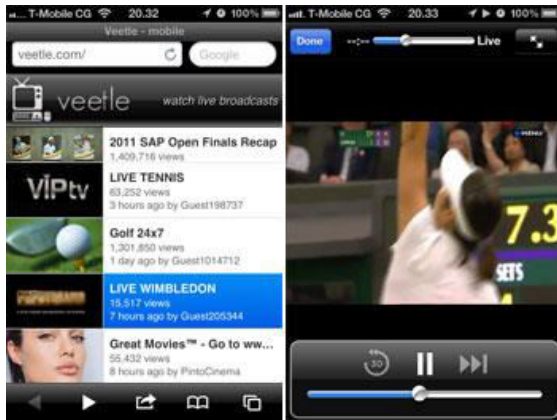


---

# Streaming Audio and Video



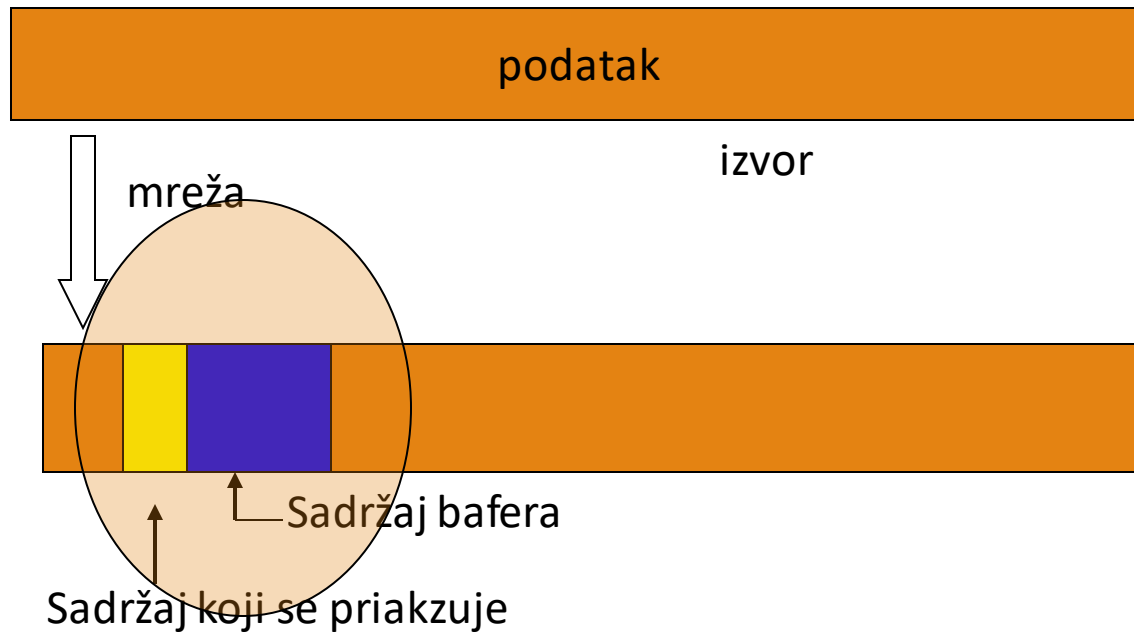
VTŠ Niš

Multimedijalne  
komunikacije

# Streaming Tehnologije

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Tehnika prenosa audio u video sadržaja putem računarske mreže u realnom vremenu!!!!!!



# Prednosti

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- redukovanje vremena download-a
- stabilni service!- pouzdan
- Dostupnost tehnologije sporijim sistemima
- „on demand,, usluga

## **Applikacije:**

Streaming Video, IP telefonija, Internet Radio, e learning Videoconferencing, inteaktivne igrice i sl...

# Nedostatci

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- veličina propusnog opsega

- održavanje servera

- ✓ **Gubitak paketa**

- ✓ **kašnjenje**

- ✓ **jitter**

# Tehnike streaminga

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- streaming snimljenog sadržaja –audio i video
- live streaming video i audio sadžaja
- Real-Time Interactive Audio and Video

