

IPTV System for Enterprise

A series of seven green dots of varying sizes arranged in a descending arc from the top right towards the center of the slide.

2005. 2. 22

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CONTENTS

□ IPTV System for Enterprise

- Overview
- Services
- Application

Introduction of IPTV

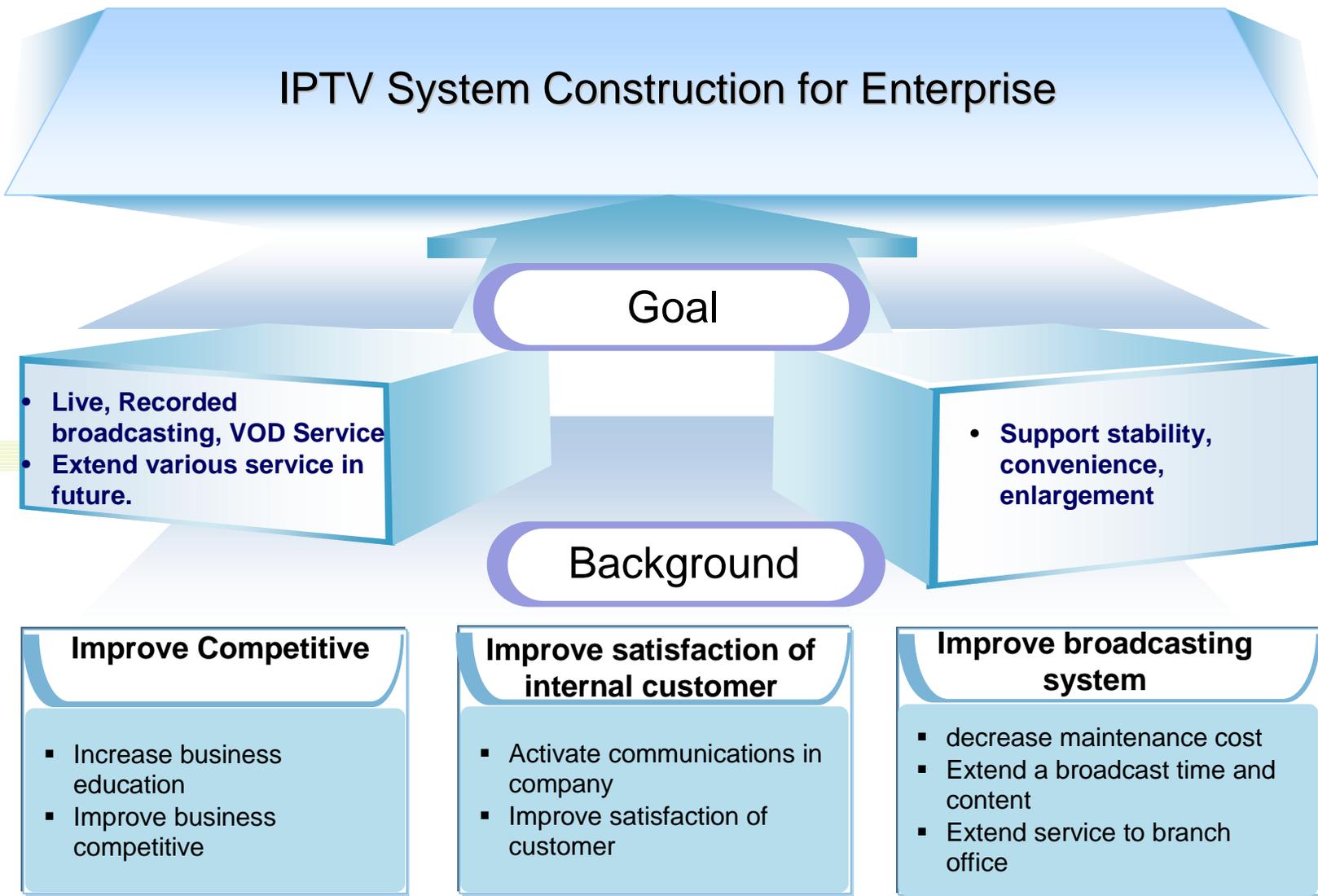
□ Definition of Internet Protocol TeleVision (IPTV)

