

perfSONAR deployment over Spanish LHC Tier 2 sites

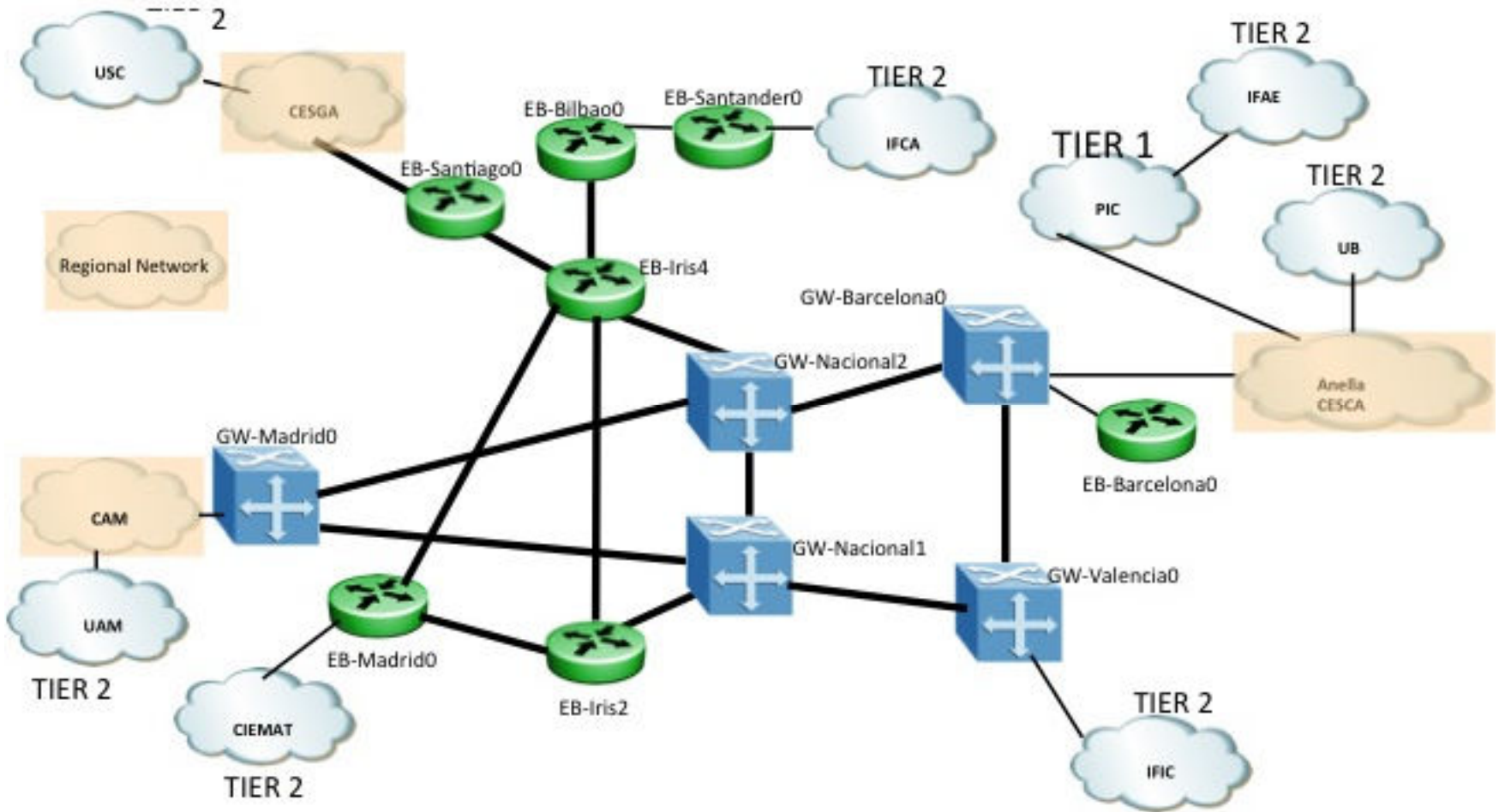
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- Introduction
- First steps
- Spanish Tier2 Architecture
- Actually doing
- T2 feedback
- Interaction with PerfSONAR at T1
- Customizing PerfSONAR-UI
- PerfSONAR-UI interfaces TAB
- PerfSONAR-UI BWCTL MPs
- PerfSONAR-UI BWCTL Measurement
- Personal feedback
- Next steps
- Questions?

