



Duckling Falcon and SaaS Applications

Kejun Dong, Kai Nan, Ji Li
CNIC, Chinese Academy of Sciences

CHAIN-REDS Workshop @ Beijing 22October2013

Outline

- Background
- Duckling/Falcon
- SaaS Applications
- Conclusions

Background

- CNIC (Computer Network Information Center) , CAS (Chinese Academy of Sciences)
 - supporting institute of Chinese Academy of Sciences for the construction, operation and services of its Cyberinfrastructure and the China' s Basic Resources of Internet

China Science & Technology Network

Scientific Data Center

Supercomputing Center

ARP Information Resources Center

China Internet Network Information Center

Internet-Based Science Communication Center

Departments in CNIC



CSTNET: the Scientific Network for China e-Sciences

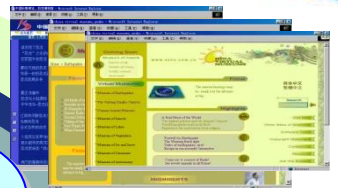


Field Observatories



国际科研网络互联
International Interconnecting

中国网格化科研基础设施
Grid Scientific Infrastructure



Website Group



Document & Information

ARP二期发展计划规划示意图

| 类别 | 名称 | 负责人 | 联系电话 | 电子邮箱 | 备注 |
|------|------|-----|----------|--------------------|----|
| 网络管理 | 网络中心 | 王德胜 | 64786111 | wangdes@ict.ac.cn | |
| 应用管理 | 应用中心 | 李国杰 | 64786111 | liguojie@ict.ac.cn | |
| 安全管理 | 信息中心 | 李国杰 | 64786111 | liguojie@ict.ac.cn | |
| 资源管理 | 资源中心 | 李国杰 | 64786111 | liguojie@ict.ac.cn | |
| 其他 | 其他 | 其他 | 其他 | 其他 | |

Scientific Resource Planning



Network Science Museums



Large-scale Scientific Instruments



Scientific Computing Grid



Scientific Data Grid



Cloud Computing

SaaS

Software as a Service



PaaS

Platform as a Service



IaaS

Infrastructure as a Service



Duckling - Collaboration Environment



A **SaaS software suite** to build your collaboration environment with features of document collaboration, col-laboratory library, virtual organization management ...

More than **240,000** researchers by October 2013

Conference
Service
Platform

Document
Library

Duckling
Portal

Duckling
Homepage

CAS Mail
Service

Video
Conference

VoIP

Research Online

科研在线
esience.cn

<http://www.esience.cn>

Duckling

as

Falcon PaaS

Mobile/

- * An unified SaaS(Software as a Service) research community around CAS
- * An open platform for CAS applications as PaaS (Platform as a Service)

A cloud-enabling open platform to integrate resources and enrich it as a scalable web-based e-Science application as you want ...



