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Connecting the Future

# Ocean

OTT System Introduction

珠海迈科智能科技股份有限公司 | Gotech International Technology Ltd.

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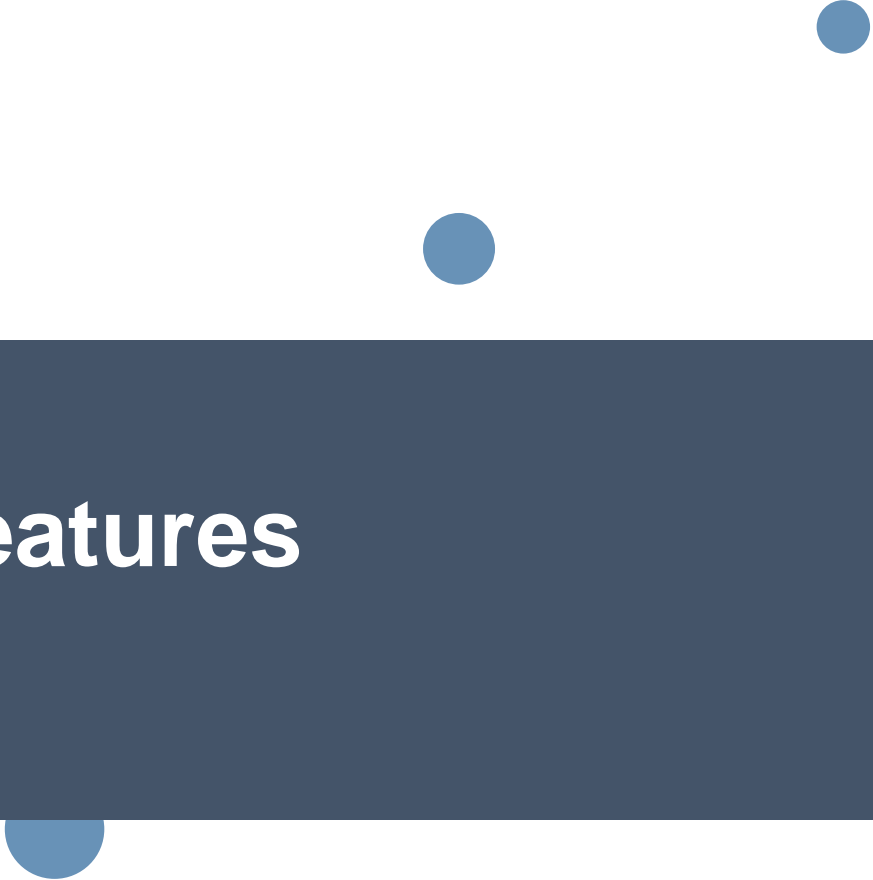
**MKTECH**





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- 01 **System Features of Ocean**
- 02 **Architecture of Ocean**
- 03 **Successful Case**



# » 01 System Features of Ocean

- Separation of control and the media
- High scalability
- Cluster-based technical architecture and common hardware platform
- Support million users scale
- Provide a strong operating platform for content provider
- Support distributed deployment

- Provide redundancy backup of key components
- No single point of failure
- With 99.999% reliability

### Carrier-grade System

### Strong Basic Service Capability

### High Availability

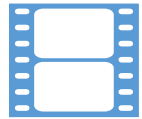
### Strong Media Delivery Platform

- Support VOD and Time-shifted TV
- Support Live TV
- Support to switch between different rate

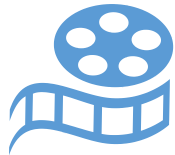
- Media delivery based on P2P
- Irrespective with media format
- Support mass storage and concurrent large-scale streaming media
- Support multi-level deployment



Live TV  
Management and monitoring



Video on Demand  
Manage VOD content, prices, covers, trailers and detailed information.



Catchup TV  
Full automatization and workflow management.



Transcoding  
Automated transcoding in cloud with different profiles and bitrate.



### EPG

Management, manual or automated EPG import from Cloud.



### Billing

Packages, Subscription periods with traditional or pre-paid subscribers.



### Real-time & Detailed statistics

Advanced CDN, Devices and client statistics with usage and revenue reports.



### Advertising

One click integration with 3rd-party Video Ads providers.



### White-label solution

Easy to transform and customize.



# OTT Market Requirement

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There are two fundamental criteria any technology (OTT or IPTV) has to meet in PAY TV industry: reliability and quality.

signal may be delivered to different platforms: smartphones, tablets, game consoles, digital media boxes, STBs, etc.

OTT lets monetise on such value-added features as:

Real-time broadcast television and VoD

Time-shifted viewing of selected broadcast programs (nPVR)

Non-linear viewing (Time Shift / Pause Live)

Viewing of recorded programmes (Catch Up)

Smart recommendation and content search system

Integration with user accounts in social networks, ability to store user generated content and view it on various devices

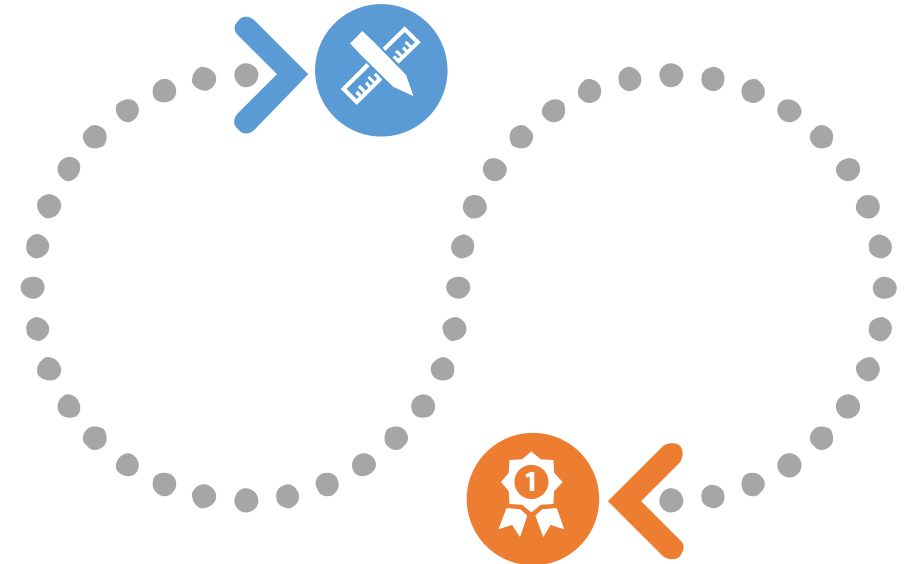
Functionality described above requires cutting-edge technology and innovativ

## Outstanding User Experience

- High definition interactive content services
- Whenever & wherever anyhow three in one screen application
- Fluent and high-quality image quality
- More nature interactive experience
- Strong application expansion capability

## Reliable & Stable Operation Platform

- High-capacity: Millions of user scale, Magnanimous contents
- High availability: Without single point of failure, Balanced loading, Distributed deployment
- High security: Support identification authentication; support anti-stealing-link
- Support multi-form: support various of forms from internet
- Low-cost network deployment and smooth upgrade





# Our advantage

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◆ Unique content delivery network (CDN)

◆ Optimisation of network capacity without compromising video quality

◆ Flexible approach to the needs of client infrastructure

◆ Real-time monitoring



## **Adaptive HTTP streaming**

This technology lets adapt video quality both inside and outside operator's network (i.e. in third party networks where quality of data streaming and network capacity can't be controlled or managed).

