

SISTEMI I TEHNOLOGIJE ZA EMITOVANJE SIGNALA

VEŽBA 1

Poseta: United Media Production



Prijem signala

- Preko satelita
 - DVB-S
 - DVB-S2
 - NS3
- Preko IP
 - *dedicated* linkovima, multikast
 - public IP



Satelitski linkovi



“polje” antena



Spaun i Televes multiswitch



LNB (Low-noise block downconverter)



*QUAD - 4 ista izlaza
QUATRO - HL, VL, HH, VH*

DVB-S

- Modulacija: QPSK
- Enkodovanje: MPEG-2
- Chroma subsampling: 4:2:0
- Video standard: SD i HD



IRD Tandberg 1290

IRD (*Integrated Receiver Decoders*)



DVB-S2

- Modulacija: QPSK, 16 APSK i 32 APSK
- Enkodovanje: MPEG-2, MPEG-4
- Chroma subsampling: 4:2:0, 4:2:2
- Video standard: SD i HD



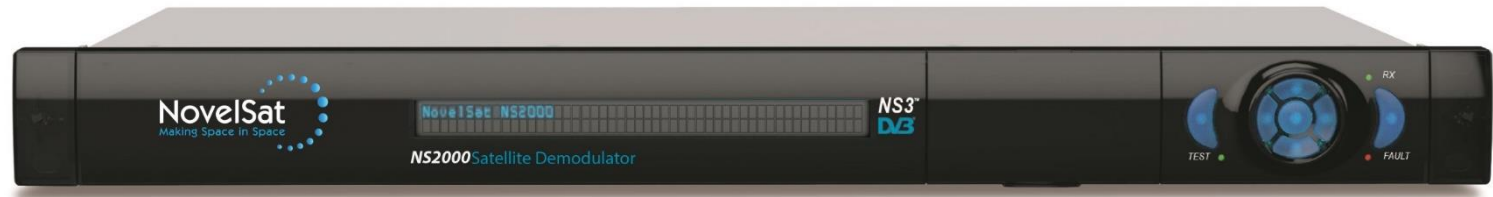
IRD Ericsson 8200

DVB-S2 ima do 30% bolju iskorišćenost spektra od DVB-S



NS3

- Modulacija: QPSK, 16 APSK, 32 APSK, 64 APSK
- Enkodovanje: MPEG-2, MPEG-4
- Chroma subsampling: 4:2:0, 4:2:2
- Video standard: SD, HD, 4K



Demodulator NovelSat NS2000

NS3 modulacija ima od 20% do 40% bolju iskorišćenost spektra od DVB-S2



Satelitski linkovi – IP linkovi

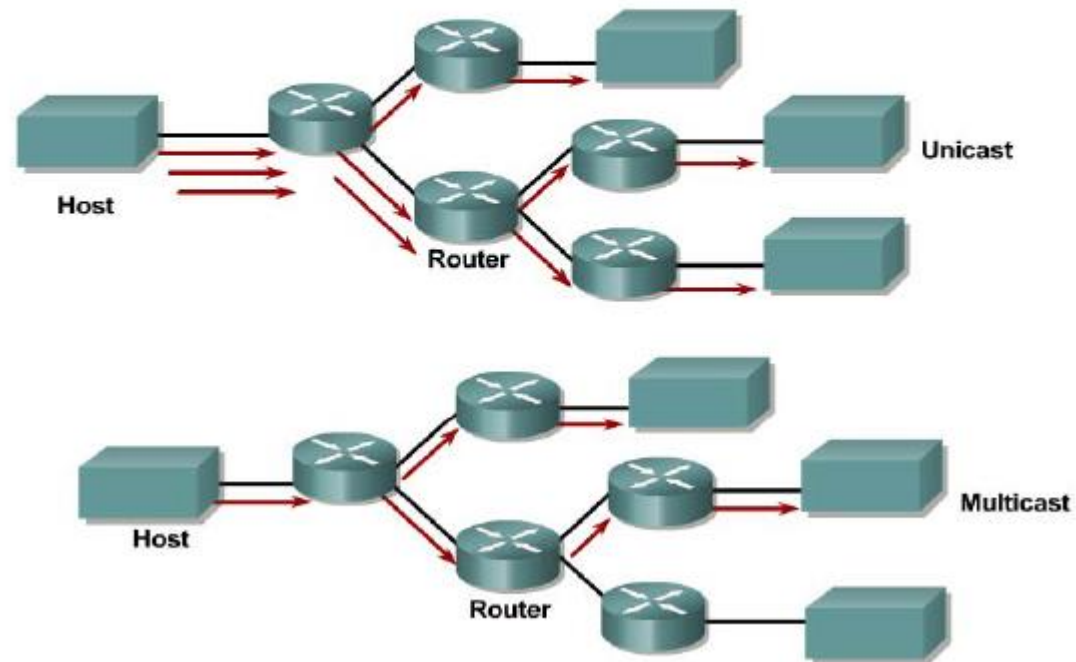
- Zakup satelitskog linka: $\approx 4 \text{ €/min}$ + *uplnik* stanica
- Cena IP linka: 0