# Media Playeri

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RealPlayer (RealNetworks),

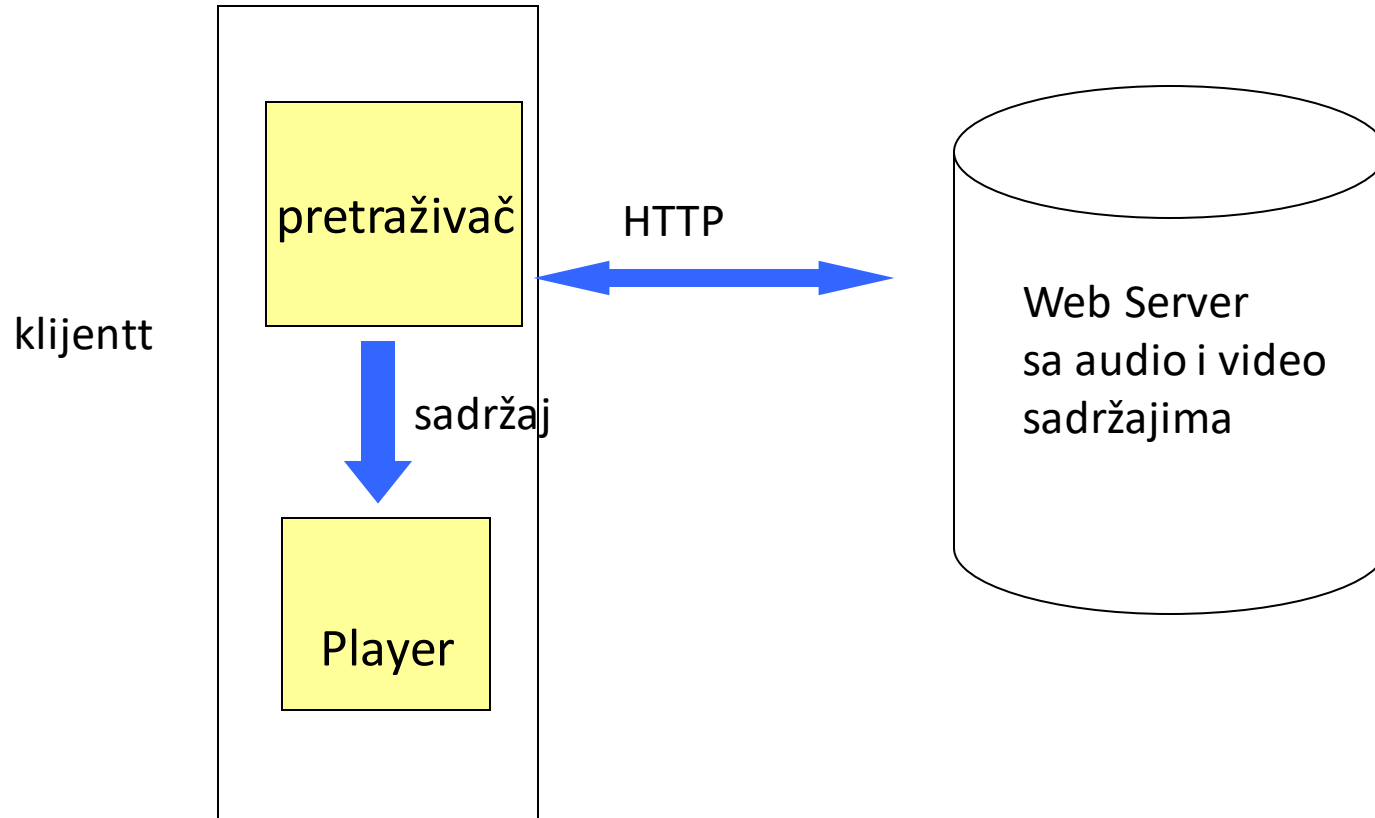
Media Player (Microsoft)

QuickTime (Apple).

