

What can KDDI do for Broadcasters ?

KDDI

Media Business Department

1. Purpose of this presentation

What can KDDI do for broadcasters ?

KDDI would like to present 3 (three) solutions for Broadcasters as answer to this questions,

1. KDDI will offer the most reliable video transmission network to Broadcasters.

KDDI has developed the brand new trans Siberian fiber network between Europe and Japan via RJCN (Russia Japan Cable Network). KDDI plan to develop the extremely reliable and fully redundant video transmission services over RJCN.

2. KDDI will have a lot of line ups of economical video transmission services for Broadcasters.

KDDI plan to provide more economical options for Video transmission services, such as file based video service, Video services on Layer 2 and Layer 3 networks.

3. KDDI will offer more convenient solutions for Broadcasters

KDDI provides the best solutions for Broadcasters with combination of its ample options of video transmission services, such as SDH based, VPN type or File based services to satisfy all the aspect of the requirements, including qualities, cost reduction or utilities. KDDI also provides the end to end services with partners in all over the world.

2. Overview of KDDI TV transmission services (present)

With more than 40 years of delivering mission-critical content for broadcasters, KDDI is the leader in providing the TV transmission solutions!!



KDDI Yamaguchi E/S

Satellite	Band	Direction	Dia
IS-904	C	T/R	18m
IS-902	C	R	34m
IS-10	C	R	9.3m
IS-8	C/Ku	T/R	7.2m
IS-5	C	R	4.5m
THAICOM-5	C	R	4.5m
AsiaSat 2	C	T/R	9.2m
AsiaSat 3S	C/Ku	R	4.5m
NSS-9	C	R	9.2m



< Features >

• One stop operation

KDDI ITC Tokyo manages international and the domestic both of service 7x24.

• World wide connectivity

KDDI can reach the world anywhere via global fiber and satellite network

**KDDI ITC Tokyo
(7x24 Operation)**

**International Fiber
services**

Beijing

Seoul

US / Europe

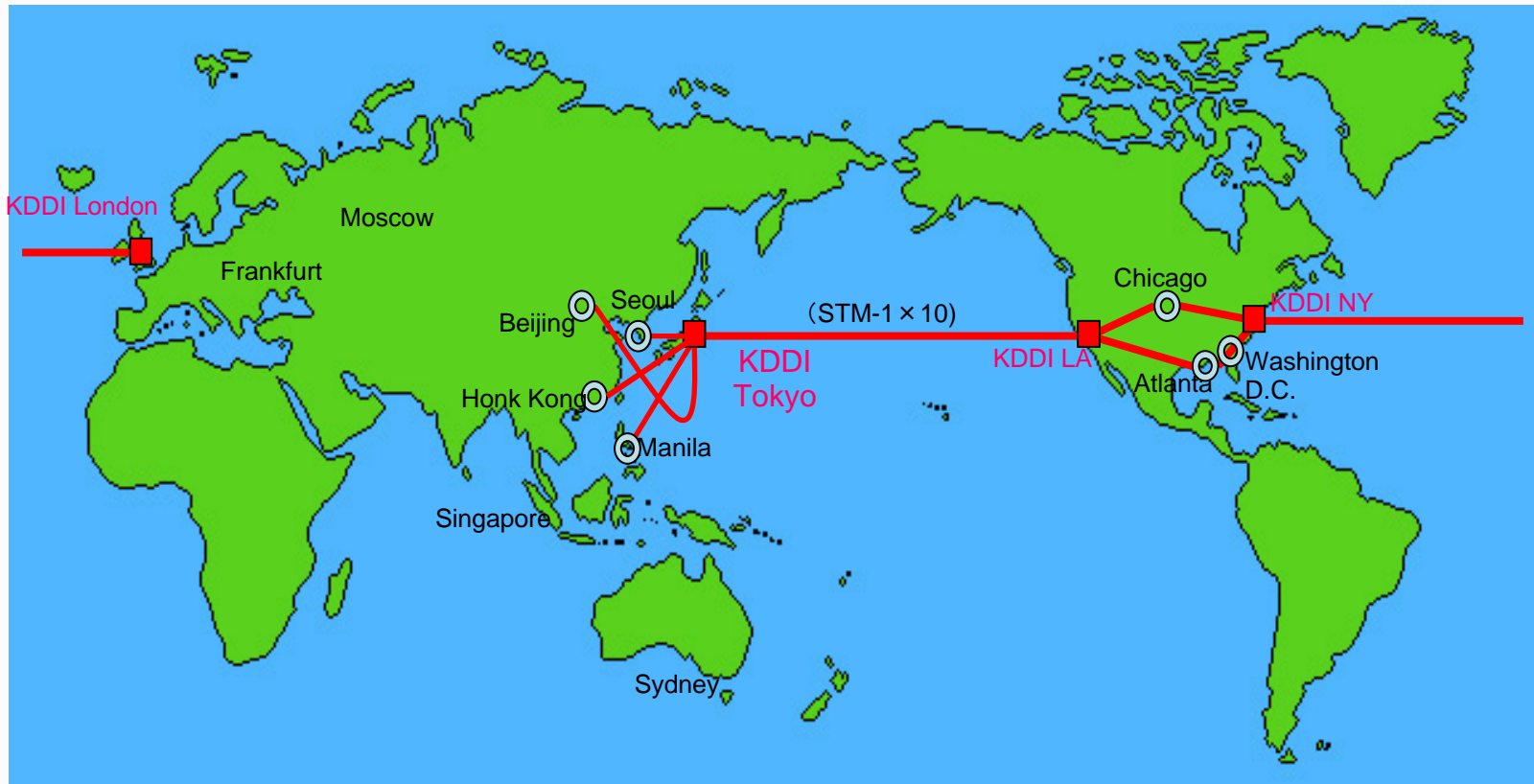
**CWDM
(Uncompressed NW)**

- Broadcasters -

KDDI has its own access fiber network to all the major broadcasters in metropolitan Tokyo area.

