Delft3D在高性能集群上的并行计算

2013-11

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高性能计算集群

Delft3D

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算例现场演示

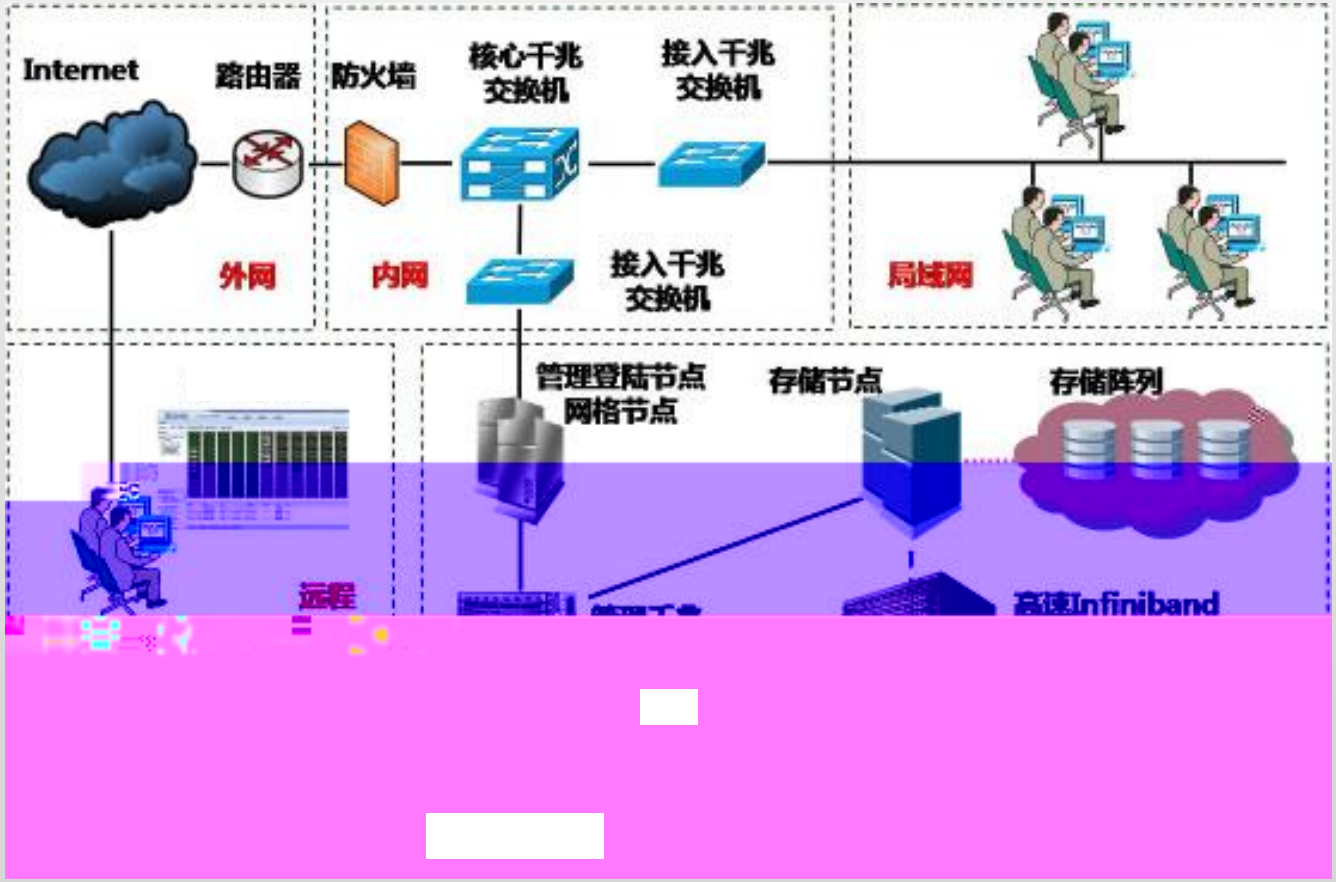
（一）高性能计算集群

IBM 1350　　37　　12

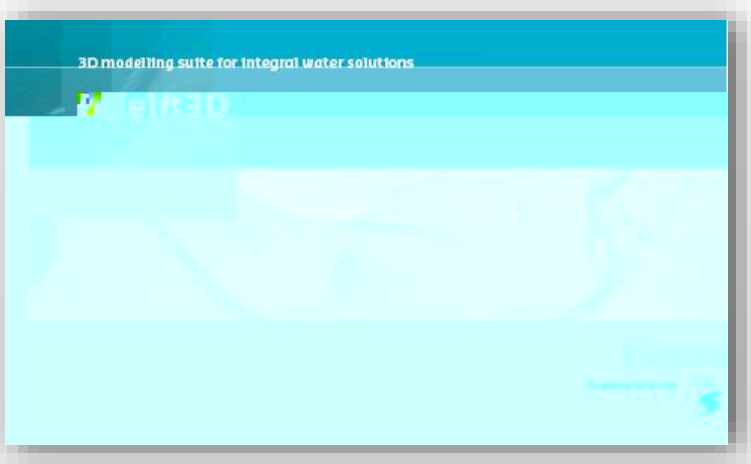