- 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



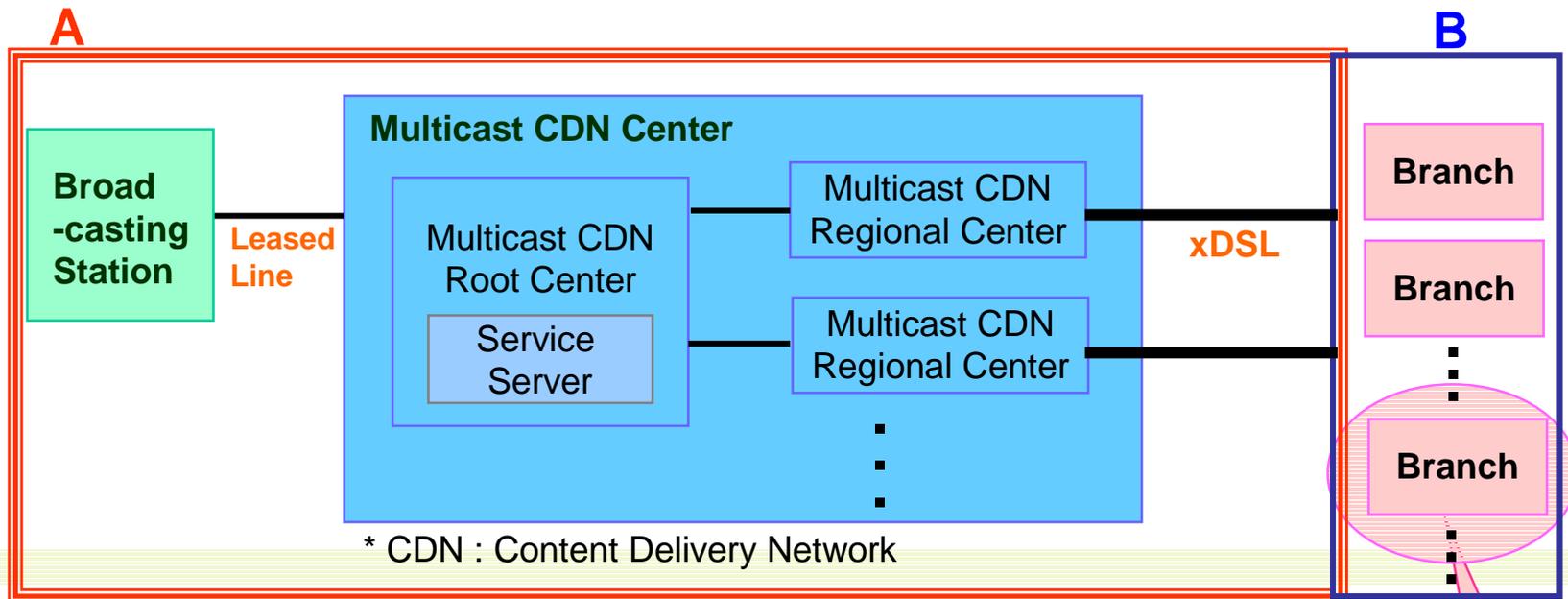
Challenges of Enterprise IPTV systems

- 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

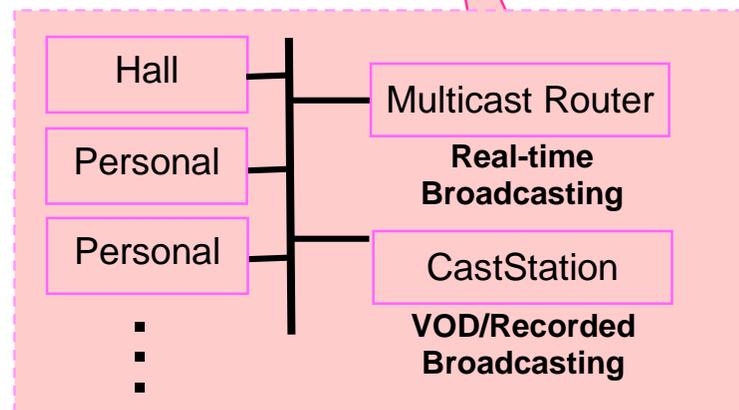
- ❑ **Distributed offices around country**
 - Stable Equipment in offices controlled by remote center
- ❑ **Best-effort Internet**
 - TCP streaming
 - Reliable Multicast feature
 - Contents distribution to edge network
- ❑ **Broadcasting quality service required**
 - Encoding format with high compression
 - 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