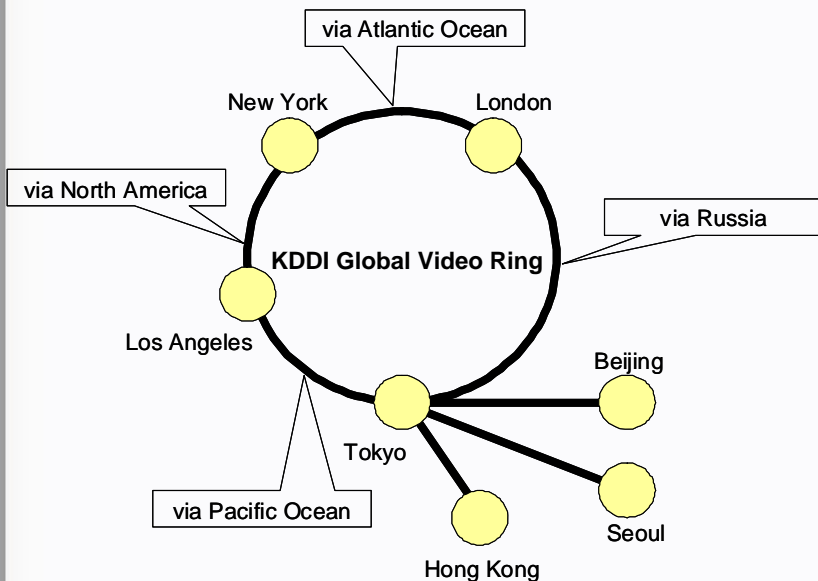
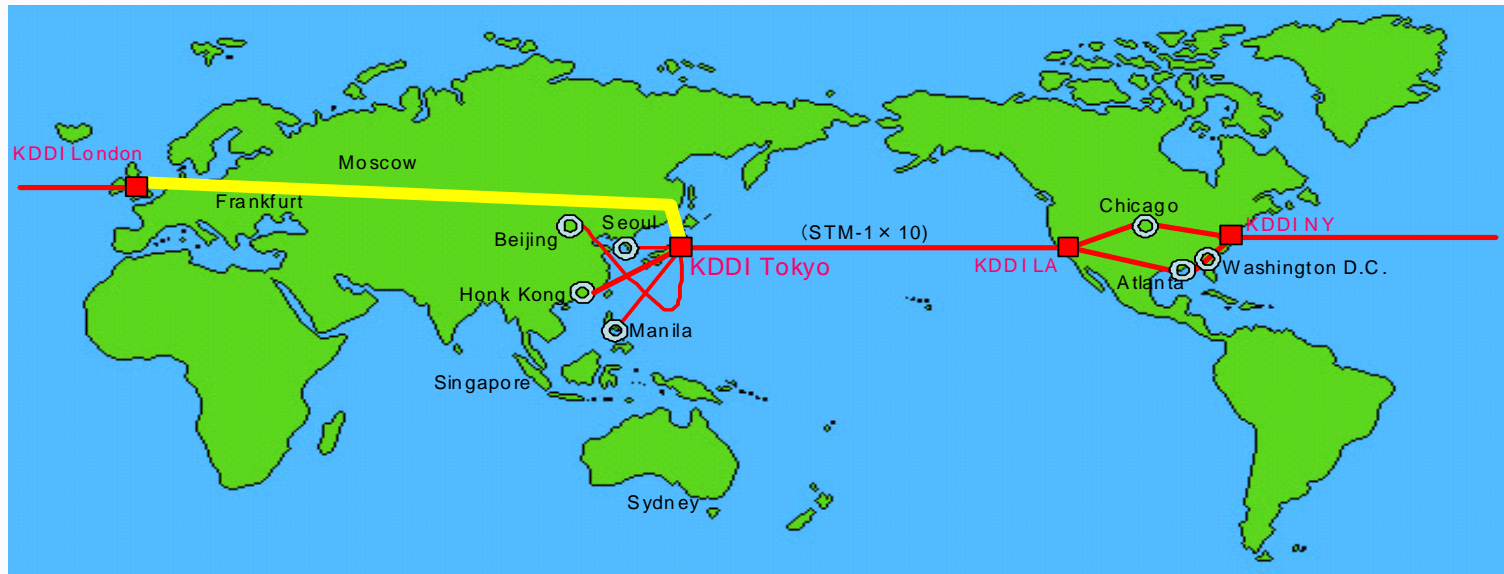
**KDDI
Domestic
Network**

3. Fiber for Video Services (present)



POP : Tokyo , Los Angeles , New York , London.

