



# The architecture and maintenance of China-VO platform

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Chinese Virtual Observatory (China-VO)  
National Astronomical Observatory of China



October 2015 Interop in Sydney, Australia

# Contents

- China-VO Platform Introduction
- The architecture of Platform
- The maintenance of Platform



# China-VO Platform



Home Login ScienceCloud 简体中文

China-VO 中国虚拟天文台 Observation Data Tools Cloud Public

<http://astrocloud.china-vo.org/>

进入图库

公众超新星搜寻项目

**热点新闻** 10岁小学生发现超新星，虚拟天文台开启科研新模式  
国内首个天文全民科学计划上线，邀您共同发现超新星  
天文云教学V6就绪，IPv6应用实现新突破

平台注册用户数超过万人  
借力科学大数据，分享自己心中的宇宙  
天文领域云论文数据仓储上线

丽江2.4米望远镜2015-2016观测季提案征集...  
上海台1.56米望远镜数据实现统一访问

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China-VO

# Proposal Submission and Management

**Opentime management**

Opentime detail

ID:	2
Instrument ID:	240
Year:	2014
Start date:	2014-01-01
End date:	2014-02-01

Opentime List

ID	Telescope ID	year	Start Date	End Date	Instruction File
1	240	2013	2013-11-01	2013-11-20	Upload Download
2	240	2014	2014-01-01	2014-02-01	Upload Download

**Edit Proposal**

中国科学院云南天文台丽江高美古2.4米望远镜观测时间申请表

该在线观测时间申请表提供了一个完整的2.4米望远镜观测申请表。您可以在线完成该申请表的填写，然后提交就可以了。如果您有任何疑问，请发送邮件到如下地址：timeappadmin@ynao.ac.cn

**注意：** "\*"指的是必填项。在填写所有的必填项之前，您不能提交您的申请。您可以通过点击 [申请表使用说明](#) 获取关于该申请表帮助的信息，也可以通过点击每个部分的帮助按钮获取帮助信息。

**注意：** 填写完所有的表格之后，直接提交，不需要单独发送邮件到如上的地址；只有通过该在线系统提交的观测申请才有可能被拟后科学委员会所接受。

观测者信息

说明：请填写主要申请人的所有信息(手机号码是必填的)，如有可能，应该提供协助参与者的姓名和单位，该协助参与者的姓名应该列在项目简介中。参与观测的所有人，除了主要申请人(但是包括协助观测者)都应该在下面的“其他观测者”列表中列出其相应信息。

PI\* 姓名: 肖健 电话: 12345678

**Proposals**

Title: project1  
ProposalId: 20131030  
need 20 hours  
17:00-20:00

Title: project2  
ProposalId: 20131120  
need 13 hours  
18:00-23:00

Submit

**Proposals**

Telescope ID	Telescope Name	From	To	Instruction	
1	240	云台2.4m	2013-11-01	2013-11-20	

Displaying 1 to 1 of 1 items

**Proposal List**

program title	proposal ID	search								
Proposal ID PI cstnetID PI Name Program Title Requested Time From Requested Time To Proposal Status	1	10001	hongzhi@jlu.edu.cn	洪智	search	Mar	2014-01-01	2014-02-12	0	

Displaying 1 to 1 of 1 items

**Calendar View**

today Nov 17 — 23 2013

	Sun 11/17	Mon 11/18	Tue 11/19	Wed 11/20	Thu 11/21	Fri 11/22	Sat 11/23
all-day							
12am							
1am	1:00 - 4:00 project1-20131030		12:00 - 2:00 project1_		12:00 - 3:00 project1-20131030		
2am							
3am		3:00 - 5:00 project1_		3:00 - project2-20131			
4am	4:00 - 6:00 project2_		4:00 - 6:00 project2_		4:00 - project2-20131	4:00 - project1-20131	4:00 - project1-20131
5am		5:00 - project2-20131					
6am							
7am							
8am							
9am							
10am							
11am							
12pm							
1pm							
2pm							
3pm							
4pm							
5pm							
6pm							
7pm							
8pm							
9pm							
10pm							

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中国科学院国家天文台版权所有 京ICP备05002854号 京公网安备1101050056号

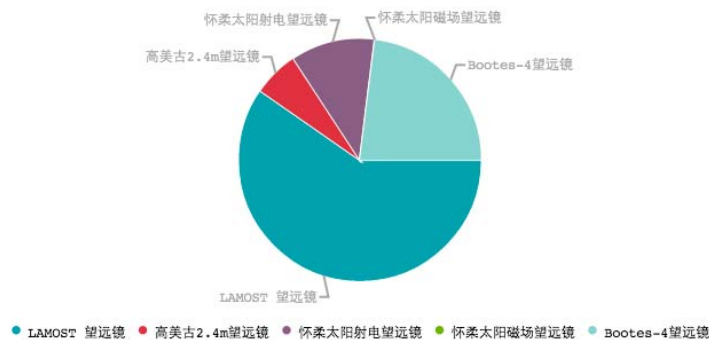
# Link Status and Archiving Management

## 望远镜节点状态 更新: 2013-10-09 12:01:23

LAMOST望远镜	● 数据量: 12,096,495 MB, 新增 9,467 MB	2013-10-08 22:02:02
高美古2.4m望远镜	● 数据量: 1,240,071 MB, 新增 2,921 MB	2013-10-07 10:21:54
怀柔太阳射电望远镜	● 数据量: 2,265,615 MB, 新增 2,055 MB	2013-10-09 17:38:21
怀柔太阳磁场望远镜	● 数据量: 4,774 MB, 新增 38 MB	2013-10-08 13:56:17
Bootes-4望远镜	● 数据量: 4,664,507 MB, 新增 705 MB	2013-10-06 08:08:31

## 统计信息 更新: 2013-10-09 12:01:23

总数据量 **20,271,462 MB**



CanvasJS.com

## 数据归档日志 更新: 2013-10-09 12:01:23

时间	站点	日志
2013-10-09 17:38:21	怀柔太阳射电	数据汇交结束
2013-10-09 17:02:54	怀柔太阳射电	数据汇交开始
2013-10-08 13:56:17	怀柔太阳磁场	数据汇交结束
2013-10-08 12:02:02	LAMOST	数据汇交结束
2013-10-08 11:50:24	怀柔太阳磁场	数据汇交开始
2013-10-08 09:02:02	LAMOST	数据汇交开始
2013-10-07 10:21:54	GMG2.4	数据汇交结束
2013-10-07 08:32:12	GMG2.4	数据汇交开始

[更多日志](#)

按日期查询

日期范围:

2013-10-18 - 2013-10-19

FROM 2013-10-18 TO 2013-10-19

Oct 2013						
Su	Mo	Tu	We	Th	Fr	Sa
29	30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2
3	4	5	6	7	8	9

Oct 2013						
Su	Mo	Tu	We	Th	Fr	Sa
29	30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2
3	4	5	6	7	8	9



# Data Search and Access

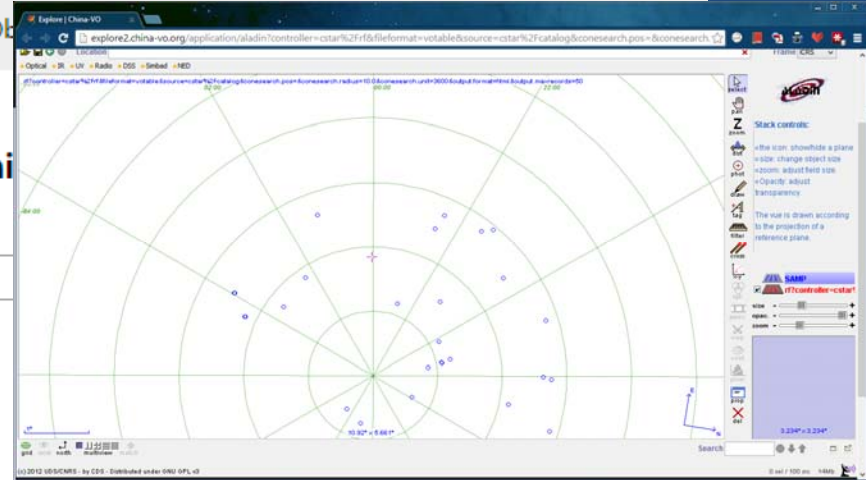
China-VO 中国虚拟天文台

科学数据

ID	RAhms	DEdms	RA	Dec	masterX	masterY	mag	magErr	count	Light Curve
1	01:16:19.020	-87:21:25.76	19.07925000	-87.35715556	3386.6800	-1255.6659	6.7269	0.000121	54094	Light Curve
2	02:18:30.076	-88:09:20.39	34.62511667	-88.15566189	5055.6292	133.8096	7.7885	0.000098	288185	Light Curve
3	03:29:45.422	-88:15:15.65	52.43925834	-88.25434722	6292.1708	727.7954	7.9583	0.000098	285000	Light Curve
4	03:57:20.814	-87:30:21.12	58.33672500	-87.50586667	7430.6160	-6943.1100	7.3405	0.000405	118312	Light Curve
5	03:57:40.123	-87:29:51.47	59.41717917	-87.49763056	7445.5727	-708.3638	7.7290	0.000148	83436	Light Curve
6	04:21:10.477	-87:49:29.76	65.29395417	-87.82493333	7803.1911	215.5962	7.3700	0.000254	42900	Light Curve
7	04:21:32.048	-87:49:09.33	65.38353333	-87.81925833	7636.4434	208.0566	7.3896	0.000000	171422	Light Curve
8	07:53:34.709	-87:27:02.47	118.39462083	-87.45008611	10941.1954	1811.4178	7.8715	0.000147	306118	Light Curve
9	08:20:10.824	-87:43:27.06	125.04510000	-87.72418333	10364.4074	4488.2401	7.5358	0.000093	212261	Light Curve
10	08:57:04.474	-88:16:05.02	134.26884167	-88.26806111	9076.7544	5155.3201	7.4644	0.000084	288970	Light Curve
11	09:29:02.426	-89:20:47.50	142.26010833	-89.34652778	6590.4236	5001.8467	7.5000	0.000058	289634	Light Curve

Domestic Dataset

Solar Dataset



TOPCAT

Table List: r?f?fileformat=votable&source=...

Current Table Properties: Label: r?f?fileformat=votable&source=cstar%2Fcatalog&con... Location: samp;r?f?fileformat=votable&source=cstar%2Fcatalog&conesearch.pos=&conesearch.radius=10

Table Browser for 1: r?f?fileformat=votable&source=cstar%2Fcatalog&con...

ID	RAhms	DEdms	RA	Dec	masterX	masterY	mag	magErr	count	Light Curve
14	01:16:19.020	-87:21:25.76	19.07925	-87.35716	3386.68	-1255.67	6.7269	0.000121	54094	Light Curve
50	02:18:30.076	-88:09:20.39	34.62532	-88.15566	5055.63	133.81	7.7885	0.000098	288185	Light Curve
61	03:29:45.422	-88:15:15.65	52.43926	-88.25435	6292.17	727.79	7.9583	0.000098	285000	Light Curve
47	03:57:20.814	-87:30:21.12	58.33672	-87.50587	7430.62	-6943.11	7.3405	0.000405	118312	Light Curve
46	03:57:40.123	-87:29:51.47	59.41718	-87.49763	7445.57	-708.36	7.7290	0.000148	83436	Light Curve
30	04:21:10.477	-87:49:29.76	65.29395	-87.82493	7603.19	215.60	7.3700	0.000254	42900	Light Curve
29	04:21:32.048	-87:49:09.33	65.38353	-87.81926	7616.44	208.06	7.3896	0.000000	171422	Light Curve
59	07:53:34.709	-87:27:02.47	118.39462	-87.45009	10943.19	1811.42	7.8715	0.000147	306118	Light Curve
37	08:20:10.824	-87:43:27.06	125.0451	-87.72418	10364.41	4488.24	7.5358	0.000093	212261	Light Curve
33	08:57:04.474	-88:16:05.02	134.26884	-88.26806	9076.75	5155.32	7.4644	0.000084	288970	Light Curve
35	09:29:02.426	-89:20:47.50	142.26011	-89.34653	6590.42	5001.85	7.5000	0.000058	289634	Light Curve
44	09:29:38.436	-87:56:23.76	142.41015	-87.93993	9673.8	5918.4	7.5000	0.000058	289634	Light Curve
26	10:17:10.030	-87:13:00.80	146.06739	-87.21689	11129.0	6773.0	7.5000	0.000058	289634	Light Curve
58	10:17:10.030	-87:43:18.45	154.29179	-87.72179	9738.08	7057.6	7.5000	0.000058	289634	Light Curve

Data Authorize Explore | explore2.china-vo.org/admin/dataautho

China-VO 中国虚拟天文台

科学数据

system management

- users
- roles
- operations
- admin
- data owner
- data authorize

Data Authorize

Authorized By: fandongwei@nao.cas.cn

User ID: [redacted]

Data Table: [redacted]

ID in Table: [redacted]

