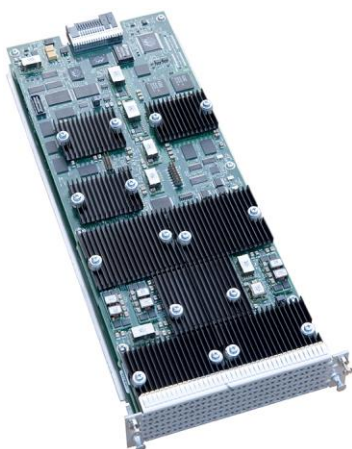


Cisco Digital Content Manager Series Multi-Format Processor Card

One of the products within the Cisco® Digital Content Manager (DCM) Solution, dedicated to providing state-of-the-art audio and video to subscribers, is the Cisco DCM Series Multi-Format Processor (MFP) Card (Figures 1 and 2). With home networks and consumer devices relied on for video content by millions, Cisco has engineered every component to enhance the customer experience. The Cisco DCM Series MFP Card provides high-density, high-quality advanced processing of MPEG-2 and H.264 advanced video coding (AVC), high definition (HD) and standard definition (SD) video, and audio with low power usage. The Cisco DCM Series MFP Card with Cisco DCM AnyRes technology supports multiple-screen transcoding and is a truly converged processing solution for all screens.

Figure 1. Cisco DCM Series Multi Format Processor Card - Dual Layer



The Cisco DCM Series MFP Card helps provide high reliability and excellent video quality for the next generation of IP-based headend deployments, large and small. With the flexibility of Asynchronous Serial Interface (ASI), IP, satellite, or Advanced Television Systems Committee (ATSC) off-air inputs, along with ASI or IP outputs, this Cisco DCM Card can be placed at multiple points in the content acquisition subsystem, processing up to 144 SD or 48 HD channels in a 2RU appliance.

Figure 2. Cisco DCM Series Multi Format Processor Card - Dual Layer



Main Features and Benefits

Any-to-Any Processing

- Transcoding and rate-changing of MPEG-2 and H.264, HD, and SD services in single-program and multiprogram transport streams
- Transcoding any input to multiple H.264 adaptive bit rate (ABR) resolutions
- Transcoding of HD services to SD video, regardless of the codec
- Logo insertion of up to 3 logos per channel
- Insertion of Encoder Boundary Points (EBP) according to CableLabs® OpenCable™ specification
- Transcoding of audio services between MPEG-1 layer II, Dolby Digital (AC-3), Dolby Digital Plus (EAC-3), and Advanced Audio Coding (AAC) formats
- Automatic real-time audio leveling
- Statistical remultiplexing of mixed MPEG-2, H.264, HD, and SD video on a single card
- Combined MPEG-2, H.264, HD, SD, and ABR processing on a single card for investment enhancement

High-Density Processing

- Adds transcoding for up to 72 SD or 24 HD programs to the Cisco DCM Series D9900 and D9901 chassis
- Adds transcoding for up to 144 SD or 48 HD programs to the Cisco DCM Series D9902 chassis
- Allows up to 300 ABR output profiles to be added per 2RU chassis
- Ad insertion for any screen

Premium Picture Quality Processing

- Advanced filtering capabilities: Motion Compensated Temporal Filtering (MCTF) and pre-deblocking filtering to remove noise and macro-blocking artifacts from video sources
- Adds premium quality transcoding for up to 24 SD or 12 HD programs to the Cisco DCM Series D9902 chassis

Flexible Modular Design

- The Cisco DCM Series MFP Card fits into any application slot of a Cisco DCM Series 1RU or 2RU chassis
- Combined with existing application cards and I/O cards, such as ASI, Gigabit Ethernet, satellite, and terrestrial, the Cisco DCM Series MFP Card supports truly converged applications
- Functionality is software activated by a flexible electronic licensing program

Adaptability

- Flexible use in both the 1RU and 2RU Cisco DCM Series chassis
- Built-in support for all application cards built to date

Fast, Easy Setup and Configuration

- The Cisco DCM Series MFP Card is fully integrated in an easy-to-use HTML-only web user interface, allowing drag-and-drop service configuration.

