this task, e.g.  
`cd /tmp/cpptest/parasoft/cpptest/9.4`  
`./cpptestcli -data ./workspace -config "builtin://Effective C++"`

```

devtest@ubuntujeos:/tmp/cpptest$ #4 Setting up license - obtaining machine ID
devtest@ubuntujeos:/tmp/cpptest$ ./parasoft/cpptest/9.4/cpptestcli -data ./workspace -config "builtin://
Effective C++"
cpptestcli: Version 9.4.0.36 -- Copyright (C) 2012 Parasoft Corporation
parasofttestcli: Version 9.4.1.20120510 -- Copyright (C) 2010-2012 Parasoft Corporation
ERROR: Error: No valid license (MachineId: LINUX2-1cb4ed0c)

```

2. Create a local settings file with license settings:

```

devtest@ubuntujeos:/tmp/cpptest$ #4 Setting up license - preparing local settings file
devtest@ubuntujeos:/tmp/cpptest$ ls -l
total 926308
-rwxr-xr-x 1 devtest devtest 474418218 May 22 04:02 cpptest_9.4.0.36_linux.sh
-rw-r--r-- 1 devtest devtest 474094135 May 23 08:17 cpptest_9.4.0.36_linux.tar.gz
-rw-r--r-- 1 devtest devtest 354 May 24 02:52 install.log
drwxr-xr-x 4 devtest devtest 4096 May 24 02:51 parasoft
-rw-r--r-- 1 devtest devtest 334 May 24 03:08 settings
drwxr-xr-x 3 devtest devtest 4096 May 24 02:55 workspace
devtest@ubuntujeos:/tmp/cpptest$
devtest@ubuntujeos:/tmp/cpptest$ cat settings
cpptest.license.use_network=false
cpptest.license.local.password=PARASOFT_8EC19D4DF494C7CBE3C39620758C019FD60BE6A6801EA5667D98E940CE3077A9
442F7DFC62D2ED8312FCA40A8BF9E427CDD517F08D50BA994B697C3894108005_CAD318BED110E3AC7CE7CE532A1F9EA67E9C668B
41718452A3EC4E719AC2C716C9D60AC7AE065C374714F2078EE6D8BD59C02676FD3FAE90BF55CF050D4BB4DB

```

## License Server

1. Configure the local settings file with license properties:

```

devtest@ubuntujeos:/tmp/cpptest$ #4 Setting up license - configuring local settings to use license server
devtest@ubuntujeos:/tmp/cpptest$ ls -l
total 926444
-rwxr-xr-x 1 devtest devtest 474418218 May 22 04:02 cpptest_9.4.0.36_linux.sh
-rw-r--r-- 1 devtest devtest 474094135 May 23 08:17 cpptest_9.4.0.36_linux.tar.gz
-rw-r--r-- 1 devtest devtest 354 May 24 02:52 install.log
drwxr-xr-x 4 devtest devtest 4096 May 24 02:51 parasoft
-rw-r--r-- 1 devtest devtest 11601 May 24 03:11 rep_footer.jpg
-rw-r--r-- 1 devtest devtest 9772 May 24 03:11 rep_footer_expander.jpg
-rw-r--r-- 1 devtest devtest 18248 May 24 03:11 rep_header_3.jpg
-rw-r--r-- 1 devtest devtest 9931 May 24 03:11 rep_header_expander.jpg
-rw-r--r-- 1 devtest devtest 20375 May 24 03:11 rep_header_logo.jpg
-rw-r--r-- 1 devtest devtest 13961 May 24 03:11 report.html
-rw-r--r-- 1 devtest devtest 26054 May 24 03:11 report.xml
drwxr-xr-x 2 devtest devtest 4096 May 24 03:33 reports
drwxr-xr-x 2 devtest devtest 4096 May 24 05:18 reports2
drwxr-xr-x 2 devtest devtest 4096 May 24 08:00 reports3
drwxr-xr-x 2 devtest devtest 4096 May 24 08:14 reports4
-rw-r--r-- 1 devtest devtest 499 May 24 04:50 settings
drwxr-xr-x 5 devtest devtest 4096 May 24 03:33 workspace
devtest@ubuntujeos:/tmp/cpptest$
devtest@ubuntujeos:/tmp/cpptest$ vim settings
devtest@ubuntujeos:/tmp/cpptest$ cat settings
cpptest.license.use_network=true
cpptest.license.network.host=main1.parasoft.com.pl
cpptest.license.network.port=2222
cpptest.license.network.edition=server_edition

