



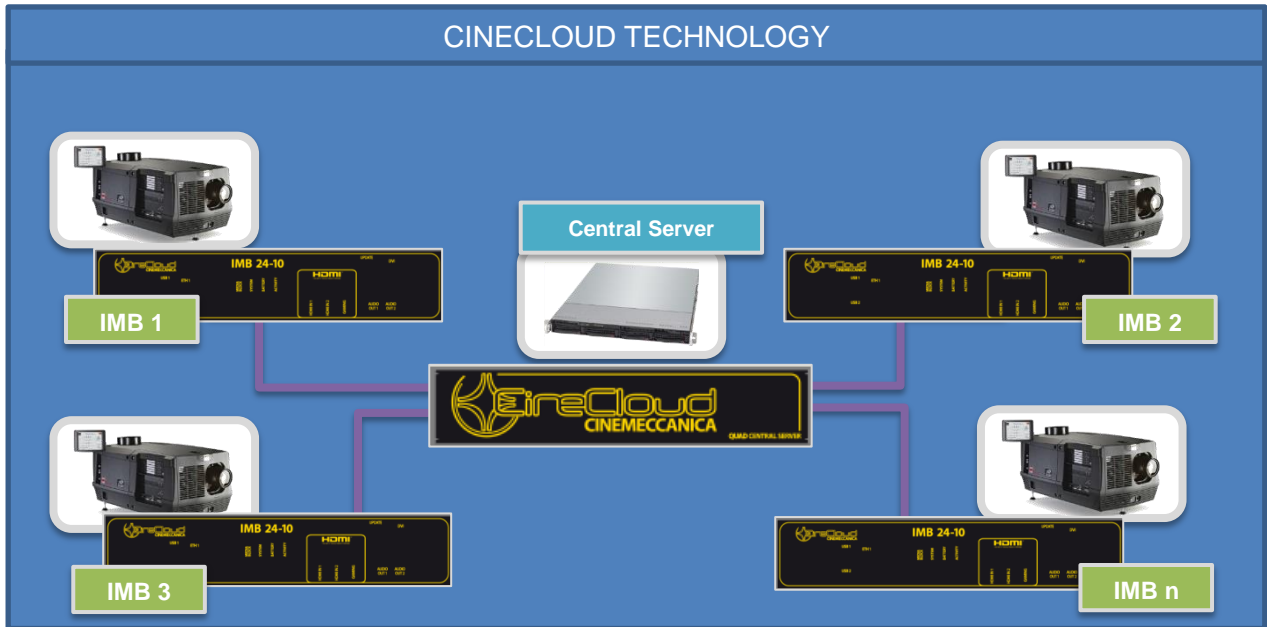
CONFIGURATION GUIDE

CINEMECCANICA

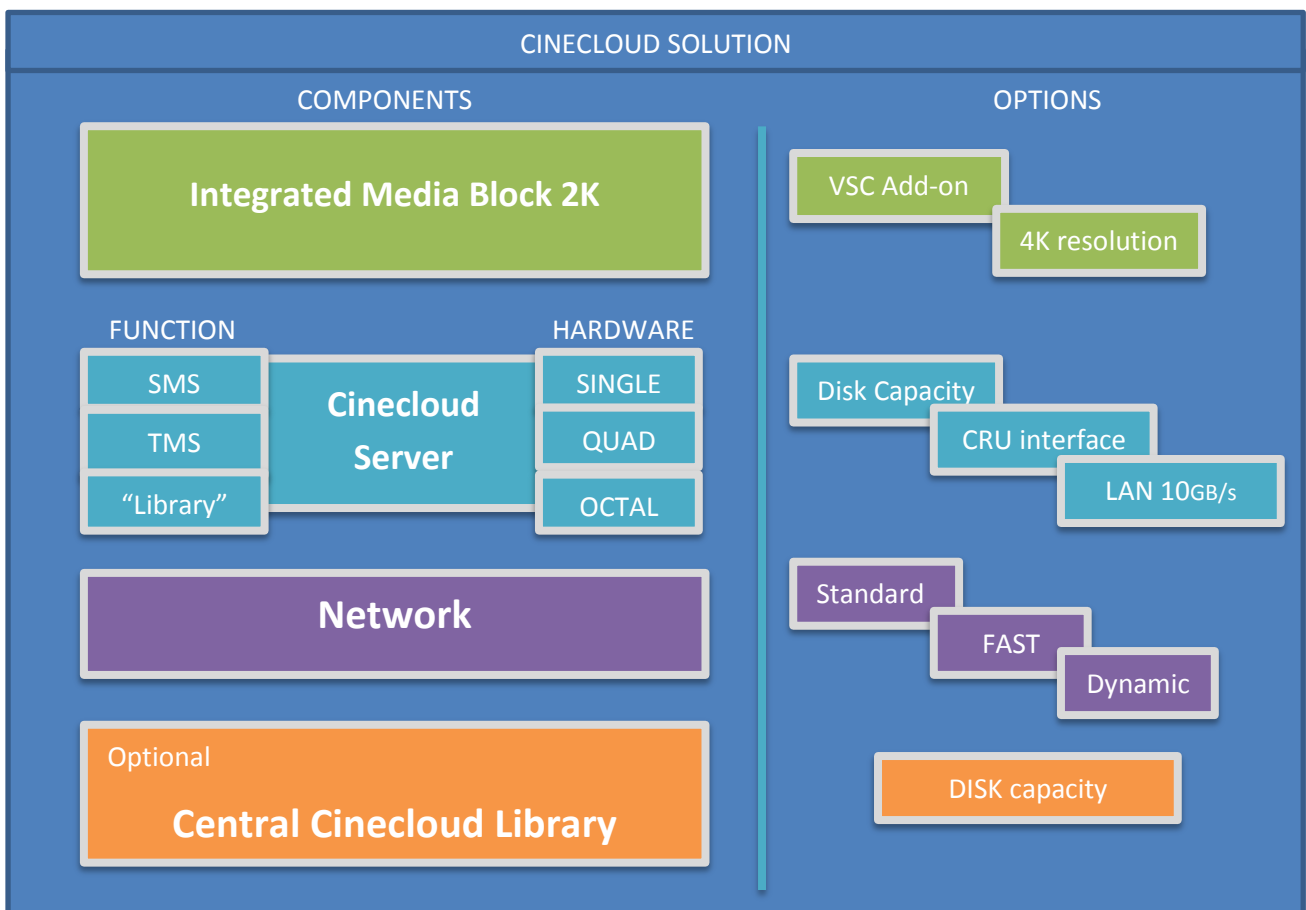


Cinecloud Solutions

The wide range of **Cinecloud** products includes different configurable **elements** which provide a full system solution with advanced features.



Each of the elements shown on the above table should be **chosen and configured** based on the **number of screens** (up to 32) in the Cinema and the **available options**.



Integrated Media Block (IMB) 2K

The Integrated Media Block (IMB) can be installed in a digital cinema series 2 projector, decoding and decrypting D-Cinema digital content for playback.

It is managed by one of Cinecloud server nodes which also streams all data from the server to the IMB itself; Cinecloud IMB is also capable of delivering High Frame Rate (HFR) video and, with a second unit, also of performing in a dual projector setup.

It is mandatory to have one IMB for each D-cinema series 2 projector, it is compatible with Barco and NEC projectors and has been tested in Christie projectors.

The available options are:

4K resolution

4K Resolution

Enables the IMB to operate up to 4K D-Cinema (4096x2160) resolution.

VSC Add-on

Videoscaler Add-on

The additional Videoscaler card is equipped with 3 HDMI 1.4a input (with HDCP and 3D support) that allow connection of external sources (such as Blue-Ray player and PC) to the projector.

Integrated Media Block 2K

GPI/O Block (4 IN,7 OUT)

HFR and Dual Projection support

Cinecloud Server

Cinecloud Server Configurations

Cinecloud modules are the major components of the Cinecloud system, each of which can be configured to perform either one of the following functions:

SMS

SMS Node – Screen Management Software

It is the module which manages and controls all the screening room functions and the content process. **For each IMB in the Cinema a corresponding SMS node has to be connected through network.**