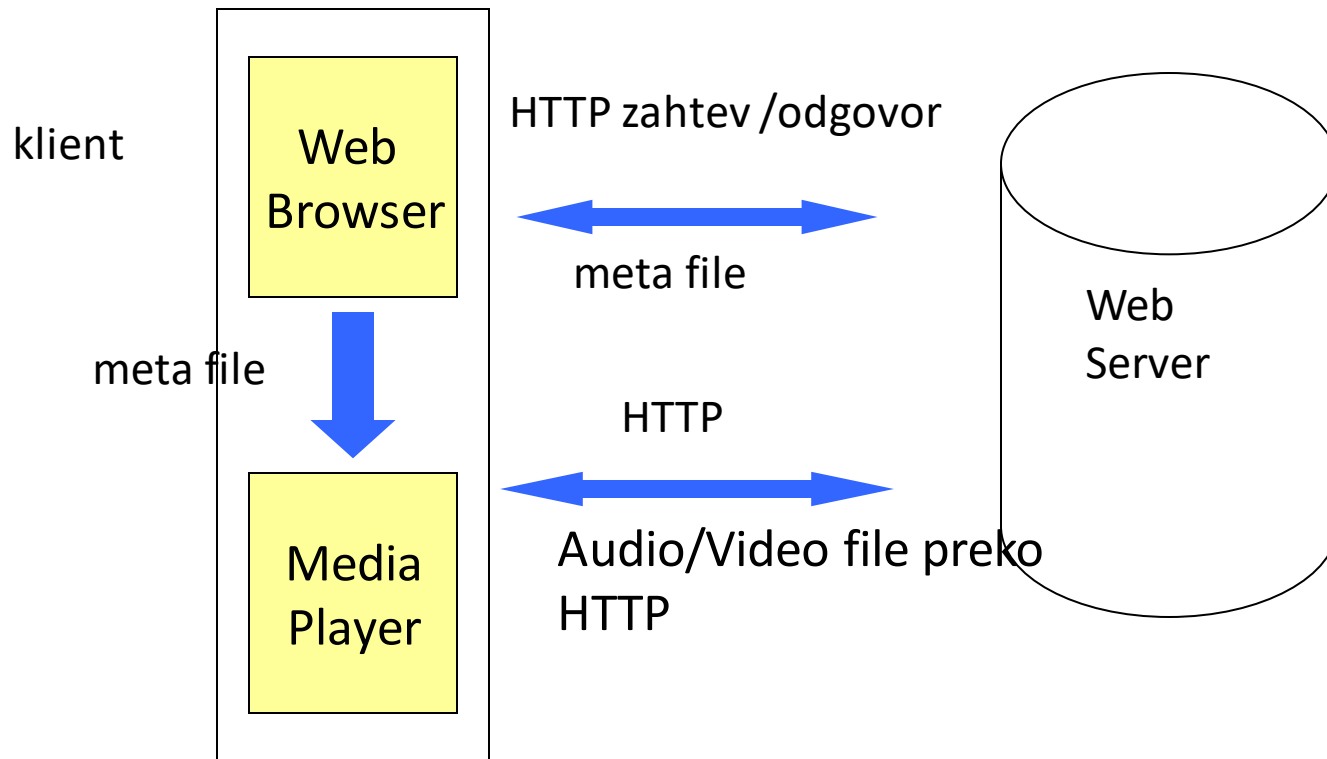
## Glavni zadatci playera:

- dekompresija sadržaja
- eliminisanje Jitter-a
- Korekcija greške

# Pristup Audio & Video sadržaju Web serveri



# Pristup Audio & Video putem Meta Fila

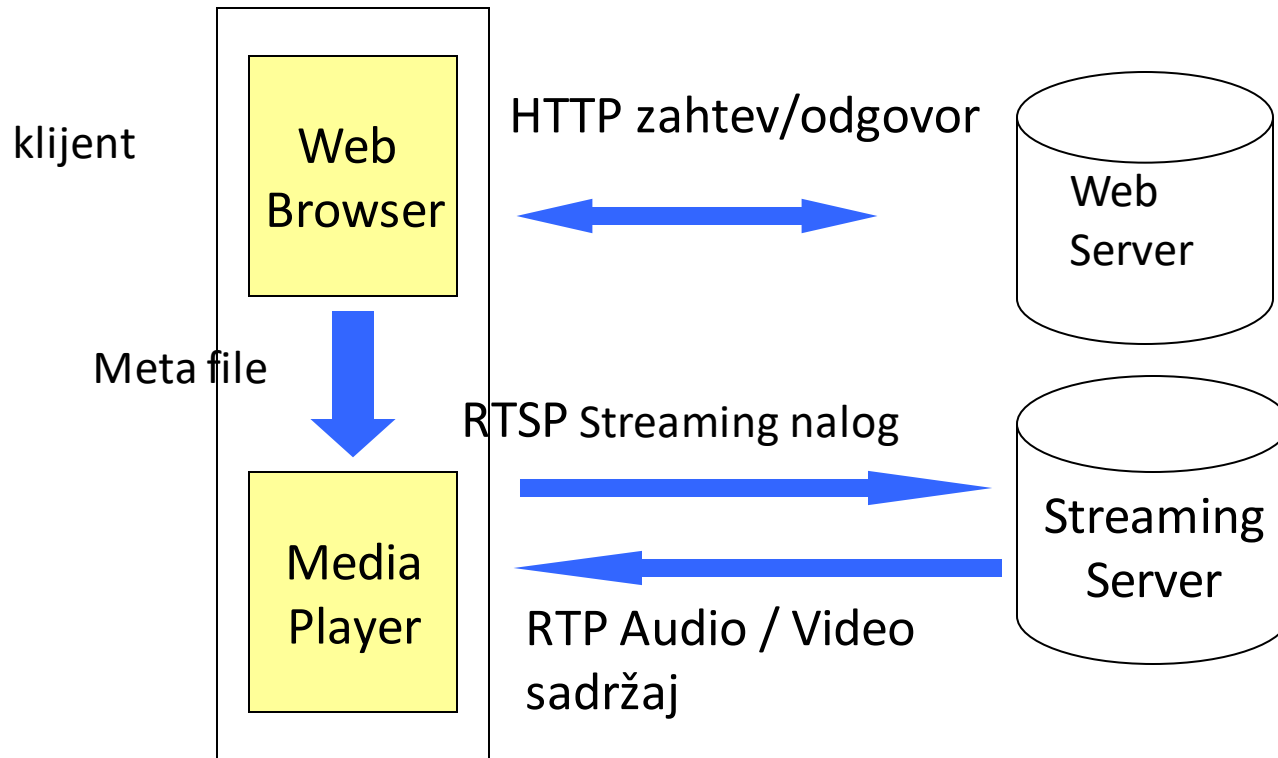


meta file sadrži podatke o URL-u, podatke o tipu koda, i sadržaja koji se prikazuje



# RTSP Diagram

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HTTP nedovljan

. Putem streaming server audio/video šalju se preko UDP,

# Protokoli

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- RTSP: Real Time Streaming Protocol
- RTP : Real-time transfer Protocol

# RTSP

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- RTSP „industrijski“, Internet standard koji se koristi na aplikacionom nivou
- RTSP okvir za isporuku za multicas transfer podataka
- RTSP omogućava media playeru kontrolu transfera podataka kroz razmenu informacija

# RTSP karakterisitke

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- RTSP radi u konjukciji sa RTP
- RTSP održava stanje servera tokom transfera podataka za razliku od HTTP-a
- Client-Server arhitektura
- Eliminirane ograničenja of HTTP.
- RTSP ojačava funkcije HTTP-a
- RTSP omogućava sinhronizaciju događaja