Product Specifications

Table 1 provides product specifications for the Cisco DCM Series MFP Card.

Table 1. Product Specifications

Feature	Description
Physical and Power	
Physical specifications	<p>Single-layer MFP card (DCM-MFP-S) that occupies 1 slot in Cisco DCM Series chassis:</p> <ul style="list-style-type: none"> • Height: 39.5 mm/1.54 in • Width: 145 mm/5.70 in • Depth: 365 mm/14.37 in • Weight: 1.120 kg/2.47 lb <p>Dual-layer MFP card (DCM-MFP) that occupies 1 slot in the Cisco DCM D9902 2RU chassis:</p> <ul style="list-style-type: none"> • Height: 39.5 mm/1.54 in • Width: 145 mm/5.70 in • Depth: 365 mm/14.37 in • Weight: 1.675 kg/3.69 lb
Power consumption	<ul style="list-style-type: none"> • DCM-MFP-S: 75W maximum • DCM-MFP: 150W maximum
Environmental Specifications	
Operating temperature	32 - 122°F (0 to 50°C)
Storage temperature	-40 - 158°F (-40 to 70°C)
Relative operating humidity	<p>5 to 90%</p> <p>Note: Not to exceed 0.024 kg water or dry air</p>
Relative storage humidity	<p>5 to 95%</p> <p>Note: Not to exceed 0.024 kg water or dry air</p>
Operating altitude	-61 to 3048m (up to 2000m conforms to IEC/EN/UL/CSA 60950 requirements)
Compliance	
Network Equipment Building Standards (NEBS)	<ul style="list-style-type: none"> • Designed for SR-3580: NEBS Criteria Levels (Level 3) • GR-1089-CORE: NEBS EMC and Safety GR-63-CORE: NEBS Physical Protection
ETSI Standards	<ul style="list-style-type: none"> • EN300 386: Telecommunications Network Equipment (EMC)
EMC Standards	<ul style="list-style-type: none"> • FCC 47 CFR Part 15 Class A • ICES- 003 Class A • AS/NZS 3548 Class A • CISPR 22 /EN55022 Class A • CISPR 24/EN55024 • VCCI Class A • KN 22 • IEC/EN 61000-3-2: Power Line Harmonics
Immunity	<ul style="list-style-type: none"> • IEC/EN-61000-4-2: Electrostatic Discharge Immunity • IEC/EN-61000-4-3: Radiated Immunity • IEC/EN-61000-4-4: Electrical Fast Transient Immunity • IEC/EN-61000-4-5: Surge • IEC/EN-61000-4-11: Voltage DIPS, Short Interruptions, and Voltage Variations
Safety	<ul style="list-style-type: none"> • UL/CSA/IEC/EN 60950-1 2nd edition • IEC/EN 60825 Laser Safety • ACA TS001 • AS/NZS 60950 • FDA: Code of Federal Regulations Laser Safety