## **CDN**

CDN is a link that connects data transmission system and client devices and applications.

**Depending on user's location Smart Routing Engine routes the user to the best located server.**



Video ultra-compression technology (H.265)



Our compression technology stands out for its unique efficiency.



Our OTT solution uses different encoding profiles and therefore is available on various devices.



Network capacity requirements depend on the type of client's device and are within the following range: 0.3 — 0.7 Mbps for SD and 1.5 — 3 Mbps for HD.



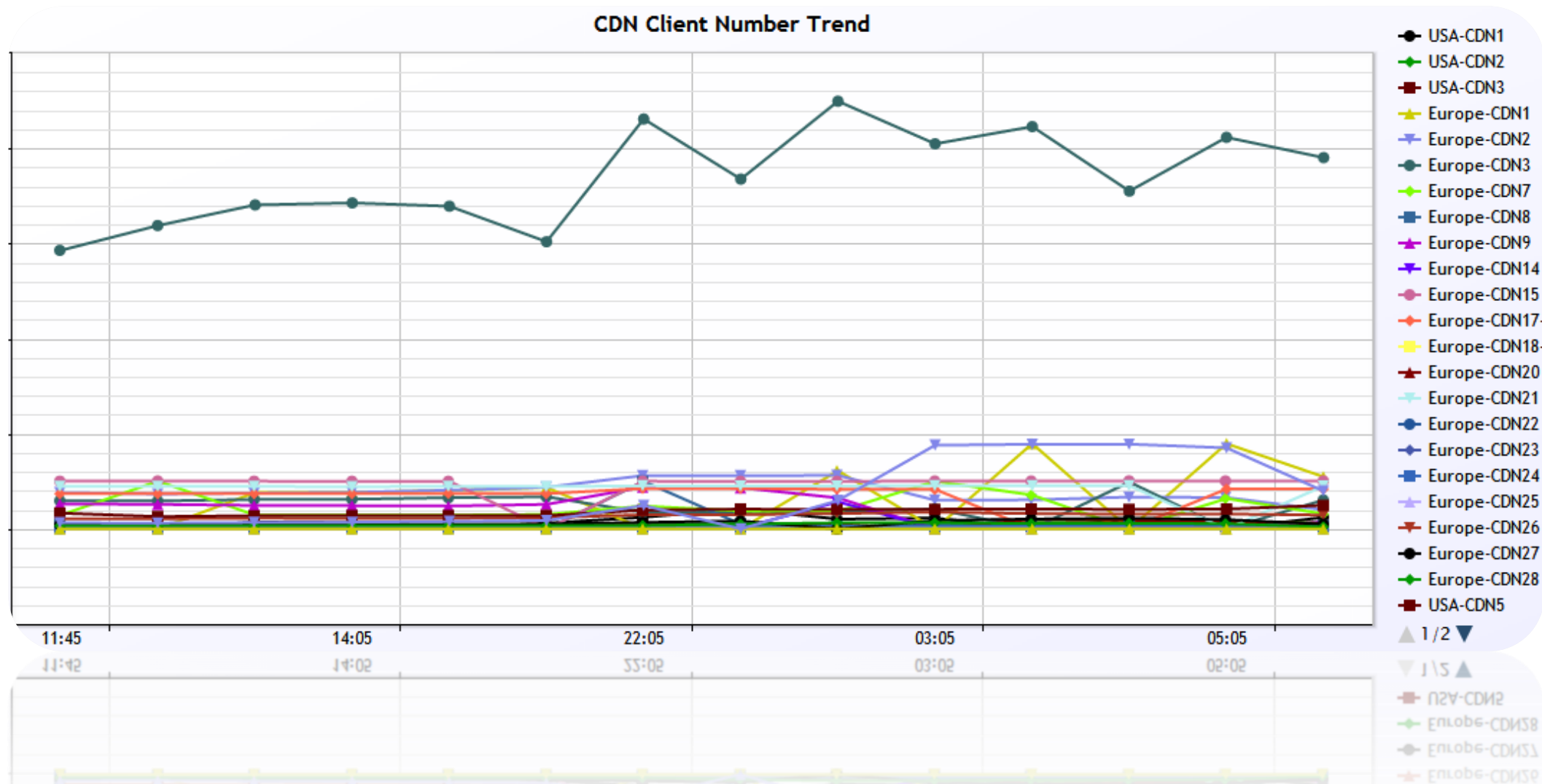
Technology developed by LifeStream has an immense potential and may be deployed extensively: TV streaming on mobile devices, OTT, nPVR and user generated content.

- Dynamic and flexible approach
- Our solution represents a unique balance between quality standard (meeting all the requirements of the largest telecom operators) and individual approach to every project.
- We are happy to provide recommendations from companies we are currently working with to demonstrate again efficiency of our approach.
- We can also provide recommendations with detailed track record and project description.
- Scalable solutions with reliability margin
- Our company and solutions we design stand out thanks to their scalable nature and reliability margin, which is proven by project we implemented for clients servicing large audiences in 11 time zones.