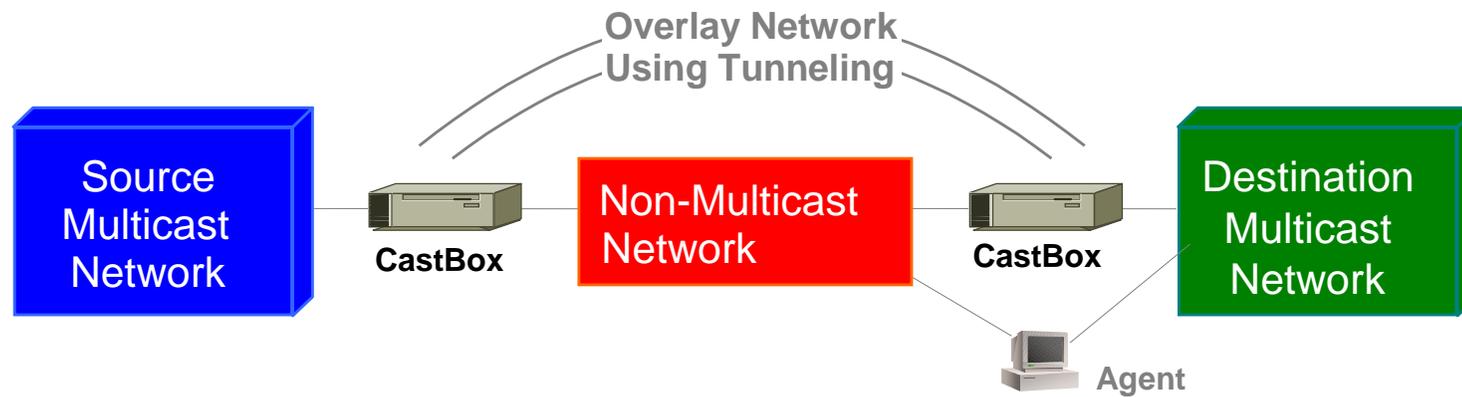


A : Multicast CDN Service
 - Low traffic at middle mile network

B : Multicast Router, CastStation at branch
 - Low traffic at branch network

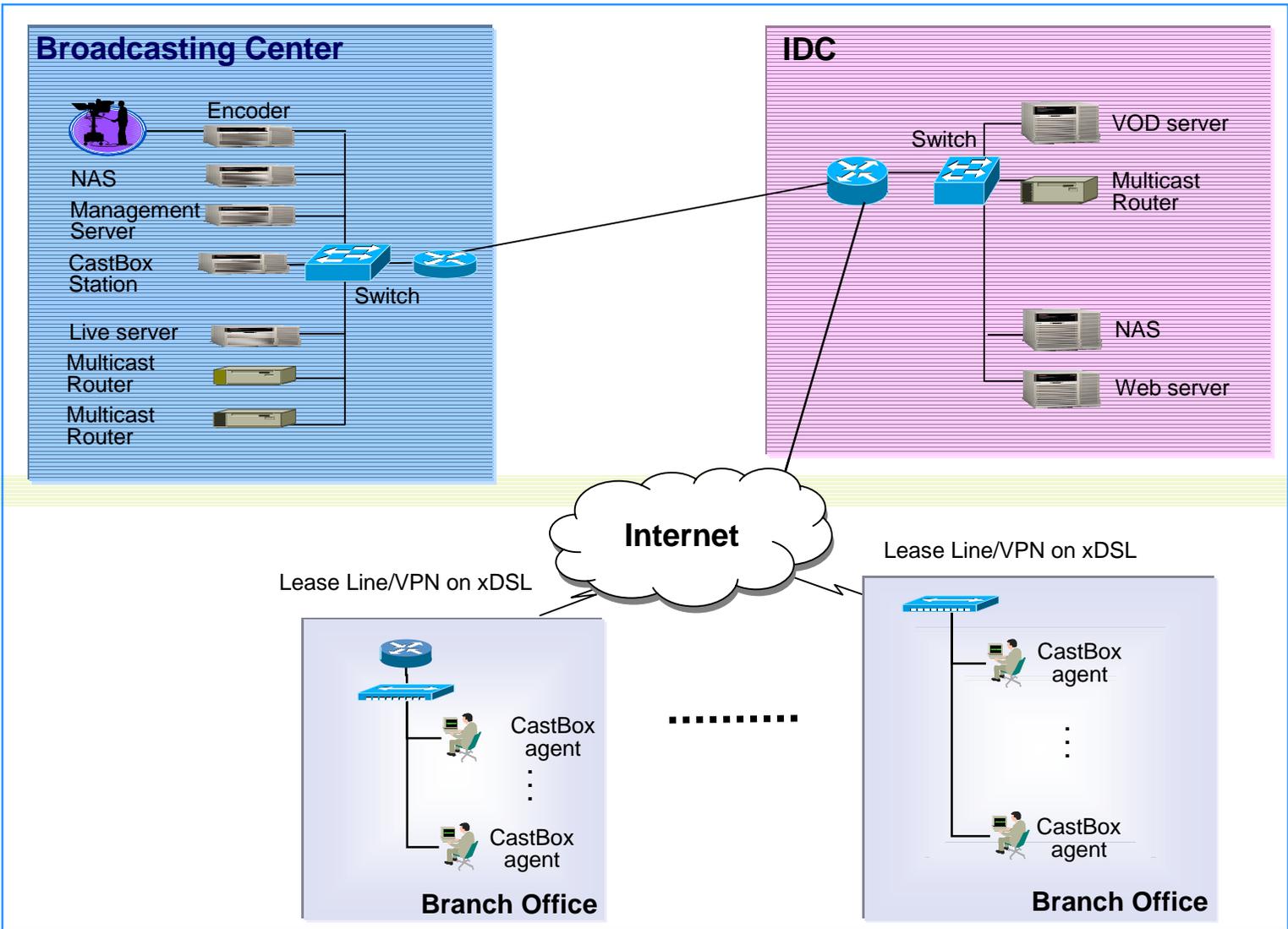


Introduction of Multicast

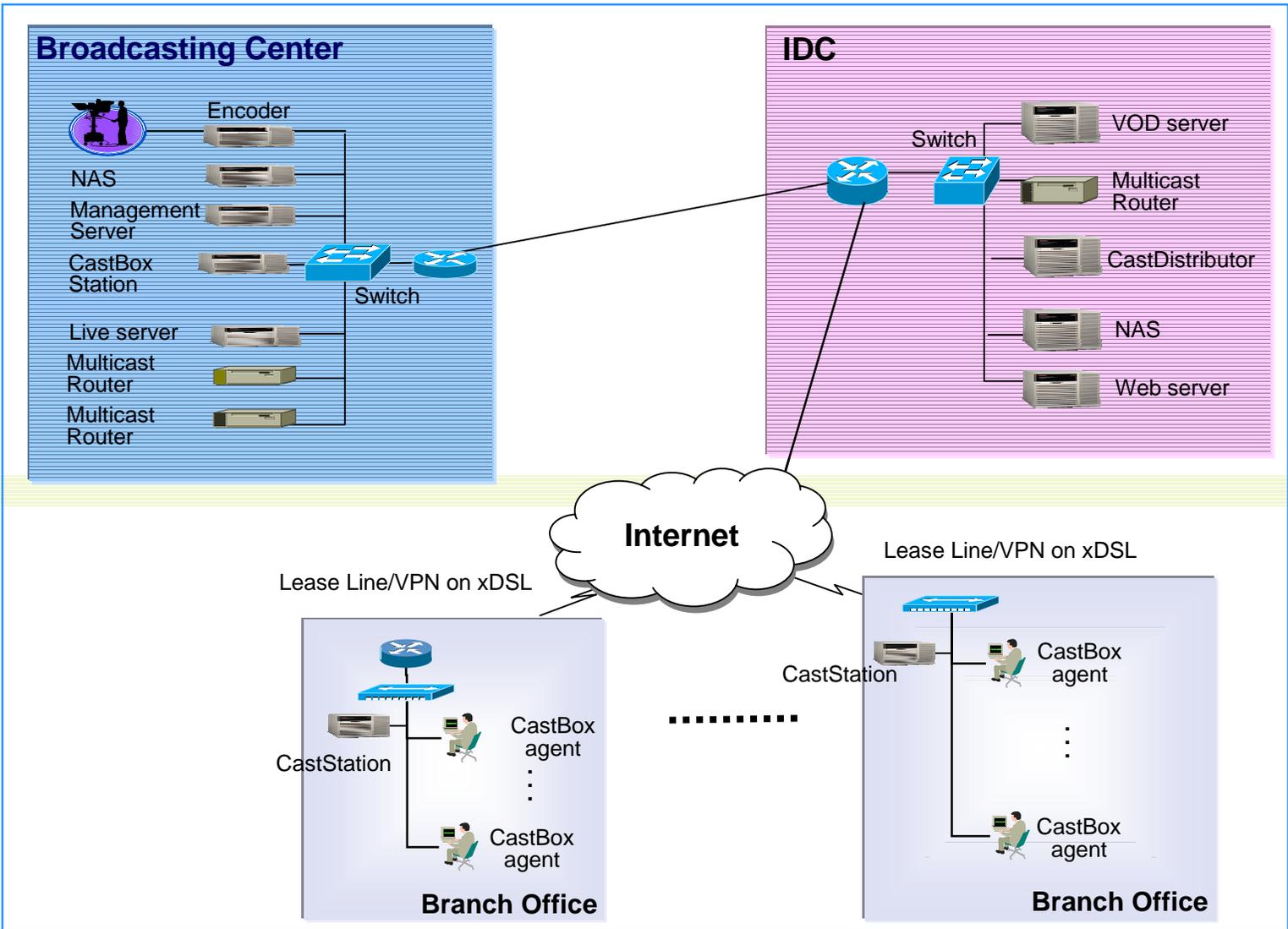


- ❑ Multicast Solution of Streaming Service
- ❑ Support both IP multicast and application-level multicast
- ❑ Multicast under a variety of Internet environment
 - xDSL, Cable, B&A, Ethernet, Leased Line

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	<table border="1"> <thead> <tr> <th>파일</th> <th>크기(byte)</th> <th>수정날짜</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> erin-300.wmv (erin-300.wmv)</td> <td>6653934</td> <td>2004/08/27 13:56:39</td> </tr> <tr> <td><input type="checkbox"/> Ml-2 wide_1024k.wmv (Ml-2 wide_1024k.wmv)</td> <td>80968160</td> <td>2004/08/27 13:59:08</td> </tr> <tr> <td><input type="checkbox"/> erin-500.wmv (erin-500.wmv)</td> <td>10210231</td> <td>2004/08/27 14:02:14</td> </tr> <tr> <td><input type="checkbox"/> 2Ml-2 wide_1024k.wmv (2Ml-2 wide_1024k.wmv)</td> <td>80968160</td> <td>2004/08/27 