4. KDDI Global Video Ring



1. Fiber video transmission network over fully redundant ring network surrounding the world.

2. Tokyo, New York, Los Angeles and London are the access points for full time and occasional video transmission services provided by KDDI.

3. End to end services including the local access networks are available through the partnerships with foreign providers.

5-1. TEA & RJCN



RJCN (Russia Japan Cable Network) Overview

- | | |
|---------------------|--|
| 1. Network | Two routes between Japan and Russia (Self-healing) |
| 2. Capacity | 640Gbps |
| 3. Commencement | September 2008 |
| 4. Landing Stations | Japan: KDDI Naoetsu (Niigata)
Russia: Rostelecom Nakhodka |
| 5. Cable Owners | KDDI (Japan), Rostelecom (Russia) |

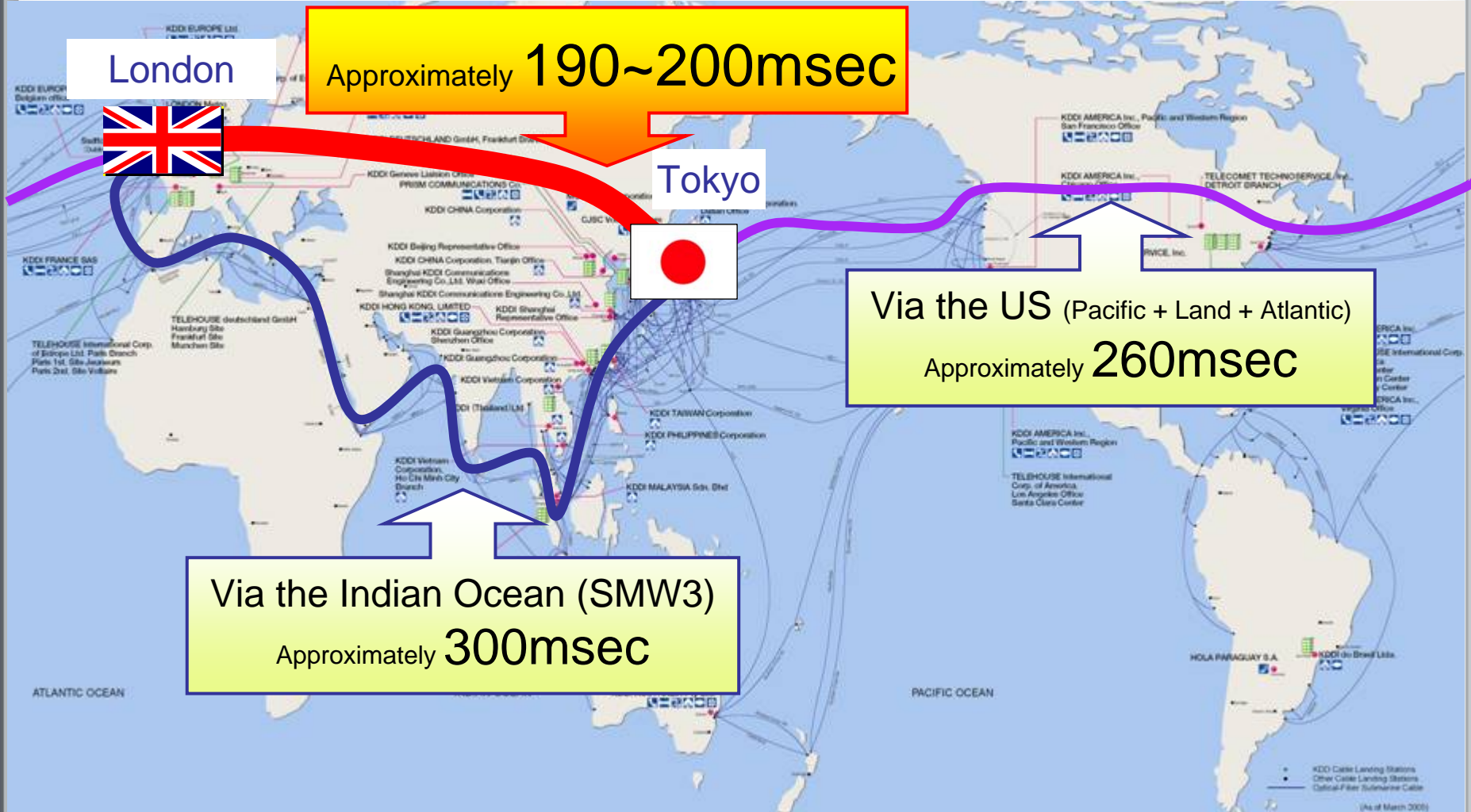
RJCN connects into Rostelecom's overland route
 (Transit-Europe-Asia, TEA)
 Low latency connections between Europe & Japan

