

IPTV System for Enterprise

A series of approximately 10 green dots of varying sizes arranged in a curved, descending path from the right side of the title area towards the center.A series of approximately 7 green dots of varying sizes arranged in a curved, ascending path from the left side of the slide towards the center.

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□ IPTV System for Enterprise

- Overview
- Services
- Application

Introduction of IPTV

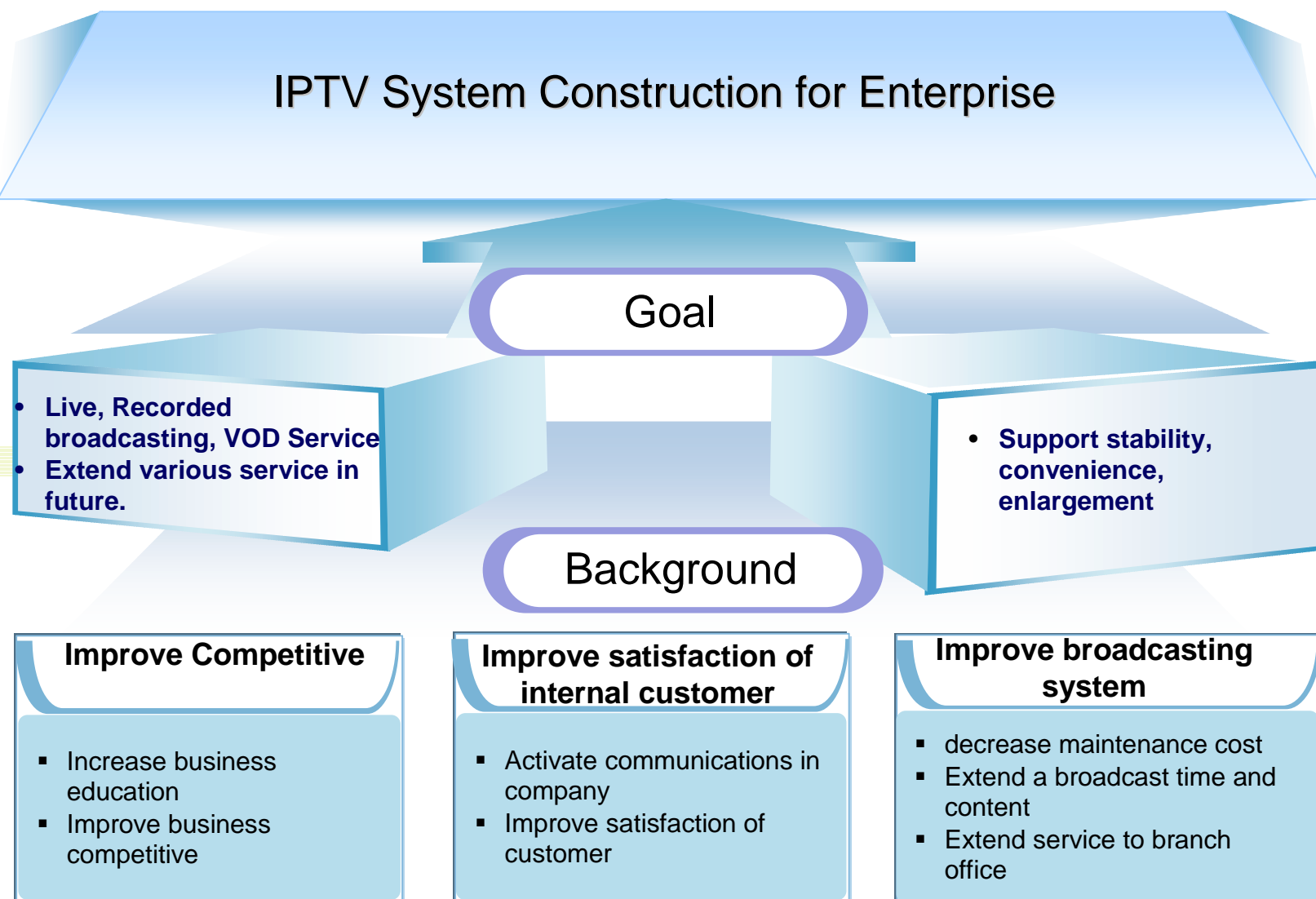
□ Definition of Internet Protocol TeleVision (IPTV)

- IP television systems provide video services through the use Internet protocol (IP) networks. These IP networks initiate, process, and receive voice or multimedia communications using IP protocol.
- Broadcasting over Internet
- Deliver TV Service over Broadband IP networks

□ Range

- Broad sense: Video streaming service
- Limited sense: Broadcasting (Except VOD)

Overview of IPTV System for Enterprise



Services of IPTV System for Enterprise

Live Broadcasting

- Real-time live broadcasting service
- Multicast support: broadcasting service to many users

Recorded Broadcasting

- Recorded broadcasting service
- **Multicast support: broadcasting service to many users**

VOD Service

- On-demand service that they want to watch.
- Unicast support:

CMS

- Contents Distribution
- Contents Management
- Electronic Program Guide

NMS

- System Management
- Network Management

Report

- Monitoring of status
- Statistics of usage

Approaches for IPTV system

☐ VOD based systems

- Providing VOD only services
- Restricting simultaneous use of services according to available bandwidth

☐ Centralized IPTV systems

- Locating the system to broadcasting center
- Providing VOD and Broadcasting services

☐ Distributed IPTV systems

- Distributing of the service to branches
- Providing VOD and (Live and Recorded) Broadcasting services

VOD based systems

❑ Characteristics

- E-learning systems
- No broadcasting services using Internet
- Centralized system
 - Bandwidth limitation
 - Easy management

❑ Status: Typical use in Organizations



Centralized IPTV systems

□ Characteristics

- E-learning and Broadcasting Systems
- Centralized system
 - Best-effort service with Internet broadcasting quality
 - Bandwidth limitation
 - Easy management

□ Status: Starting services



Distributed IPTV systems

□ Characteristics

- E-learning and Broadcasting system
- Systems for branches
- Distributed systems
 - Highly reliable services with Broadcast quality
 - No limit on usage
 - Careful management