CentOS6.2 (x86-64Edition)

GNU Compiler　Intel Compiler 11.1 (non-commercial edition)

mpich2-1.5　mvapich2-1.8　OpenMPI1.6.4



（二） Delft3D



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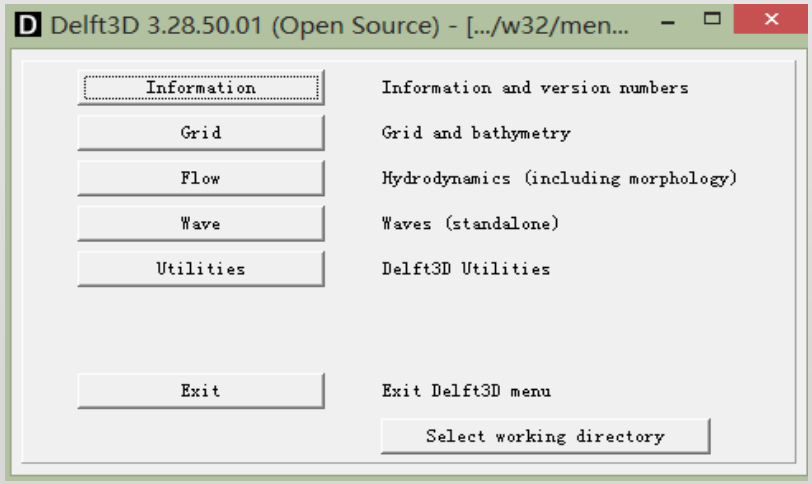

