

Kaltura On-Prem Discovery Document

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Introduction to Kaltura's On-Prem™ Solution

This document presents the basic and essential information about Kaltura's OnPrem™ solution. This document is intended for organization business owners, video content managers and technical owners such as IT Managers.

Core Components

Kaltura's On-Prem™ Package is a solution that enables a customer to operate a fully-featured Video Management Platform on their premises behind a firewall.

The following components operate within Kaltura's video platform:

[collapsed title="Kaltura Web Services Module"]

The Kaltura Web Services module consists of an Apache server and Kaltura web services layer in the form of a set of Application Programming Interfaces (API) that serve as a single access point for client-server applicative communication. This module should be deployed on the front-end server/s, where traffic is distributed by a load balancing equipment.

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[collapsed title="Kaltura Batch Jobs Module"]

The Kaltura Brach Jobs module consists of scalable middleware entities that are deployed on back-end server/s. The Batch Jobs module acts as the central orchestration of atomic batch services such as media import, media information extraction, transcoding, server notification and other batch jobs. The Batch Jobs module should be deployed on a backend server.

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[collapsed title="Kaltura Transcoding Module"]

The Kaltura Transcoding module manages all media transcoding tasks, by utilizing open source and/or commercial transcoders. The Transcoding module is a CPU intensive module and may be deployed on a backend server at a local deployment or may be distributed using

independent transcoding servers deployed in a cloud solution.

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[collapsed title="Shared Storage"]

Shared storage contains dedicated disk space that is shared and accessible by all of Kaltura's servers within a specific deployment. The shared storage holds all content and application files, including: media assets, Kaltura flash widgets/applications, skins, thumbnails, players/playlist configuration files (UI conf) and all other components. The shared storage may be deployed as part of a local deployment or using independent storage within a cloud solution.

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[collapsed title="Operational Database"]

The Operational Database is the applicative database, used for storing and managing content related data (metadata, identifiers, URLs and other relevant information.) as well as application and business logic supporting data. The Operational Database should be deployed as part of a local deployment, preferably on dedicated server/s utilizing a master/slave topology.

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[collapsed title="Search Server"]

The Search Server includes full text search servers based on the Sphinx open source solution for fast indexing and search.

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[collapsed title="Site Admin Module"]

The Site Admin Module is responsible for operating Kaltura's Admin Console, enabling site administrators to monitor and operate their own deployment of Kaltura's online video platform. For full monitoring, it is important to deploy this module separately on a local server.

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[collapsed title="Video Analytics Module"]

The Video Analytics Module is responsible for processing and aggregating Kaltura's video

analytics data into a dedicated Data Warehouse (DWH), and the production of video usage and behaviour reports. The module includes the data Exporting, Transforming and Loading processes (ETL), a DWH database, and the reporting utilities in use. This module can be deployed as part of a local deployment or can be distributed using independent analytics servers deployed in a cloud solution.

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[collapsed title="Document Conversion Module (Optional)"]

The Document Conversion Module converts various document formats into a Flash based swf document that can be used later within the Kaltura Dynamic Player (KDP) as a synchronized slideshow alongside a video.

The supported document formats include the following: MS Office documents (for example, Word, PowerPoint), Open Office documents, and Adobe PDF. The document conversion process can be distributed using independent document conversion servers deployed in a cloud solution. Each server must run Open Office and MS Office in order to perform the document conversion.

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[collapsed title="Video Recording Module (Optional)"]

The Video Recording Module is responsible for recording web camera streams; and is an optional component to be deployed only when there is a need to support video recording functionalities. Kaltura operates the Video Recording Module using the Red5 solution. Using a local Flash Media Server (FMS) of another provider is possible, but may require validation.

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[collapsed title="MediaSpace (Optional)"]

MediaSpace (Optional)Kaltura MediaSpace is a fully customizable media destination site for the organization. MediaSpace is an out-of-the-box video-centric site that can serve as a repository for media collections across an organization or a full-featured "internal YouTube. Kaltura MediaSpace may be integrated into the local authentication environment for role-based authentication, or used as a public destination site. Kaltura MediaSpace can be easily configured and branded, and requires minimal resources to get up and running while allowing extensive customization.

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Deployment Options

On-Prem deployment has two variations:

[collapsed title="Single Server"]

Deployment on one server that combines all modules into a single server and all share its resources (RAM, CPU, and HDD).

The single server deployment is usually not scalable (limited by physical resources of the single server) and typically used for small scale organizations with low traffic or for test/dev environment for the organization (not production environment.).

A single server can handle up to 1000 active user sessions and approximately 220 minutes of daily video uploads.

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[collapsed title="Multiple Server"]

Deploy numerous connected servers. Each one operates as a different module in the cluster.