TMS

TMS Node – Theatre Management System

It is the module which manages and controls the main cinema hall functions, like show times scheduling, playlists, content transfers and movies and KDM upload.

It is possible to include one in each Cinecloud architecture; when equipped with high capacity disks, it can store a higher number of films.

Additional Storage

Additional Storage Node - "Library"

This additional module acts as an extra storage unit ("Library") and as a support module allowing a better and easier content management; it can also perform as a replacement SMS module when needed; **any number of additional storage modules can be chosen for a Cinecloud server configuration, but their presence is entirely optional.**

There are three types of *Hardware configurations* for Cinecloud servers:

SINGLE

SINGLE

The Single is a stand-alone module, with the following available options:

- Disk Capacity (in **4 bays**¹) from **2TB** to **12TB** net, in **RAID 5** configuration.
- CRU interface or alternatively² high speed Network card 10GB/s

Disk Capacity

CRU interface

LAN 10GB/s

QUAD

QUAD

The QUAD includes **up to 4 independent modules** in one frame, with the following available options:

- Disk Capacity (in **3 bays**¹) from **2TB** to **8TB** net, in **RAID 5** configuration.
- CRU interface or alternatively high speed Network card 10GB/s

Disk Capacity

CRU interface

LAN 10GB/s

OCTAL

OCTAL

The OCTAL includes **up to 8 independent modules** in one frame, with the following available options:

- Disk Capacity (in **2 bays**¹) from **2TB** to **4TB** net, in **RAID 1** configuration.
- CRU Interface
- High Speed Network card 10GB/s

Disk Capacity

CRU interface

LAN 10GB/s

All the aforementioned hardware configurations are equipped with **dual hot-swap power supplies** which allow maintenance during system operation, with no need for interruption.