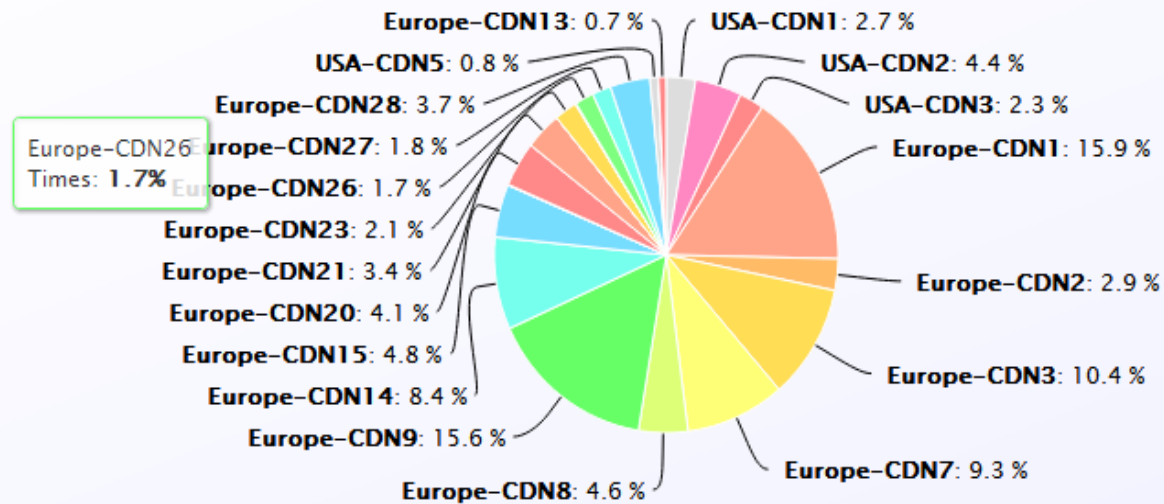
# Monitoring

## CDN Client Number Trend



# Monitoring

## Program View

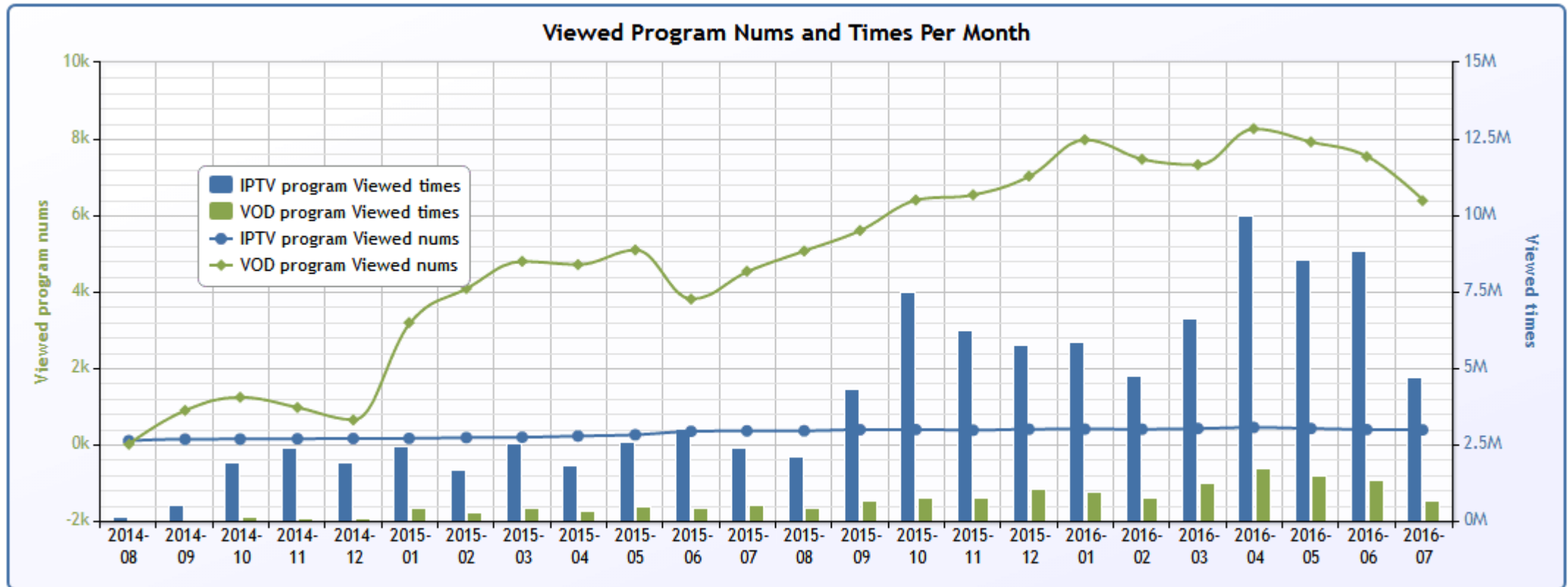


Legend:

- USA-CDN1
- USA-CDN2
- USA-CDN3
- Europe-CDN1
- Europe-CDN2
- Europe-CDN3
- Europe-CDN7
- Europe-CDN8
- Europe-CDN9
- Europe-CDN14
- Europe-CDN15
- Europe-CDN17-H265
- Europe-CDN18-H265
- Europe-CDN20
- Europe-CDN21
- Europe-CDN22
- Europe-CDN23
- Europe-CDN24
- Europe-CDN25

# Monitoring

## Program View



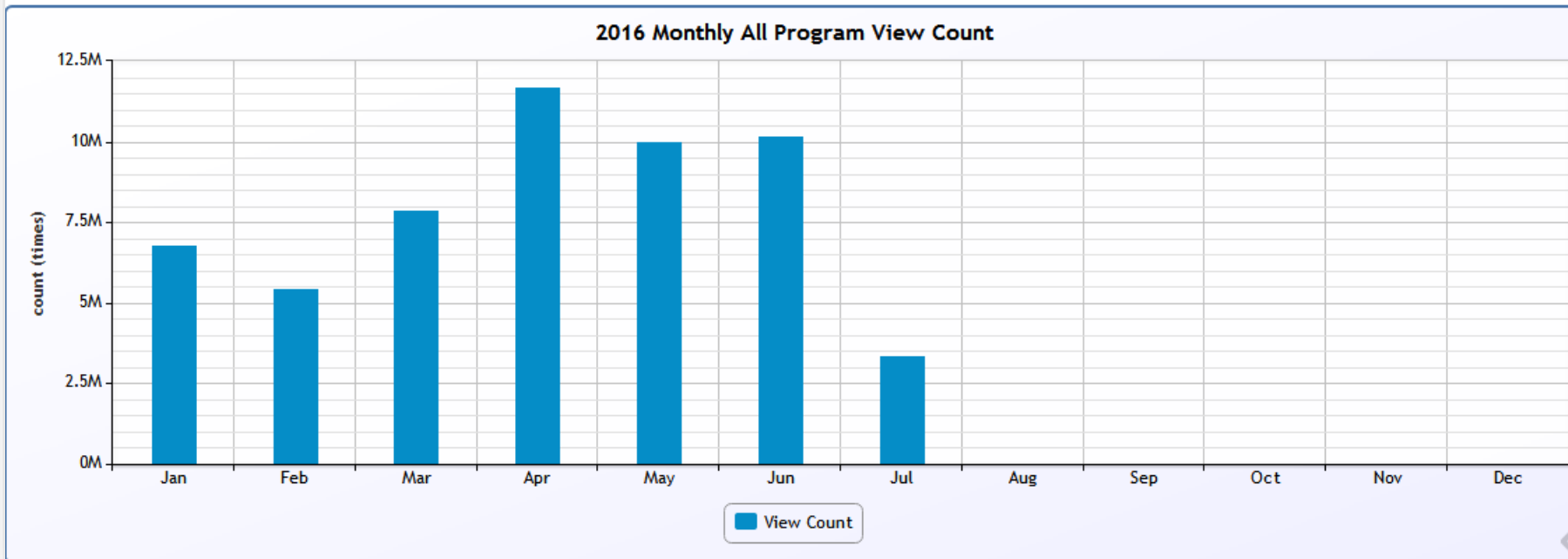


# Monitoring

## Program View

Classification_Name	Category_Total	Prog_Total	View_Count	View_Proportion
IPTV	14	506	103706625	96.70%
VOD	11	14055	3537377	3.30%