- **LHC T2 connectivity is based on best effort regular Internet links**
- **Some LHC applications require high performance connections**
- **Spanish LHC T2 network engineers met to define a common strategy**
- **perfSONAR deployment with RedIRIS support was the choice**

- **RedIRIS work was oriented to find the best solution for the deployment**
- **Internet2 solution initially adopted for simplicity (live CD Knoppix – Perl based)**
- **Spanish T1 started deploying perfSONAR (appliance with DANTE solution)**
- **RedIRIS decided to use DANTE perfSONAR MDM bundle (JAVA based) for better T1-T2 platform interaction**

- **DANTE solution was not so easy to deploy as Internet2 live CD version of the platform**
 - Several packages containing the tool
 - perfSONAR admin guide with the information required to install all packages
- **RedIRIS tried to make things easier to spanish T2 sites**
 - Generated the first ISO DVD with an auto-installation containing the full set of perfSONAR tools (CentOS linux based)



- **RedIRIS updated the ISO DVD (it can be deployed in 1 or 2 servers) with all necessary software to build a PerfSONAR system at T2**
 - <http://perfsonar@ftp.rediris.es/perfsonar/>
 - Password: Vifhodjif2
- **Pilot defined and CIEMAT (Spanish T2) was chosen to be the first T2 deploying the platform**
- **Some regional networks are also working to deploy the platform in parallel (CESGA)**

- **RedIRIS and PIC continue working to deploy perfSONAR MDM bundle at Spanish T2, integrating it with DANTE's PerfSONAR appliance already deployed at the T1s**
- **By now it have been deployed at three sites (RedIRIS, CESGA and CIEMAT)**
- **It can interact with PIC's PerfSONAR Appliance, the one deployed by DANTE at the T1s**
- **Version deployed: MDM bundle 3.1**

- **CIEMAT people answers when asking if the platform was easy to install:**
 - “I think interactive installation is really easy (I tried it in a virtual machine using the ISO image file)”
 - “I have said "interactive" because due to my machine selection (lacking of DVD drive and unable of boot up from an USB memory)”
 - “I had to tweak the kickstart file in order to boot up via PXE”
 - “With this method the only "problem" is with the post-installation interactive steps (JAVA installation and password choice) “
 - I had attached a console to the machine and I could finish the installation without problems “
 - “I think that those two steps could be done running the scripts by hand after machine is completely up”

- Interfaces and BWCTL tabs from PerfSONAR UI can interoperate with DANTE's deployed PerfSONAR at T1s
- RedIRIS has deployed a single server PerfSONAR system where Interfaces and BWCTL services can interoperate with PIC's PerfSONAR deployed by DANTE
- CIEMAT (CMS spanish T2) has deployed a two server PerfSONAR system which right now is only able to *echo reply*; no successful BWCTL test yet, some configuration might be missing and we still need to look into that
 - Some firewall issues
 - T1 appliances were updated on August

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- According to DANTE other tabs need some PerfSONAR/PerfSONAR-UI development to be able to interoperate
 - BWCTL periodic tests are possible but there's no way to show the results. It will be possible in the future, but we've no schedule
 - All the data collected is stored in T1 appliance
 - The problem is the lack of a UI to show that data
 - Circuits tab (OWD) needs some development in the PerfSONAR software (HADES). At the moment if you want to deploy HADES dedicated HW (a particular vendor 3 U server) is needed, nobody's working in a workarround for this.