```

## Testing Headless Installation

1. Prepare sample project for testing, e.g.:

```

cd /tmp/cpptest/parasoft/cpptest/9.4/Examples/ATM
make CC="../../cpptestscan g++"
cd /tmp/cpptest/parasoft/cpptest/9.4
./cpptestcli -data /tmp/cpptest/workspace -bdf ./Examples/ATM/
cpptestscan.bdf -localsettings /tmp/cpptest/settings

```

```

devtest@ubuntujeos:/tmp/cpptest$ #5 Prepare project for testing
devtest@ubuntujeos:/tmp/cpptest$ cd ../parasoft/cpptest/9.4/Examples/ATM/
devtest@ubuntujeos:/tmp/cpptest/parasoft/cpptest/9.4/Examples/ATM$ ls -l
total 36
-rw-r--r-- 1 devtest devtest 1228 May 22 04:01 ATM.cxx
-rw-r--r-- 1 devtest devtest 214 May 22 04:01 Account.cxx
-rw-r--r-- 1 devtest devtest 929 May 22 04:01 Bank.cxx
-rw-r--r-- 1 devtest devtest 273 May 22 04:01 BaseDisplay.cxx
drwxr-xr-x 2 devtest devtest 4096 May 22 04:01 CppUnit
-rw-r--r-- 1 devtest devtest 345 May 22 04:01 Makefile
-rw-r--r-- 1 devtest devtest 567 May 22 04:01 TestObjectFactory.cxx
-rw----- 1 devtest devtest 946 May 24 03:25 cpptestscan.bdf
drwxr-xr-x 2 devtest devtest 4096 May 22 04:01 include
devtest@ubuntujeos:/tmp/cpptest/parasoft/cpptest/9.4/Examples/ATM$ make CC=".../cpptestscan g++"
mkdir obj
.../cpptestscan g++ -g -Iinclude -o obj/ATM.o -c ATM.cxx
.../cpptestscan g++ -g -Iinclude -o obj/Bank.o -c Bank.cxx
.../cpptestscan g++ -g -Iinclude -o obj/BaseDisplay.o -c BaseDisplay.cxx
.../cpptestscan g++ -g -Iinclude -o obj/Account.o -c Account.cxx
devtest@ubuntujeos:/tmp/cpptest/parasoft/cpptest/9.4/Examples/ATM$ cd ...
devtest@ubuntujeos:/tmp/cpptest/parasoft/cpptest/9.4$ ./cpptestcli -data /tmp/cpptest/workspace/ -bdf ../
Examples/ATM/cpptestscan.bdf -localsettings .../.../settings
cpptestcli: Version 9.4.0.36 -- Copyright (C) 2012 Parasoft Corporation
parasofttestcli: Version 9.4.1.20120510 -- Copyright (C) 2010-2012 Parasoft Corporation
> [0%] Compiler detection
> [0%] Importing 1 build data file project(s)...
> [0%] Importing ATM...
>> [7%] Creating C Project... Opening 'ATM'.
>> [13%] Creating C Project...
>> [20%] Setting project description.
>> [60%] Creating link.
>> [62%] Refreshing '/ATM/ATM'.
>> [79%] Creating link.
>> [80%] Refreshing '/ATM'.
>> [100%] Project "ATM" successfully created in /tmp/cpptest/workspace/ATM.
> [100%] ...done
> [100%] ...finished, 1 of 1 project(s) successfully imported.
> [100%] Done

```

## 2. Execute Coding Standards run of C++test CLI, e.g.:

```

cd /tmp/cpptest/parasoft/cpptest/9.4
./cpptestcli -data /tmp/cpptest/workspace -config "builtin://Effective C++" -report /tmp/cpptest/reports -
localsettings
/tmp/cpptest/settings