中国科技网
China Science & Technology Network

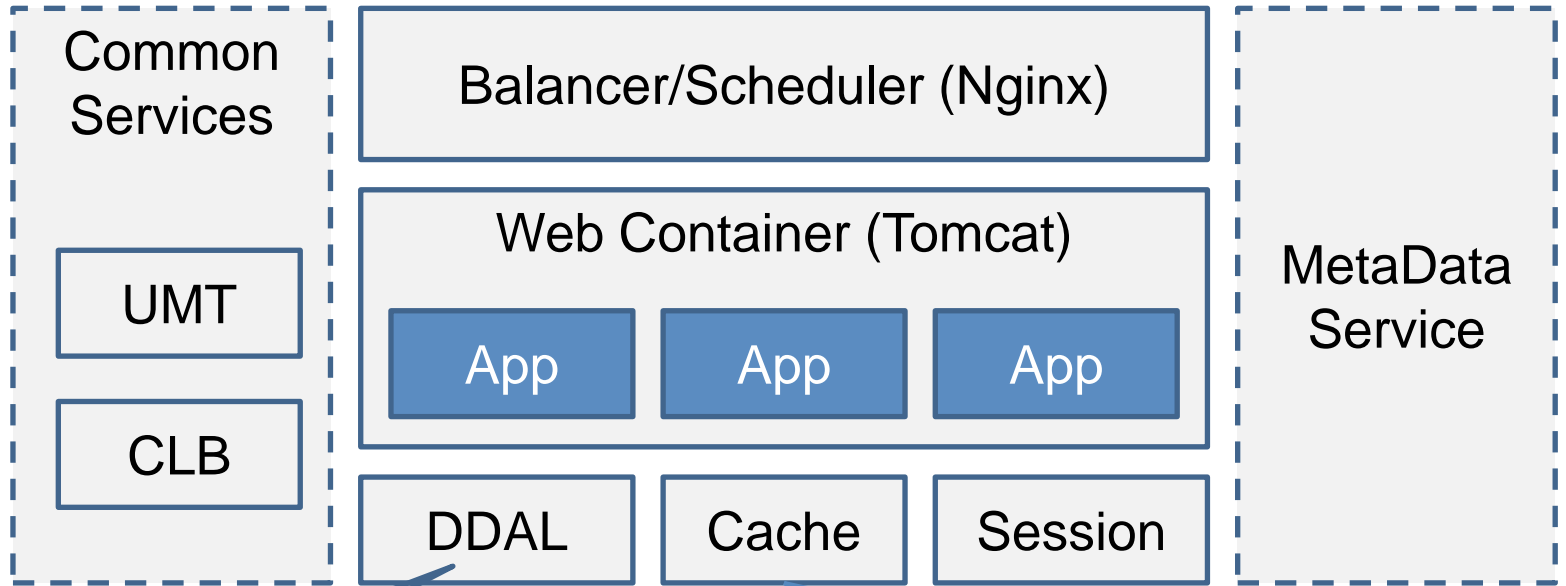
Falcon and Cloud Foundry

- Falcon is a cloud functionality of Duckling, to enable SaaS applications, for its robustness and scalability. And we also integrate Cloud Foundry, which is an open source Platform as a Service (PaaS) project (<http://www.cloudfoundry.com/>) to provide a faster and easier way to build, test, deploy and scale applications.
- Cloud Foundry supports applications written in several JVM-based languages, including Java, Groovy, and Scala, Ruby applications written using the Rails, Sinatra, and Rack frameworks and Javascript applications using the Node.js, as well as most of frameworks including Spring, Grails, Play, Lift, and so on.

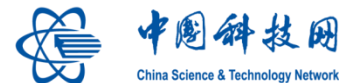
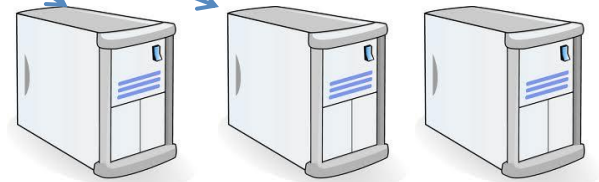
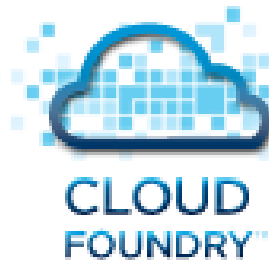
| Functionality | Falcon | Cloud Foundry |
|---|--------|---------------|
| App Auto Deployment | × | √ |
| Web High Availability | √ | √ |
| Multiple Language Support (Java/Python/...) | × | √ |
| Service High Availability (MYSQL/MongoDB/...) | √ | × |
| Session Stateless (Memcached) | √ | × |
| App Instance Migration | √ | √ |



Architecture of Duckling Falcon

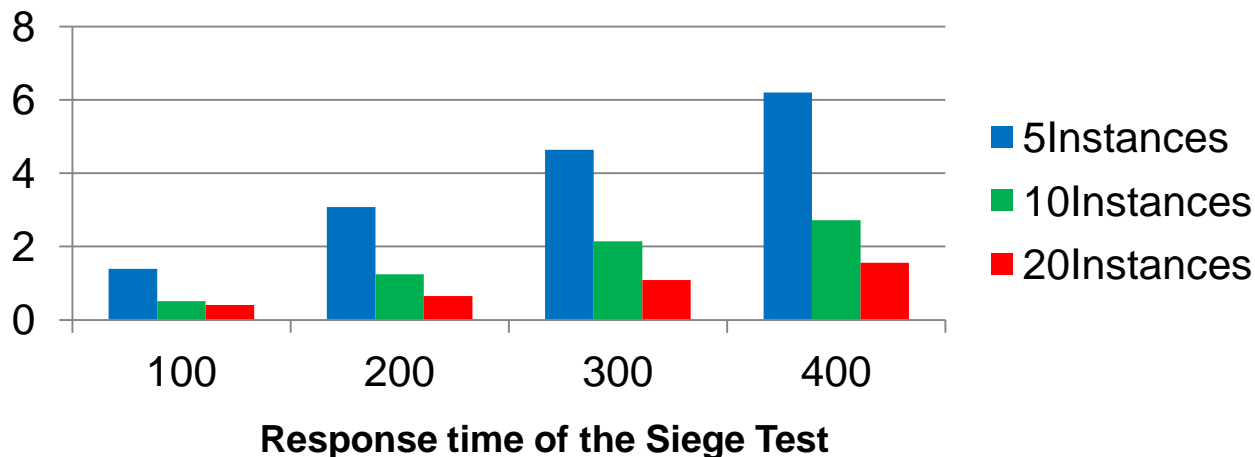


Dynamic Data Access Layer



Evaluations

- An evaluation of a falcon-enabled application named “SiteNav”
 - A 5/10/20 instances are used as the load balance web container cluster for the SiteNav application
 - The siege tool is used to simulate the concurrent of web browser
- Conclusions
 - all visits are load balanced to the server instances with the fault tolerant support
 - we can easily extend the cluster from 5 instances to 20 instances in few seconds by falcon with cloud foundry support and get the better response time