- It was not difficult to create a custom PerfSONAR UI but it's not working under Windows since last update
- The config file can be loaded manually
- You can find a perfSONAR UI customized for the Spanish cloud at
- <http://lhweb.pic.es/perfsonar/perfsonar-LHC-ES.jnlp>
 - The only difference in the .jnlp file is (in bold):
 - `<argument>-rhttps://noc-mon.srce.hr/visual_perf/</argument>` `<!--`
`VisualPerfsonar-->`
`<argument>-ehttp://lhweb.pic.es/perfsonar/perfsonar-LHC-ES.conf</argument>`
`<argument>-shttp://perfsonar.acad.bg/ClientSASLCA.jks</argument>`

- Where the .conf file looks like:
 - ES-PIC-RRD-MA,<http://mdm-opn01.pic.es:8080/geant2-java-rrd-ma/services/MeasurementArchiveService>,<http://schemas.perfsonar.net/2.0>,"",<http://ggf.org/ns/nmwg/characteristic/utilization/2.0>,<http://ggf.org/ns/nmwg/characteristic/discards/2.0>,<http://ggf.org/ns/nmwg/characteristic/errors/2.0>
 - ES-PIC-Telnet-SSH,<http://mdm-opn01.pic.es:8080/ps-mdm-sshtelnet-mp/services/TelnetSSH>,lg,"",lg,lg
 - ES-PIC-XML-LS,<http://mdm-opn01.pic.es:8080/geant2-java-xml-ls/services/LookupService>,ls,"",ls,ls
 - ES-PIC-BWCTL,<http://bwctl-opn01.pic.es:8090/services/MP/BWCTL>,bwctl,"",bwctl,bwctl
 - ;ES-PIC-AS,<http://mdm-opn01.pic.es:8080/geant2-java-as/services/AuthService>,as,"",as,as
 - ES-REDIRIS-RRD-MA,<http://perfsonar-lab.rediris.es:8080/geant2-java-rrd-ma/services/MeasurementArchiveService>,<http://schemas.perfsonar.net/2.0>,"",<http://ggf.org/ns/nmwg/characteristic/utilization/2.0>,<http://ggf.org/ns/nmwg/characteristic/discards/2.0>,<http://ggf.org/ns/nmwg/characteristic/errors/2.0>
 - ES-REDIRIS-Telnet-SSH,<http://perfsonar-lab.rediris.es:8080/ps-mdm-sshtelnet-mp/services/TelnetSSH>,lg,"",lg,lg
 - ES-REDIRIS-XML-LS,<http://perfsonar-lab.rediris.es:8080/geant2-java-xml-ls/services/LookupService>,ls,"",ls,ls
 - ES-REDIRIS-BWCTL,<http://perfsonar-lab.rediris.es:8090/services/MP/BWCTL>,bwctl,"",bwctl,bwctl
 - ;ES-REDIRIS-AS,<http://perfsonar-lab.rediris.es:8080/geant2-java-as/services/AuthService>,as,"",as,as

Measurement archives

The list is loaded from <http://perfsonar.acad.bg/LHCOPN.conf>

Select MA(s)

Use	Measurement ar...	URL	Schema	Status	Status explanation
<input checked="" type="checkbox"/>	ES-RedIRIS-RR...	http://perfsona...	http://schemas...	success.echo	This is the echo...
<input checked="" type="checkbox"/>	ES-PIC-RRD-MA	http://mdm-op...	http://schemas...	success.echo	This is the echo...
<input type="checkbox"/>	NL-T1-RRD-MA	http://p-mdm.l...	http://schemas...	org.apache.axis...	java.net.Conne...
<input type="checkbox"/>	FR-CCIN2P3-R...	http://ccmdm1...	http://schemas...	org.apache.axis...	java.net.Conne...
<input type="checkbox"/>	US-T1-BNL-RR...	http://192.12...	http://schemas...	success.echo	This is the echo...
<input type="checkbox"/>	NDGF-RRD-MA	http://193.10...	http://schemas...	success.echo	This is the echo...
<input type="checkbox"/>	CH-CERN-RRD...	http://lhcopn-d...	http://schemas...	org.apache.axis...	java.net.Socket...
<input type="checkbox"/>	TW-ASGC-RRD...	http://117.103...	http://schemas...	success.echo	This is the echo...
<input type="checkbox"/>	CA-TRIUMF	http://mdm-pri...	http://schemas...	org.apache.axis...	java.net.Socket...
<input type="checkbox"/>	US-FNAL-CMS	http://198.49...	http://schemas...	success.echo	This is the echo...