```

```

devtest@ubuntujeos:/tmp/cppptest/parasoft/cppptest/9.4$ #6 Run C++test Coding Standards
devtest@ubuntujeos:/tmp/cppptest/parasoft/cppptest/9.4$ ./cpptestcli -data /tmp/cppptest/workspace/ -config
"builtin://Effective C++" -report /tmp/cppptest/reports/ -localsettings ../../../../settings
cpptestcli: Version 9.4.0.36 -- Copyright (C) 2012 Parasoft Corporation
parasofttestcli: Version 9.4.1.20120510 -- Copyright (C) 2010-2012 Parasoft Corporation
> [0%] Running: Scope
> [3%] Computing scope
>> [3%] Initializing
>> [5%] Refreshing workspace
>> [5%] Opening 'ATM'.
>> [5%] Refreshing workspace
>> [5%] Refreshing '/ATM'.
>> [9%] Refreshing workspace
>> [9%] Building
>> [13%] Finding files
>> [14%] Computing selection for
>> [15%] Finding files
>> [17%] Applying scope filters
>> [19%] Computing lines to check
> [21%] Preparing options
>> [21%] ATM
>> [25%] Reporting scope results
Total Files: 12
Source Files to Check: 12
Total Source Lines: 374
Source Lines to Check: 374
Test Data Files: ---
Excluded Files: 0
> [31%] Running: Static
> [33%] Static analysis (C/C++ Static Analysis) - 95 rules enabled
>> [39%] Preparing project ATM
>> [41%] Assembling source files of ATM
>> [41%] Assembling symbols for ATM
>> [44%] Checking Account.cxx
>> [45%] Checking ATM.cxx
>> [45%] Checking Bank.cxx
>> [46%] Checking BaseDisplay.cxx
>> [47%] Checking Account.hxx
>> [48%] Checking ATM.hxx
>> [49%] Checking Bank.hxx
>> [50%] Checking BaseDisplay.hxx
>> [58%] Cleaning project run for ATM
> [61%] Performing post-testing tasks...
Files Checked:
    Coding Standards: 8/8 Skipped: 4
Failed Runs: 0
Violations Found: 18
Violations Suppressed: 0
Number of Rules Violated: 8
> [78%] Finished
> [80%] Generating reports
> [100%] Done

```

3. When the test finishes, generate a test report, e.g.:  
`cd /tmp/cppptest/reports`

elinks ./report.html

C++test Report [05/24/12 03:33:04] (1/2)

rep\_header\_3.jpg rep\_header\_logo.jpg

05/24/12 03:33:04 Results from: **Effective C++**

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**STATIC ANALYSIS**

Project Name	Tasks				Files		Lines	
	suppressed	qfix	total	per 10,000 lines	checked	total	checked	total
ATM	0	0	18	694	8	8	259	259
<b>Total</b> [0:00:05]	<b>0</b>	<b>0</b>	<b>18</b>	<b>694</b>	<b>8</b>	<b>8</b>	<b>259</b>	<b>259</b>

---

**All Tasks by Category** by: **Category Severity**

**All Tasks by Severity**

- [2] **Coding Conventions for C++** (CODSTA-CPP)
  - [1] Constructors allowing for conversion should be made explicit (CODSTA-CPP-04-1)
  - [1] Prefer C++-style casts (CODSTA-CPP-11-3)
- [8] **Initialization** (INIT)
  - [1] All member variables should be initialized in constructor (INIT-06-1)
  - [7] Prefer initialization to assignment in constructors (INIT-14-5)
- [1] **Memory and Resource Management** (MRM)
  - [1] Check the return value of new (MRM-34-3)
- [1] **Object Oriented** (OOP)
  - [1] If a class has virtual functions it shall have a virtual destructor (OOP-23-2)
- [6] **Optimization** (OPT)
  - [2] Pass objects by reference instead of by value (OPT-14-3)
  - [4] Avoid inline constructors and destructors (OPT-17-3)
  
- [2] **Severity 1 - Highest**
  - [1] Constructors allowing for conversion should be made explicit (CODSTA-CPP-04-1)
  - [1] All member variables should be initialized in constructor (INIT-06-1)
- [1] **Severity 2 - High**
  - [1] If a class has virtual functions it shall have a virtual destructor (OOP-23-2)
- [8] **Severity 3 - Medium**
  - [1] Prefer C++-style casts (CODSTA-CPP-11-3)
  - [1] Check the return value of new (MRM-34-3)
  - [2] Pass objects by reference instead of by value (OPT-14-3)