« < | Page 1 of 1 | > » View 1 - 2 of 2

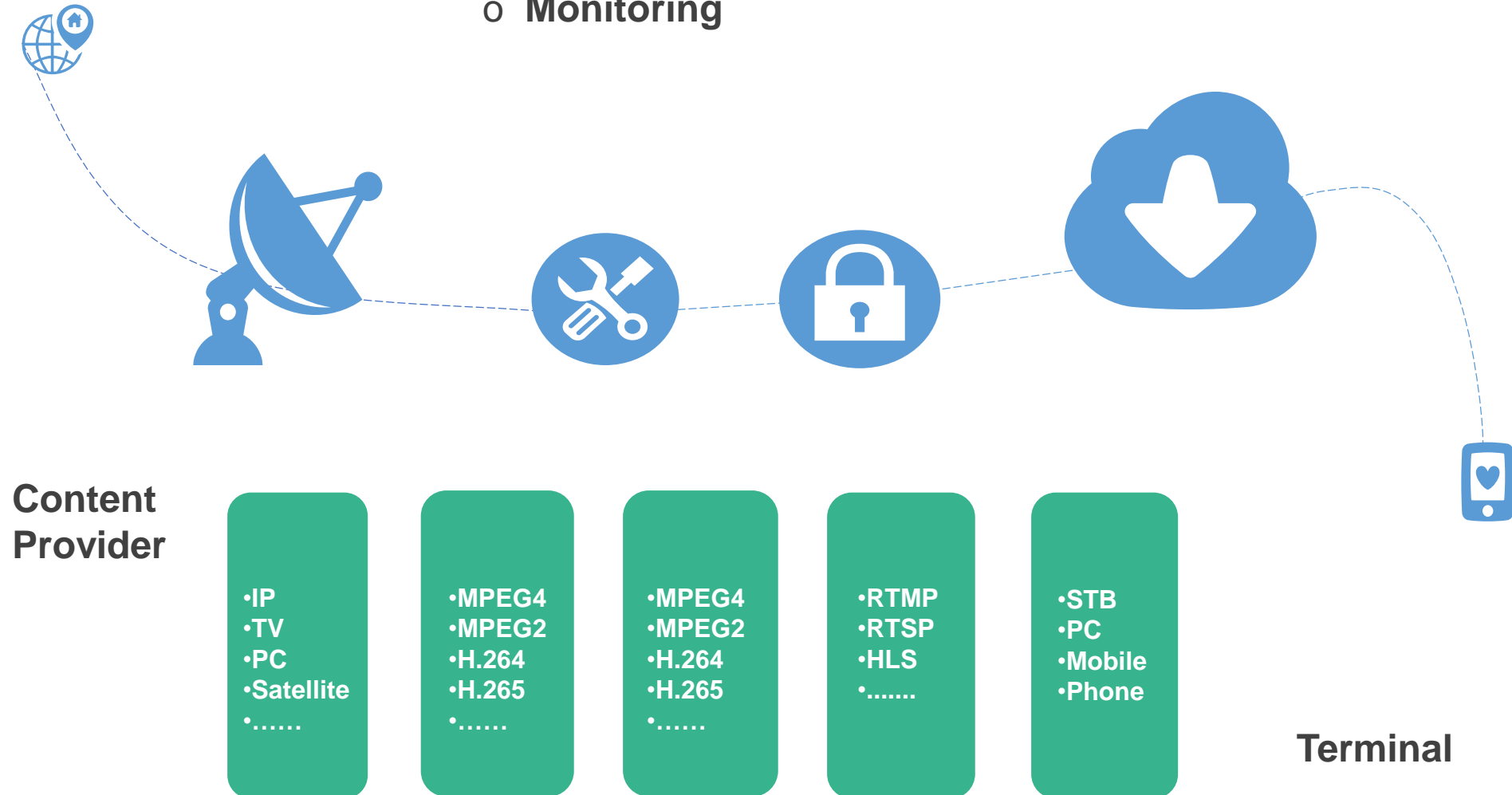


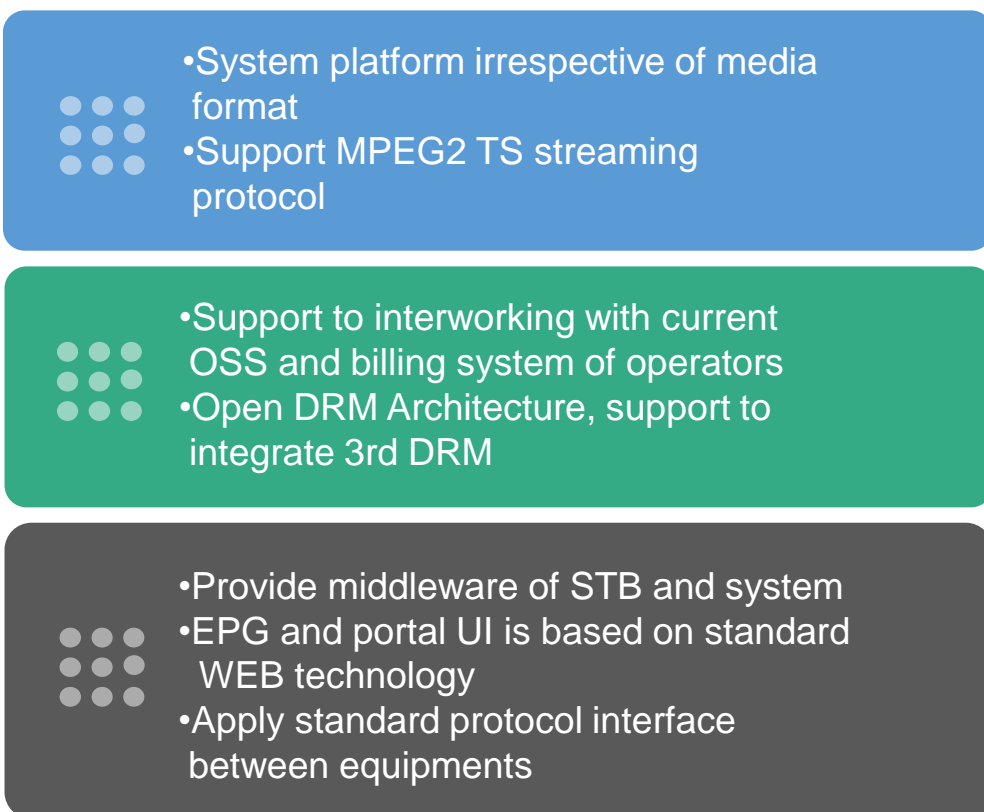


# End to End Solution

BOSS & CMS of sites

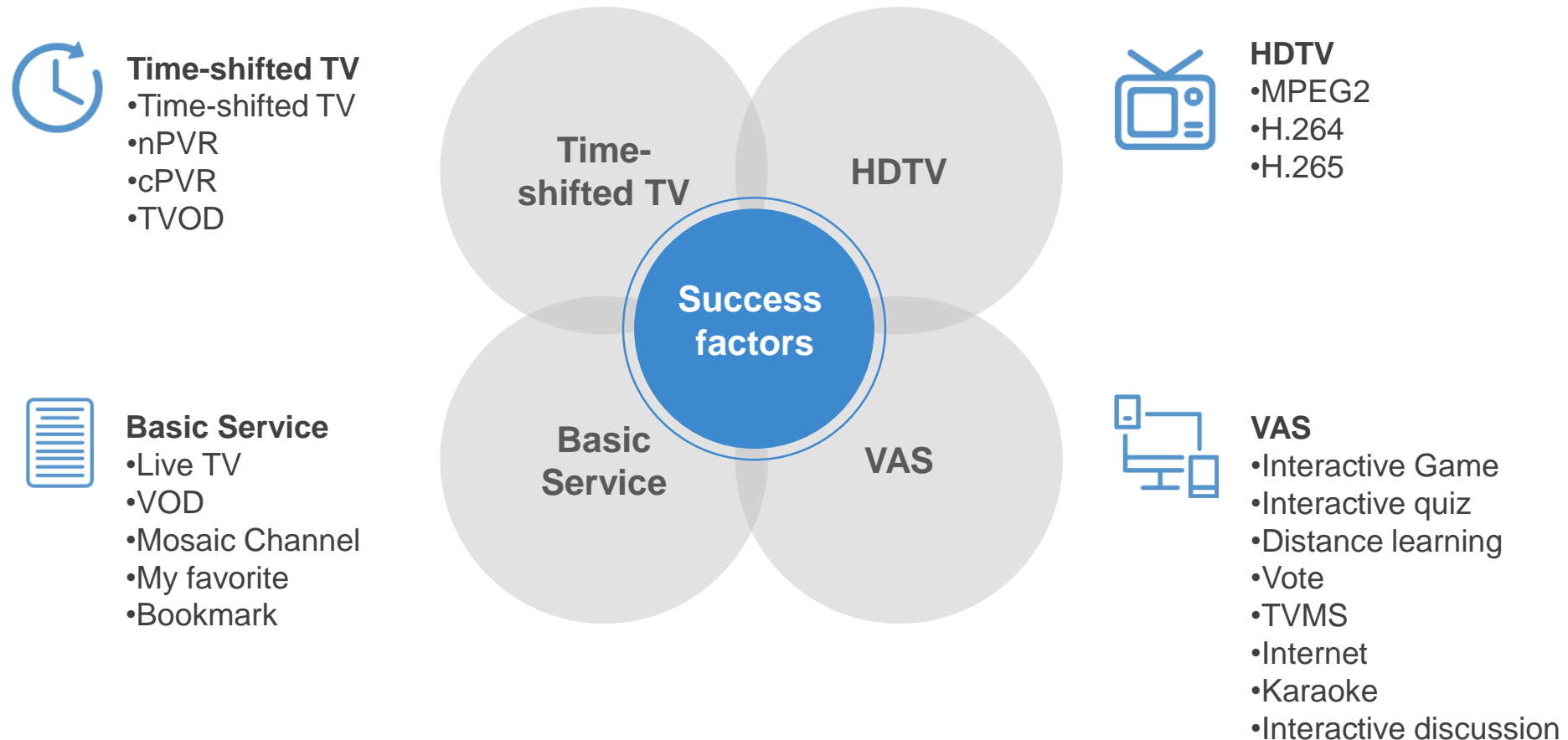
- o Content management
- o User management
- o Service management
- o Billing center
- o Monitoring





**Open  
Platform**

## Rich Interactive Video Service and Value Added Service



# System Redundancy & High Availability (HA)

## High Availability

### Contributions



#### Content Redundancy

Contents are replicated in slice on multiple MSN. All replicas are active to allow load sharing between MSN



#### Inter-MSN Redirection

In case of a MSN failure, NE redirects terminal requests to another MSN holding redundant content



#### NE Redundancy

All NE (ICMS, GSLB, MPT, CMT, NM, MSN) features 1+1 or N+M redundancy



#### Port Redundancy

All MSN has 2 GE ports and features Port failover redundancy



#### Load Sharing

Load-sharing structure is adopted on GSLB, ICMS, MPT to maximize performance while providing mutual backups





