



**"Compression Technologies:
How high is high enough? How low can you go?"**

NHK's field uplink in HD

Kei TAMURA
Director, International Circuits
NHK General Bureau for America

June19, 2011 ISOG Session

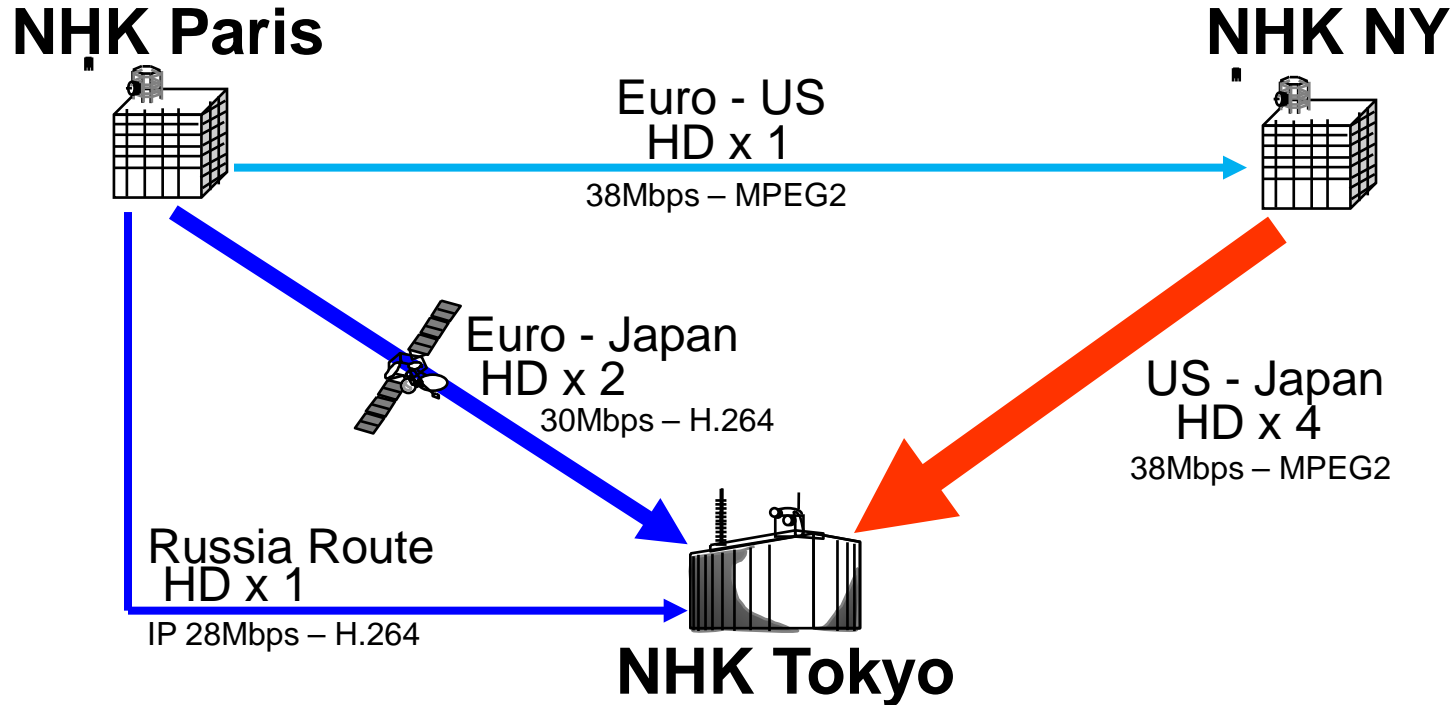




Overview

- **NHK Tokyo HQ - HD (1080i) production.**
- **Required mission – How to realize HD “live” uplink from remotest places**
- **NHK’s Global HD transmission networks**
- **Tape feed vs Live**
- **Case study**
- **Where we are heading**

NHK's HD global networks



- **Global loop of HD “pipes”**
- **Mission from the field - Connection into these “pipes”**
Not necessarily “Direct to Tokyo”

Tape Feed vs Live

- **Tape feeds - IP / FTP solution useful**
- **Live – “a bit different” in NHK’s terms**
 - **TREMENDOUS value on quality & stability (video shocks / freeze, audio breaks simply unacceptable)**

Low bandwidth HD Live with small flyaway

Case 1) Chilean miners rescue ops

- Copiapo, Chile (October 2010)
- Flyaway: Norsat Newslink
 - Ku, 1m diamond antenna
 - SSPA 25W
 - MPEG-2 encoding / DVB-S modulation
 - **HVE9100 HD encoder**
 - **SDM2020 modulator (H.264 capable)**



Case 1) Chilean miners rescue

- S/R 6.113 MSym/s,
- Info Rate 8.448 Mbps,
- MPEG-4 (H.264), QPSK, FEC $\frac{3}{4}$
- Downlink in US: 4.6m antenna

Tape feed in HD (Live in SD)

Case 2) Haiti quake 1 year later

- Port au Prince, Haiti (January 2011)
- Flyaway: Norsat Newslink
 - Ku, 1m diamond antenna
 - SSPA **80W**
 - MPEG-2 encoding / DVB-S modulation
 - **HVE9100 HD encoder**
 - **NTC2277 modulator (H.264 capable)**





Case 2) Haiti quake 1 year later

- S/R 7.2 Msym/s
- Info Rate 10.455 Mbps
- MPEG-4 (H.264), QPSK, FEC $\frac{3}{4}$
- Downlink in US: 6.1m antenna

Fulltime HD Ops (Tape feed & Live)

Where we are heading

- **NHK domestic SNG network –
H.264 Implementation yet in progress.**
 - “time lag” implementing new technologies
- **IP based solution –
Good for tape feed; For live from the field,
still weighing “reliable solution”**
- **Speed vs Quality – Editorial mindset**



Thank you !