□ Status: Emerging services



Challenges of Enterprise IPTV systems

☐ Distributed offices around country

- Over 1000 offices
- Unstable or unmanageable environment in offices

☐ Best-effort Internet

- xDSL or low bandwidth leased line
- No QoS

☐ Various network environment

- xDSL: VPN, dynamic IP, NAT
- Leased line, Firewall

☐ Broadcasting quality service required

- SD quality services
- Highly reliable service: Non-stop service

☐ No multicasting service in public Internet

☐ Integration with existing or emerging applications of company or organization

Basic concept for Enterprise IPTV

☐ Distributed offices around country

- Stable Equipment in offices controlled by remote center

☐ Best-effort Internet

- TCP streaming
- Reliable Multicast feature
- Contents distribution to edge network

☐ Broadcasting quality service required

- Encoding format with high compression
- Dual systems
- Adaptive quality control for streaming

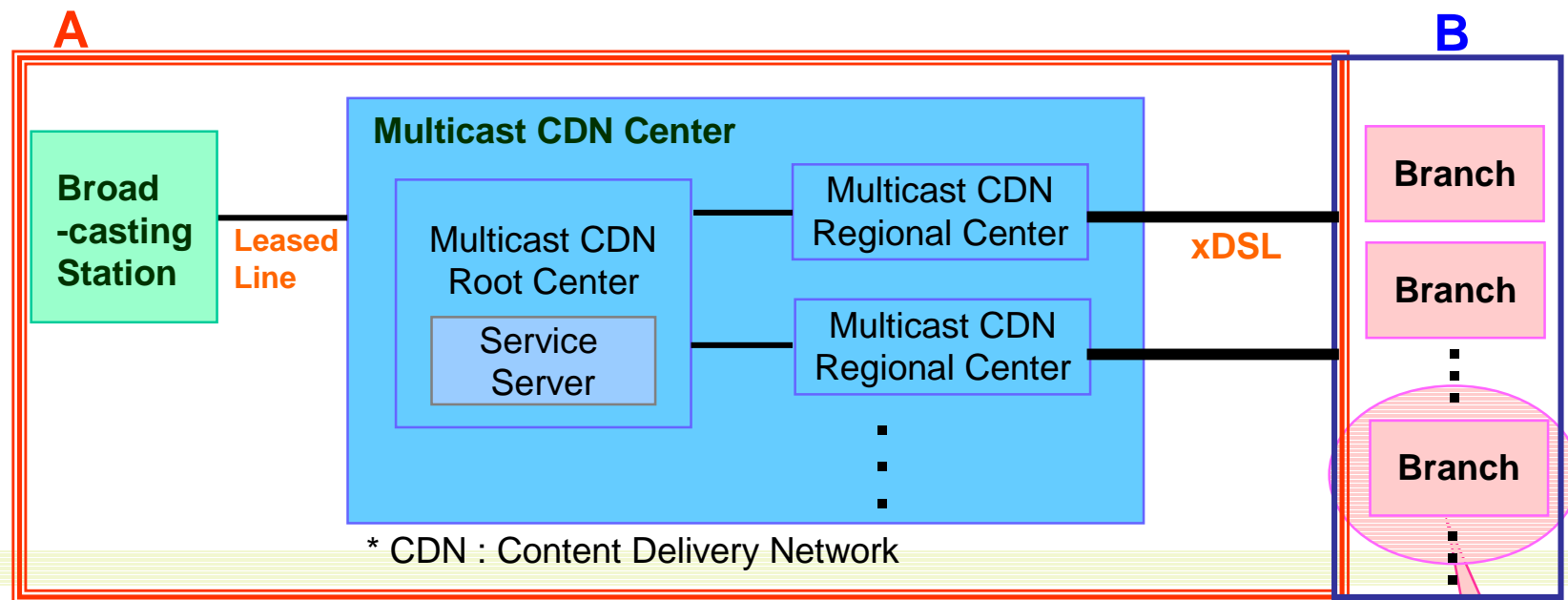
☐ No multicasting service in public Internet

- Overlay multicast

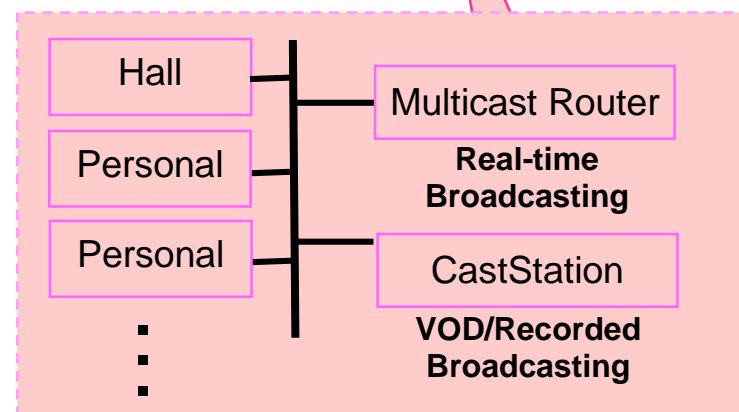
☐ Integration with existing or emerging applications of company or organization