The multiple server deployment provides the ability to replicate a certain kind of module (for example the Transcoding Module or the Web Services Module) for improving management of multiple users and optimizing the server's physical resources.

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Multi-Server Diagram Example

[collapsed title="On-Prem™ Multi-Server Diagram Example"]

These customizations should be clearly defined by the administrator and then scoped by Kaltura.

NOTE: Choosing the Custom Package installation has the following implications.

- A unique environment is created that was not tested by Kaltura
- OS certification
- Riskier, harder and costlier installation
- Harder to upgrade to Kaltura's solution

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[collapsed title="Hardware Recommendations"]

These are the general hardware recommendations for single and multi-server deployment. If not stated otherwise for a specific deployment in a specific project, these recommendations are effective.

[collapsed title="Single Server"]

Minimum HW requirements are:

- 8 GB RAM
- 2 quad core CPU
- Storage per need, according to expected usage estimations.

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[collapsed title="Multi Server"]

Kaltura's recommendation and best practice is to have full redundancy of the modules for failover.

- 2 physical servers running a VMware 5.x ESX/ESXi Hypervisor. Each server will host several modules as VMs.
- 1 Platform Shared Storage - To be accessible by the Kaltura platform servers via NFS (RAID 5 or 10 is recommended). It is recommended to select hardware based on [VMWare's Hardware Compatibility List](#):

The following table indicates the minimum quantity and specifications, suitable for about 75K

users.

With growth in service utilization, the initial setup can be scaled up as needed, to add the required server type (for example, additional transcoding servers, additional database servers for replications, additional front end server, and other server types.).

Server	Minimum Quantity	Comments	Minimal HW Requirements
Front-End API Servers and search servers	2	In high load cases, we may recommend a SQUID proxy in front of the Apaches. In this case Back-End Batch servers might also be needed. 2 search servers (Sphinx) for redundancy	2GHz, 64bit, 8GB RAM 1 quad core CPU 100GB of local HDD (100GB is recommended but not mandatory if local storage is an issue) 6M inodes
Back-End Batch Server	2	2 for redundancy	
Back-End Transcoding Servers	2	Creating a video entry with multiple flavors can take up to 20 times the length of the source file. 2 for redundancy Add more CPUs to be able to handle peak uploads	

DB Server	2	One master and one slave	No minimal specifications
Server	Minimum Quantity	Comments	Minimum Hardware Requirements
		<p>One pair will suffice for ~75k users</p> <p>DB Should be solid dedicated to the Kaltura platform</p>	
Admin Console and DHW Server	1	not exposed to the world directly - for security reasons	<p>3GB RAM</p> <p>The app is not CPU intensive</p> <p>No special storage required.</p>
MediaSpace	2	Optional - if MediaSpace is required Estimation - a typical server with 3GB RAM can support 100 concurrent requests ~1,000 concurrent users	Per SW requirements (FMS, Wowza, Red5)
Media Server	2	Optional - if Webcam recording feature is required	<p>Windows server 2008</p> <p>Hyper-V licensing</p> <p>2GB RAM</p> <p>1 quad core CPU</p> <p>100GB of local HDD</p>
Windows	2	Optional - if Video-PPT	

server	feature is required		
Server	Minimum Quantity	Comments	Minimal HW Requirements

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[collapsed title="Redundancy and Failover"]

In a multi-server environment, except for the Admin and DWH servers, Kaltura recommends servers to be in a pair pool. Pools can accept more than 2 servers when needed, for extra capacity.

Failover and load balancing should be enabled by Kaltura or the customer, depending on the server role. The Load Balancer (proxy/firewall/appliance) should be LVS based; running on a Linux server and fail over can be a scripted DNS change or may be changed manually in the configuration file.

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[collapsed title="Batch/ Transcoding Servers"]

The batch/transcoding servers are pool balanced via Batch Manager. The Batch Manager looks at all job requests and job status in the database. If the server is available for a job, it performs requests and flags the database accordingly. The Batch Manager also diagnoses job timeouts and failed jobs and reschedules jobs automatically.

Each batch/transcode server runs its own Batch Manager that determines its participation, or lack in the pool. Failover is dynamic, smooth and there is no impact on down time. Some performance degradation is likely (where requests are processed more slowly) due to the reduced number of servers, since one server has likely failed.

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[collapsed title="API Servers"]

The API Servers should be load balanced, internally and externally, by proxy/firewall/appliance

(active-active). This information should be delivered by the customer.

Sticky sessions are required for GUI sessions such as for the Kaltura Admin Console, Kaltura Management Console or Kaltura MediaSpace.

As in Batch, failover is dynamic, smooth and there is no impact on down time.