5-2. TEA & RJCN

Russia-Japan Cable Network + Transit-Europe-Asia Cable



Shortest route between Europe & Japan
First ring cable between Russia & Japan



London



Approximately **190~200msec**

Tokyo



Via the US (Pacific + Land + Atlantic)
Approximately **260msec**

Via the Indian Ocean (SMW3)
Approximately **300msec**

ATLANTIC OCEAN

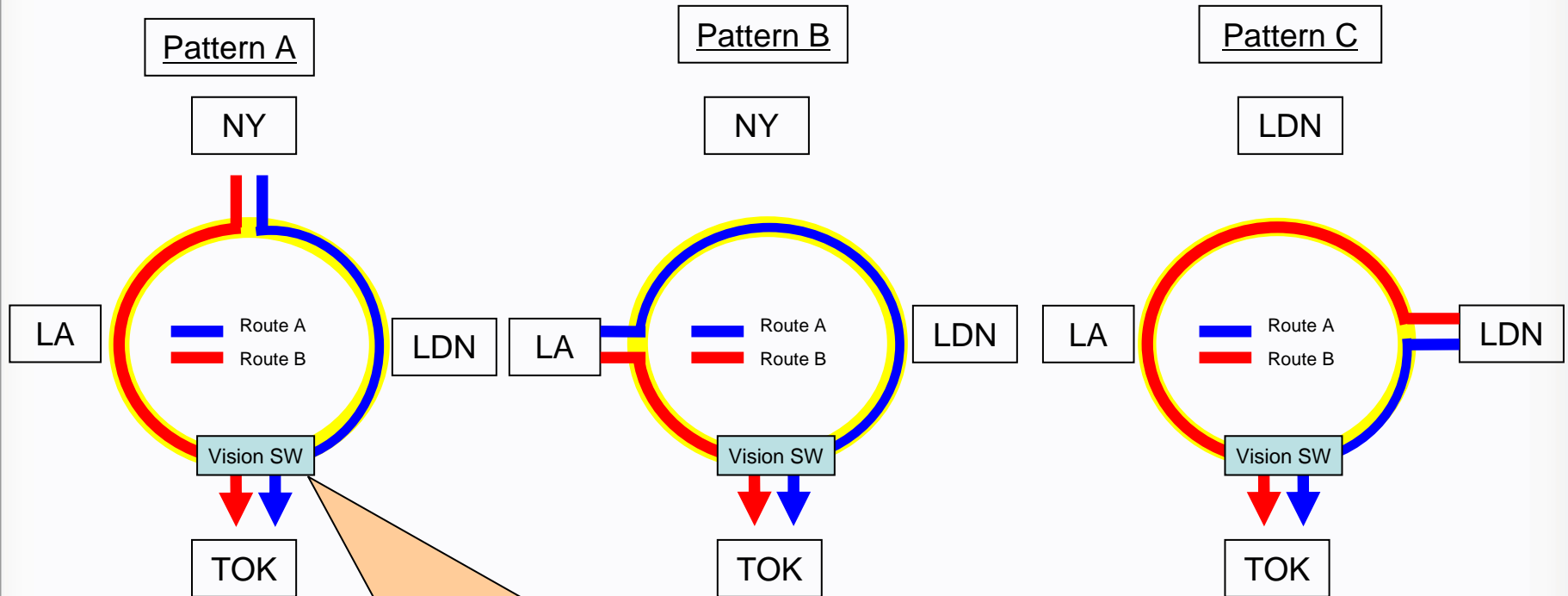
PACIFIC OCEAN

• KDDI Cable Landing Stations
• Other Cable Landing Stations
• Optical-Fiber Submarine Cable

6. Routing in KDDI Global Video Ring

KDDI Global Video Ring realize flexible routings within the network.