Duckling SaaS Applications

Research Online
<http://www.escience.cn>

(By 20 October 2013)

- More than 500 Institutions, 240,000 Users
- 2200+ Groups, 660+ Conference Collaborations
- 3700+ Scientists' Homepages



使用旧版

欢迎使用科研在线提供的在线服务！

| | | |
|---|---|---|
|  文档库 面向团队的文档协作与管理工具 |  科研主页 快速创建属于您的学术主页 |  会议服务平台 会务信息化管理平台，助您轻松办会 |
|  邮箱 大容量 反垃圾 杀病毒 安全稳定 |  中国科技网资源导航 全面、专业、精确的资源共享导航服务 |  实验室信息系统 面向实验室的云端信息系统，助力科研 |

- CSTNET Passport/UMT
- VO Management Tool

- Document Library
- Group Calendar
- Conference Service
- Homepage
- CAS Email Service
- dChat Service

Research Online - CSTNET Passport/UMT

<http://passport.escience.cn>

- Based Software
 - Duckling UMT version 7.x
 - User Management Tool (UMT)
- CAS User Identification Service
- Over 240000 Users, 500 Institutions
- OAuth2 Implementation
- More than 10 Applications

您正在使用中国科技网通行证登录云存储业务服务平台，一键通行更轻松

账号 kevin@cstnet.cn

密码

十天内存登录

登录



Research Online - VO Management Tool (VMT)

<http://vmt.escience.cn>

- Org-based Management Tool
- Group/VO
- Org Directory Service
- Falcon-enabled Load Balance



Research Online - Conference Service Platform

<http://csp.escience.cn>

A Solution for Conference Management Informatization

**Software Suites, Technical Support and Training
for Conference Service Cloud!**

■ Features:

- ✓ Software as a Service
- ✓ One-Clicking Creating
- ✓ Web Publishing
- ✓ Online Registration
- ✓ Abstract Submission
- ✓ Hotel Reservation
- ✓ Online payment
- ✓ Bulk Email Service

- Offer one-clicking conference website creating, and assist conference organizers to publish and manage the conference website conveniently.
- Reduce the cost of conference website construction, improving efficiency of the conference management and building a scientific knowledge base.

**A collaboration platform for connecting
organizers, attendees and decision maker.**

104 Institutions with 660 Conference and 56000+ Registrations



Typical Conferences

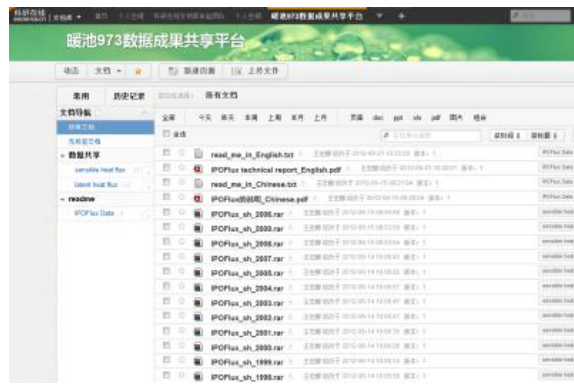
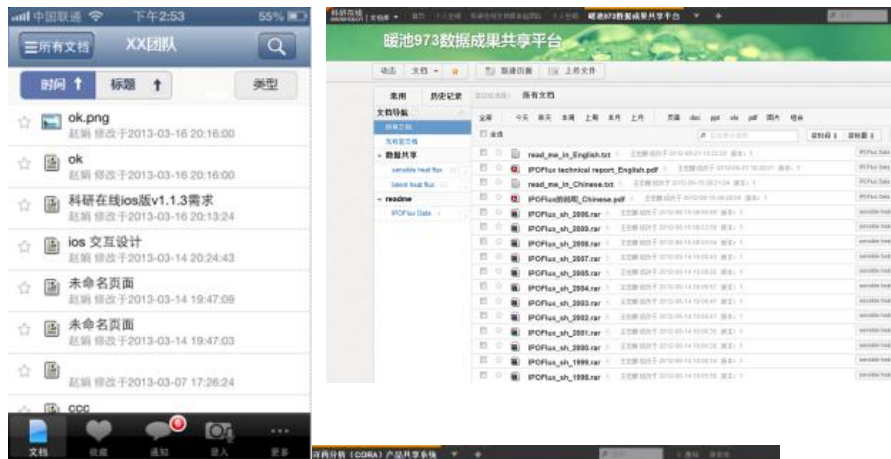
- ✓ IAU2012 (3000+ Registrations)
- ✓ IBC 17th (1700+ Registrations)
- ✓ CSCB2011 (1400+ Registrations)
- ✓ CSBMB2012 (1300+ Registrations)
- ✓ Hadoop China2011 (800+ Registrations)