URL:

Name: Schema:

Event type: Supported event types:

PerfsonarUI-v0.15a

File Interfaces Circuits BWCTL Looking Glass FlowSA Playground Help

Interfaces Circuits BWCTL Looking Glass FlowSA Playground

perfSONAR

Query & search options

Options
Select service addresses

Execute query

Load metadata
Load metrics
Load metadata and metrics
Clear

Interface details

ES - PIC - RRD - MA, ES - PIC - RR...

Hostname gw0-vlan20...
IP address 192.16.166...
Interface name V1288
Interface des... VLAN288 up...
Capacity 100000000...
Resolution N/A
Key

Summary

Completed.

- Traceroute

From: 22/09/09 07:33:48 Duration: 15 min Search Traceroute & search Use Lookup Service

Utilisation
 Input Errors
 Output Drops

- Select interface

No.	hostName	ifAddress	ifName	ifDescription	Capacity, ...	Inbound ut...	Outbound ...	Inbound ut...	Outbound ...	Input errors	Output dr...	Domain	Status
1	gw0-vlan...	192.16.1...	V1288	VLAN288 ...	10.000.0...	1,877	1,682	187.674....	168.232....	0	0	[ES-PIC-R...	OK
2	nkpic.pic.es	192.16.1...	eth-s1/s1...	N/A	10.000.0...	N/A	N/A	N/A	N/A	NaN	0	[ES-PIC-R...	OK
3	nkpic.pic.es	84.88.20...	eth-s1/s1...	N/A	10.000.0...	N/A	N/A	N/A	N/A	NaN	0	[ES-PIC-R...	OK
4	nkpic.pic.es	84.88.16...	eth-s1/s1...	N/A	10.000.0...	N/A	N/A	N/A	N/A	NaN	0	[ES-PIC-R...	OK

- Summary

Summary for all interfaces (From: Tue Sep 22 07:33:44 CEST 2009 To: Tue Sep 22 15:33:44 CEST 2009 (8 hours))

Page
1 / 1
1-4
First
Prev
Next
Last

- Measurements

1,0	1,0	1,0	1,0
0,9	0,9	0,9	0,9

Time
15 min

Measurement archives

The list is loaded from <http://perfsonar.acad.bg/LHCOPN.conf>

Select MA(s)

Use	Measurement archive	URL	Schema	Status	Status explanation
<input type="checkbox"/>	ES-RedIRIS-BWCTL	http://perfsonar-l...	bwctl	echo	
<input checked="" type="checkbox"/>	ES-PIC-BWCTL	http://193.109.1...	bwctl	echo	
<input type="checkbox"/>	NL-T1-BWCTL	http://145.100.1...	bwctl	org.apache.axis.A...	java.net.ConnectE...
<input type="checkbox"/>	FR-CCIN2P3-BWCTL	http://193.48.99...	bwctl	org.apache.axis.A...	java.net.ConnectE...
<input type="checkbox"/>	US-T1-BNL-BWCTL	http://192.17.15...	bwctl	echo	
<input type="checkbox"/>	NDGF-BWCTL	http://193.10.12...	bwctl	echo	
<input type="checkbox"/>	CH-CERN-BWCTL	http://128.142.2...	bwctl	org.apache.axis.A...	java.net.SocketTi...
<input type="checkbox"/>	TW-ASGC-BWCTL	http://117.103.1...	bwctl	echo	