- Web interface

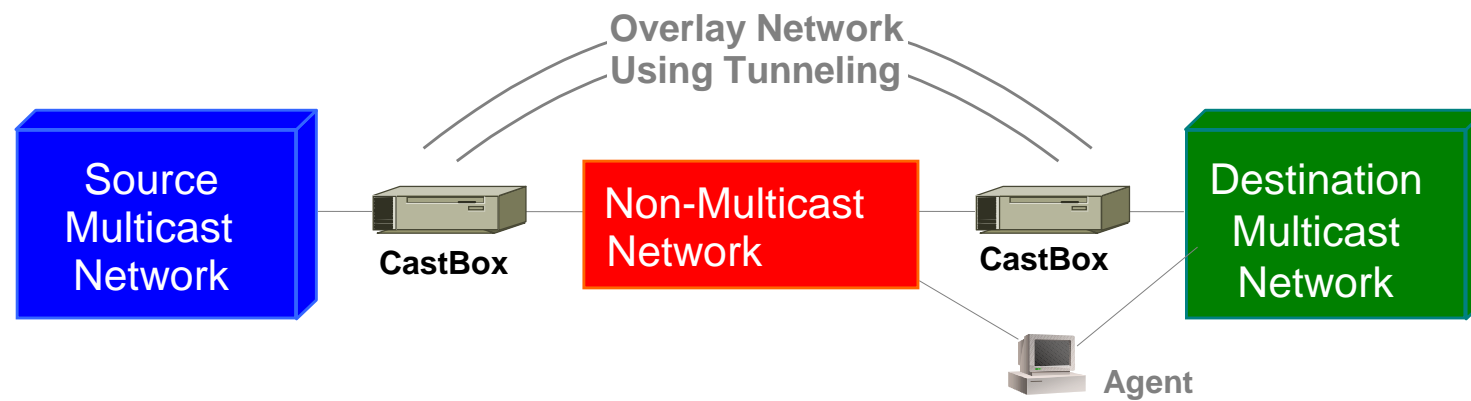
Network System – Application of Multicast Router



- A** : Multicast CDN Service
- Low traffic at middle mile network
- B** : Multicast Router, CastStation at branch
- Low traffic at branch network