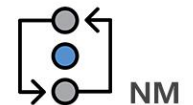
## » 02 Architecture of Ocean

# Architectur of Ocean IPTV System

Operation and Maintenance Layer



Service Delivery Layer



Content Delivery layer



Encoder



Transcoder

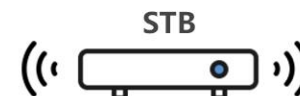


Network Access Layer

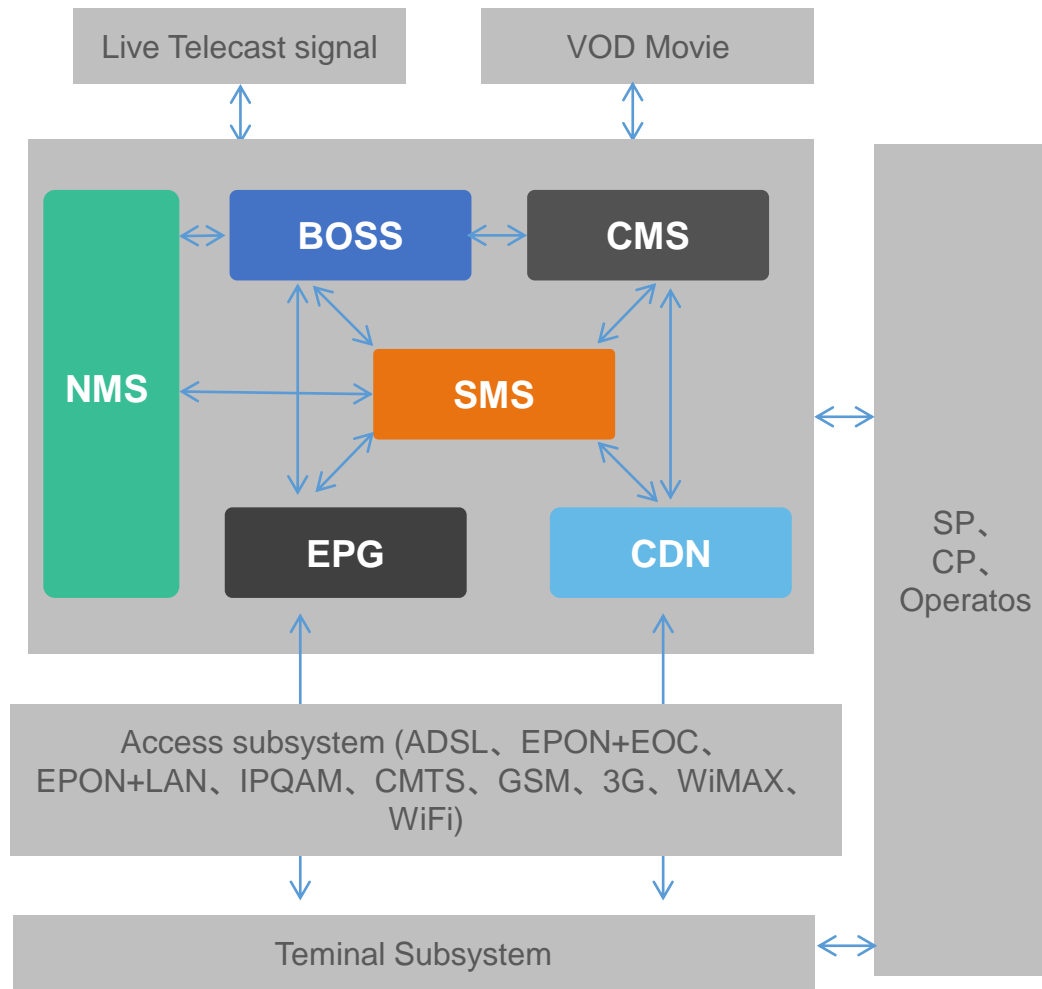
Access sub-system

(ADSL, EPON+EOC, EPON+LAN, IPQAM, CMTS, GSM, 3G, WIMAX, WIFI)

User Access Layer



# System Architecture



## Core components of system platform

- 1 Content Management System (CMS)
- 2 Business Operation Support System (BOSS)
- 3 Service Management System (SMS)
- 4 Content Distribution Network (CDN)
- 5 Electronic Program Guide (EPG)
- 6 Network Management System (NMS)

CMS

BOSS

SMS

CDN

EPG

NMS

## Information management

Responsible for the management of content metadata, namely content description information, including the content audit、 content distribution 、 content maintenance etc.