URL:

Name: Schema:

Event type: Supported event types: ▼

PerfsonarUI-v0.15a

File Interfaces Circuits BWCTL Looking Glass FlowSA Playground Help

Interfaces Circuits **BWCTL** Looking Glass FlowSA Playground

perfSONAR

Query options

BWCTL Destination
BWCTL MP/Source

Execute query

Estimate RTT
Clear
Query

Address type IPv4 IPv6

Source Address

Destination Address

Transport layer TCP UDP

TCP Window Size (bytes)

RTT (ms)

Test Duration (s)

Reporting Interval (s)

Type of Service bits

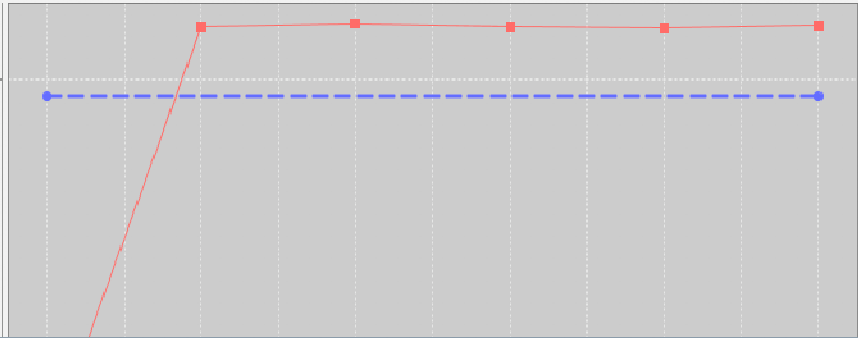
BWCTL Login Password

If you wish to see the Expected maximum theoretical bandwidth (TCP window size ÷ RTT) both RTT value and a window size must be entered