Feature	Description
Video Decoding	
HD bit rates	<ul style="list-style-type: none"> • MPEG-2: MP@HL up to 30 Mbps • H.264: HP@ L4.0-L4.1 up to 25 Mbps
HD resolutions	<ul style="list-style-type: none"> • 1080i x 1920/1280 @ 25 fps • 1080i x 1920/1280 @ 29.97 fps • 720p x 1280/960 @ 50 fps • 720p x 1280/960 @ 59.94 fps
SD bit rates	<ul style="list-style-type: none"> • MPEG-2: MP @ML up to 15 Mbps • H.264: MP@L3-L4.1 up to 12 Mbps
SD resolutions	<ul style="list-style-type: none"> • PAL: 576i x 720/ 704/ 640/ 544/ 528/ 480/ 352 @25 fps • NTSC: 480i x 720/ 704/ 640/ 544/ 528/ 480/ 352 @29.97 fps
Video Encoding	
HD bit rates	<ul style="list-style-type: none"> • MPEG-2: HP@ HL 0.5 to 30 Mbps • H.264: MP@ L4.0 1 to 20 Mbps • H.264: HP@ L4.0 1 to 25 Mbps • H.264: MP@ L4.1 1 to 30 Mbps
HD resolutions	<ul style="list-style-type: none"> • 1080i x 1920/1280 @ 25 fps • 1080i x 1920/1280 @ 29.97 fps • 720p x 1280/960 @ 50 fps • 720p x 1280/960 @ 59.94 fps • ABR: between 128 x 160 and 1920 x 1080p @ 25/30 fps Flexible support for any resolution that is multiple of 2 px
SD bit rates	<ul style="list-style-type: none"> • MPEG-2: MP@ ML 0.5 to 10 Mbps • H.264: MP@ L3.0 0.5 to 10 Mbps • H.264: HP@ L3.0 0.5 to 12.5 Mbps
SD resolutions	<ul style="list-style-type: none"> • PAL: 576i x 720/ 704/ 640/ 544/ 528/ 480/ 352 @ 25 fps • NTSC: 480i x 720/ 704/ 640/ 544/ 528/ 480/ 352 @ 29.97 fps • ABR: between 128 x 160 and 1920 x 1080p @ 25 or 30 fps Flexible support for any resolution that is multiple of 2 px
Inverse telecine	<ul style="list-style-type: none"> • 3:2 pulldown inversion
Video Processing	
Number of services	<p>DCM-MFP-S</p> <ul style="list-style-type: none"> • SD: up to 24 services per card • HD: up to 8 services per card • HD to SD downconversion: up to 8 services per card • ABR: up to 8 services per card • Smooth ad insertion: up to 16 services per card <p>DCM-MFP</p> <ul style="list-style-type: none"> • SD: up to 48 services per card • HD: up to 16 services per card • HD to SD downconversion: up to 16 services per card • ABR: up to 16 services per card • Smooth ad insertion: up to 32 services per card
Statistical multiplexing	<ul style="list-style-type: none"> • Mixed AVC, MPEG-2 HD and SD • 64 services per statistical multiplexing group
GOP control	<ul style="list-style-type: none"> • Static, Hierarchical and dynamic GOP
Encoder Boundary Point (EPB) insertion	<ul style="list-style-type: none"> • EPB according OpenCable™ OC-SP-EBP-I01-130118
Ad Insertion	<ul style="list-style-type: none"> • Smooth ad insertion using SCTE-35 cueing message and SCTE-30 interface with ad servers • Ad marker insertion in adaptive bit rate services for targeted advertising

Feature	Description
Audio Decoding	
MPEG-1 and MPEG-2 Layer II audio	<ul style="list-style-type: none"> • Mono, stereo, and multichannel • Bit rate: 32 to 384 kbps
AAC	<ul style="list-style-type: none"> • Low complexity, high efficiency • Mono, stereo, and multichannel • Bit rate: 32 to 640 kbps, depending on the encoding mode • ADTS, LATM, and LOAS
Dolby Digital (AC-3) Dolby Digital Plus (E-AC-3)	<ul style="list-style-type: none"> • Mono, stereo, and multichannel • Bit rate: 56 to 640 kbps
Audio Encoding	
MPEG-1 and MPEG-2 Layer II audio	<ul style="list-style-type: none"> • Mono, stereo, and multichannel • Bit rate: 32 to 384 kbps
AAC	<ul style="list-style-type: none"> • Low complexity, high efficiency • Mono, stereo, and multichannel • Bit rate: 32 to 640 kbps, depending on the encoding mode • ADTS, LATM and LOAS
Dolby Digital (AC-3) Dolby Digital Plus (E-AC-3)	<ul style="list-style-type: none"> • Mono, stereo, and multichannel • Bit rate: 56 to 640 kbps
Number of audio services	<ul style="list-style-type: none"> • DCM-MFP-S: Up to 128 stereo pairs per card • DCM-MFP: Up to 256 stereo per card
Audio Processing	
Automatic Audio Leveling	<ul style="list-style-type: none"> • Loudness measurement according ITU-R BS.1770-2 • Automatic leveling to comply with Commercial Advertisement Loudness Mitigation (CALM) act.
VBI and Ancillary Data	
Closed captions	<ul style="list-style-type: none"> • CEA-608 and CEA-708 conversion
VBI formats	<ul style="list-style-type: none"> • WST, DVB-WST, Inverted WST, WSS, VPS, transparent lines, VII, and OP-47