IP linkovi

- *dedicated* linkovi, multicast, UDP

Unicast - Multicast

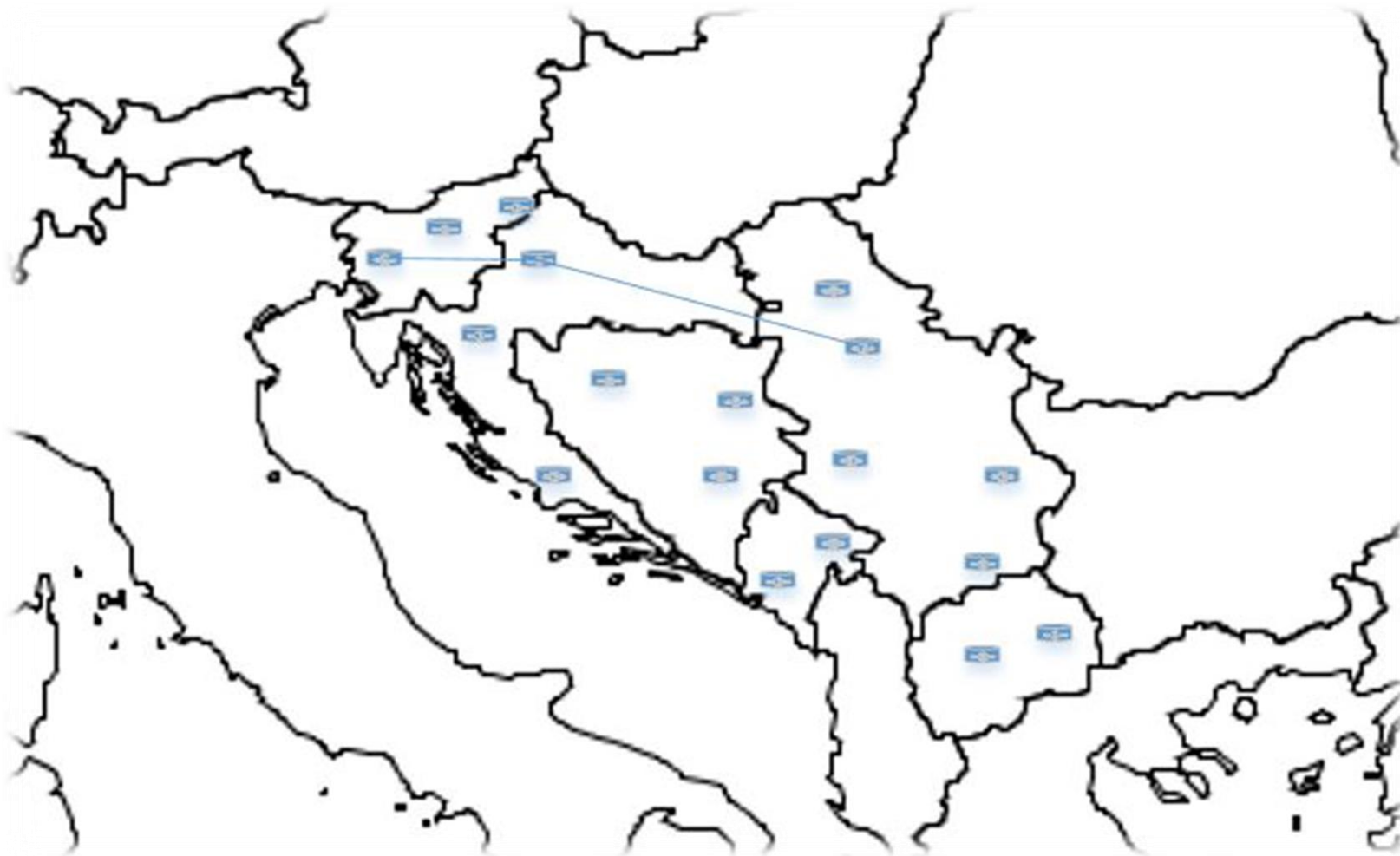


IP linkovi

- *dedicated* linkovi



Enkoder Cisco D9054



IP linkovi

- *Public IP,*
- TCP/UDP
- Peer-to-peer, CDN



Ateme CM5000



Ateme DR5000