Result

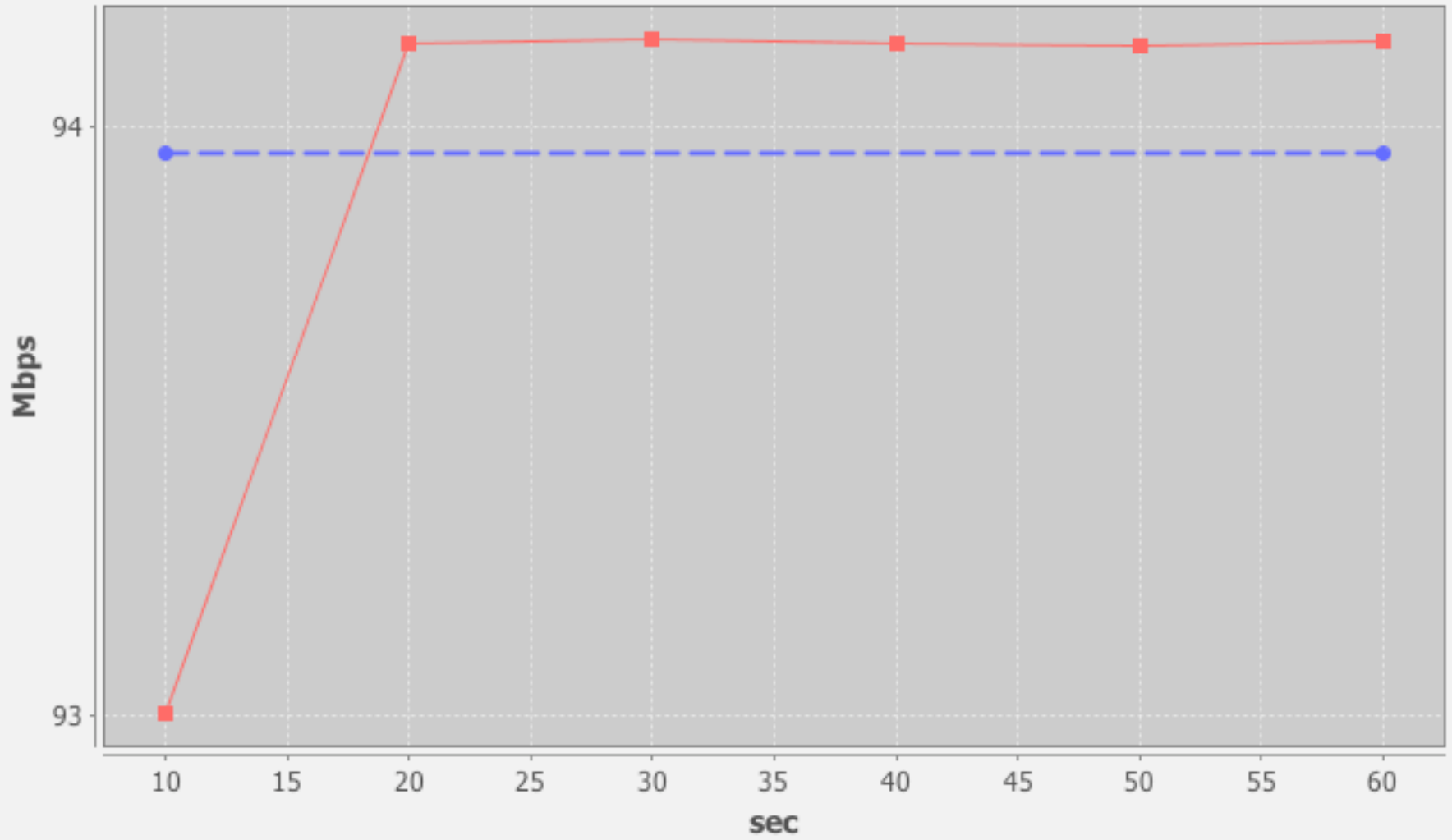
```
Interval: 0.0-10.0 Transferred: 110 MB (116255496 Bytes) / 93 Mbps (93004397 bits/sec)
Interval: 10.0-20.0 Transferred: 112 MB (117675064 Bytes) / 94 Mbps (94140051 bits/sec)
Interval: 20.0-30.0 Transferred: 112 MB (117683552 Bytes) / 94 Mbps (94146842 bits/sec)
Interval: 30.0-40.0 Transferred: 112 MB (117677936 Bytes) / 94 Mbps (94142349 bits/sec)
Interval: 40.0-50.0 Transferred: 112 MB (117673168 Bytes) / 94 Mbps (94138534 bits/sec)
Interval: 50.0-60.0 Transferred: 112 MB (117679632 Bytes) / 94 Mbps (94143706 bits/sec)
Interval: 0.0-60.2 Transferred: 673 MB (706641920 Bytes) / 93 Mbps (93953418 bits/sec)
```

■ TCP throughput per reporting interval ◆ Average TCP throughput over test duration



Completed.

■ TCP throughput per reporting interval ● Average TCP throughput over test duration



- **Actually we got an easy way to deploy perfSONAR platform in the spanish T2**
- **Deploying the full set of tools included in the DVD is NOT the same thing as customizing them**
 - Customization is not easy
- **Great DANTE support received**
- **Interfaces and BWCTL tab working right now**
 - Interface statistics and bandwidth measurements supported
- **OWAMP measurements NOT supported and there is no development on this issue**

- **A new perfSONAR MDM bundle was released on August (version 3.2)**
 - New DVD with all the new packages included
- **Some scripting to make things easier when customizing the tools of the platform**
- **Support to all the sites deploying the platform**
- **Massive deployment in all the spanish sites involved (all the regional networks and all the T2 sites)**
- **Continue improving the platform working with new DANTE releases**

Questions?