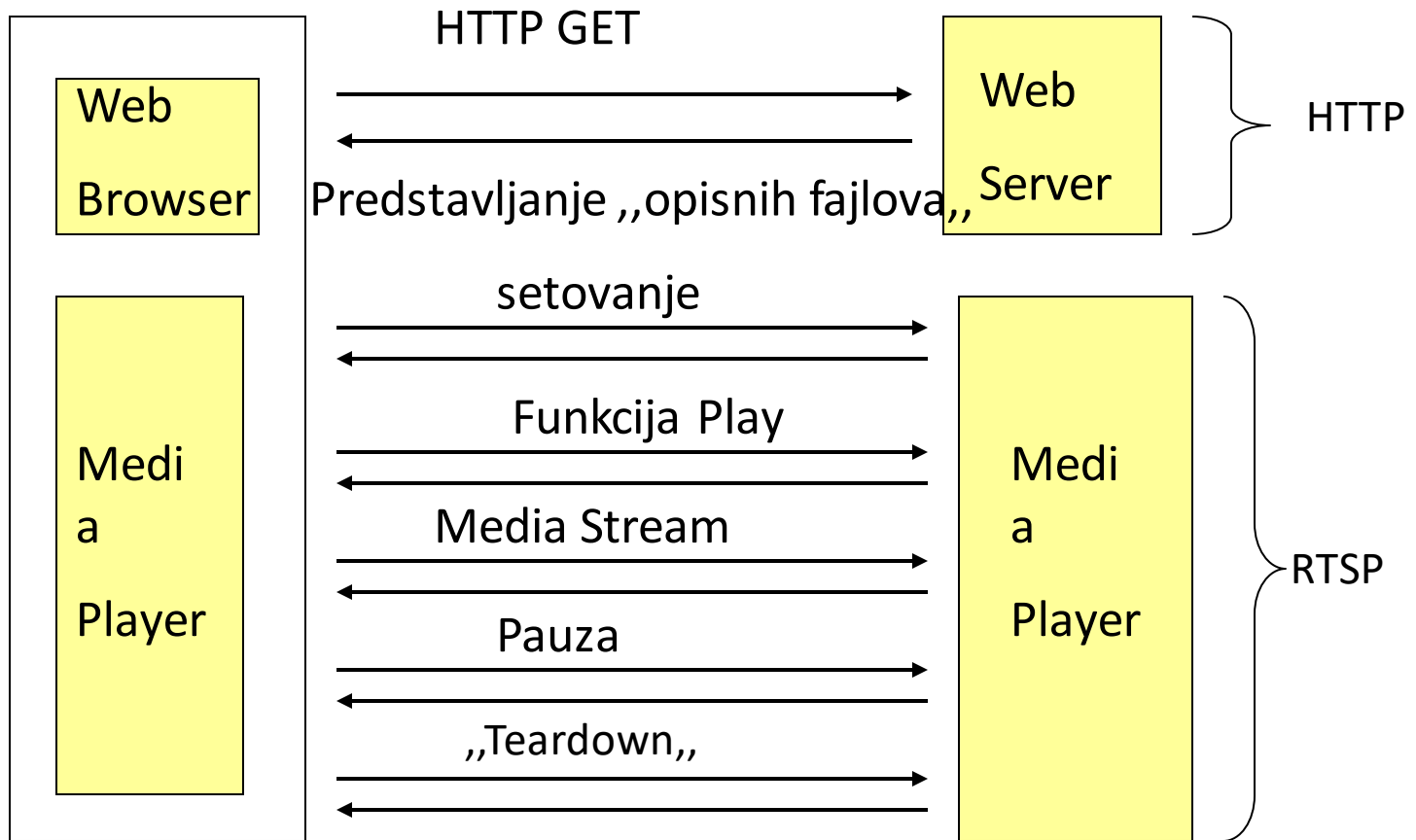
# RTP

---

- RTP koristi se za prenos real-time podataka
- RTP „„enkapsulira segmente

Payload type    Sequence number    Timestamp    Synchronization source identifier    Misc