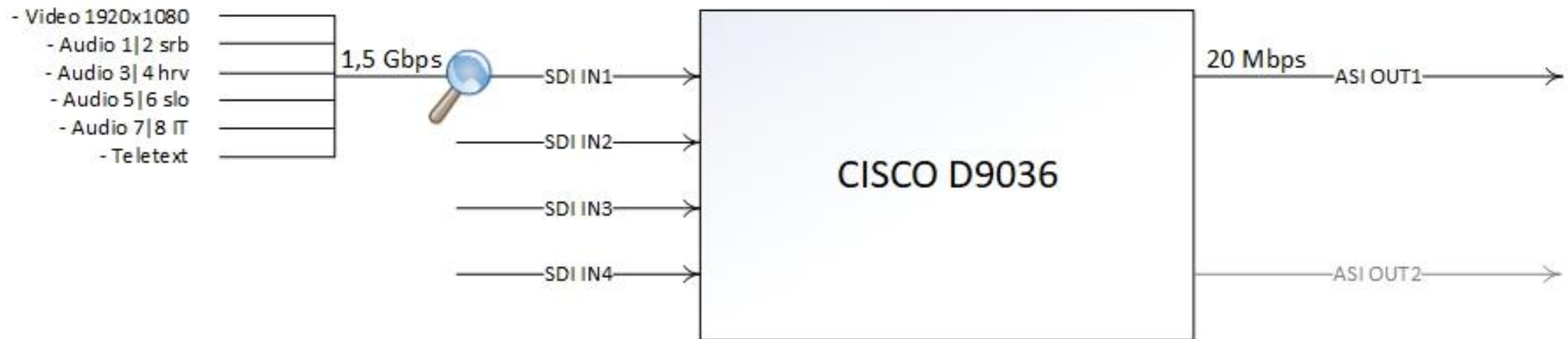


Enkodovanje signala



Enkoder Cisco D9036

Enkodovanje + multipleksiranje prvi nivo, *statmux*



PS – *program stream*, TS – *transport stream*

SDI - *Serial digital interface*, ASI - *Asynchronous Serial Interface*

Multipleksiranje