Research Online - Document Library (DDL)

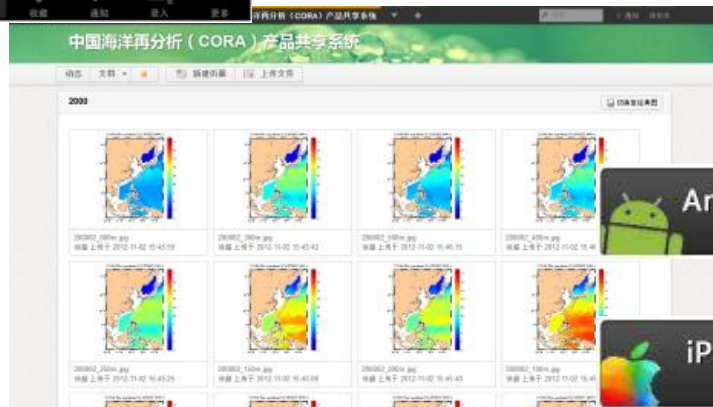
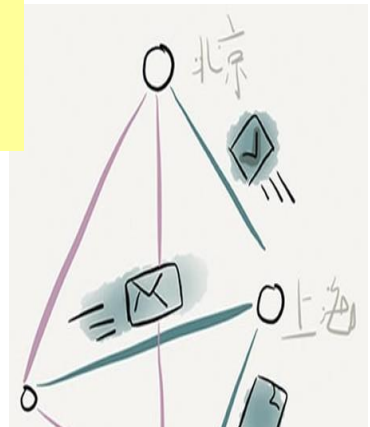
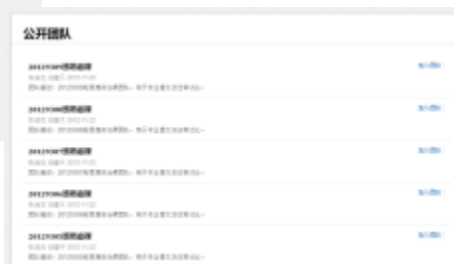
<http://ddl.escience.cn>

- A Wiki-based document collaboration environment for groups
- More than 2200 groups involved.



**Project groups
Laboratory management
Students groups**

.....



Android 客户端
APK文件下载

iPhone 客户端
App Store



- 中科院青年创新促进会
- 中科院信息化工作领导小组办公室
- 树木年轮与环境演变研究组
- 虚拟地理环境实验室
- 中国海洋再分析(CORA)产品共享系统
- 暖池973数据成果共享平台
- 研究生园地
- 轮滑协会
-(1500+)

Research Online - Duckling Homepage (dHome)



>Academicians

- > 金亚秋 院士 复旦大学
- > 石耀霖 院士 研究生院

>Professors

- > 司徒国海 研究员 上海光机所
- > 贾根锁 研究员 大气所
- > 吴通华 研究员 寒旱所
- > 潘曹峰 研究员 纳米能源所
- > 黄小荣 研究员 福建物质结构所

>(3700+)



★ Homepage Services for Researchers

Conclusions

- PaaS: Duckling and Cloud Foundry
 - Easy Deployment
 - Easy Balance
 - Easy Scalability
- SaaS: Research Online
 - Unified User Identification
 - Unified Information Directory Service
 - Unified Message Queue

Duckling - Collaboration Environment



A **SaaS software suite** to build your collaboration environment with features of document collaboration, col-laboratory library, virtual organization management ...

More than 220,000 researchers

Conference
Service
Platform

Document
Library

Duckling
Portal

Duckling
Homepage

CAS Mail
Service

Video
Conference

VoIP

Research Online

科研在线
escience.cn

<http://www.escience.cn>

Duckling

as

Falcon PaaS



Mobile/
Cloud

A **cloud-enabling open platform** to integrate resources and enrich it as a scalable web-based e-Science application as you want ...



中国科技网
China Science & Technology Network



Thanks!

Email: kevin@cstnet.cn