

Table of Contents

Intelligent Networking.....	1
Introduction.....	2
Preface.....	3
Network Metrics Delivery Components.....	4
PanDA Use Cases.....	5
Monitoring.....	6

Intelligent Networking

Introduction

- This page is evolving. Please keep checking.
- This page contains information about how PanDA interacts with network infrastructure.
- Feel free to contact ArtemPetrosyan with questions.

Preface

Connectivity between each pair of sites in the Grid infrastructure is measured constantly. Bringing this info to the system layer allows to adapt decision making process of workload management system to the real time network situation. To bring network measurements into the system, PanDA is instrumented with the components aimed to bring network metrics to the system.

Network Metrics Delivery Components

- Gets network metrics from SSB (Site Status Board) and pushes them into AGIS (ATLAS Grid Information System).
 - ◆ Deployed at aipanda021.
 - ◆ Executed via cron every hour.
 - ◆ Source code: <https://git.cern.ch/web/WAN.git/tree/HEAD:/SSB2AGIS>
- Downloads data from AGIS and stores it to the PanDA configuration database (SchedConfig).
 - ◆ Deployed at aipanda045.
 - ◆ Executed via cron every hour.
 - ◆ Source code: <https://svnweb.cern.ch/trac/newcontroller/browser/trunk/networkHandling.py>
 - ◆ Run script: <https://svnweb.cern.ch/trac/newcontroller/browser/trunk/runscripts/runNet.sh>

PanDA Use Cases

- FAX integration
 - ◆ In case when number of waiting tasks and load on site are high some of jobs may be transferred to nearby sites. The task in this case will be calculated on the nearby site using the remote read from the source site. The nearby sites lookup is done using network stats: get 5 best destination sites where XRootD is enabled for the source one.
 - ◆ Implemented as a function (getBestNNetworkSites_JEDI) in JEDI dbProxy.py.
 - ◆ Source code:
<https://github.com/PanDAWMS/panda-jedi/blob/master/pandajedi/jedicore/JediDBProxy.py>
 - ◆ More info at Panda brokering to FAX - overflow jobs page.
- Automatic MultiCloudProduction Configuration Update
 - ◆ Each T2D site may be configured to receive transfers from several clouds (multicloud field in SchedConfig). This configuration is being set automatically using network measurements. Current implementation is: select 3 best T1 sites for each T2D site where transfer rate of large files measured by DDM Sonar is higher than 10 MB/s.
 - ◆ Executed via cron once per week.
 - ◆ Source code:
<https://svnweb.cern.ch/trac/newcontroller/browser/trunk/multicloudHandling.py>
 - ◆ Run script:
<https://svnweb.cern.ch/trac/newcontroller/browser/trunk/runscripts/runMulticloud.sh>
- Software Defined Networks Integration

Monitoring

- Provides web UI, displays site to site measurements, T1 to T2D matrix, detailed reports for T1, T2D sites, current configuration and of update history of sites involved into multcloud production.
 - ◆ <http://aipanda021.cern.ch/networking/>
 - ◆ Deployed at aipanda021
 - ◆ Django application.
 - ◆ Source code: <https://svnweb.cern.ch/trac/panda/browser/pandaweb>

-- ArtemPetrosyan - 22 Oct 2014

This topic: PanDA > IntelligentNetworking

Topic revision: r3 - 2014-10-24 - ArtemPetrosyan



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