An example of Japanese Broadcaster's transmission



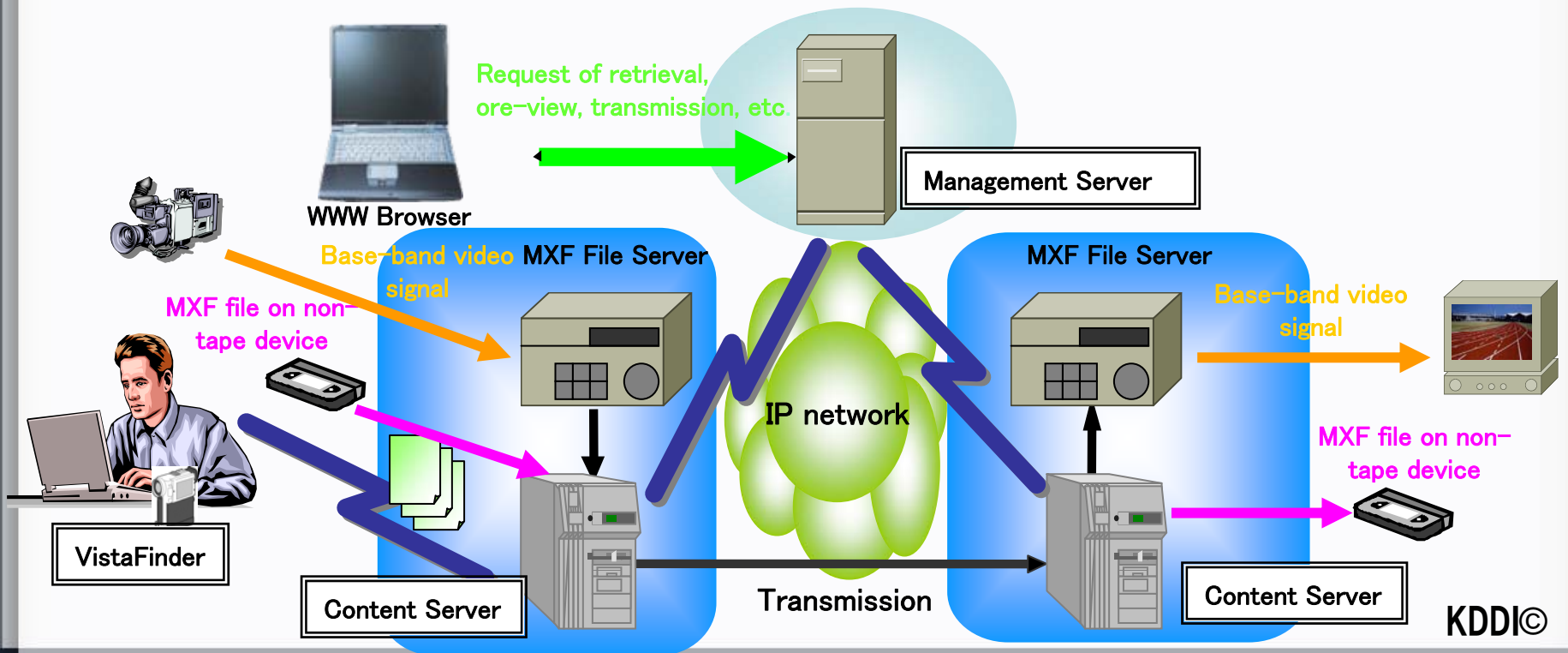
KDDI Vision SW

“KDDI vision SW”, an original development by KDDI R&D, is an hit-less protection switch. This can protect the video signals perfectly even if the primary or the secondary circuit fails and also absorbs delay-deference between the both routes.

7-1. Overview on Planned KDDI's File-based Video Transmission Service

Features:

- Input & output of video by means of base-band video signal & MXF file
- Management of transmission & storage based on meta-data in MXF file
 - * Access control based on pre-defined member grouping
 - * Retrieval of stored MXF file
 - * Control & history management of transmission
- MXF formatting of video file transferred from VistaFinder



7-2. Advantages on KDDI's File-based Video Transmission Service

- Cost effectiveness : Use of best effort IP network (e.g. the Internet)
- Easy operation : Retrieval → Pre-view → Transmission order → Completion indication
- High speed & error free transmission : Use of KDDI's original protocol (SVFTP)

Examples on operation



Retrieval by several parameters (date & time, keyword, etc)