Authority: allow

Authorized Date: [redacted]

# Public Channel

China-VO 中国虚拟天文台

Observation

Data

Tools

Cloud

Public

公众超新星搜寻

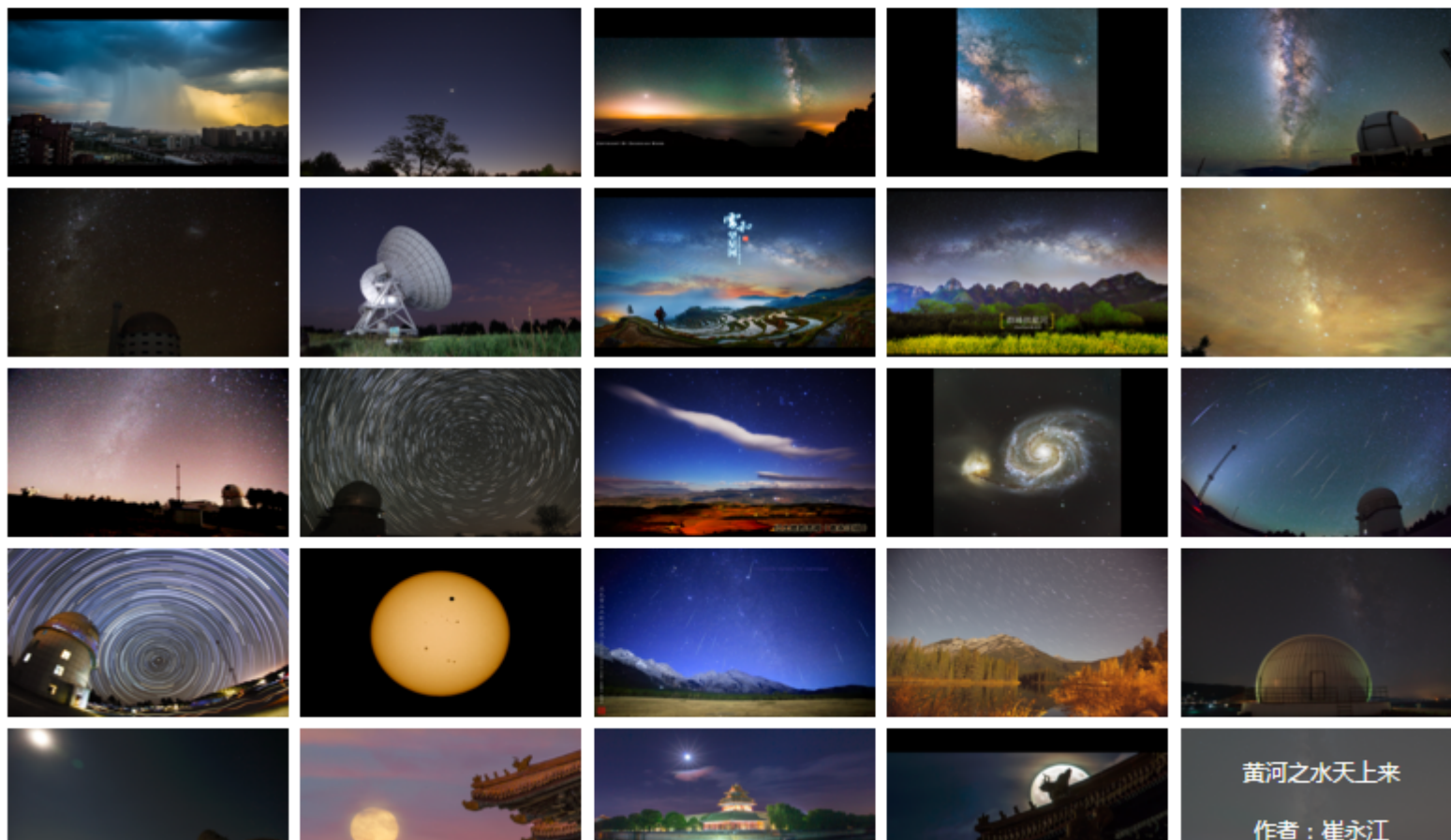
此时此刻

特色专题

天文美图

所有图片

按作者排序



# Cloud Computing Environment

The screenshot displays the 'Add Instance' wizard in the ScienceCloud interface. The wizard consists of six steps: 1. Setup, 2. Select a template, 3. Compute offering, 4. Data Disk Offering, 5. Network, and 6. Review. Step 2 is currently active.

A notification window is overlaid on the wizard, stating: **Your VM created successfully.** The notification includes the following details:

- 发件人: notify@china-vo.org
- 时间: 2014年07月16日 14:16:35 (星期三)
- 收件人: lich@bao.ac.cn

The main content of the notification reads:

```
Welcome to astrocloud!  
  
Your VM has created successfully. the detailed info. is as follows:  
  
VM Info:  
VM_Name: astrocloud-explore  
OS Type: CentOS 6.0 (64-bit)  
Hostname: myvm.china-vo.org  
Forward service: SSH  
Port:10026  
The root password of VM : bu6zatscs  
  
China-VO Support Group
```