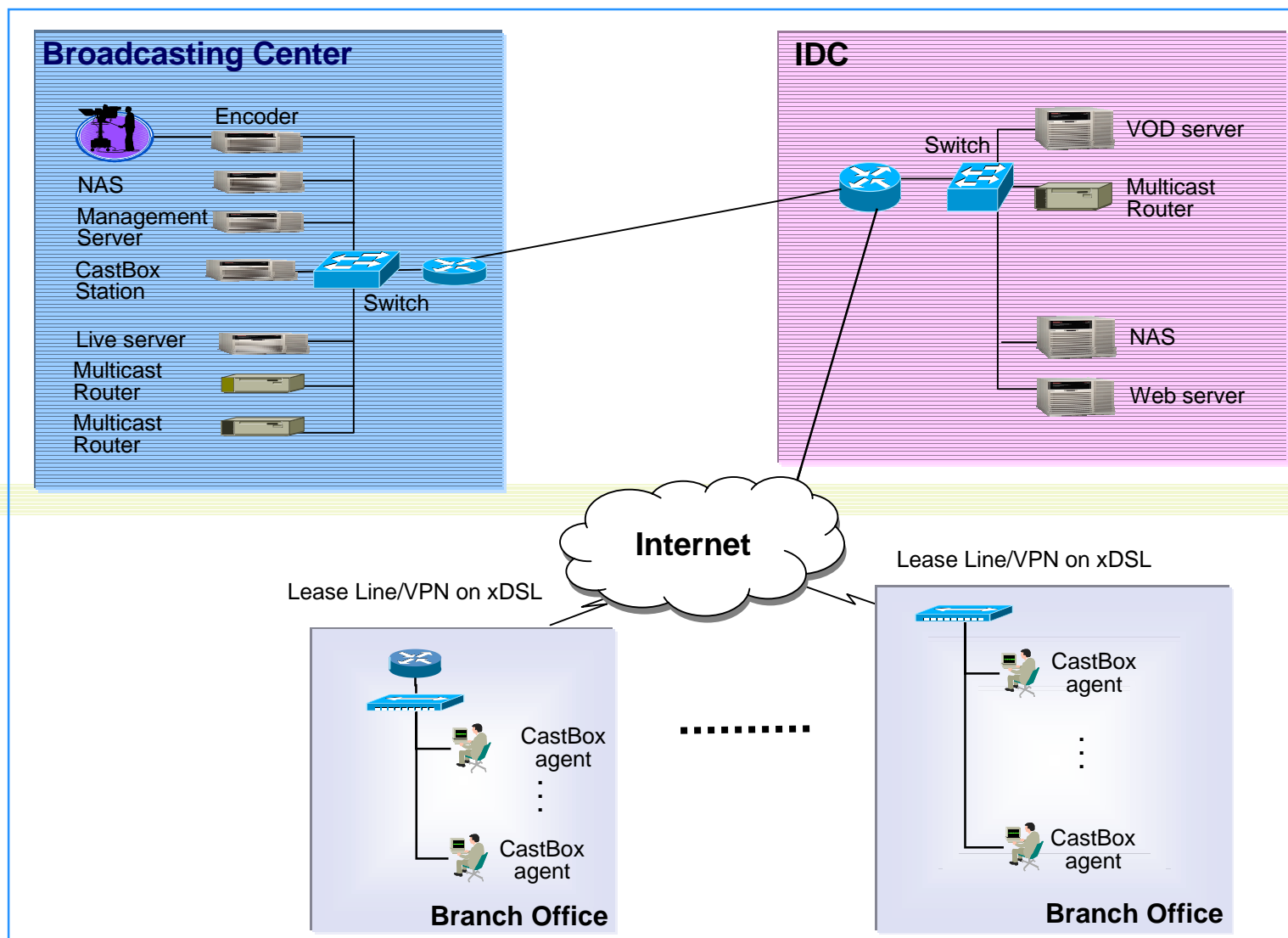


Introduction of Multicast

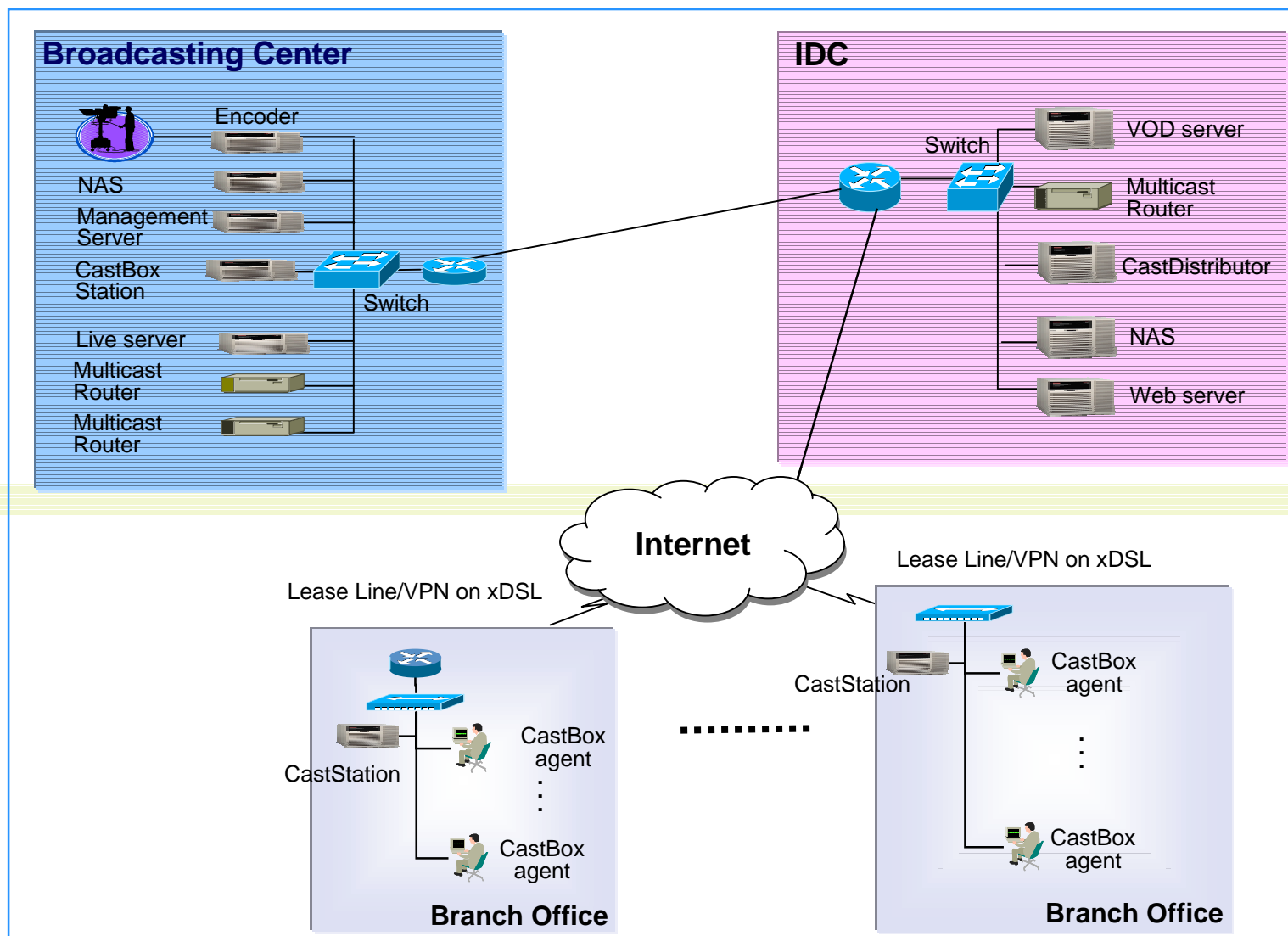


- ❑ Multicast Solution of Streaming Service
- ❑ Support both IP multicast and application-level multicast
- ❑ Multicast under a variety of Internet environment
 - xDSL, Cable, B&A, Ethernet, Leased Line

Configuration of Centralized IPTV System



Configuration of Distributed IPTV System



Live & Recorded Broadcasting

- ☐ Support real-time multicast (Live Multicast with Multicast Router)
- ☐ Live broadcasting service
 - ☐ Weekly meeting, Event
- ☐ Recorded broadcasting service
 - ☐ Interactive education



VOD Service

- ❑ High quality service with VOD services.



CMS (Contents Management System)

- ☐ Catalog Management
- ☐ Contents Distribution
- ☐ CastStation(Media server) Information Management
- ☐ Remote management at center (Registration, Status Monitoring)
- ☐ Active-Active backup.(24x7x365 service)
- ☐ Real-time/File Broadcasting/VOD Management
- ☐ Real-time/File Broadcasting Channel Management
- ☐ Schedule-based reliable high quality service

CMS (Contents Management System)

Content Register

컨텐츠 저장소 관리

저장소 홈: /usr/local/apache/htdocs/cds/upload/cds_files

저장소 **파일**

aa
dd
khpark
m1
m2
m3
m4
m5
test1
khpark2
min1
titamoon
tita

저장소: m3 **삭제**

파일	크기(byte)	수정날짜
<input type="checkbox"/> erin-300.wmv (erin-300.wmv)	6653934	2004/08/27 13:56:39
<input type="checkbox"/> 2 wide 1024k.wmv (2 wide 1024k.wmv)	80968160	2004/08/27 13:59:08
<input type="checkbox"/> erin-500.wmv (erin-500.wmv)	10210231	2004/08/27 14:02:14
<input type="checkbox"/> 2 wide 1024k.wmv (2 wide 1024k.wmv)	80968160	2004/08/27 14:05:00
<input type="checkbox"/> erin2-500.wmv (erin2-500.wmv)	10210231	2004/08/27 14:02:14
<input type="checkbox"/> erin3-500.wmv (erin3-500.wmv)	10210231	2004/08/27 14:02:14
<input type="checkbox"/> 222.wmv (222.wmv)	24895477	2001/11/13 02:48:26

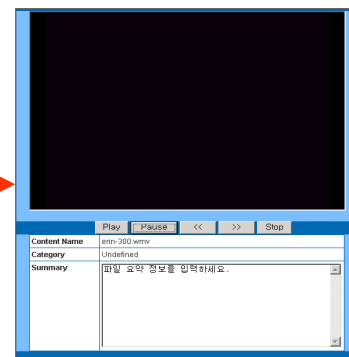
저장소 삭제

저장소 생성 **파일 업로드**

 찾아보기...

생성 >> **업로드 >>**

필수 항목



< Preview >

Content Information.