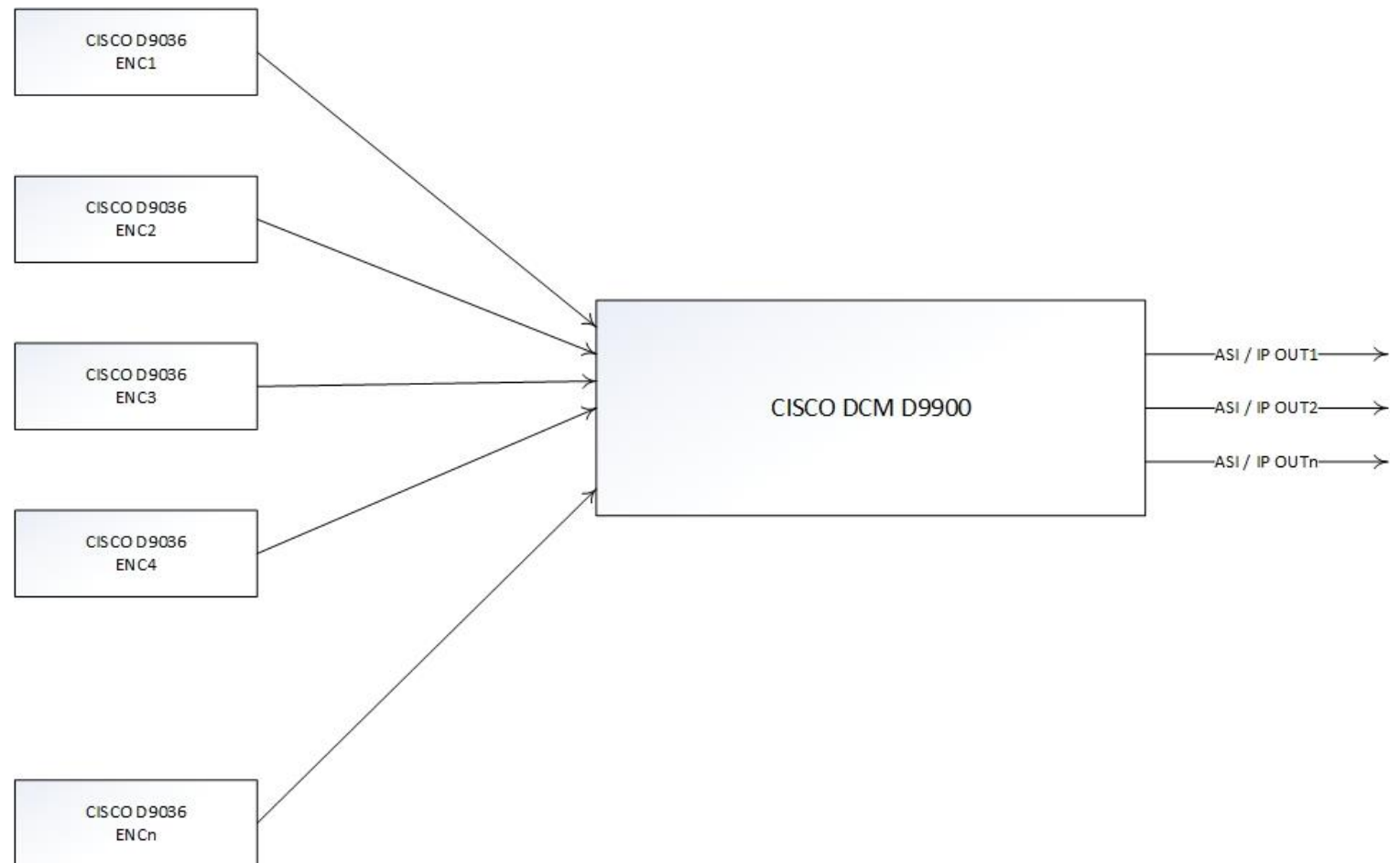


Cisco DCM D9900



Thomson / Harmonic
Netprocesor 9040

DCM - *Digital Content Manager*



Kontribucija

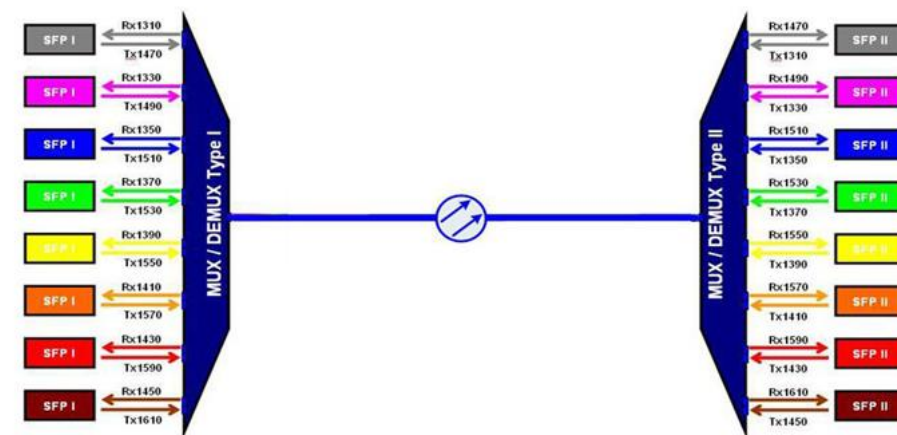


SFP



Transmode

SFP - *Small Form-factor Pluggable*
DWDM - *Dense Wavelength Division Multiplexing*