（三）并行计算实现步骤

1. 客户端—Xshell & XFTP

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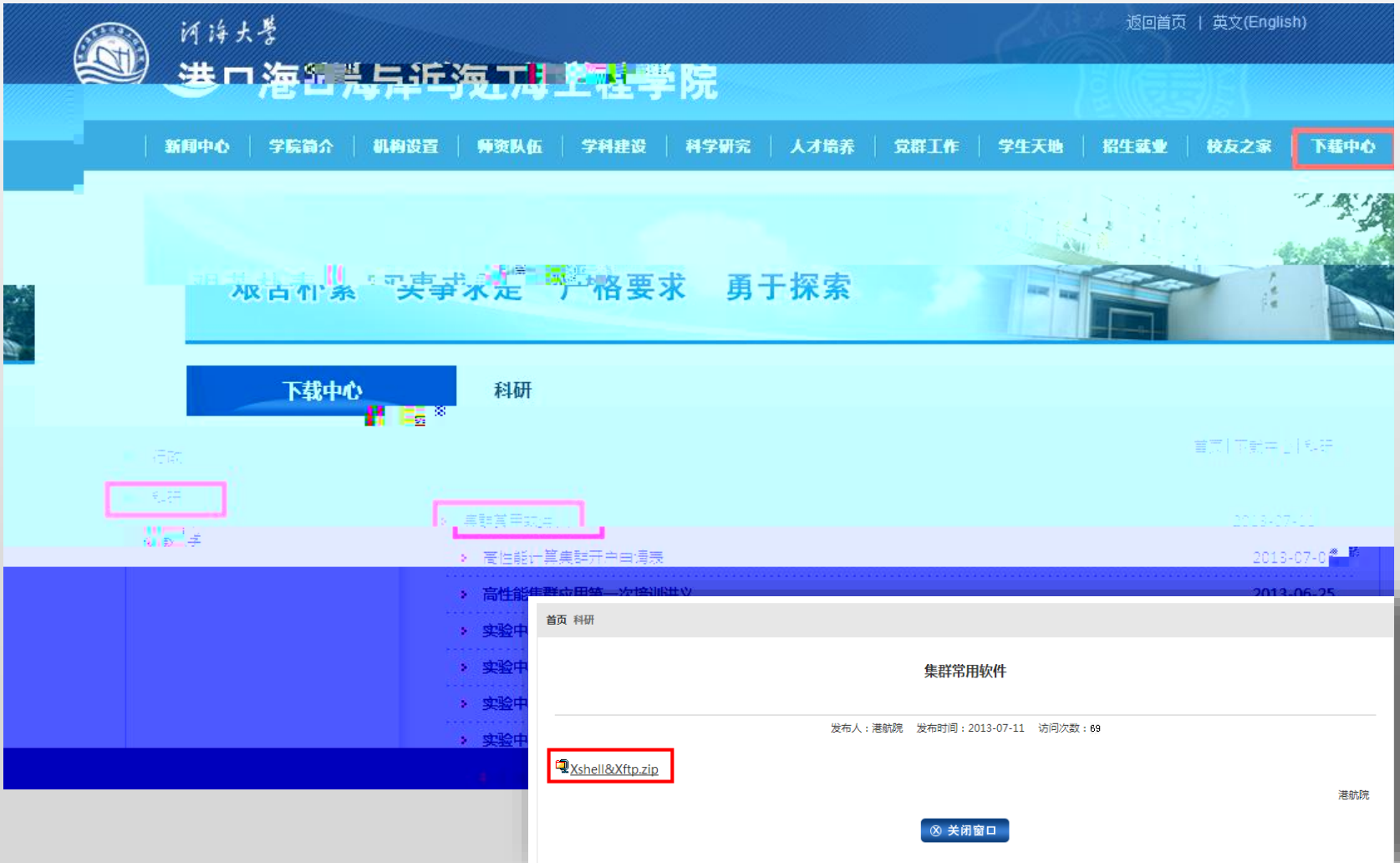