14:05:00</td> </tr> <tr> <td><input type="checkbox"/> erin2-500.wmv (erin2-500.wmv)</td> <td>10210231</td> <td>2004/08/27 14:02:14</td> </tr> <tr> <td><input type="checkbox"/> erin3-500.wmv (erin3-500.wmv)</td> <td>10210231</td> <td>2004/08/27 14:02:14</td> </tr> <tr> <td><input type="checkbox"/> 222.wmv (222.wmv)</td> <td>24895477</td> <td>2001/11/13 02:48:26</td> </tr> </tbody> </table>	파일	크기(byte)	수정날짜	<input type="checkbox"/> erin-300.wmv (erin-300.wmv)	6653934	2004/08/27 13:56:39	<input type="checkbox"/> Ml-2 wide_1024k.wmv (Ml-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"/> 2Ml-2 wide_1024k.wmv (2Ml-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
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m5																									
test1																									
khpark2																									
min1																									
titamoon																									
tita																									

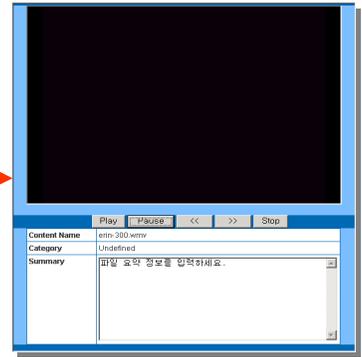
저장소 삭제

저장소 생성 파일 업로드

생성 >> 업로드 >>

필수 항목

찾아보기...



< Preview >

Content Information.

필수 입력항목

컨텐츠 이름: erin-300.wmv

업로드 권한: erin-300.wmv Read only

키워드: []

카테고리: [Undefined] Select

요약: 파일 요약 정보를 입력하세요.