Ordering Information

To place an order, visit the [Cisco Ordering homepage](#). Table 2 provides ordering information for the Cisco DCM Series MFP Card.

Table 2. Ordering Information

Description	Part Number
Hardware	
D9900/01/02 DCM Multi Format Processor Board, Single Layer (req. SW, DCM, V10.00.05 or later)	DCM-MFP-S
D9900/01/02 DCM Multi Format Processor Board, Single Layer, Spare (req. SW, DCM, V10.00.05 or later)	DCM-MFP-S=
D9902 DCM Multi Format Processor Board, Double Layer (req. SW, DCM, V10.00.05 or later)	DCM-MFP
D9902 DCM Multi Format Processor Board, Double Layer, Spare (req. SW, DCM, V10.00.05 or later)	DCM-MFP=
Licenses	
Software licenses (Add licenses in the Cisco Commerce Workspace)	DCM-LIC-UPGR
Main DCM Device Licenses	
D9900/01/02 MPEG-2 SD Transcoding Lic (1/prg; req MFP)	LDCM-MP2SDTC
D9900/01/02 MPEG-2 HD Transcoding Lic (1/prg; req MFP)	LDCM-MP2HDTTC
D9900/01/02 AVC SD Transcoding Lic (1/prg; req MFP)	LDCM-AVCSDTC
D9900/01/02 AVC HD Transcoding Lic (1/prg; req MFP)	LDCM-AVCHDTC