DWDM



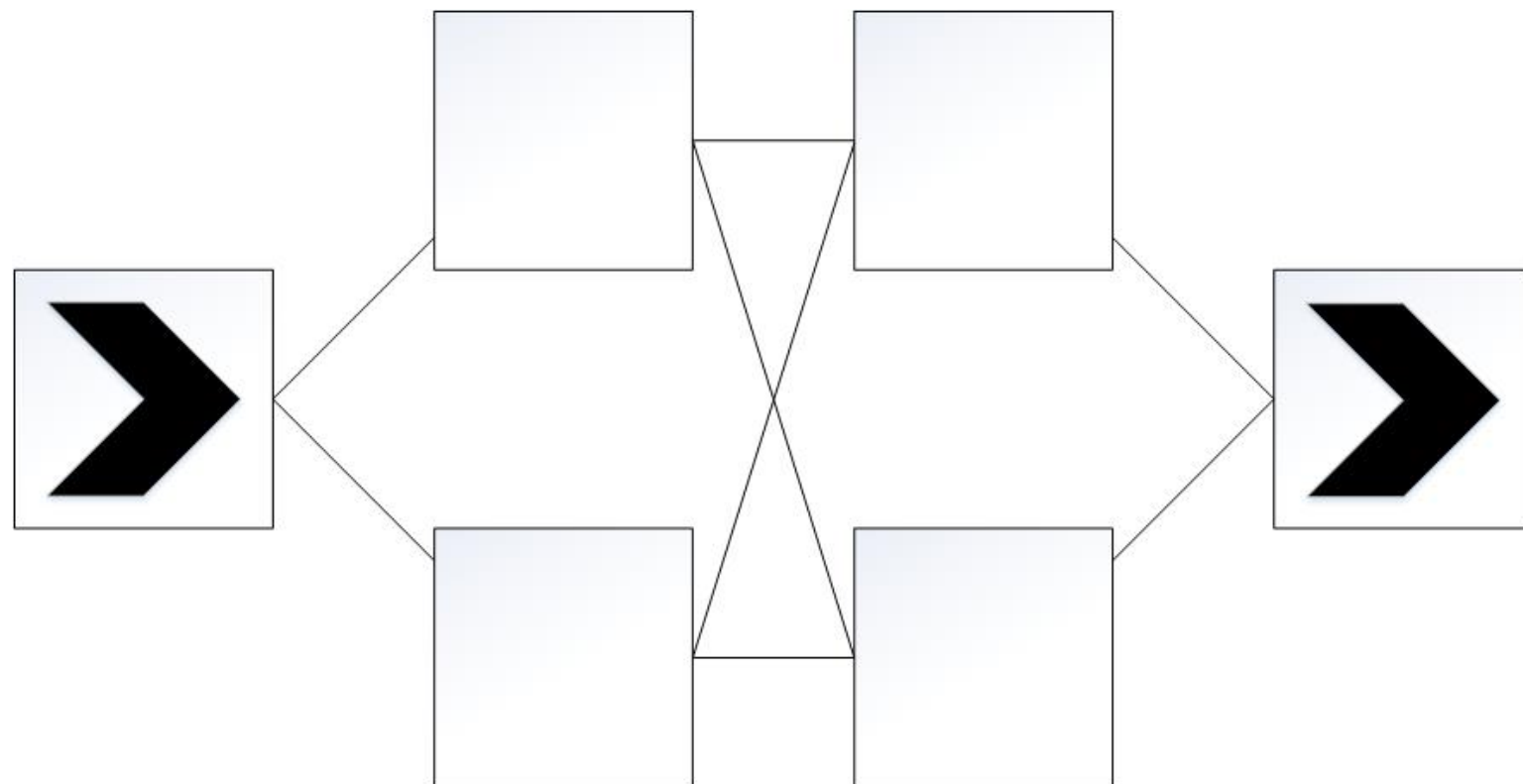
Interkonekcija regionalnih centara

- Sony NXL-IP55



Osnovni zahtevi celokupnog sistema

- Dostupnost 24/7/365
- Redudantnost
- Mogućnost nadogradnje
- Automatizacija



Tema sledeće posete: Distribucija signala



Pitanja