필수 입력 항목

컨텐츠 이름:

업로드 권한: Read only

키워드:

카테고리: **Select**

요약:

취소 **적용 >>**

< Meta Information >

CMS (Contents Management System)

Contents Distribution

프로젝트 관리

○ Idle ● Error(or No-Reply) ● Complete ● All Running

저장소 홈: /usr/local/apache/htdocs/cds/upload/cds_files

선택	이름	원본위치	복제위치	스케줄	스테이션	상태
<input type="checkbox"/>	uh	/aa	#방송 배포#	즉시	Lists	
<input type="checkbox"/>	dc	/aa	#방송 배포#	실시간	Lists	No Target
<input type="checkbox"/>	we	/test1	d:\tmp\we	실시간	Lists	No Target
<input type="checkbox"/>	er	/m2	#방송 배포#	실시간	Lists	No Target
<input checked="" type="checkbox"/>	gh	/m1	#방송 배포#	실시간	Lists	
<input checked="" type="checkbox"/>	tm3	/m3	#방송 배포#	실시간	Lists	
<input checked="" type="checkbox"/>	tm4	/m4	#방송 배포#	실시간	Lists	
<input checked="" type="checkbox"/>	tm5	/m5	#방송 배포#	실시간	Lists	
<input type="checkbox"/>	ccc	/m2	#방송 배포#	즉시	Lists	No Target
<input checked="" type="checkbox"/>	kkk	/m4	#방송 배포#	실시간	Lists	
<input checked="" type="checkbox"/>	min1	/min1	#방송 배포#	실시간	Lists	
<input checked="" type="checkbox"/>	tita	/titamoon	#방송 배포#	즉시	Lists	
<input checked="" type="checkbox"/>	moon	/tita	#방송 배포#	즉시	Lists	
<input checked="" type="checkbox"/>	gaz	/aa	#방송 배포#	실시간	Lists	

- × 저장소가 존재하지 않음.
- 회색(선택이 disable)의 경우, 방송용(Live/VOD)으로 사용중이므로 삭제할 수 없음.

삭제

새 프로젝트 >>

Register channel

방송 채널 등록

필수 입력 항목

채널이름 ☒ Live지원

멀티캐스트IP 범위 : 224.0.0.0 ~ 239.255.255.255

멀티캐스트 port 범위 : 32000 ~ 42000

요약정보

프로젝트 생방송서비
스는 '(Live)'가 포함된 프로젝트를 선택하십시오.

Live/백업 방송 ☒ CastBox 지원

Manager IP

Log Interval (s)

Bit rate kbps

NAT ☐ Yes

- 중요 Live방송을 하려면 채널명 입력시, 'Live지원'을 선택하시고, 'CastBox지원'의 내용을 입력하세요
- 녹화방송은 'Live지원'을 선택하지 마시고, 내용을 입력하세요
- 녹화방송시, 백업 방송도 함께 송출을 원하시면, 'CastBox지원'의 내용을 입력하세요

취소

다음 >>

CMS (Contents Management System)

Program Schedule

방송 프로그램 편성

- 채널이름 : @vm5
- 프로젝트 : tm5 (본문에서 : m5)
- 멀티캐스트 IP : 233.3.3.1
- 멀티캐스트 Port : 32333
- 요약정보 :
- 생성날짜 : 2004-09-21 21:09:08
- 수정날짜 : 2004-10-22 18:07:21
- 방송날짜 : 2004-11-1

선택	시간	콘텐츠	방송시간
	00:00:00		
	01:00:00		
<input type="checkbox"/>	02:18:00	(LIVE) - http://192.168.102.220:9999	00:30:00
	▷ 02:49:00		
	03:00:00		
<input type="checkbox"/>	04:00:00	(LIVE) - http://192.168.102.220:9999	00:10:00
	▷ 04:11:00		
	05:00:00		
	06:00:00		
	07:00:00		
	08:00:00		
<input type="checkbox"/>	09:15:00	(LIVE) - http://192.168.102.220:9999	00:10:00
	▷ 09:26:00		
<input type="checkbox"/>	09:50:00	(LIVE) - http://192.168.102.220:9999	00:10:00
	▷ 10:01:00		
<input type="checkbox"/>	10:05:00	(LIVE) - http://192.168.102.220:9999	00:10:00
	▷ 10:16:00		
<input type="checkbox"/>	11:35:00	(LIVE) - http://192.168.102.220:9999	00:10:00

Program Schedule (VOD)

VOD 방송 관리

프로젝트: tm3

[등록 콘텐츠]

선택	번호	제목	카테고리	미리보기
<input type="checkbox"/>	33	222.wmv	Undefined	
<input type="checkbox"/>	32	2erin-2000.wmv	Undefined	
<input type="checkbox"/>	22	2MI-2_wide_300k.wmv	Undefined	

등록 >>

삭제

[VOD 백업 스테이션]