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="radio"/> <input type="radio"/> <input type="radio"/>
<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="radio"/> <input type="radio"/> <input type="radio"/>
<input checked="" type="checkbox"/>	tm3	/m3	#방송 배포#	실시간	Lists	<input checked="" type="radio"/> <input type="radio"/> <input type="radio"/>
<input checked="" type="checkbox"/>	tm4	/m4	#방송 배포#	실시간	Lists	<input checked="" type="radio"/> <input type="radio"/> <input type="radio"/>
<input checked="" type="checkbox"/>	tm5	/m5	#방송 배포#	실시간	Lists	<input checked="" type="radio"/> <input type="radio"/> <input type="radio"/>
<input type="checkbox"/>	ccc	/m2	#방송 배포#	즉시	Lists	No Target
<input checked="" type="checkbox"/>	kkk	/m4	#방송 배포#	실시간	Lists	<input type="radio"/> <input type="radio"/> <input type="radio"/>
<input checked="" type="checkbox"/>	min1	/min1	#방송 배포#	실시간	Lists	<input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/>
<input checked="" type="checkbox"/>	tita	/tita moon	#방송 배포#	즉시	Lists	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/>
<input checked="" type="checkbox"/>	moon	/tita	#방송 배포#	즉시	Lists	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/>
<input checked="" type="checkbox"/>	gaz	/aa	#방송 배포#	실시간	Lists	<input checked="" type="radio"/> <input type="radio"/> <input type="radio"/>

- × 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

Live지원

채널이름

멀티캐스트IP 범위 : 224.0.0.0 ~ 239.255.255.255

멀티캐스트 port 범위 : 32000 ~ 42000

요약정보

프로젝트 생방송서비스는 '(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 (본문예제 : 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	

[VOD 백업 스테이션]

스테이션 이름	내부 IP	외부 IP
해당 서버가 없습니다.		

[서비스 스테이션]

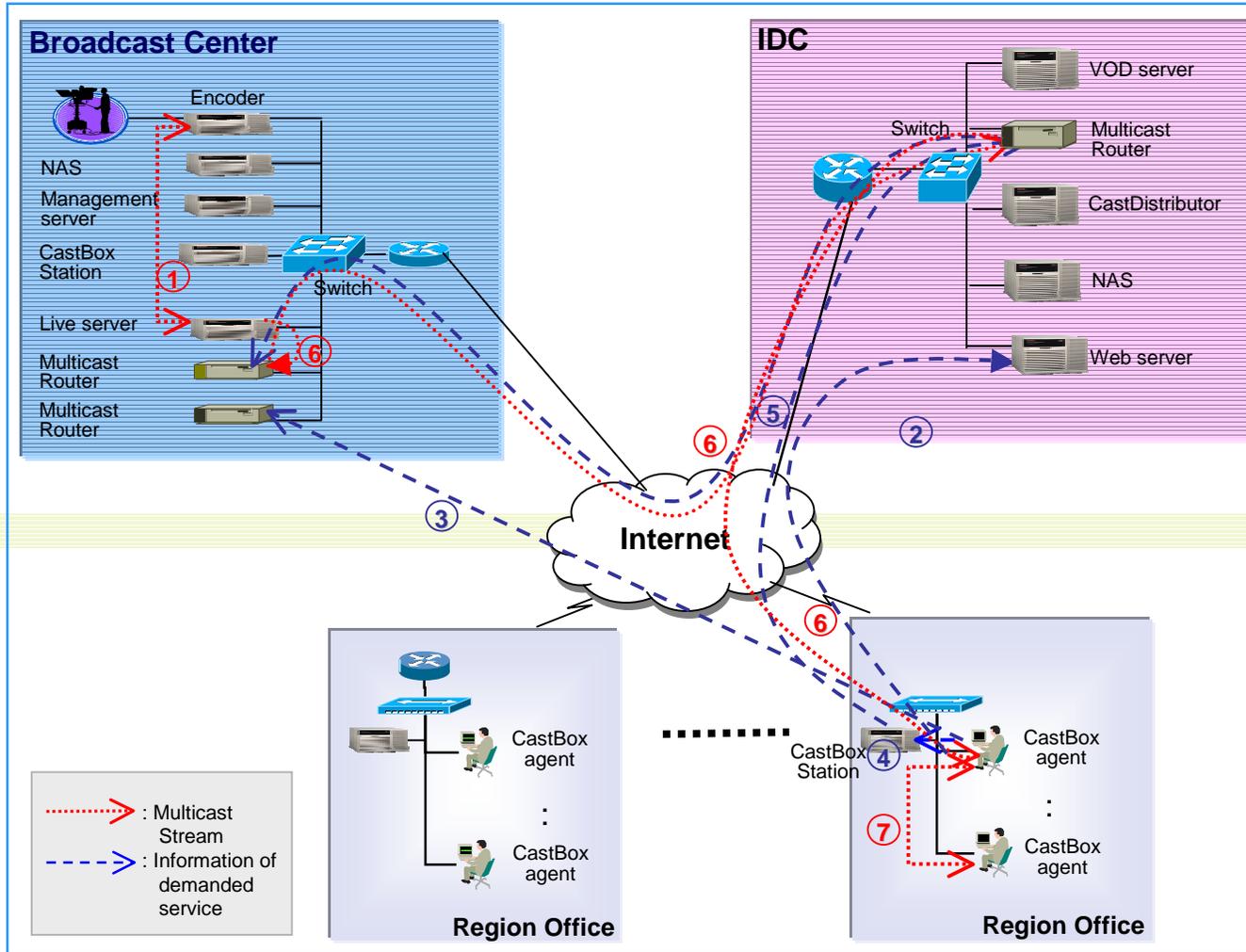
스테이션 이름	내부 IP	외부 IP
ms_P	192.168.101.82	192.168.101.82



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	오락수영 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 선정된 콘텐츠 입니다.