# RTSP funkcionisanje

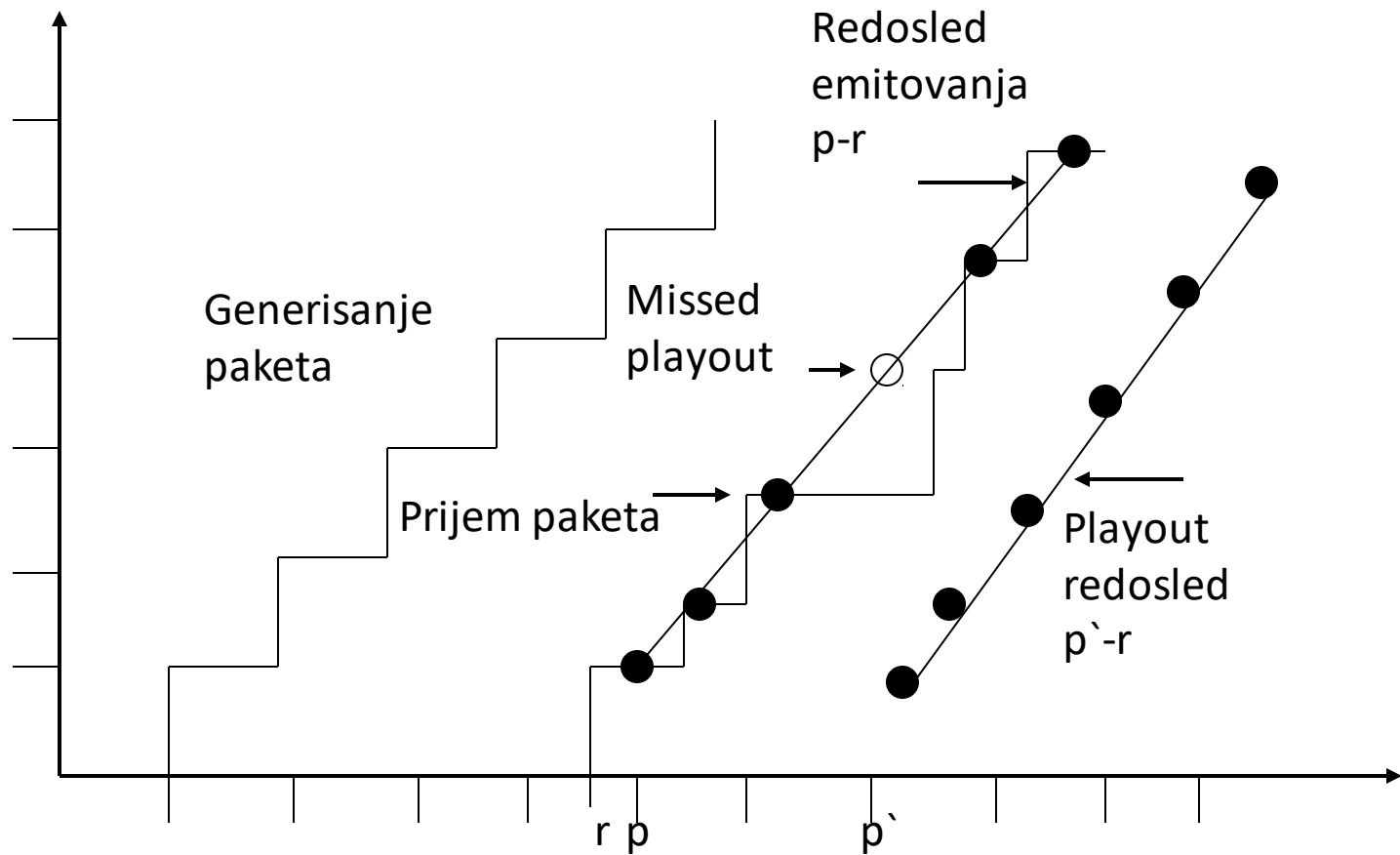


# Opisni fajl

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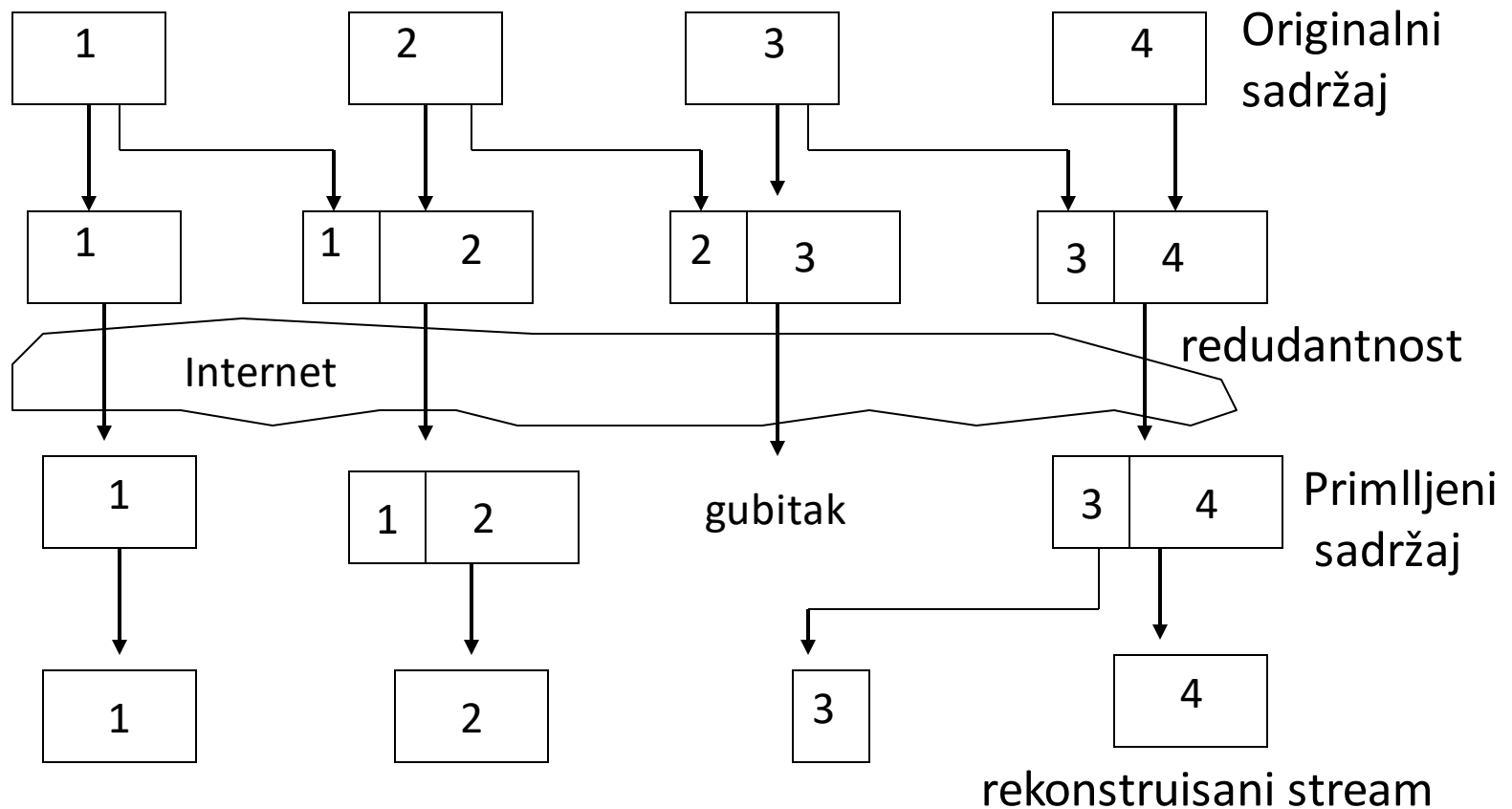
```
<title> Music </title>
<session> <group language=en lipsync>
  <switch>
    <track type=audio
      e="PCMU/8000/1"
      src="rtsp://audio.com/music/audio.en/lofi">
    <track type=audio
      e="DV14/16000/2" pt="90 DV14/8000/1"
      src="rtsp://audio.com/music/audio.en/hifi">
  </switch>
    <track type="video/jpeg"
      src="rtsp://video.com/music/video">
</group> </session>
```