¹ Table of the available disk configuration and size for data storage in Cinecloud hardware:

SINGLE Module (4 Disk Bays- RAID5)						QUAD (3 Disk Bays - RAID5)			OCTAL (2 Disk Bays – RAID1)		
Disk Capacity	Used Slots	Total Capacity	Disk Capacity	Used Slots	Total Capacity	Disk Capacity	Used Slots	Total Capacity	Disk Capacity	Used Slots	Total Capacity
1TB	3	2TB	1TB	4	3TB	1TB	3	2TB	1TB	2	2TB
2TB	3	4TB	2TB	4	6TB	2TB	3	4TB	2TB	2	4TB
3TB	3	6TB	3TB	4	9TB	3TB	3	6TB	3TB	2	6TB
4TB	3	8TB	4TB	4	12TB	4TB	3	8TB	4TB	2	8TB

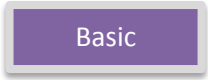
² SINGLE modules with **both** CRU interface and 10GB/s network cards (LAN) are available upon request

Network



Each Cinecloud Installation includes a LAN switch to manage all network connections between modules which plays a key role in system performances, allowing **high-speed transfer rates** (FAST option) to copy content between screens and/or **dynamic association** (DYNAMIC option) between each Cinecloud node and each IMB in the Cinema hall, which allows to instantly switch content between screens.

Three different configuration options are available:



Basic

In the **basic** option connection between each SMS module and the corresponding IMB is a *peer-to-peer type*, in which each node is *statically* associated to a single projector; this is the base on which other two options can be implemented on. It includes a basic network switch for content transfer.



FAST

The **FAST** configuration has a more advanced switch with an high speed network interface (10GB/s) which allows to shorten the time needed for content transfer within modules that compose the server.



DYNAMIC

The **DYNAMIC** configuration uses a dual redundant network switch; in this configuration each Cinecloud node, connected with 2 Cat6 network cables, is **dynamically** associated with a specific projector. With this setup each node is able, in a matter of seconds, to redirect its content stream to **any** of the projectors in the cinema.

FAST and **DYNAMIC** options **can be combined together**, to achieve the best performances of the Cinecloud System: **high speed data transfers** and **dynamic scheduling** of shows.

Central Library (optional)

Available in the range of Cinecloud products is the **Central Cinecloud Library**, which is an optional unit that enhances storage space and eases management and distribution of the digital contents.

Optional

Central Cinecloud Library

The Cinecloud Libraries can also **perform TMS node functions** in lieu of a standard TMS Server Node

DISK
capacity

Disk Capacity

Cinecloud Libraries are available in **10TB, 20TB, 30TB** and **42TB** capacities.

Cinecloud Central Library is a completely **optional** device, but it highly enhances storage space and content management in structures with a high number of screens, whilst delivering additional storage security.

Cinecloud configuration table based on number of screens

The following table lists the possible Cinecloud configurations based on the number of projection screens and available options.

Number of Screens	SINGLE Module	QUAD Module	OCTAL Module			MAX STORAGE	NETWORK	
	code C100120	code C400420	code C800820	STAND-ALONE	TMS included	per module	FAST	DYNAMIC
1	1x			✓	✓	12TB		
2	2x			✓		12TB		
	3x	1x [3 nodes]			✓	12TB 8TB	✓[1] ✓[1]	✓ ✓
3	3x	1x		✓	✓	12TB 8TB	✓[1]	✓
4	4x			✓		12TB		
	1x	1x	1x [5 nodes]		✓	12TB / 8TB 4TB	✓[1] ✓	✓ ✓
5	5x			✓		12TB		
	2x	1x	1x [6 nodes]		✓	12TB / 8TB 4TB	✓[1] ✓	✓ ✓
6	6x			✓		12TB		
		2x [7 nodes]	1x [7 nodes]		✓	8TB 4TB	✓[1] ✓	✓ ✓
7	7x	2x	1x	✓	✓	12TB 8TB 4TB	✓[1] ✓	✓ ✓
8	8x			✓		12TB		
	1x 1x	2x	1x		✓	12TB / 8TB 12TB / 4TB	✓[1] ✓	✓ ✓
9	9x			✓		12TB		
	2x	2x	2x [10 nodes]		✓	12TB / 8TB 4TB	✓[1] ✓	✓ ✓
10	10x			✓		12TB		
		1x	1x [7 nodes] 2x [11 nodes]		✓	8TB / 4TB 4TB	✓ ✓	✓ ✓
11	11x			✓		12TB		
		3x	2x [12 nodes]		✓	8TB 4TB	✓[1] ✓	✓ ✓
12	12x			✓		12TB		
	1x	3x	2x [13 nodes]		✓	12TB / 8TB 4TB	✓[1] ✓	✓ ✓
13	13x			✓		12TB		
	2x	3x	2x [14 nodes]		✓	12TB / 8TB 4TB	✓[1] ✓	✓ ✓
14	14x			✓		12TB		
		1x	2x [11 nodes] 2x [15 nodes]		✓	8TB / 4TB 4TB	✓ ✓	✓ ✓
15	15x			✓		12TB		
		4x	2x		✓	8TB 4TB	✓[1] ✓	✓ ✓

[1] Requires a SINGLE Module with double interface CRU+10GB or installation of a Cinecloud Central Library



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