## Testing Team Server Configuration

1. Configure team server connection via local settings file. You can alternatively change license settings to use local license. E.g.:

```
cd /tmp/cpptest
vim ./settings
```

```

devtest@ubuntujeos:/tmp/cpptest$ #8 Run custom team test configuration - set up team server
devtest@ubuntujeos:/tmp/cpptest$ cd /tmp/cpptest
devtest@ubuntujeos:/tmp/cpptest$ ls -l
total 926432
-rwxr-xr-x 1 devtest devtest 474418218 May 22 04:02 cpptest_9.4.0.36_linux.sh
-rw-r--r-- 1 devtest devtest 474094135 May 23 08:17 cpptest_9.4.0.36_linux.tar.gz
-rw-r--r-- 1 devtest devtest 354 May 24 02:52 install.log
drwxr-xr-x 4 devtest devtest 4096 May 24 02:51 parasoft
-rw-r--r-- 1 devtest devtest 11601 May 24 03:11 rep_footer.jpg
-rw-r--r-- 1 devtest devtest 9772 May 24 03:11 rep_footer_expander.jpg
-rw-r--r-- 1 devtest devtest 18248 May 24 03:11 rep_header_3.jpg
-rw-r--r-- 1 devtest devtest 9931 May 24 03:11 rep_header_expander.jpg
-rw-r--r-- 1 devtest devtest 20375 May 24 03:11 rep_header_logo.jpg
-rw-r--r-- 1 devtest devtest 13961 May 24 03:11 report.html
-rw-r--r-- 1 devtest devtest 26054 May 24 03:11 report.xml
drwxr-xr-x 2 devtest devtest 4096 May 24 03:33 reports
-rw-r--r-- 1 devtest devtest 499 May 24 04:50 settings
drwxr-xr-x 5 devtest devtest 4096 May 24 03:33 workspace
devtest@ubuntujeos:/tmp/cpptest$ vim ./settings
devtest@ubuntujeos:/tmp/cpptest$ cat ./settings
cpptest.license.use_network=false
cpptest.license.local.password=PARASOFT_8EC19D4DF494C7CBE3C39620758C019FD60BE6A6801EA5667D98
7F08D50BA994B697C3894108005_CAD318BED110E3AC7CE7CB532A1F9EA67ECD68B41718452A3EC4E719AC2C716C
55CFC050D4BB4DB

tcm.server.enabled=true
tcm.server.name=main1.parasoft.com.pl
tcm.server.port=18888
tcm.server.accountLogin=true
tcm.server.username=test
tcm.server.password=test

```

## 2. List available test configurations

```

cd /tmp/cpptest
./parasoft/cpptest/9.4/cpptestcli -data ./workspace -list-configs -localsettings ./settings

```

```

devtest@ubuntujeos:/tmp/cpptest$ #8 Run custom team test configuration - list configs
devtest@ubuntujeos:/tmp/cpptest$ ./parasoft/cpptest/9.4/cpptestcli -data ./workspace/ -list-
configs -localsettings ./settings
cpptestcli: Version 9.4.0.36 -- Copyright (C) 2012 Parasoft Corporation
parasofttestcli: Version 9.4.1.20120510 -- Copyright (C) 2010-2012 Parasoft Corporation
Available C++test configurations:
  user://Example Configuration
  builtin://Sutter-Alexandrescu
  builtin://Metrics
  builtin://The Power of Ten
  builtin://Run Keil uVision Tests - ULINKPro or Simulator (ITM)
  builtin://Load Test Results (Sockets)
  builtin://Find Unused Code
  builtin://Run Altium TASKING CTC Tests - CrossView
  builtin://ISO 26262 Recommended Rules
  builtin://Extract Symbols from VxWorks Image
  team://Example Configuration (3)
  team://Example Configuration (2)
  team://Example Configuration
  team://AllRules
  team://Demo Configuration
  team://Coding Standards Nightly