Pre-view

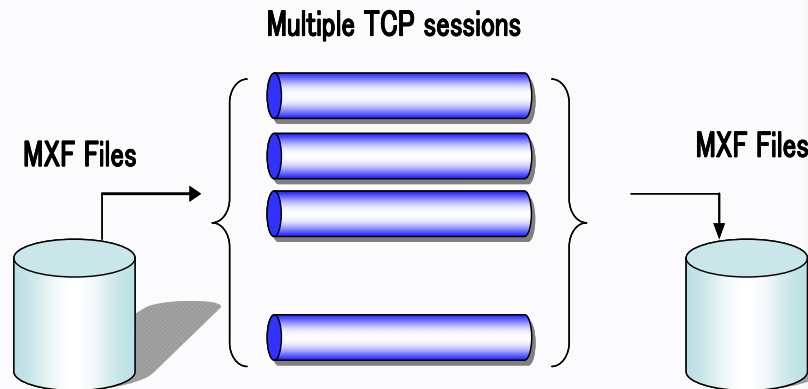
&

transmission order

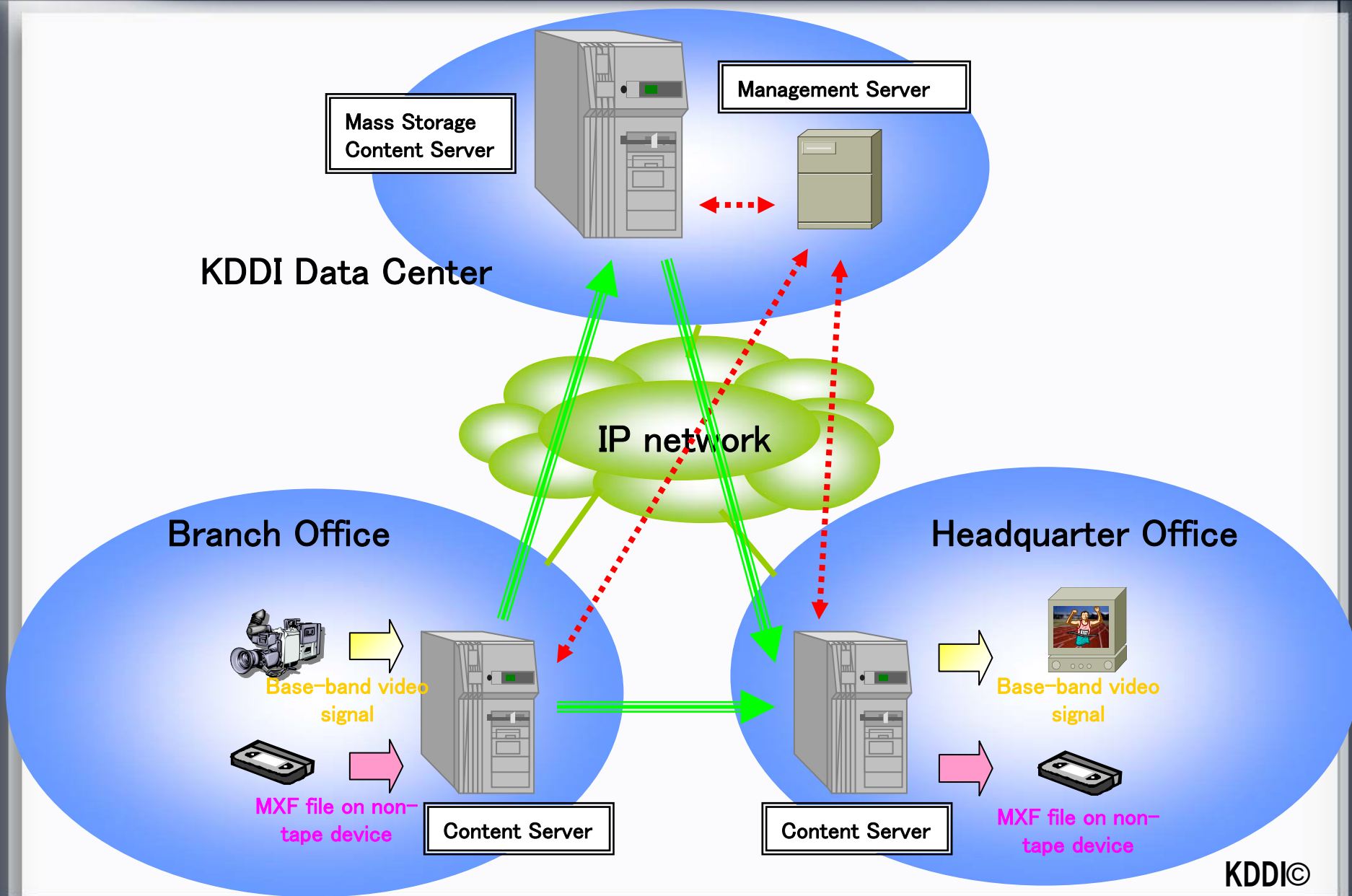


SVFTP

- Use of TCP for error free transmission
- Use of multiple TCP sessions for high speed transmission to prevent from decrease of throughput caused by transmission delay



7-3. Application of KDDI's File-based Video Transmission Service



7-4. Overview on VistaFinder

FEATURES:

Transmission rate :

a few tens bps to a few Mbps

Cover area :

from any place to any place on the earth

Protocol :

KDDI's original protocol (SVFTP) for high performance

Network :

all IP networks (eg. Terrestrial IP network, Satellite IP network (Inmarsat BGAN))

Video coding algorithm :

KDDI's original H264 coding engine (half encoding rate of MPEG2 coding rate for same quality of video)

Transmission mode :

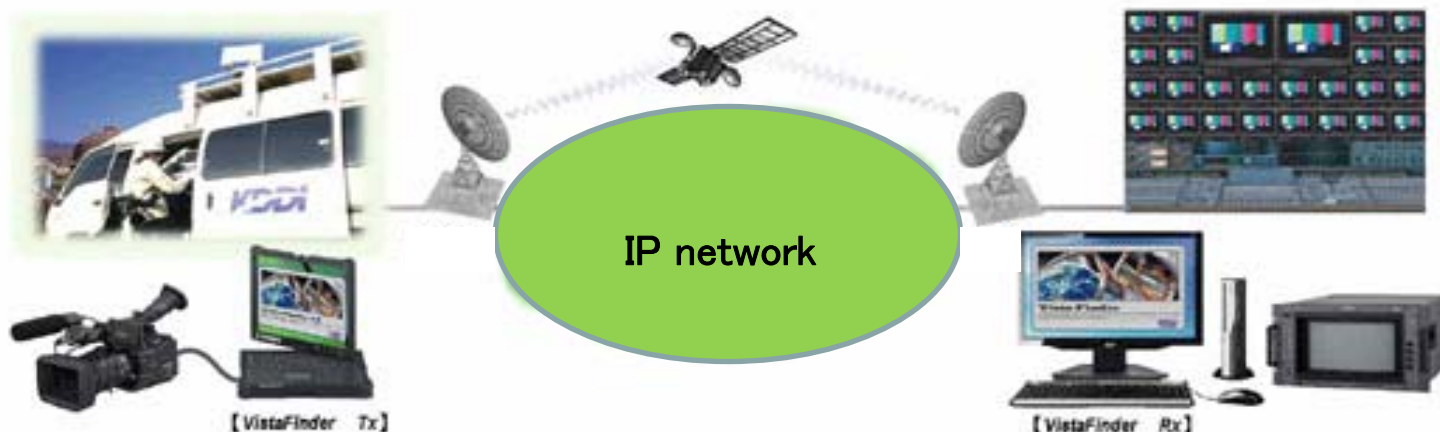
live & stored based video transmission modes (HD video transmission in case of stored based video transmission mode)

Light weight :