### Operation support system

- SP content management
- Log, statistical report

## Content distribution management

According to heat of content and state of SP resource, adjust the distribution of content dynamically, in order to distribute content dynamically in the whole network.

### EPG system

- Metadata
- Maintenance
- Audit
- Broadcast
- Information

### Streaming media service system

- Heat statistics
- Distribution maintenance
- Content distribution management

## EPG management

According to the published content, automatically update EPG template and content, provide kinds of combined search criteria to positioning and retrieve according to given conditions.



### Content manufacture system

## User authority management

The system supports four-stage users, they are super administrator, operator, SP operator and SP administrator , each one is assigned different permissions.



CMS

**BOSS**

SMS

CDN

EPG

NMS

- Subscribers account opening, activation, deactivation
- Service subscriptions definition, effective and query
- Support SOAP interface integration with the third party system
- Set subscribers' charging parameters
- Support content classification setting
- Support operation test account

## Functions of service management subsystem for subscribers:



Provides a GUI for the service provider to maintain subscribers' information easily.



Details lists and service information query



Historical billing query



Purchase channels and content service

CMS

**BOSS**

SMS

CDN

EPG

NMS



## Authentication

Supports username/password authentication, binding authentication etc..



## Billing

Collects subscribers' original data (such as time and flow), generates records of consumption and submits to BOSS for accounting. BOSS will reconcile with SP, and pay with SP according to the settlement rules that development with SP/CP.



## CP/SP management

Includes basic information management, life-cycle management, credit control management etc..



## Statistical analysis

- Analyses basic information of subscribers, and provides corresponding report
- Analyses program resources, user demand info, and provides corresponding report
- Analyses marketing, and provides corresponding report;
- Colligation statistic based on other conditions, provides reliable basis for decisions
- Preprocesses and censuses the system data, improves processing efficiency of follow-up report.

CMS

BOSS

SMS

CDN

EPG

NMS

- **Content delivery.**

When used, CDN functions within service platforms grouped geographically and located in the closest proximity to end-user.



- **Offloading streaming servers.**

Instead of addressing streaming servers clients are routed to CDN servers thus decreasing the load on broadcasting system.

- **Support of popular broadcasting formats.**

Our solution supports all popular formats including widely used HLS system. We also support linear (live broadcasting) and nonlinear (including VOD) viewing. Also compatible with client apps.

CMS

BOSS

SMS

CDN

EPG

NMS



## Authentication

- Recording user bookmarks and collecting personalized information.
- Supporting STB access, AAA able to authenticate the user, and will based on the user group and other attributes assigned a list of the corresponding live channel after the authentication successfully.



## Authorization

- When user request any content, AAA will base on the user and user's ordering relationship complete the authentication automatically.
- If the authentication is not passed, the AAA will base on the user's product package structure, return to the product list for the user to order to EPG, and guiding the user to complete the order.
- Once the order is successful, the AAA can record the order relationship automatically, and generate the order records.



## Accounting

- And also be able to record, query the user log on demand, to generate a detailed list of user orders and billing.
- With billing functions, to ensure the billing result accurate and detailed.

CMS

BOSS

SMS

CDN

EPG

NMS

- **Open architecture.**

CDN is a link that connects broadcasting system and client devices and applications. Instead of addressing streaming servers clients are routed to CDN servers. Users are routed to Edge servers by Smart Routing Engine depending on users' geographical location and status of their networks.

- **Specifically optimised streaming network.**

Video streaming network built especially for OTT and IPTV. CDN may also be used to transmit any static data like any conventional CDN.

- **Technology.**

CDN's Smart Routing System ensures the most efficient content delivery decision based on users' geographical location and status of their network. Our CDN ensures content transmission via service platforms located in the closest proximity to end-user.





CMS

BOSS

SMS

CDN

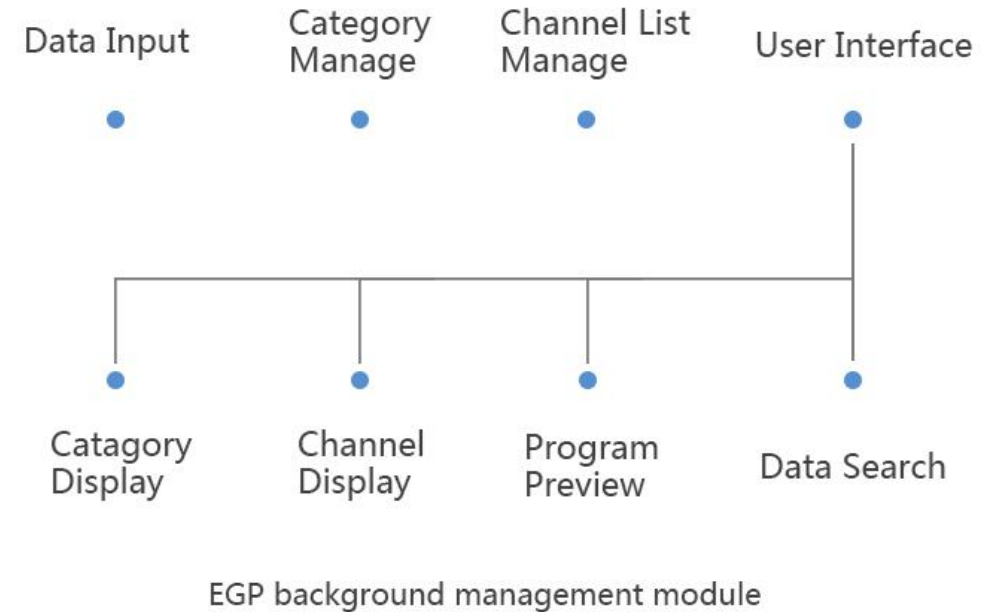
EPG

NMS

The EPG subsystem provides for the end user consumption guidelines, the main functions include:

- EPG page function
- Program playlist function
- Show additional information function
- Program classification function
- Business search function
- Business navigation function
- Program reservation function
- Parental hierarchical control function