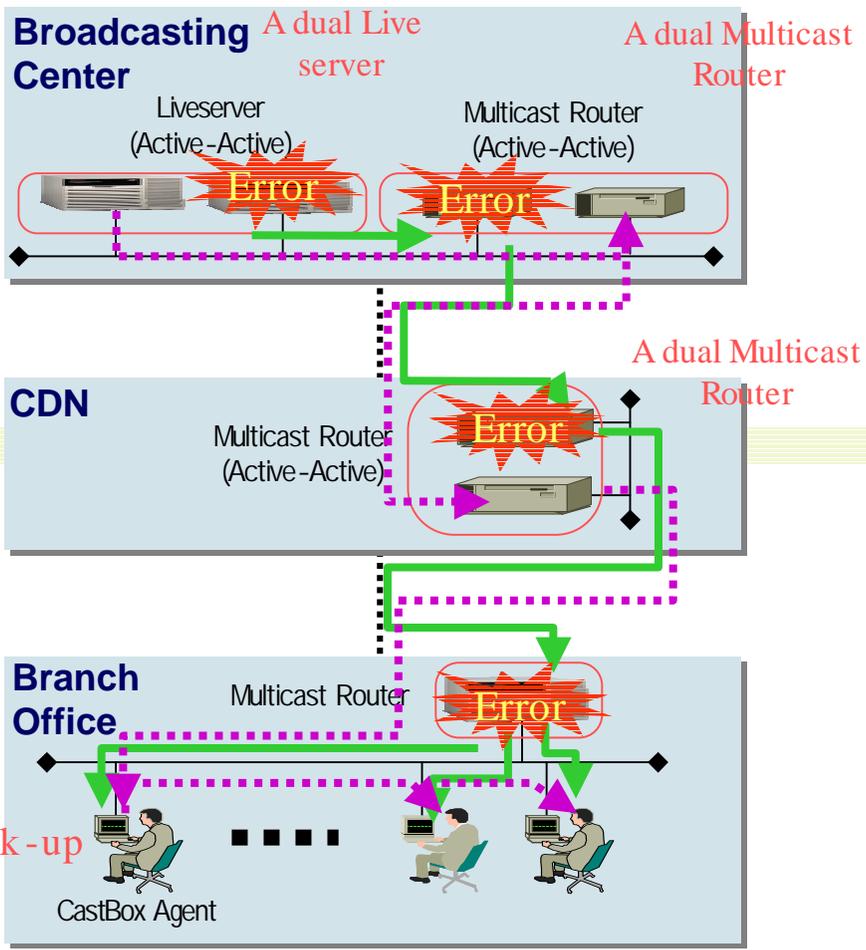
Live Broadcasting



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

Live Broadcasting

Back-up



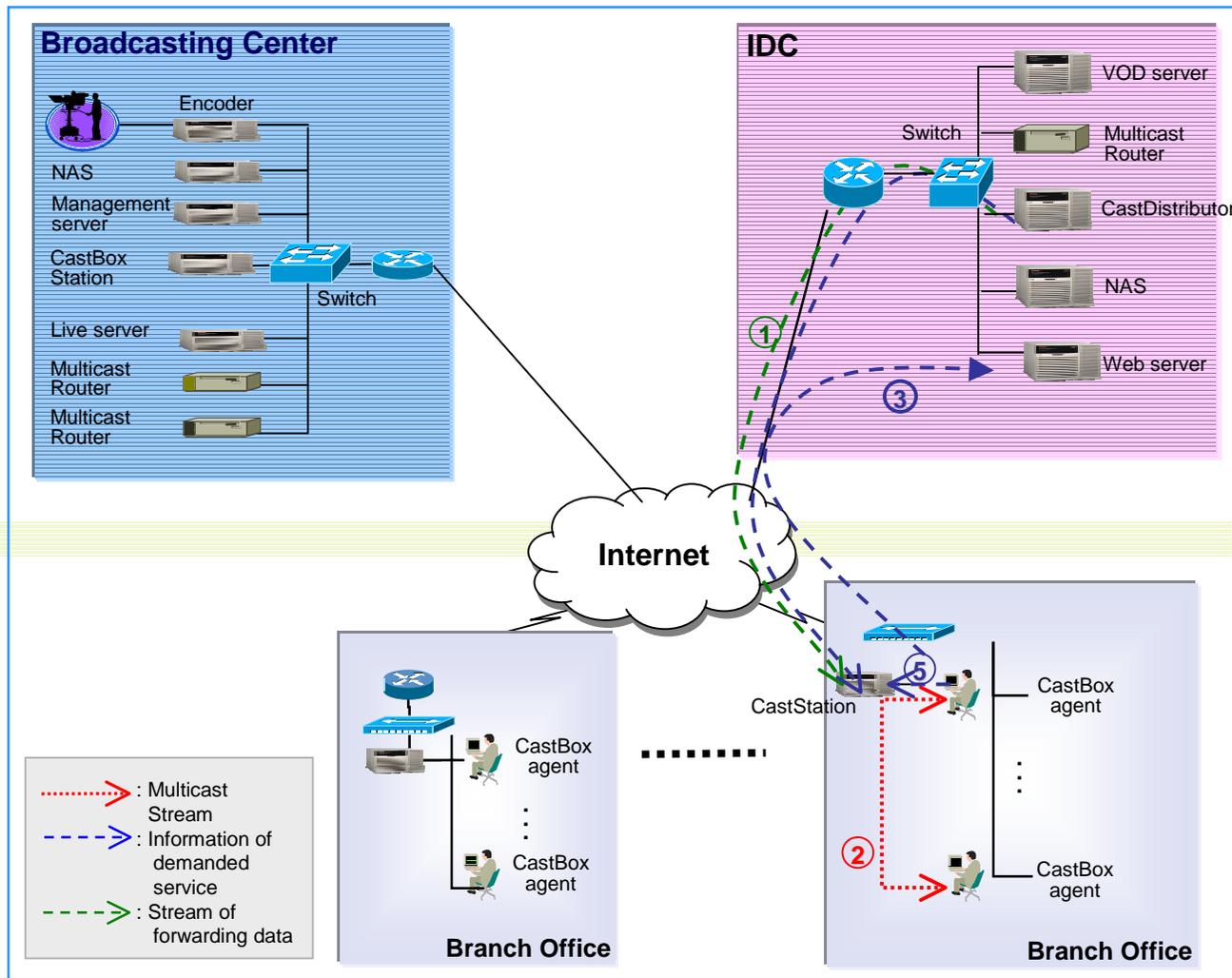
- A error of live server in broadcasting center
- A error of Multicast Router in broadcasting center
- A error of multicast router in CDN
- A error of Multicast router in branch office