Description	Part Number
D9900/01/02 MFP Statmux (1/prg; req. MFP)	LDCM-SMX
D9902 MPEG-2 SD Premium PQ Transcoding Lic (1/prg; req MFP)	LDCM-MP2SDTC-PQ
D9902 MPEG-2 HD Premium PQ Transcoding Lic (1/prg; req MFP)	LDCM-MP2HDTC-PQ
D9902 AVC SD Premium PQ Transcoding Lic (1/prg; req MFP)	LDCM-AVCSDTC-PQ
D9902 AVC HD Premium PQ Transcoding Lic (1/prg; req MFP)	LDCM-AVCHDTC-PQ
D9902 MFP Premium PQ Statmux (1/prg; req. MFP)	LDCM-SMX-PQ
D9900/01/02 ABR Transcoding Lic 16 credits (req MFP)	LDCM-ABRTC
D9900/01/02 ABR Profile Lic 1080p25/30 (8 credits; req MFP)	LDCM-ABR-1080PTC
D9900/01/02 ABR Profile Lic 720p25/30 (4 credits; req MFP)	LDCM-ABR-720PTC
D9900/01/02 ABR Profile Lic 576p/480p (2 credits; req MFP)	LDCM-ABR-SDTC
D9900/01/02 ABR Profile Lic 352x576p/480p (1 credit; req MFP)	LDCM-ABR-HALFSDTC
D9900/01/02 MPEG-1 LII Transcode Lic (1/stereo; req MFP)	LDCM-MP1LII-TC
D9900/01/02 Dolby AC-3 Transcoding Lic (1/stereo; req MFP)	LDCM-DLBYAC3-TC
D9900/01/02 Dolby Digital Plus Transcode Lic (1/stereo; req MFP)	LDCM-DDP-TC
D9900/01/02 AAC Audio Transcode Lic (1/stereo; req MFP)	LDCM-AAC-TC
D9900/01/02 Automatic Loudness Control (1/stereo, requires MFP and audio transcode license)	LDCM-LOUDCTRL
D9900/01/02 MFP SD DPI Upgr Lic (1/prg; req MFP)	LDCM-SDDPIU
D9900/01/02 MFP HD DPI Upgr Lic (1/prg; req MFP)	LDCM-HDDPIU
D9900/01/02 Static Logo Lic (1/prg; req MFP or Transcoder Card)	LDCM-LOGO-STATIC
D9900/01/02 Text Crawl Lic (1/prg; req MFP or Transcoder Card)	LDCM-TEXT-CRAWL
Backup DCM Device Licenses	
D9900/01/02 BU MPEG-2 SD Transcoding Lic (1/prg; req MFP)	BDCM-MP2SDTC
D9900/01/02 BU MPEG-2 HD Transcoding Lic (1/prg; req MFP)	BDCM-MP2HDTC
D9900/01/02 BU AVC SD Transcoding Lic (1/prg; req MFP)	BDCM-AVCSDTC
D9900/01/02 BU AVC HD Transcoding Lic (1/prg; req MFP)	BDCM-AVCHDTC
D9900/01/02 BU MFP Statmux (1/prg; req. MFP)	BDCM-SMX
D9902 BU MPEG-2 SD Premium PQ Transcoding Lic (1/prg; req MFP)	BDCM-MP2SDTC-PQ
D9902 BU MPEG-2 HD Premium PQ Transcoding Lic (1/prg; req MFP)	BDCM-MP2HDTC-PQ
D9902 BU AVC SD Premium PQ Transcoding Lic (1/prg; req MFP)	BDCM-AVCSDTC-PQ
D9902 BU AVC HD Premium PQ Transcoding Lic (1/prg; req MFP)	BDCM-AVCHDTC-PQ
D9902 BU MFP Premium PQ Statmux (1/prg; req. MFP)	BDCM-SMX-PQ
D9900/01/02 BU ABR Transcoding Lic 16 credits (req MFP)	BDCM-ABRTC
D9900/01/02 BU ABR Profile Lic 1080p25/30 (8 credits; req MFP)	BDCM-ABR-1080PTC
D9900/01/02 BU ABR Profile Lic 720p25/30 (4 credits; req MFP)	BDCM-ABR-720PTC
D9900/01/02 BU ABR Profile Lic 576p/480p (2 credits; req MFP)	BDCM-ABR-SDTC
D9900/01/02 BU ABR Profile Lic 352x576p/480p (1 credit; req MFP)	BDCM-ABR-HALFSDTC
D9900/01/02 BU MFP Statmux (1/prg; req. MFP)	BDCM-SMX
D9900/01/02 BU MPEG-1 LII Transcode Lic (1/stereo; req MFP)	BDCM-MP1LII-TC
D9900/01/02 BU Dolby AC-3 Transcode Lic (1/stereo; req MFP)	BDCM-DLBYAC3-TC
D9900/01/02 BU Dolby Digital Plus Transcode Lic (1/stereo; req MFP)	BDCM-DDP-TC
D9900/01/02 BU AAC Audio Transcode Lic (1/stereo; req MFP)	BDCM-AAC-TC

Description	Part Number
D9900/01/02 BU Automatic Loudness Control (1/stereo, requires MFP and audio transcode license)	BDCM-LOUDCTRL
D9900/01/02 BU MFP SD DPI Upgr Lic (1/prg; req MFP)	BDCM-SDDPIU
D9900/01/02 BU MFP HD DPI Upgr Lic (1/prg; req MFP)	BDCM-HDDPIU
D9900/01/02 BU Static Logo Lic (1/prg; req MFP or Transcoder Card)	BDCM-LOGO-STATIC
D9900/01/02 BU Text Crawl Lic (1/prg; req MFP or Transcoder Card)	BDCM-TEXT-CRAWL
Software	
SW, DCM, V14.10.02	DCM-SW-141002-K9

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