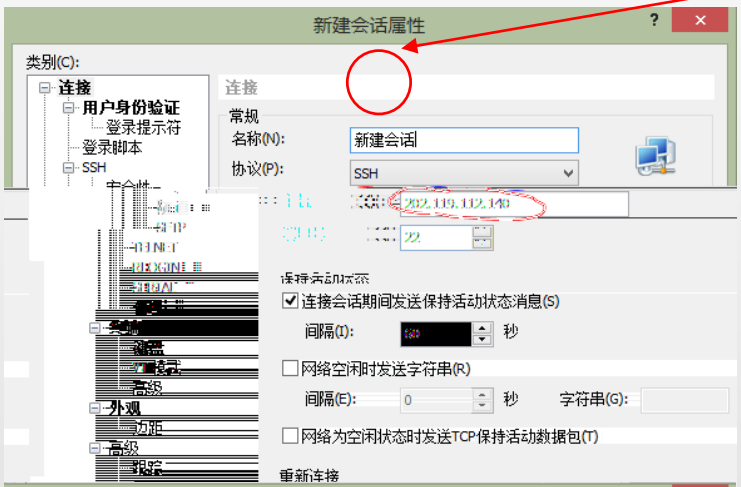
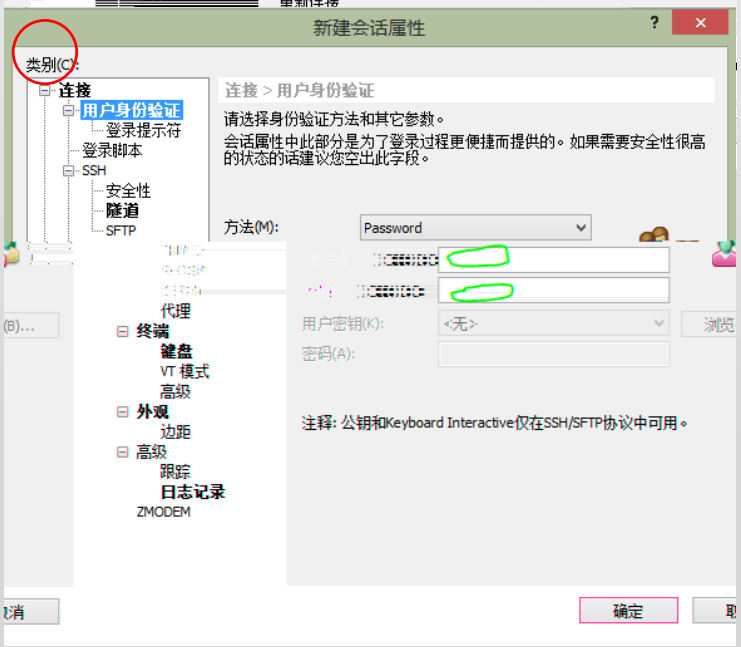
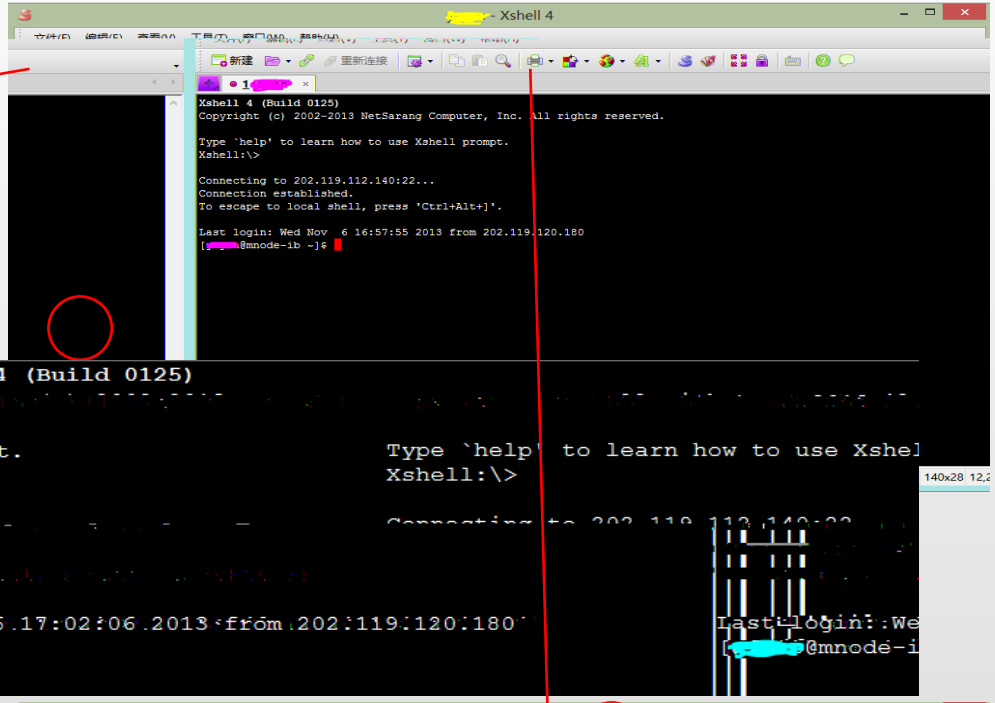