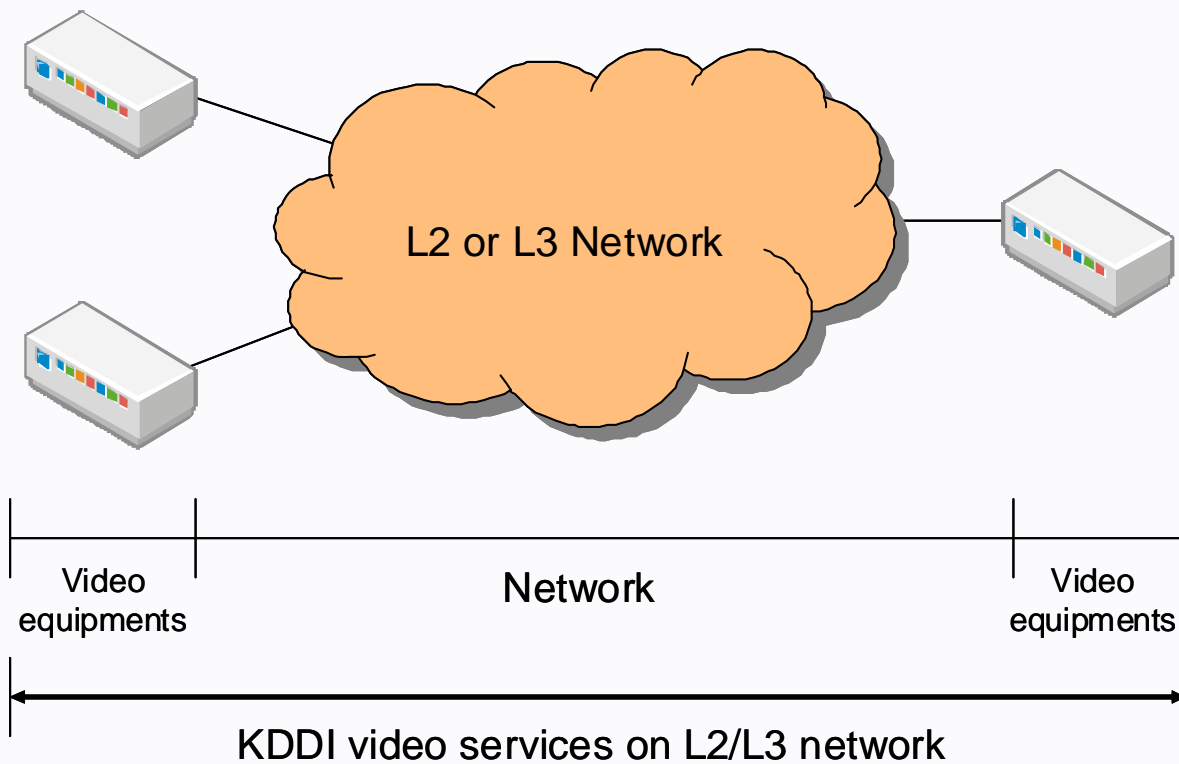
less than 10kg in case of a set (BGAN+camera+VistaFinder)

Easy operation :

just selection from pre-set parameters menu

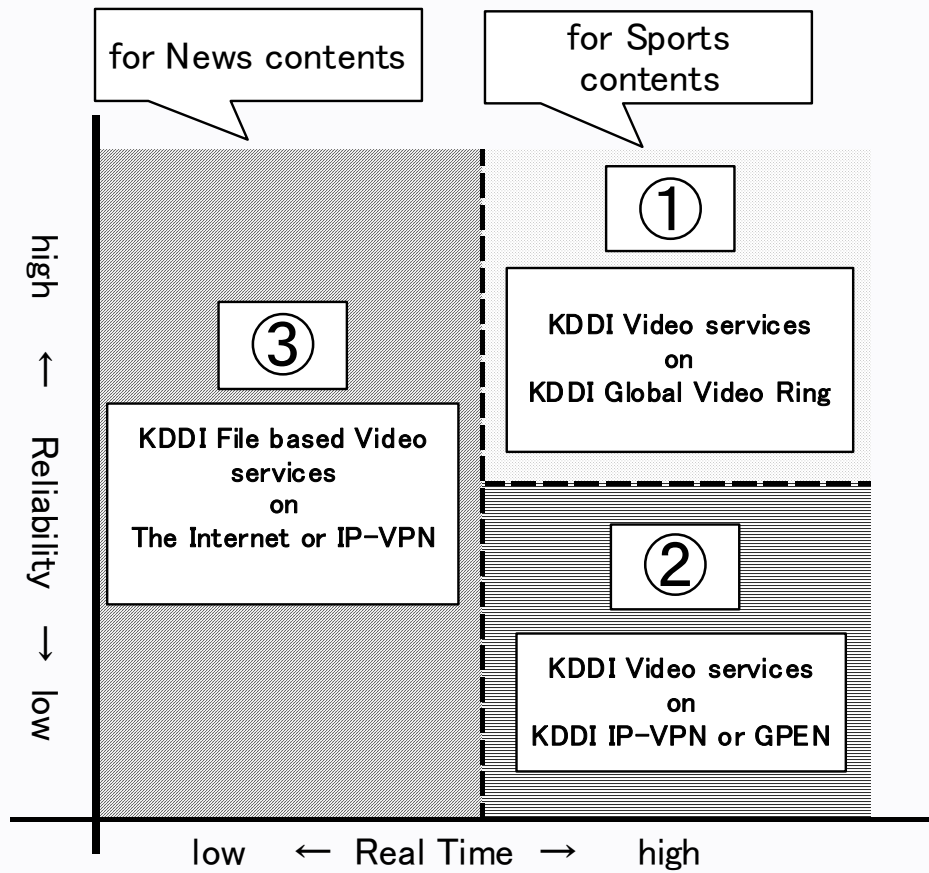


8. KDDI Video Services on VPN with Video equipments



9. More convenient package service

KDDI will support both occasional and full time services in the 3 types of the services. The features of 3 services are shown bellow.