## EPG Architecture



CMS

BOSS

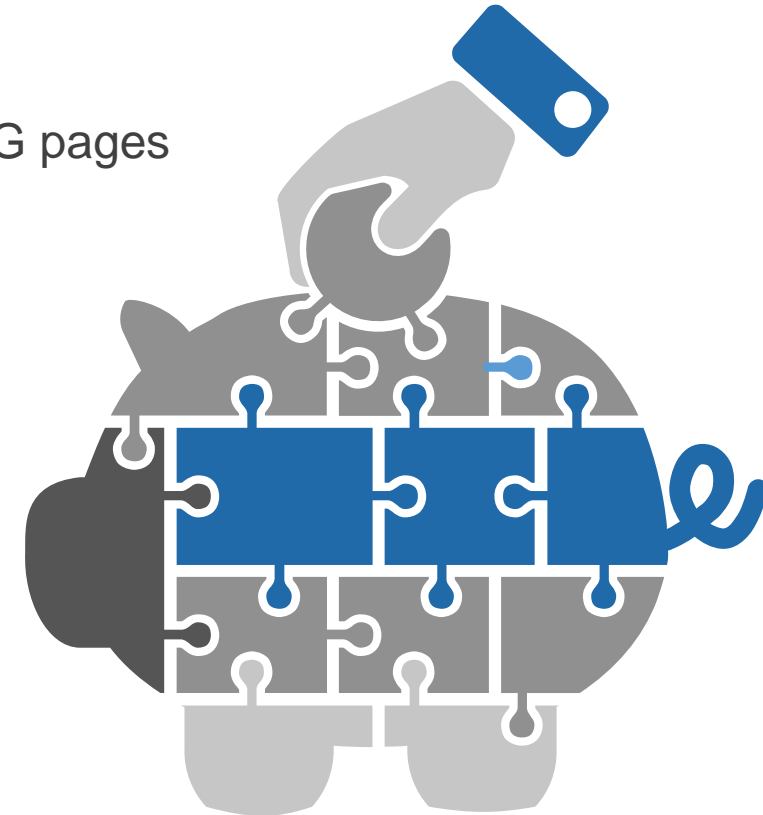
SMS

CDN

EPG

NMS

- The web-based EPG allows subscriber to browse and purchase programs. The EPG can be easily customized in different site, and subscribers in different groups are provided with different EPGs.
- Gets metadata information from NMDB and then generates dynamic EPG pages for subscribers. The EPG pages can be easily customized according to subscriber's demand.
- The EPG used for the streaming service is browser-based.
- Full motion video can be embedded in an EPG page.  
Browser page can also be overlaid on top of a full motion video.



CMS

BOSS

SMS

CDN

EPG

NMS

- Abides by ITU-TM.3010 standard specification
- Abides by China Telecom IPTV2.0 standard
- Supports interface of Web Service
- Adopts Browser/Server structure, completely achieves network management functions that defined by international standard organization, such as TMN (Telecommunication Management Network), the functions include fault management, configuration management, performance management, security management and user management.



# Network Management System (NMS) |

CMS

BOSS

SMS

CDN

EPG

NMS



## Fault Management

- Real-time alarm/ event monitoring, history alarm management
- Fault diagnosis and location
- Alarm filtering, severity define, confirm and clean up
- Automatic alarm and event processing, analysis of correlation and causes



## Performance Management

- Real-time performance monitoring on PC server and streaming media service
- Performance management over-limit
- Statistics on performance , trend analysis and network optimization of network element

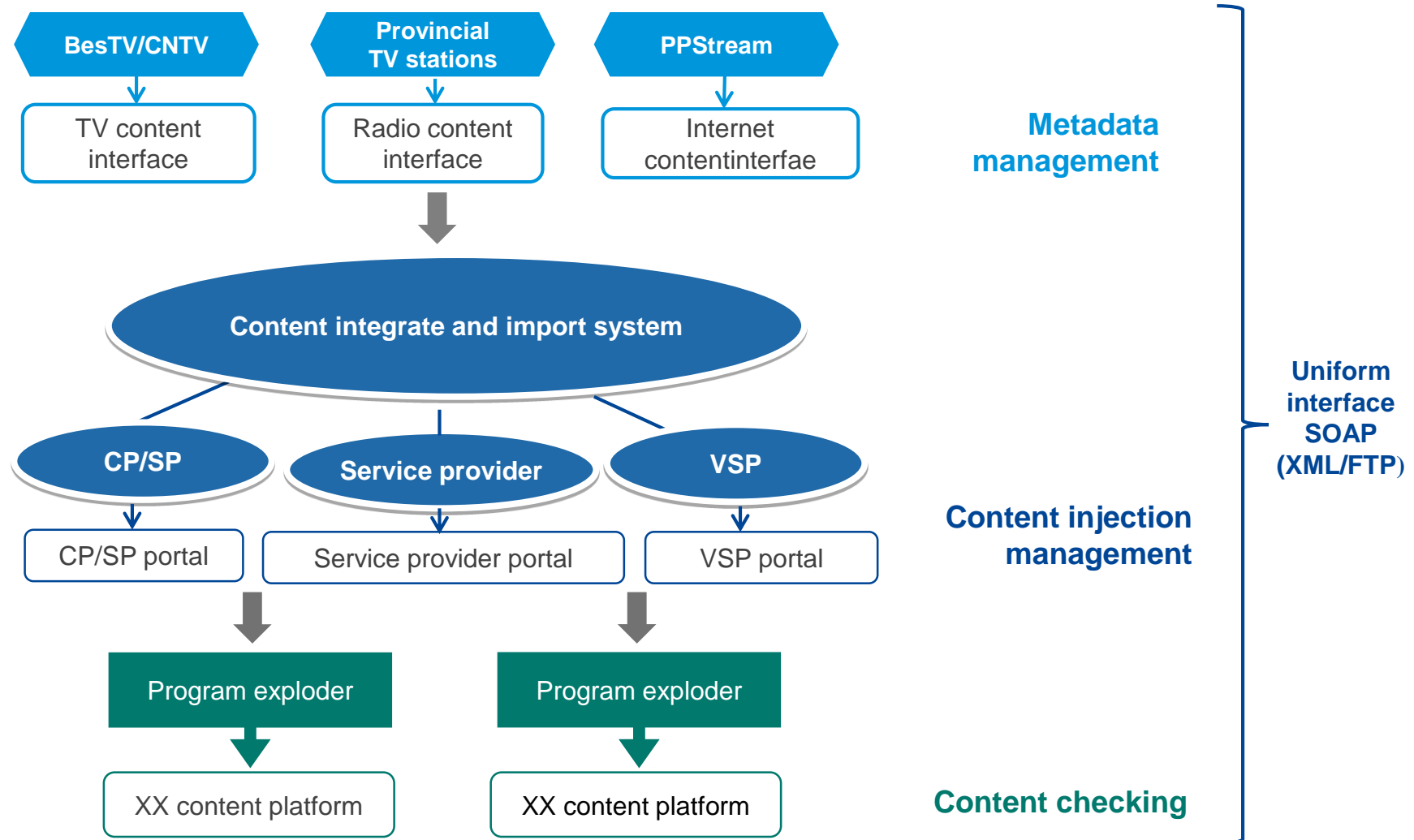


## Configuration Management

- Automatic discovery and configuration management
- Software upgrade and patch management
- Control and file the ystem log and user operation log

# Media Assets Management System (MAM)

- Program source through the Media Assets Management System, the Content Injection Management System and the Content Checking System can send the related service to every platform and program equipment.
- A process of the program source from input to output:  
Program injection system supports local channel services injection and third-party services integration, finally reaching the entrance of each business via a unified standardized data format SOAP.