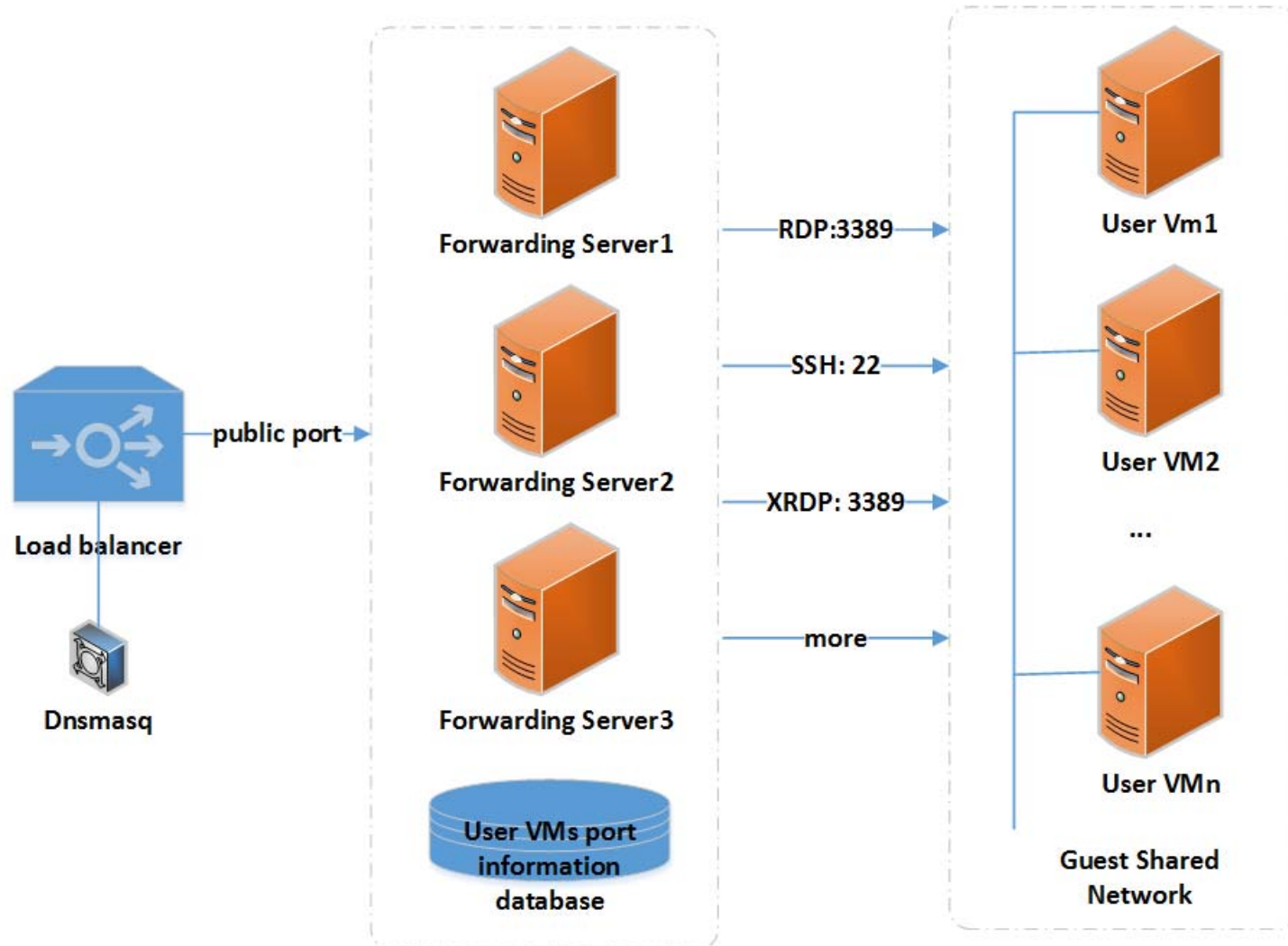
At the bottom of the wizard, there are three buttons: 'Previous', 'Cancel', and 'Next'.



# Cloud Computing Environment

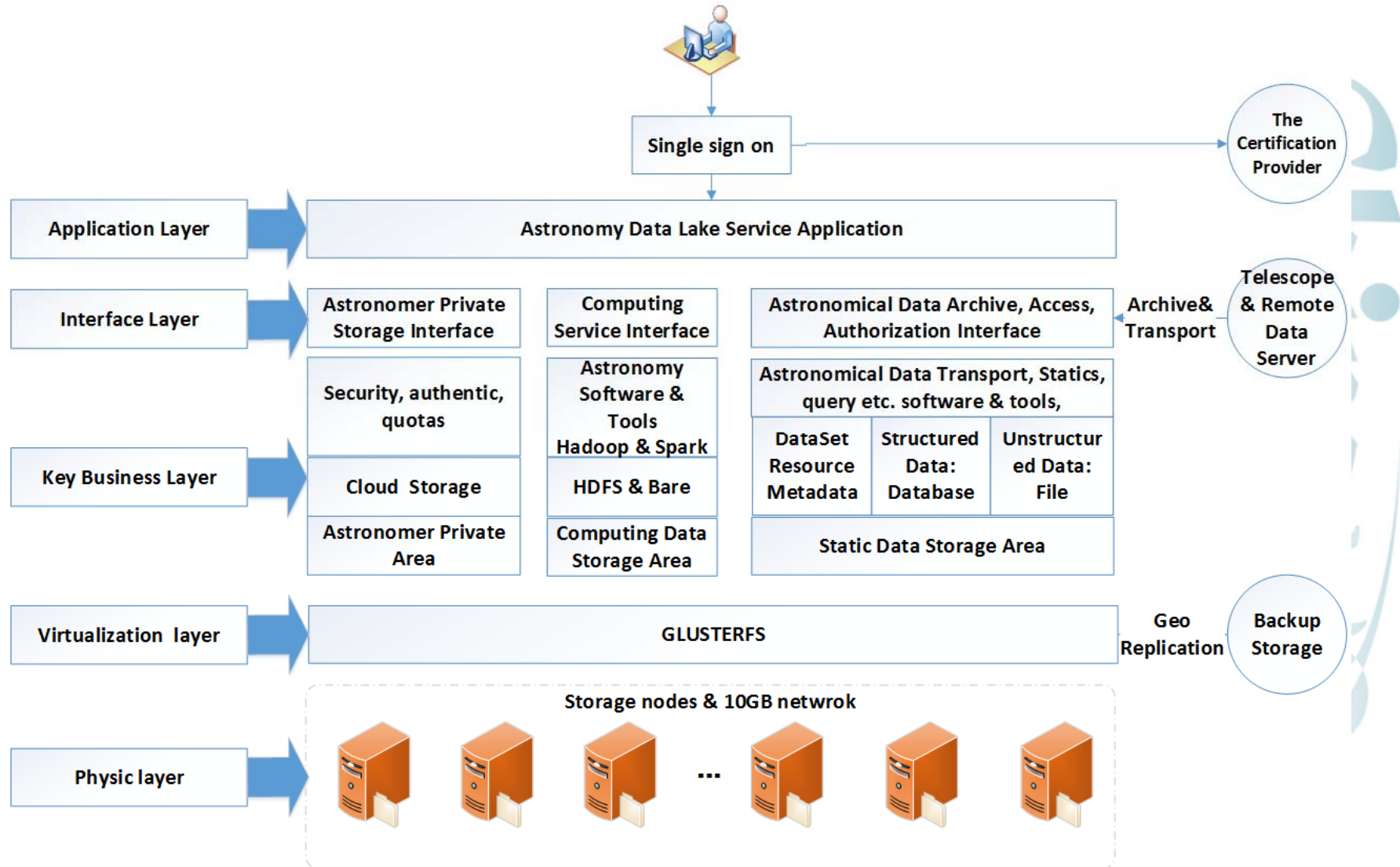
## ----VM Access

- Web\
- Port f



# Cloud Computing Environment

## ---China-VO Data Lake



# Cloud Computing Environment

---Vospace &

China-VO 中国虚拟天文台



## China-VO Paper Data Repository

China-VO Paper Data Repository provides long-term storage and open access service for your paper data, which in-

res, movies,  
s mentioned in  
er specified URL  
e, copyrights of

The screenshot shows the Vospace web interface. At the top, there's a navigation bar with 'yVOSpace' and buttons for 'Upload File' and 'Parent'. Below is a table listing files and folders:

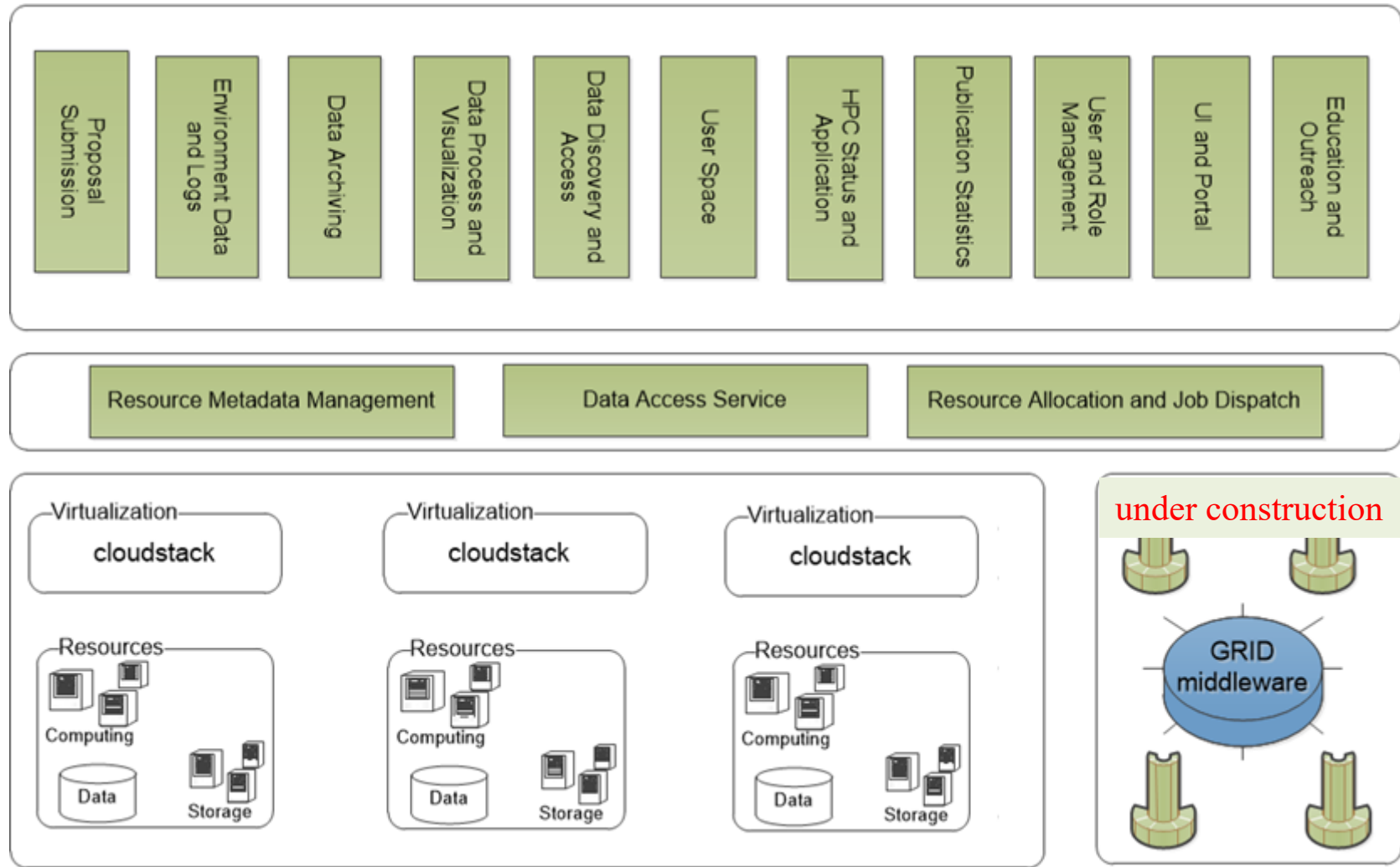
FileType	Name	Size	modified time
Folder	2015	18KB	2015-03-12
Folder	highbluebutton-mas		
Folder	cloudstackinstall		
Folder	clubmaster_1.3.5		

A dialog box titled 'PaperData - LICHANGHUA' is open, showing a 'Domain Setting' section. It contains a text input field for the domain name and a 'Hint' in red text: 'Hint: You have set the domain name, if you modify it, all old link url would be invalid.' Below the input field are 'Cancel' and 'OK' buttons.

A 'Status' dialog box displays the following text:

```
file link address:  
http://paperdata.china-vo.org/Li.Changhua/adass2014/cloudcomputing/ADASSPOSTER.pdf
```

# Architecture

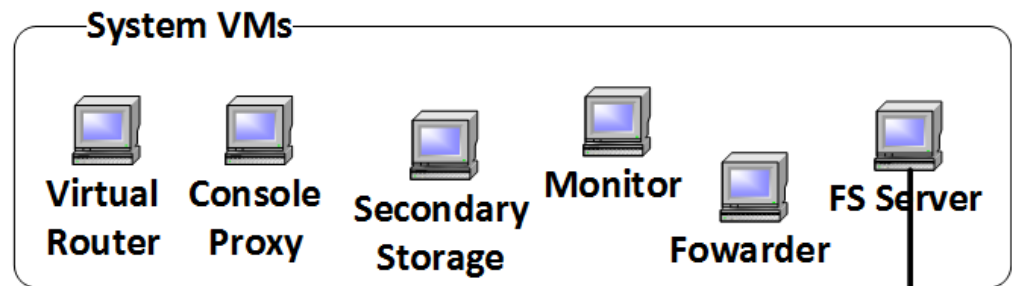
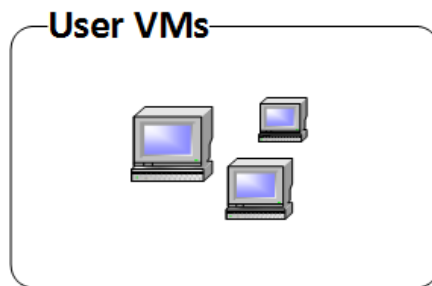