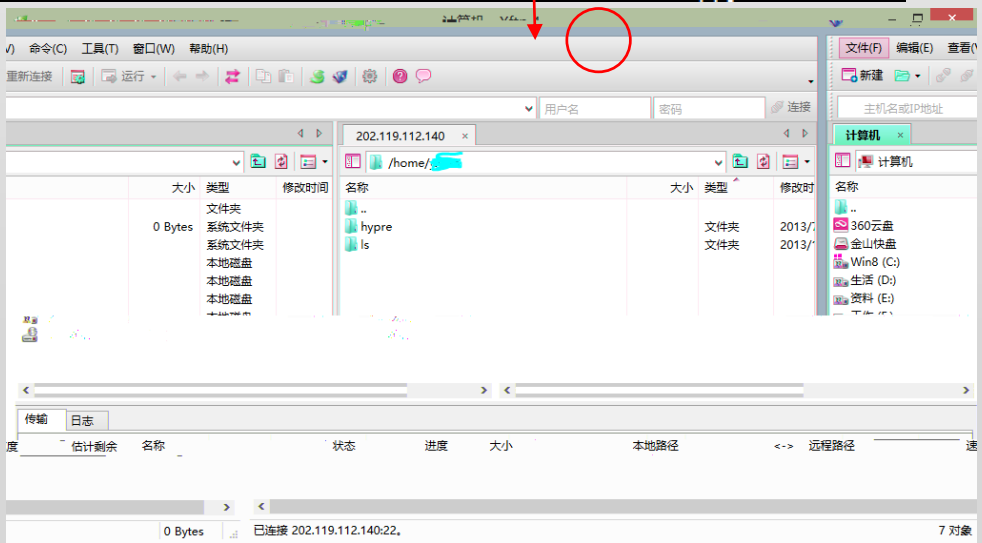
（三）并行计算实现步骤

1. 客户端—Xshell & XFTP









（三）并行计算实现步骤

2. 文件准备—模型配置文件

config_flow2d3d.ini

config_flow2d3d.ini × job.sh ×

```
[FileInformation]
   FileCreatedBy     = runtestbank Tcl scripts
   FileCreationDate = Mon Dec 06 2:55:54 PM W. Europe Standard Time 2010
[General]
   MdfFile           = nestriver
```

（三）并行计算实现步骤

2. 文件准备—shell脚本文件

job.sh

config_flow2d3d.ini × job.sh ×

```
#!/bin/sh
#__INFO__MARK_BEGIN__
# Welcome to use  EasyCluster V1.6 All Rights Reserved.
#
#__INFO__MARK_END__
#
#$ -S /bin/sh
#$ -N test
#$ -j y
#$ -o .
#$ -e .
#$ -cwd
#$ -q short.q
#$ -pe mvapi 24-24
source ~/.bashrc
hash -r
export path=$TMPDIR:$path
/usr/local/mpich2_1.5/bin/mpiexec -launcher rsh -n $NSLOTS -f $TMPDIR/machines /usr/local/Delft3D.5.00.06.1677/bin/deltares_hydro.tcl config_flow2d3d.ini
```