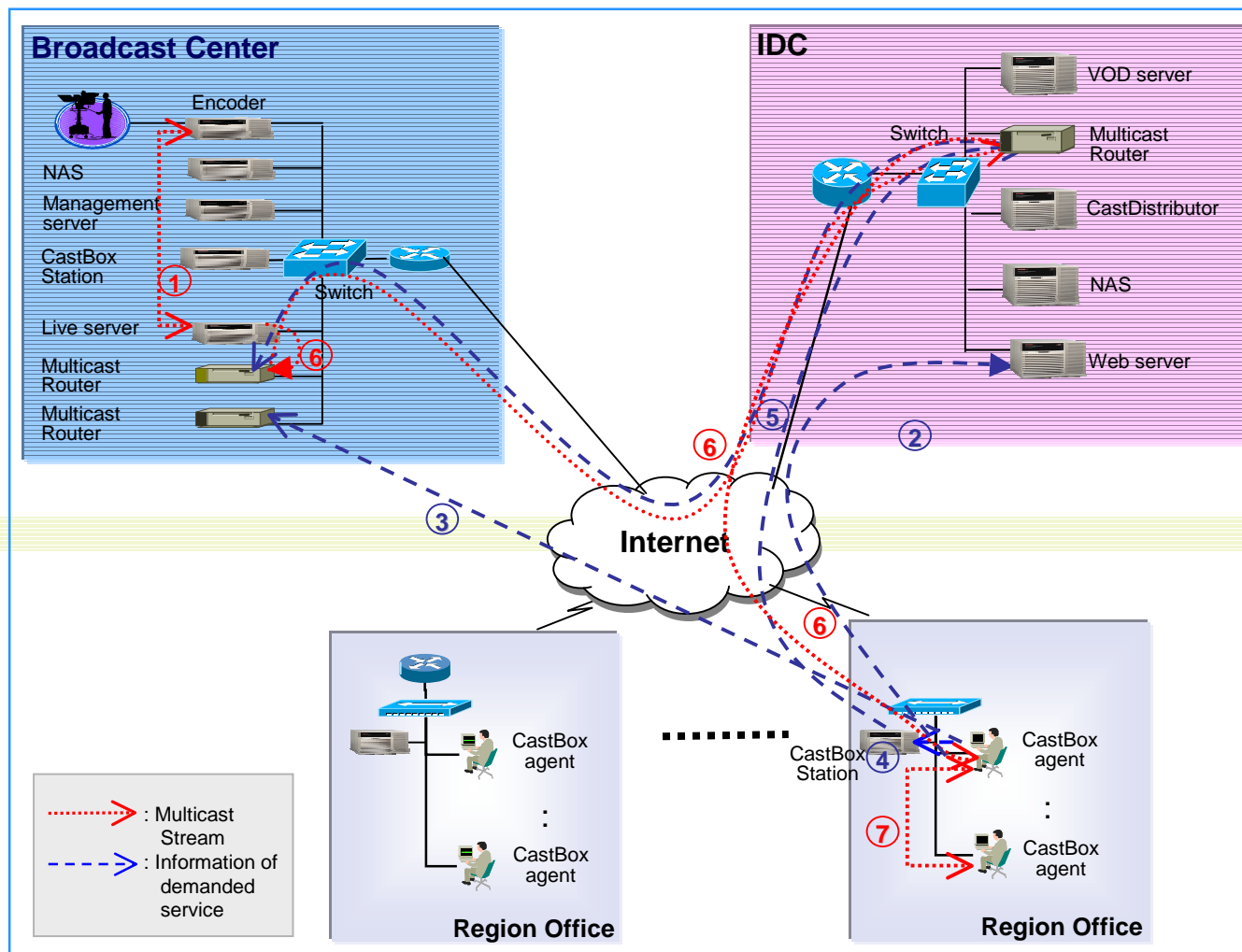
스테이션 이름	내부 IP	외부 IP
해당 서버가 없습니다.		

[서비스 스테이션]

스테이션 이름	내부 IP	외부 IP
ms_P	192.168.101.82	192.168.101.82

Content Filename	Content Name	Category
VOD] 222.wmv	222.wmv	
2erin-1000.wmv	2erin-1000.wmv	
2erin-1500.wmv	2erin-1500.wmv	
VOD] 2erin-2000.wmv	2erin-2000.wmv	
2erin-3000.wmv	2erin-3000.wmv	
2erin-500.wmv	2erin-500.wmv	
2erin-700.wmv	2erin-700.wmv	오락/수험 게임/
2MI-2_wide_1024k.wmv	2MI-2_wide_1024k.wmv	
VOD] 2MI-2_wide_300k.wmv	2MI-2_wide_300k.wmv	
2MI-2_wide_750k.wmv	2MI-2_wide_750k.wmv	업무관련/
VOD] 는 이미 선택된 콘텐츠입니다.		
Cancel		