# Architecture

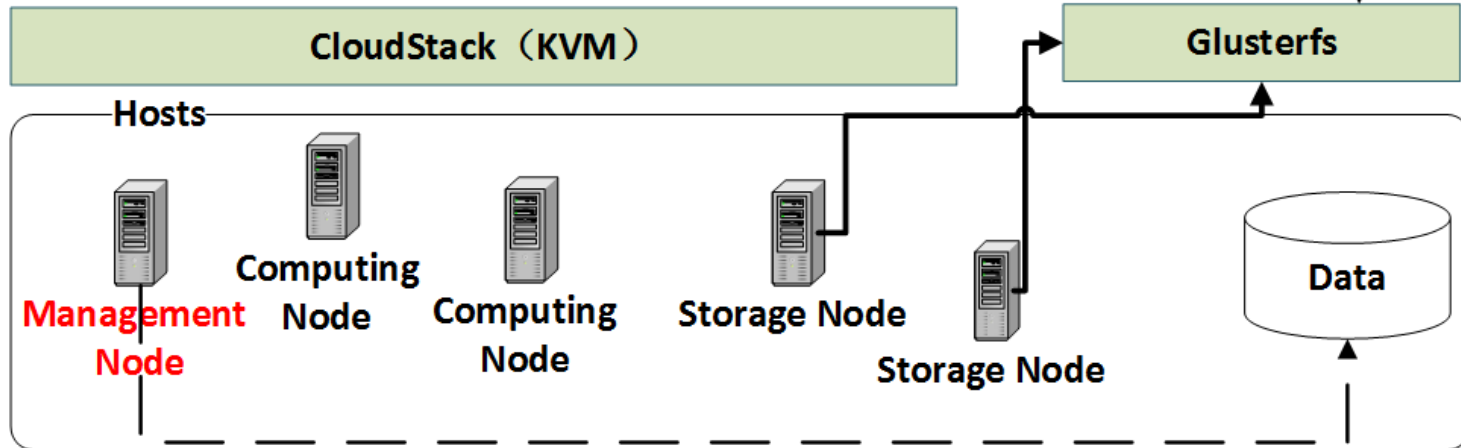
用户层



虚拟层



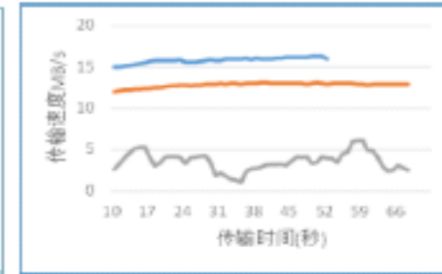
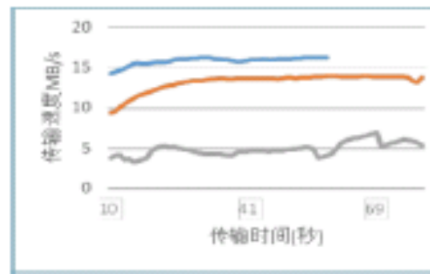
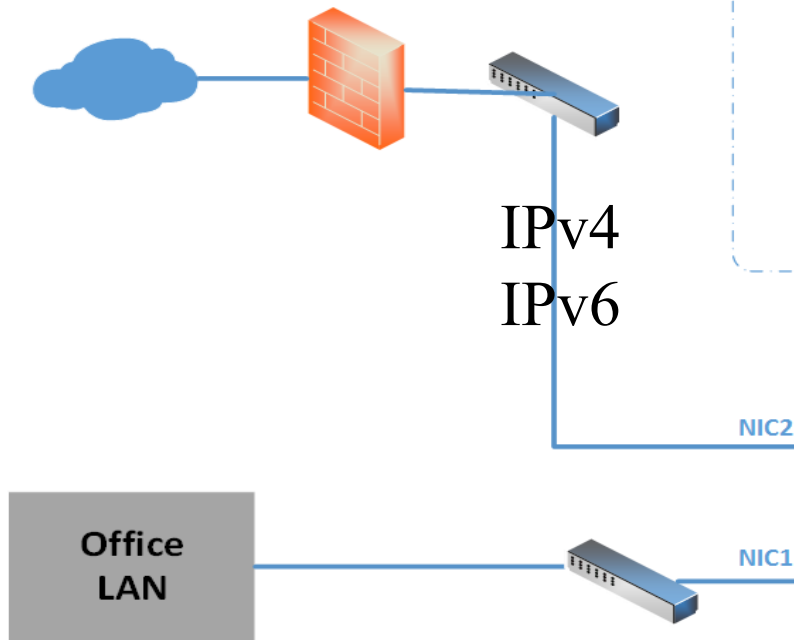
物理层



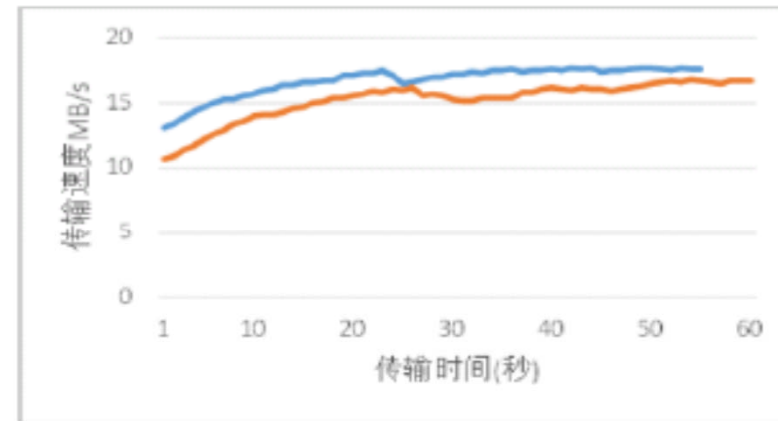


# Arc

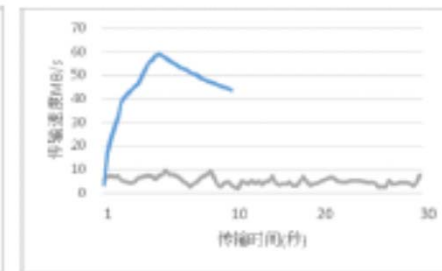
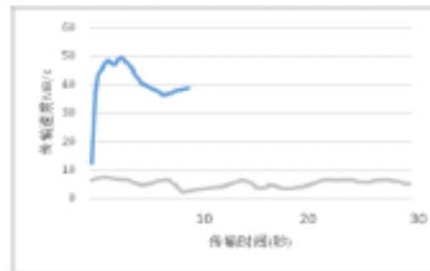
The speed in IPv6 is 50 times faster than IPv4