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（三）并行计算实现步骤

3. 实现并行计算—cd, qsub,qstat

```
[[redacted]@mnode-ib ~]$ clear
[[redacted]@mnode-ib ~]$ cd ls/test
[[redacted]@mnode-ib test]$ qsub job.sh
Your job 1365 ("test") has been submitted
[[redacted]@mnode-ib test]$ qstat
job-ID  prior   name       user         state submit/start at     queue
                           slots ja-task-ID
-----------------------------------------------------------------------
-----------------------------------------
   1361 0.60500 gSJ05R18   [redacted]        r     11/06/2013 15:21:25 long.
q@node22-ib                  48
   1357 0.50500 job        [redacted]        r     11/06/2013 14:33:10 seria
l.q@node32-ib                 1
   1358 0.50500 job        [redacted]        r     11/06/2013 14:34:10 seria
l.q@node33-ib                 1
   1359 0.50500 job        [redacted]        r     11/06/2013 14:39:25 seria
l.q@node34-ib                 1
   1356 0.60500 gs07JR013  [redacted]        r     11/06/2013 10:19:25 short
.q@node16-ib                 48
   1365 0.55394 test       [redacted]        r     11/07/2013 00:59:10 short
.q@node30-ib                 24
   1362 0.60500 N09_R119   [redacted]        r     11/06/2013 15:23:25 short
.q@node5-ib                  48
   1360 0.60500 gsJ05R010  [redacted]        r     11/06/2013 15:20:10 short
.q@node8-ib                  48
[[redacted]@mnode-ib test]$
```

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（三）并行计算实现步骤

3. 实现并行计算—tail

```
   1356 0.60500 gs07JR013 [redacted]          r     11/06/2013 10:19:25 short
.q@node16-ib                    48
   1365 0.55394 test      [redacted]          r     11/07/2013 00:59:10 short
.q@node30-ib                    24
   1362 0.60500 N09_R119  [redacted]          r     11/06/2013 15:23:25 short
.q@node5-ib                     48
   1360 0.60500 gsJ05R010 [redacted]          r     11/06/2013 15:20:10 short
.q@node8-ib                     48
[[redacted]@mnode-ib test]$ tail test.o1365
  Time to finish   2h  3m,    8.5% completed, time steps left  47364
  Time to finish   2h  3m,    8.5% completed, time steps left  47363
  Time to finish   2h  3m,    8.5% completed, time steps left  47362
  Time to finish   2h  3m,    8.5% completed, time steps left  47361
  Time to finish   2h  3m,    8.5% completed, time steps left  47360
  Time to finish   2h  3m,    8.5% completed, time steps left  47359
  Time to finish   2h  3m,    8.5% completed, time steps left  47358
  Time to finish   2h  3m,    8.5% completed, time steps left  47357
  Time to finish   2h  3m,    8.5% completed, time steps left  47356
  Time to finish   2h  3m,    8.5% completed, time steps left  47355
[[redacted]@mnode-ib test]$ tail test.o1367
D_Hydro [1383765624.964204] <anonymous> >> d_hydro shutting down normally
D_Hydro [1383766958.700083] <anonymous> >> d_hydro shutting down normally
D_Hydro [1383765624.964288] <anonymous> >> d_hydro shutting down normally
```

（三）并行计算实现步骤

3. 实现并行计算—qdel

```
Time to finish    1h 53m,    15.9% completed, time steps left   43530
Time to finish    1h 53m,    15.9% completed, time steps left   43529
Time to finish    1h 53m,    15.9% completed, time steps left   43528
Time to finish    1h 53m,    15.9% completed, time steps left   43527
Time to finish    1h 53m,    15.9% completed, time steps left   43526
Time to finish    1h 53m,    15.9% completed, time steps left   43525
Time to finish    1h 53m,    15.9% completed, time steps left   43524
Time to finish    1h 53m,    15.9% completed, time steps left   43523
[[redacted]@mnode-ib test]$ qdel 1365
[redacted] has registered the job 1365 for deletion
[[redacted]@mnode-ib test]$
```

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（三）并行计算实现步骤

4. 结果文件

test.o1367
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（四） 算例现场演示

Q & A