【Rough price level image】

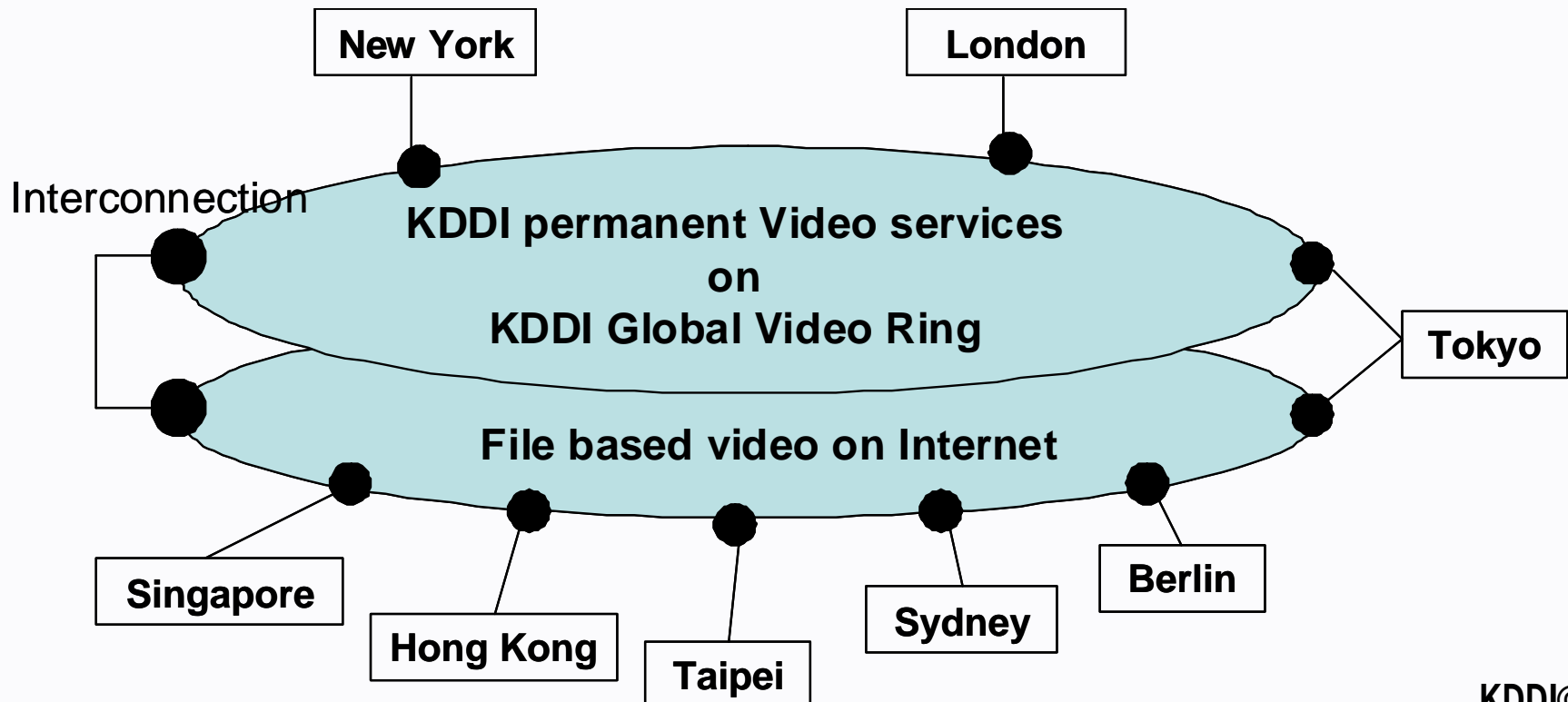
Occasional < ③ < ② < ①

Depends on traffic volume

KDDI provides package services by the combination of Type 1,2,3 and occasional services.

10. An Example of Package service

- Customer : Japanese broadcaster (Head office : Tokyo)
- Site to be required supports event feed (need real time feed) :
New York, London
- Site to be required news feed (does not need real time feed) :
Singapore, Hong Kong, Taipei, Sydney, Berlin,



11. Conclusion

- **KDDI, as Ubiquitous Solution Company, is willing to support the various solutions for the Broadcasters.**
- **KDDI plan to start the brand-new video services within the year 2010. KDDI continue to seek the customer request and reflect the brand - new services.**
- **KDDI brand – new video services will satisfy the requirement not only the Japanese Broadcasters but also the Broadcasters all over the world.**

Especially, Video transmission services via “KDDI Global Video Ring” will be the best solutions for all the Broad Casters.