Live Broadcasting

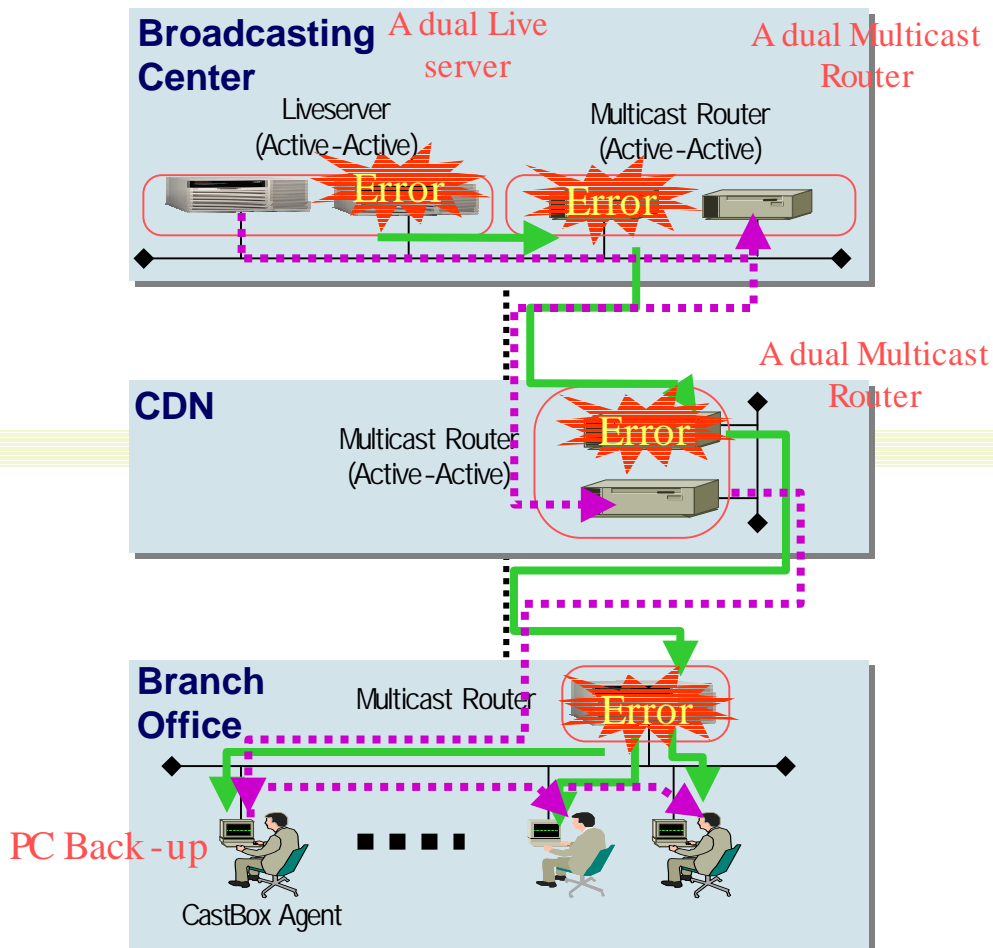


□ The various channel quality: 300K, 500K, 700K

Live Broadcasting

Back-up

 Normal route
 Back-up route

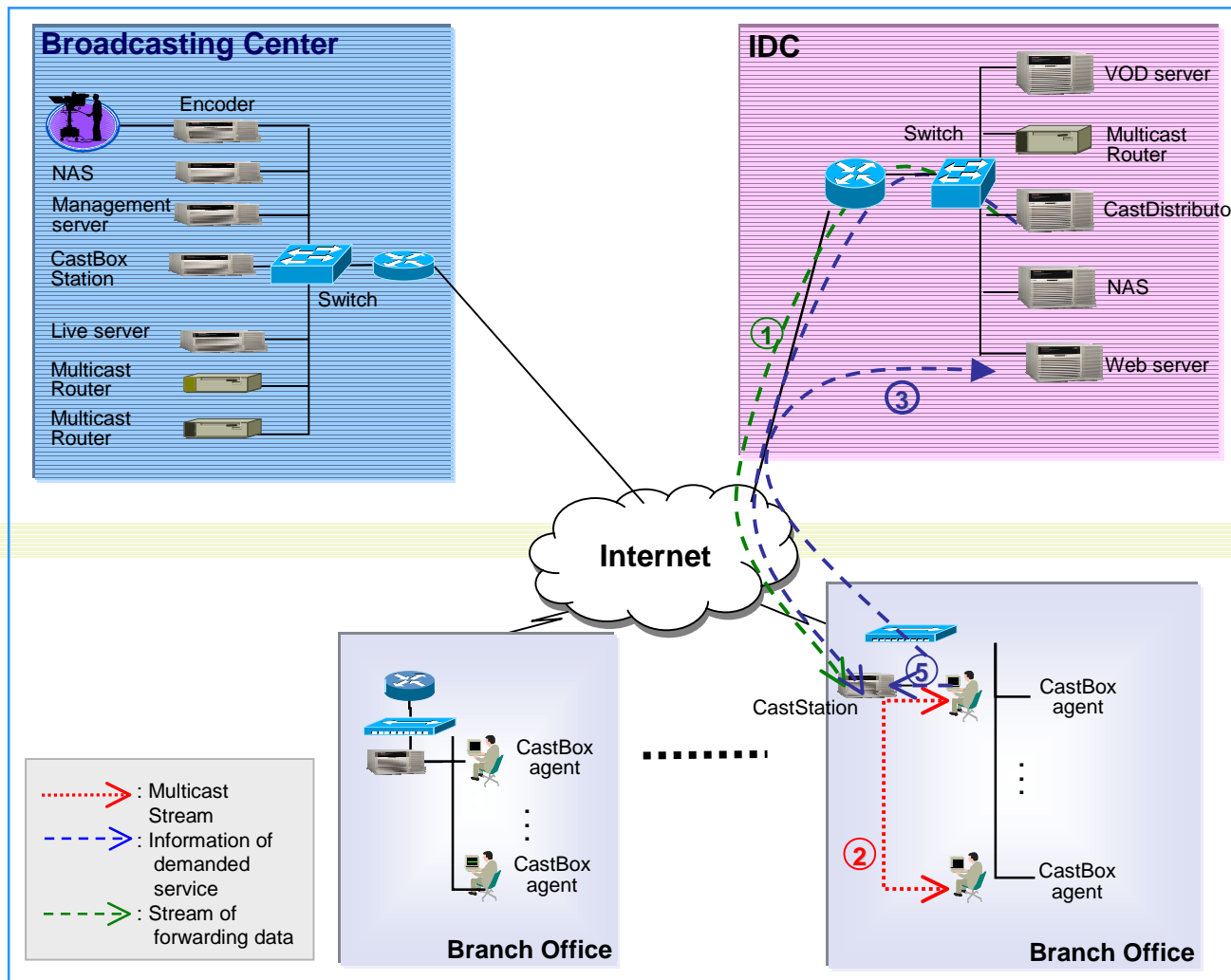


- A error of live server in broadcasting center
- A error of Multicast Router in broadcasting center
- A error of multicast router in CDN
- A error of Multicast router in branch office

Support a perfect back-up at a dual live server, a dual multicast router and the client PC

Support a continuous service

Recorded Broadcasting



□ Channel Quality: 1 ~ 1.5Mbps

Recorded Broadcasting

● Back-up

→ Normal route
→ Back-up route

Broadcasting Center

Live server
(Active-Active)

Multicast Router
(Active-Active)

CDN

Multicast Router
(Active-Active)