a) 在两个地域不同的云节点虚拟机上通过 SCP 下载文件的时间与速度对比图



b). 云内网虚拟机间使用 IPv4 与 IPv6 速度对比



c). 在两个地域不同的云节点虚拟机上通过 wget 下载 VOSPACE 文件的时间与速度对比图

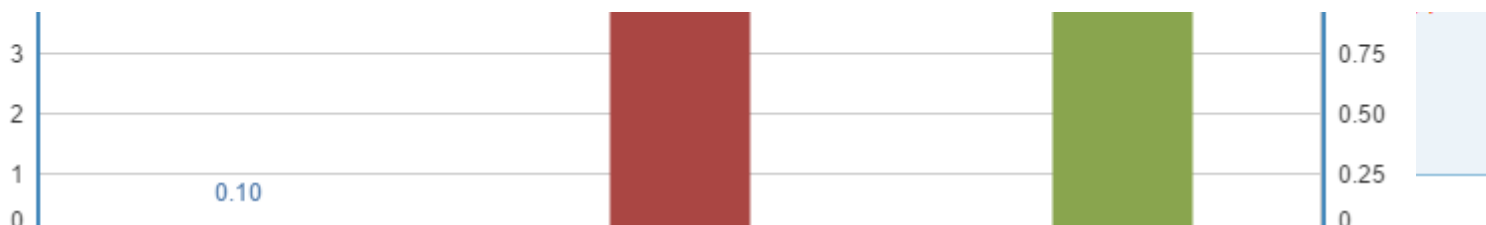
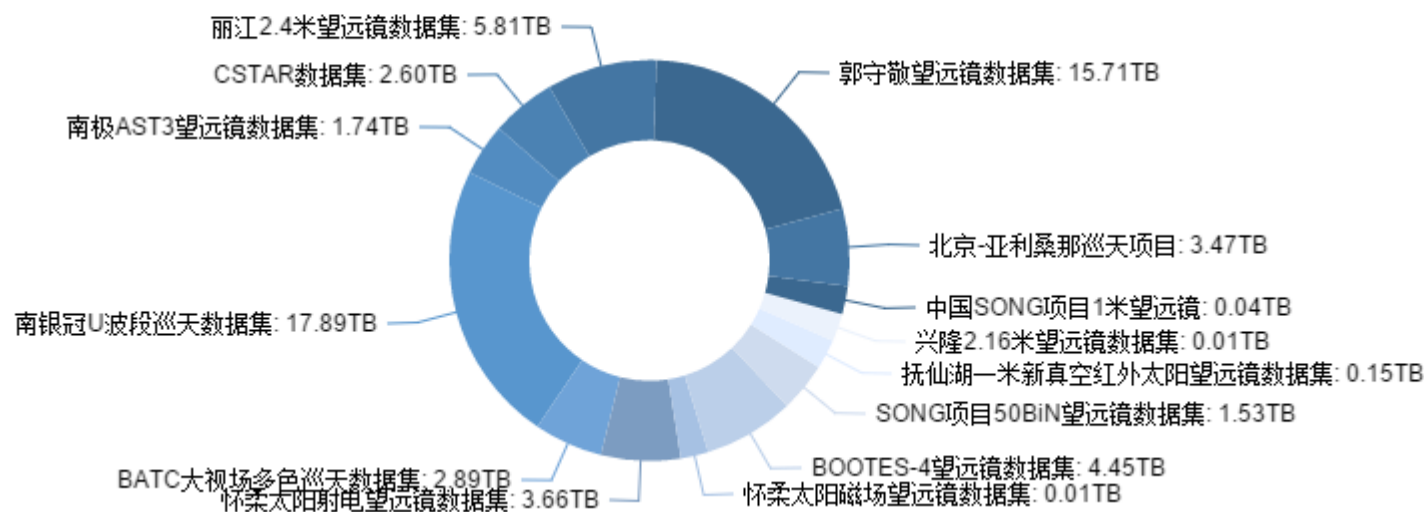
# Usage statistic data