```

## 3. Choose and run an available team test, e.g.:

```

cd /tmp/cpptest
./parasoft/cpptest/9.4/cpptestcli -data ./workspace -config "team://Coding Standards Nightly" -
localsettings ./settings -report./reports2

```

```

devtest@ubuntujeos:/tmp/cpptest$ #8 Run custom team test configuration -run config
devtest@ubuntujeos:/tmp/cpptest$ ./parasoft/cpptest/9.4/cpptestcli -data ./workspace -config
"team://Coding Standards Nightly" -localsettings ./settings -report ./reports2
cpptestcli: Version 9.4.0.36 -- Copyright (C) 2012 Parasoft Corporation
parasofttestcli: Version 9.4.1.20120510 -- Copyright (C) 2010-2012 Parasoft Corporation
> [0%] Running: Scope
> [3%] Computing scope
>> [3%] Initializing
>> [5%] Refreshing workspace
>> [5%] Opening 'ATM'.
>> [5%] Refreshing workspace
>> [5%] Refreshing '/ATM'.
>> [9%] Refreshing workspace
>> [9%] Building
>> [13%] Finding files
>> [14%] Computing selection for
>> [15%] Finding files
>> [17%] Applying scope filters
>> [19%] Computing lines to check
> [21%] Preparing options
>> [21%] ATM
>> [25%] Reporting scope results
Total Files: 12
Source Files to Check: 12
Total Source Lines: 374
Source Lines to Check: 374
Test Data Files: ---
Excluded Files: 0
> [31%] Running: Static
> [33%] Static analysis (C/C++ Static Analysis) - 33 rules enabled
>> [39%] Preparing project ATM
>> [41%] Assembling source files of ATM
>> [41%] Assembling symbols for ATM
>> [44%] Checking Account.cxx
>> [45%] Checking ATM.cxx
>> [45%] Checking Bank.cxx
>> [46%] Checking BaseDisplay.cxx
>> [47%] Checking Account.hxx
>> [48%] Checking ATM.hxx
>> [49%] Checking Bank.hxx
>> [50%] Checking BaseDisplay.hxx
>> [58%] Cleaning project run for ATM
> [61%] Performing post-testing tasks...
Files Checked:
  Coding Standards: 8/8 Skipped: 4
Failed Runs: 0
Violations Found: 5
Violations Suppressed: 1
Number of Rules Violated: 4
> [78%] Finished
> [80%] Generating reports
> [100%] Done

```

4. When the test finishes, generate a test report, e.g.:  
`cd /tmp/cpptest/reports2`

rep\_header\_3.jpg

rep\_header\_logo.jpg

05/24/12 05:15:07 Results from: **Coding Standards Nightly**

**STATIC ANALYSIS** **GOALS**

**STATIC ANALYSIS**

Project Name	Tasks				Files		Lines	
	suppressed	qfix	total	per 10,000 lines	checked	total	checked	total
ATM	1	0	5	193	8	8	259	259
<b>Total</b> [0:00:13]	<b>1</b>	<b>0</b>	<b>5</b>	<b>193</b>	<b>8</b>	<b>8</b>	<b>259</b>	<b>259</b>

**All Tasks by Category** by: **Category Severity**  
**All Tasks by Severity**

- [1] **Initialization (INIT)**
  - [1] All member variables should be initialized in constructor (INIT-06-1)
- [1] **MISRA C 2004 (MISRA2004)**
  - [1] Assignment operators shall not be used in expressions that yield a Boolean value (MISRA2004-13\_1-3)
- [1] **Object Oriented (OOP)**
  - [1] If a class has virtual functions it shall have a virtual destructor (OOP-23-2)
- [2] **Optimization (OPT)**
  - [2] Pass objects by reference instead of by value (OPT-14-3)
- [1] **Severity 1 - Highest**
  - [1] All member variables should be initialized in constructor (INIT-06-1)
- [1] **Severity 2 - High**
  - [1] If a class has virtual functions it shall have a virtual destructor (OOP-23-2)
- [3] **Severity 3 - Medium**
  - [1] Assignment operators shall not be used in expressions that yield a Boolean value (MISRA2004-13\_1-3)
  - [2] Pass objects by reference instead of by value (OPT-14-3)