Branch Office

CastStation

Error

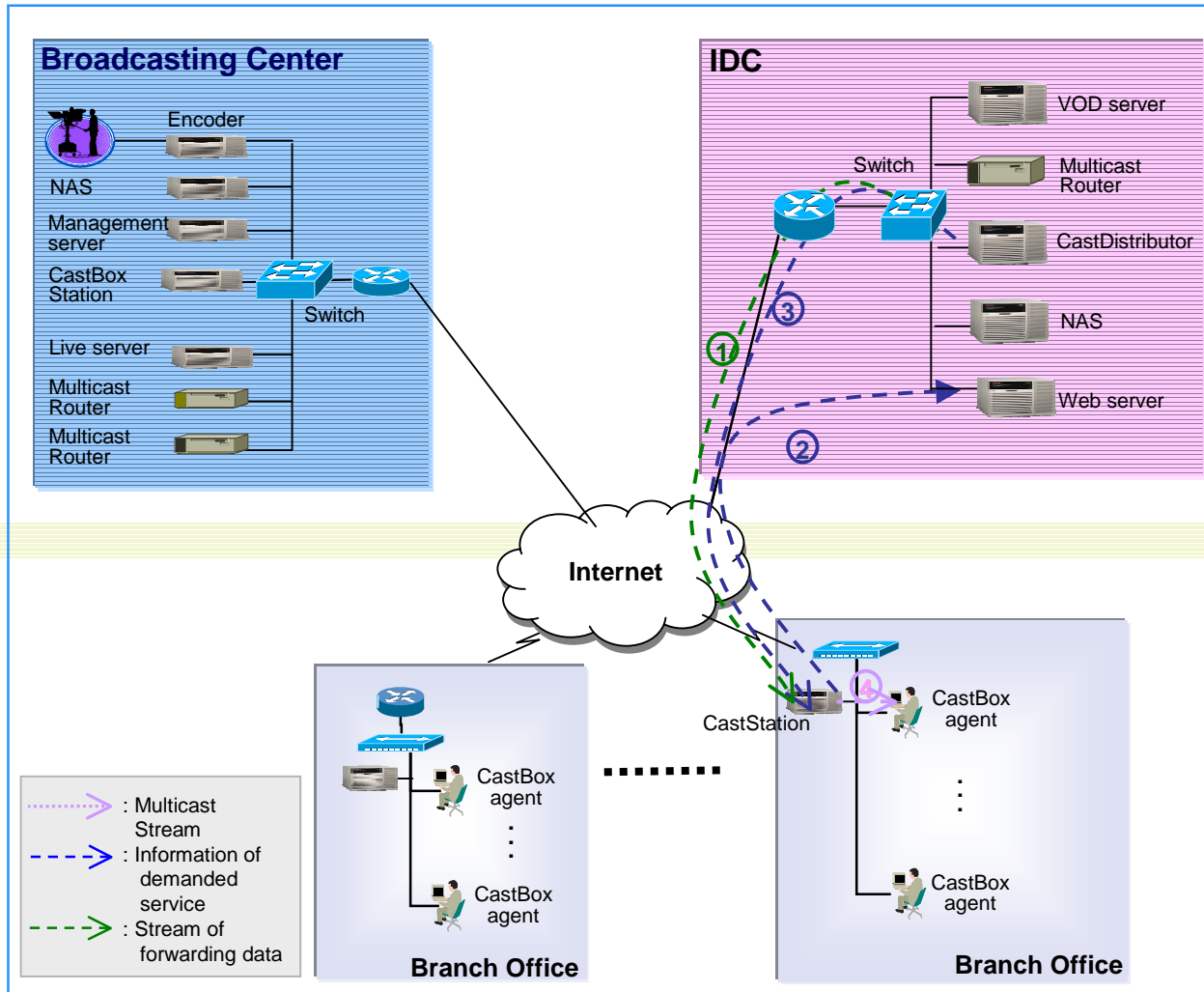
CastBox Agent

- A error of CastStation in branch office

Support a perfect
back-up at **the Client PC**

Support a continuous
Service

VOD Service



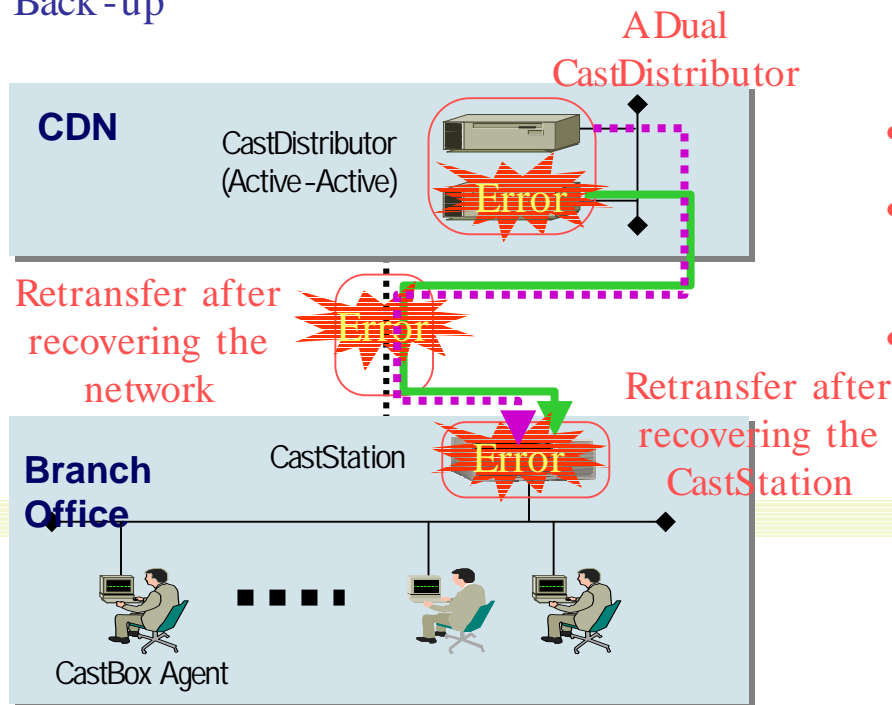
□ Channel Quality: 1 ~ 1.5Mbps

CMS (Contents Management System)



Back - up

 Normal route
 Back-up route



- A error of CastDistributor in CDN
- A error of Internet network in branch office (In a short time)
- Branch Office CastStation Error



- Support a perfect back - up at a dual CastDistributor in CDN , Support continuous service
- Complete to transfer a data without a loss for recovering a **Network and CastStation** In a short time



..... Stop to transfer

———— Complete to transfer a data continuously

Case Studies with examples

Concluding Remarks

- ☐ **Convergence of broadcasting and communication for enterprise environment is coming.**
- ☐ **IPTV services include (live and recorded) broadcasting and VOD.**
- ☐ **IPTV services should match broadcast quality service to compete with the satellite.**
- ☐ **IPTV systems should add various technologies to enhance unreliable and best-effort services:**
 - Reliable overlay multicast
 - Dual systems
 - Contents distribution policy