数据使用

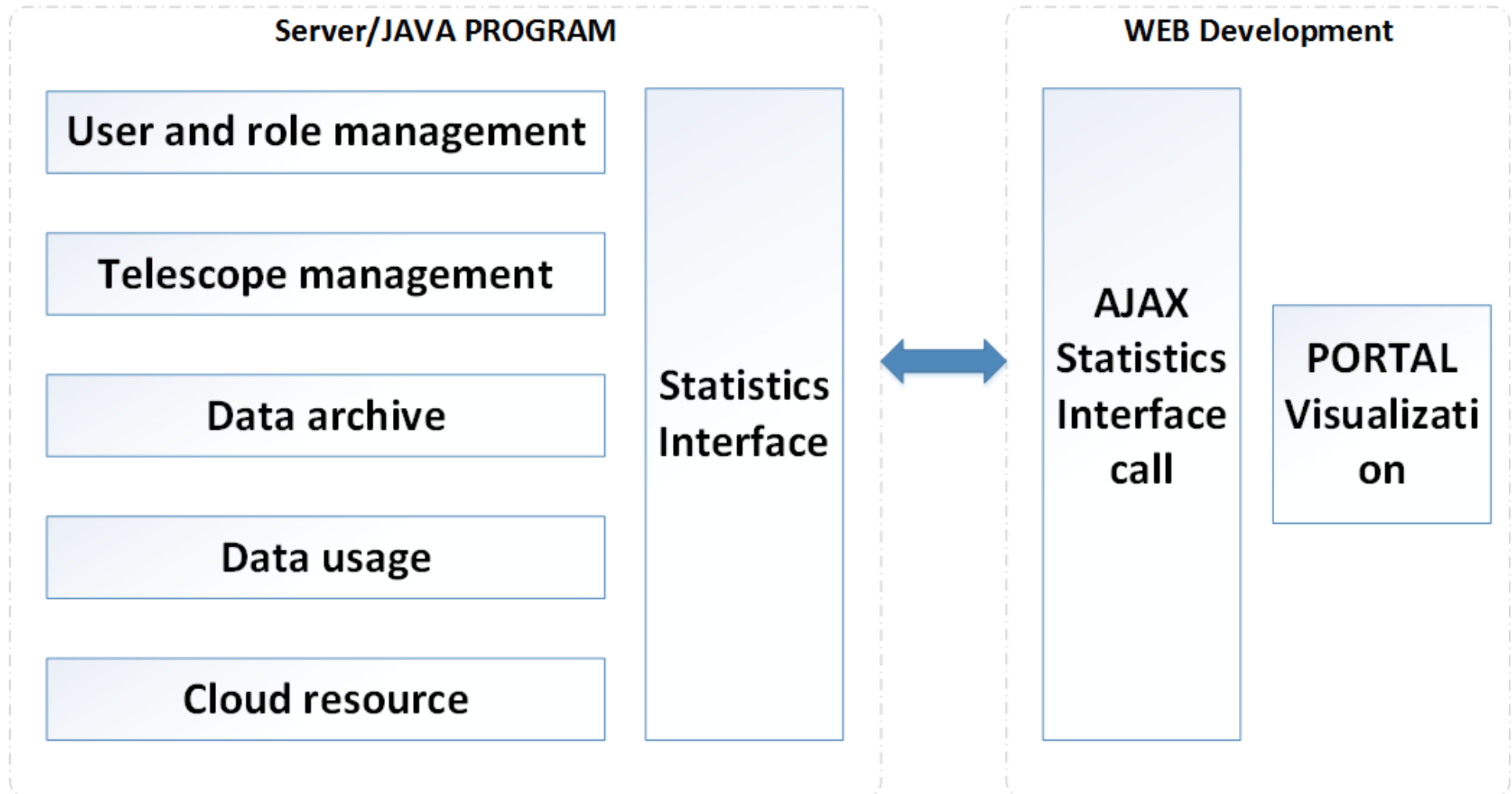
■ 查询次数 ■ 下载次数 ■ 数据下载量

数据归档

数据归档总量为：59.96 TB

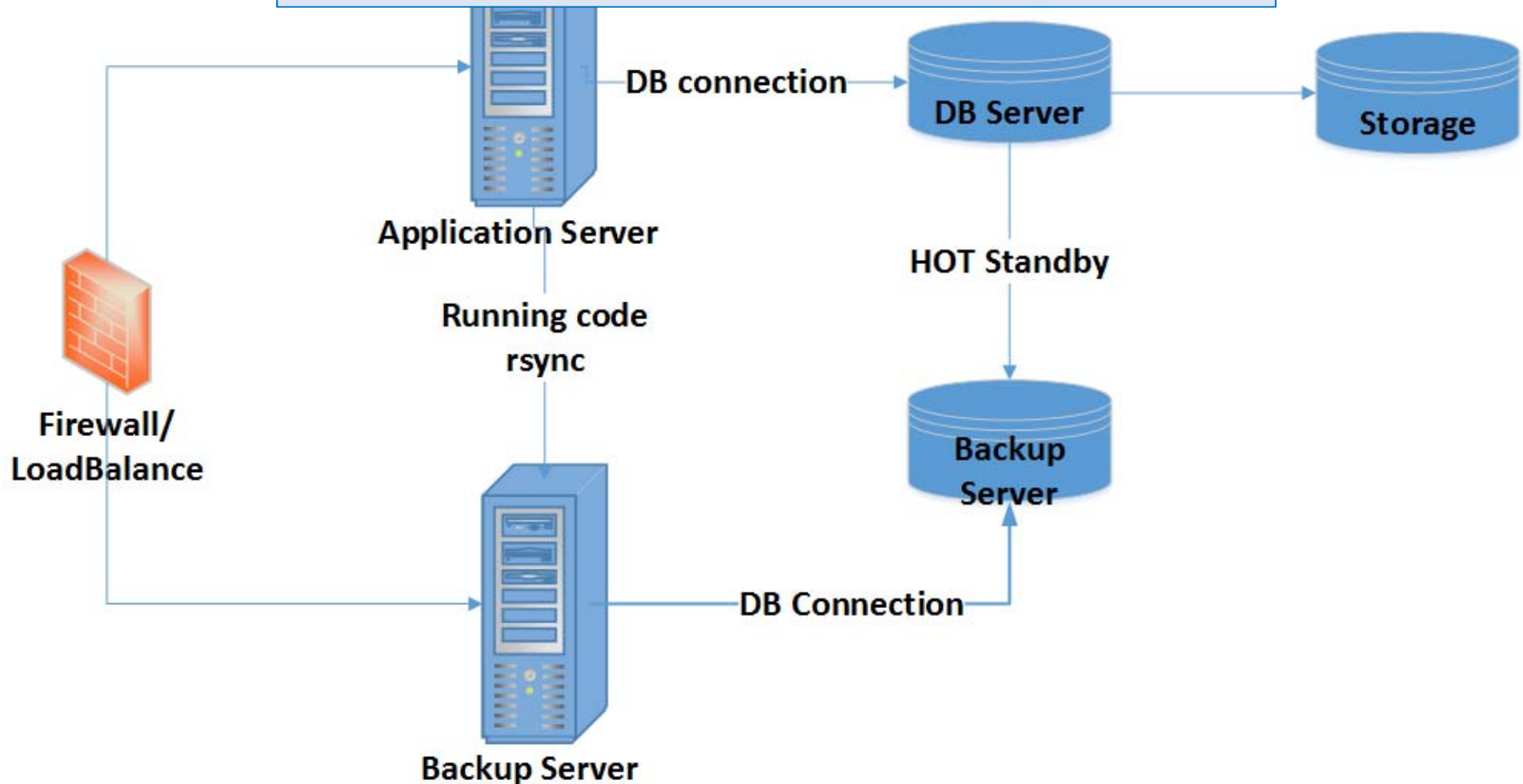


# Statistical Module



# Platform deployment

Stability and reliability are most important!



# Platform deployment

- Application server and DB server backup in different Data Center.
- Fault Event
  - Server
    - Firewall or Load balance
  - Data Center
    - DN Resolution







1 已添加网站  
1 已认证网站

+ 添加网站

网站详情

- ▶ 站点概要
- ▶ 网站安全
- ▶ 运行数据
- ▶ 网站设置

用户中心

- ▶ 帐号设置
- ▶ 消息中心

观测新闻 [更多>>](#)

- ▶ 增加Joomla高危注入漏...
- ▶ 增加CmsEasy高危注入...
- ▶ 增加MetInfo高危注入...

快速帮助 [更多>>](#)

- ▶ 如何添加我的网站
- ▶ 如何查看网站报告
- ▶ 如何接收报警

当前网站 天文云超算 (http://hpc.china-vo.org)

### 信息卡

- WEB服务器: nginx
- DNS服务商: 万网
- 服务器地址: 159.226.170.200
- WEB应用: 暂无
- CDN服务商: 暂无

### 安全指数

更新时间 14:04:30



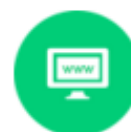
您的网站状态**良好**，但是仍存在改进空间。

[立即查看](#)

### 网站速度

评测时间: 10-30 12:24

### 实时全景



用户浏览器



# Thank You!



<http://astrocloud.china-vo.org/>

China-VO