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[collapsed title="Sphinx Search Servers"]

Servers hold internal load balance logic in their code. The API servers direct actions to Sphinx server randomly.

Each Sphinx server indexes all data in real time so once a server fails, the failover mechanism is active.

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[collapsed title="Database Servers"]

These servers arranged in a master-slave pair.

All data reads and writes go to the master and replicates in real-time to the slave. Failure of the slave has no user impact, and carries minor risk due to lack of redundancy until corrected. On failure of the primary, the standard methodology for MySQL recovery is to update DNS to point the primary DB host name to the backup DB host IP address, until the primary can be recovered. This failover process is manual and failure carries significant impact until DNS is updated or the primary database is recovered. However, depending on the DNS server software and/or in conjunction with a remote monitoring server/service, automated DNS updates and/or database recovery routines can usually be developed and configured, reducing impact significantly. Another option can be set the slave DB to be used as primary in the DB configuration file.

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[collapsed title="DWH and Admin Servers"]

There is no need for redundancy and recovery may be manual. DWH processes analytics data collected from the DB on a daily interval. If the server cannot be recovered near real-time, it back fills automatically. Missing days of the Apache log data (up to the log retention period)

automatically load once the DWH becomes operational.

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[collapsed title="Software Components"]

This section describes the components included in the Virtual Machine of a Standard Package.

These SW prerequisites should be provided by the customer for a Custom Package. (For example in case the Kaltura install file is installed on your own HW or OS combinations).

Item	Details	Comments
Operating system	CentOS 6.x RHEL 6.x	64bit only
Web server	Apache 2.2.x	with the following modules enabled - rewrite, headers, expires, filter, deflate, env, proxy
PHP	PHP 5.3.3	Prerequisite - The following RPM packages need to be installed from the distro's official repository: php-gd php-pdo php-mysql php-pecl-apc php-soap php-common php-pear php-xml php-devel php-mbstring php-xmlrpc php-cli php-pear memcached zlib.i686 bzip2-libs.i686 glibc.i686 ImageMagick ncurses-

Item	Details	Comments
		libs.i686 httpd java php-pecl-memcache mysql rsync cronie mailx postfix mod_ssl mysql-server
Data Base	MySQL 5.1.73	Kaltura code is not needed on MySQL. Needs to comply with the minimum version of the MySQL DB supported. Custom package Prerequisite - MySQL 5.1.33 or higher. InnoDB and statement based replication.
Java	JRE 1.6.x	Used by Pentaho for Analytics purposes
BI Suite	Pentaho 4.2.1	Also include the Pentaho data integration package. Prerequisite - Pentaho 4.2.1 or higher
Caching	Memcached	used for caching purposes to accelerate performance
Mail server	mailx	Mailx is used by various shell scripts in order to send out mail alerts about various system events.

Item	Details	Custom package Prerequisites
		Prerequisite - An MTA such as: postfix, sendmail, exim or any other sendmail compatible variation is required to allow email delivery.
Installation	rsync	Required for installation used by shell scripts provided with the Kaltura platform
Cron	Cronie	Needed for scheduling various cronjobs, for both maintenance and daemon watchdog purposes
Thumbnails	ImageMagick	Use for creating thumbnails
Storage	NFS	Storage is always a customer responsibility, Kaltura will configure the mount for use.
Transcoding engine	Ffmpeg	Third party software bundled in the On-Prem package
Search/index engine	Sphinx	Third party software bundled in the OnPrem package

Extract media data Item	Mediainfo Details	Used for by the Kaltura transcoding decision layer Comments
		Third party software bundled in the On-Prem package
Application framework	Zend Framework	Used by Kaltura admin console Third party software bundled in the On-Prem package
Media server	Wowza 4.0.x	Optional component for webcam recording and live features. License can either be included or be purchased by customer separately.
Windows & Office	Should be provided by customer: <ul style="list-style-type: none"> • Microsoft 2008 server • PDFCreator • Office 2007 • OpenOffice 	Optional, if Video-Presentation feature is required <ul style="list-style-type: none"> • XAMPP 1.7.1 on port 8080 • OpenOffice 3.2.1 • MS Office Professional 2007 • PDF Creator 1.0.2 (standard installation) • make PDFCreator the default printer • Place RunAffinityCmd.exe in C: • Mediainfo 0.7.29 – optional • .NET 3.5.1

Item	Details	• Desktop Experience Comments

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[collapsed title="CDN/CDS Integration"]

The Standard Package includes integration with Akamai CDN for external delivery.

Any other CDN/CDS/p2p solution for internal or external delivery, Media server or Proxy integrations are considered as Custom package integration. For example: Limelight, Level3, Edgecast, Mirror Image, BlueCoat, Ignite, Octoshape, Adobe AMS, etc.