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

Support a continuous service

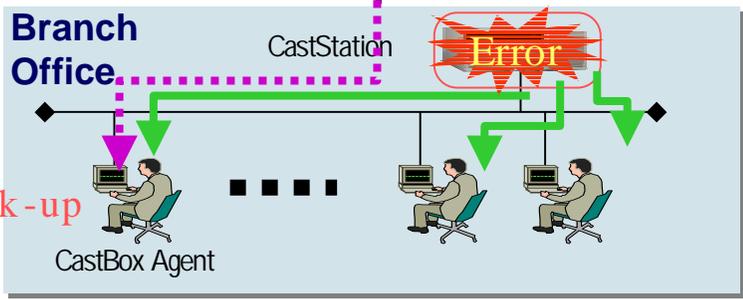
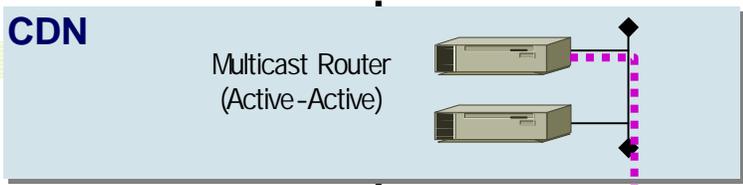
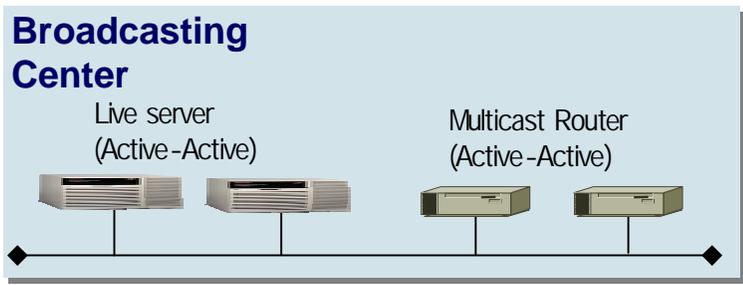
Recorded Broadcasting