# Hardware Platform



**CTLoader Cluster**



**GSLB Cluster**

**MPT Cluster**

**ICMS Cluster**

**HLC Cluster**

**HLS Cluster**

## Content-Encoding Transcoding System:

- Real-time encoding, transcoding and transmission
- Analog and digital video input
- Support MPEG2, MPEG4, H.264, H.265 etc video encoding format
- Support MP2, MP3, AAC, WMA, AC-3 etc audio encoding format
- High bit rate (up to 6Mbps) and low bit rate (as low as 750kbps) video encoding
- Support hot swap and backup

## Media Delivery System:

- Cluster based system design
- non-blocking service mechanism for large-scale users
- Support M3U8, RTSP, web service, mP2P, SDFS(GFS-like)
- Complete fault-tolerance



**Terminal**

## Terminal:

- Broadcast video quality
- Middleware based software architecture
- Totally online software upgrade capability
- Full HTML embedded browser
- Support video communication





## » 03 Successful Case

# Successful Case



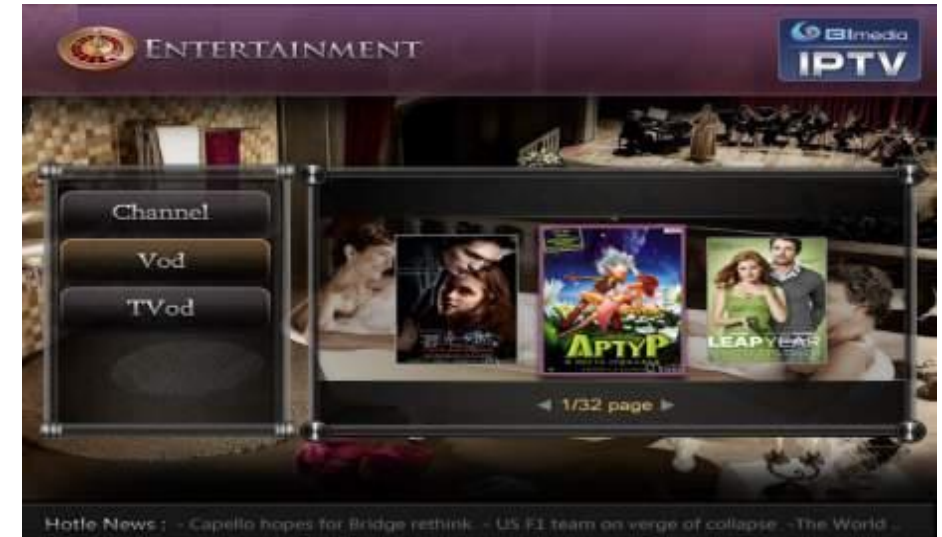
The IPTV project of Chengdu Military Region



The project of Shandong Prison



The project of Datang Mobile



The hotel project

# Successful Case



The IPTV project of Jiuzhou

# Successful Case



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"FROM THE EARTH, FROM A SCRAP OF PAPER, FROM A PASSING SHAPE, FROM A SPIDER'S WEB..."

PABLO PICASSO

"THE ARTIST IS A RECEPTACLE FOR EMOTIONS THAT COME FROM ALL OVER THE PLACE; FROM THE SKY, FROM THE EARTH, FROM A SCRAP OF PAPER, FROM A PASSING SHAPE, FROM A SPIDER'S WEB..."

PABLO PICASSO

图片信息



视频播报 Shi Pin bobao



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气象预报:今/明/后



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October

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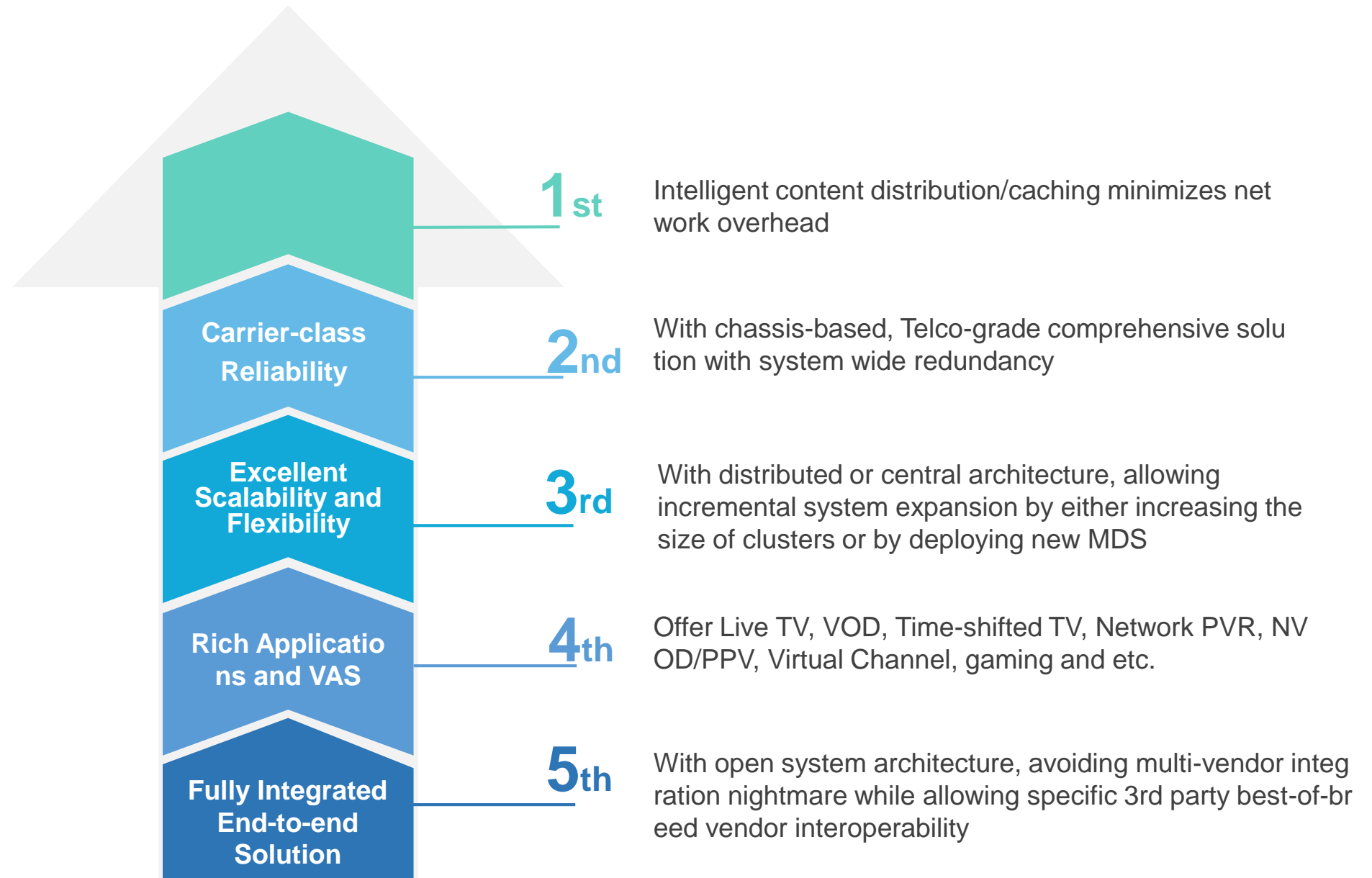
公告

新公交站牌将以公交车智能改造线路为基础，至十二运开始前，完成沈阳市全部200多条线路所涵盖的2000多个公交站牌的改造。  
站点覆盖市内所有繁华商业中心及一、二级马路两侧，在四个方向的城市出入口以及北站、南站、龙之梦、皇寺广场、文化路、大东门、铁西广场等公共交通枢纽设置多个公交站牌，在满足公交运营管理需要的前提下，为公众提供了新的媒体、资讯平台。

The project for a bus group



# Successful Case



# Thanks

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