See the article [Kaltura Supported CDN \(Content Delivery Networks\) and Streaming Servers](#) for more info.

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[collapsed title="Video Delivery Format"]


On-Prem can deliver HTTP Progressive Download and HLS for mobile support.

Other delivery formats such as HDS, RTMP and RTMPE can be supported with the help of a Media Server that is required to segment and provision the format.

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[collapsed title="Live Streaming"]

Live Streaming configuration in On-Prem is possible through the KMC for Akamai or Limelight customers (external delivery).

KMC can provision other sources than Akamai or Limelight (like Adobe FMS/AMS, also for internal delivery) using the API (This may require additional configuration. Contact your account manager for information about Professional Services.). Additional information about configuring Live streaming is available in [KMC User Manual](#) .

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[collapsed title="Optional On-Prem Custom Features"]

On-Prem customers can choose to add or customize certain features as part of the Custom Package. The following table provides examples of several features that may be customized. Scoping is required prior to development and execution.

For additional details, please refer to the Professional Services Catalogue.

Functionality	Explanation	Comments
Integrate with non-standard CDN Account	Integrating with non-standard CDN account (Amazon Cloudfront, Jetstream, Octoshape, Highwinds, Kontiki and more)	
Custom Media Server	Integrating with customer's Flash Media Servers (Adobe FMS or Wowza) - streaming server that can be integrated with Kaltura's On-Prem installation and enable webcam recording and other streaming use cases.	For officially supported versions only (for Adobe FMS Interactive server v3.5). Local FMS should enable recording.
KMC Localization	The KMC has English user interface. Kaltura offers the ability to change the default copy in English or translate to other languages.	Only for supported localization text and copy changes. The default interface may already be available in a limited set of languages.

Functionality	Explanation	Comments
		Requires a document that outlines a list of all KMC texts and screens for customer to provide requested text in English or other requested language
Changing underlying OS	Changing VM's default OS (CentOS) to another (RHEL5, RHEL6, etc.)	
Custom transcoder	Integration with a non-standard encoding/transcoding service or software (Rhozet, Harmonic etc.)	
Solution White-labeling	Include the customer's logo and details instead of Kaltura's details in every aspect of the management console and other interfaces	Requires graphics and spec from the customer.
Antivirus scanning	Scanning the entries as part of upload process. Scanning by Symantec (licensed SW) or with Clam AV (Open source).	

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[collapsed title="Installation Requirements"]

- Remote access is through one of the following:
 - - SSH
 - Cisco VPN
 - PPTP (point to point tunnelling protocol)
- Remote access to different geographical locations for installing and testing (USA and Israel) should be available.
- Root Access to the entire environment during the installation phase is required.
- VPN login (if needed)
- Cross platform must be HTTP only, or HTTPS only (no mixed content). Kaltura recommends HTTPS - a prerequisite is to supply a signed certificate.
- The following tools are required for successful installation – Telnet, nmap, wget, tcpdump, traceroute, ping, Allow icmp during deployment, iptraf, iperf
- 100 megabit internal network bandwidth.
- Kaltura cannot run when the Security-Enhanced Linux (SELinux) feature is deployed and enabled. If the SELinux feature is deployed on the servers, it must be disabled or set it to permissive for being able to use Kaltura.
- In case you require HTML 5 support and your environment has security restrictions, you will need to provide enabled iPads and iPhones to the testing team (or make sure to enable your teams' devices to work properly).

You will be responsible for every tool or process that runs over the environment, and is not part of Kaltura product. Kaltura does not take responsibility, for investigating or fixing issues that are caused by the operation of this tool.

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[collapsed title="Additional Features"]

Kaltura's extensions and features are available after On-Prem is setup, to create an improved and encompassing on-premise video management platform in your organization.

These extensions and features part of the On-Prem Standard or Custom Packages but as additional Professional Services offering, Please contact your account manager for details about Kaltura's Professional Services.

For example:

- Single Sign On (SSO) - Integration with an external authentication server to enable external user management and access to already logged in users – as supported by KMS (not supported by KMC)
- Active Directory integration as LDAP, Shibboleth, SAML.
- Secured Login - Creation of an HTTPS certificate by the customer and integration effort
- - The Kaltura Dynamic Player supports HTTPS, but requires to be set on the on the partner's CDN configuration. The same is true for other widgets (for example KCW)
 - Kaltura's Video Building Block for Blackboard supports HTTPS from version 2 and on.
 - KMC – Only the login page supports SSL.
 - Admin Console – supports.
- LMS integration as Kaltura's Video Building Block for Blackboard, Kaltura's Video Package for Moodle, Kaltura's Video Tool for Sakai.
- Kaltura Application Framework (KAF) for integration with third party products.

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