□ Channel Quality: 1 ~ 1.5Mbps

Recorded Broadcasting

Back-up



- A error of CastStation in branch office

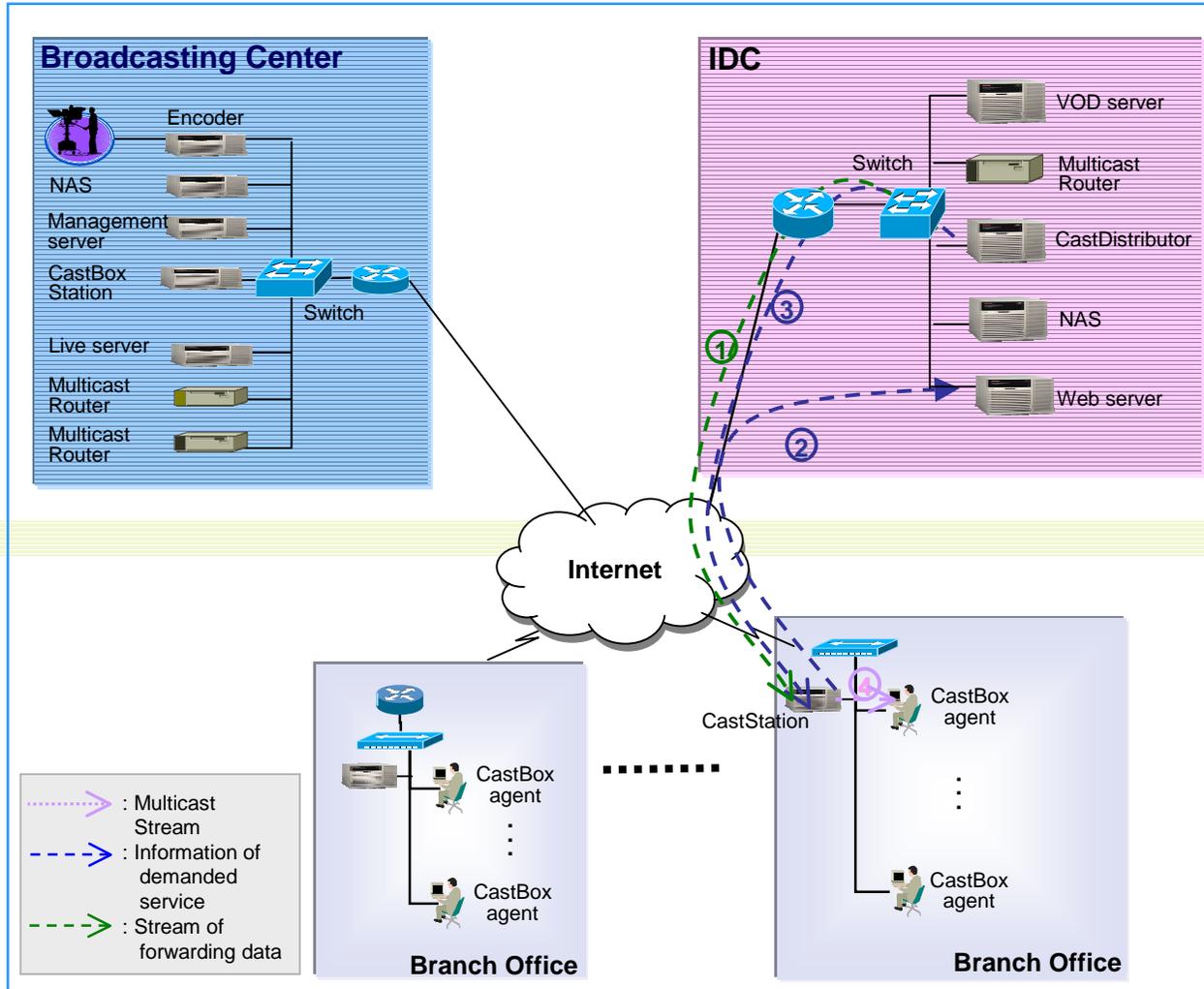


Support a perfect back-up at the **Client PC**

Support a continuous Service

PC Back-up

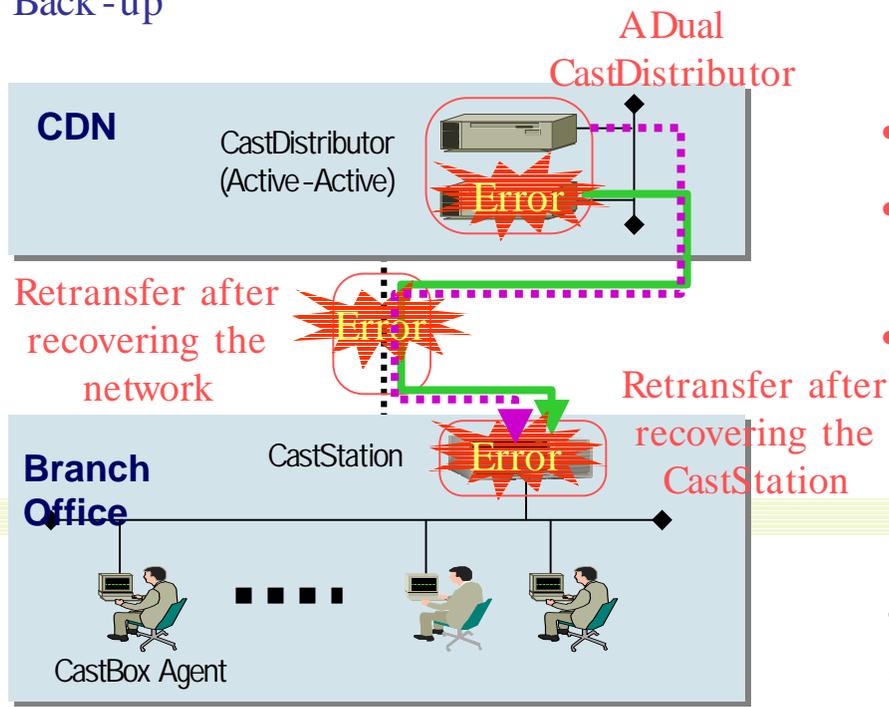
VOD Service



□ Channel Quality: 1 ~ 1.5Mbps

CMS (Contents Management System)

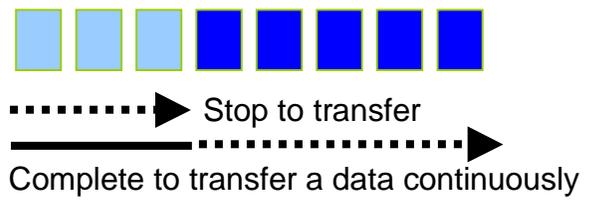
Back-up



- 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



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**