# Fiksno kašenje

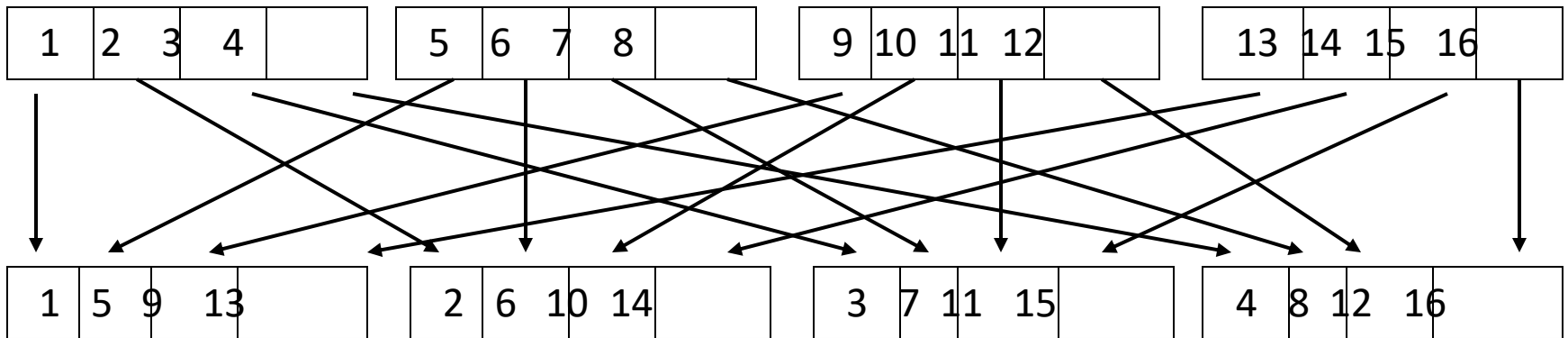




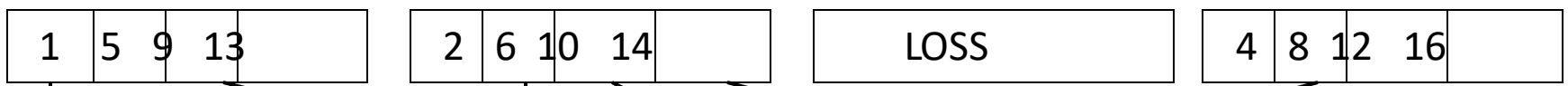
# Korekcija greške



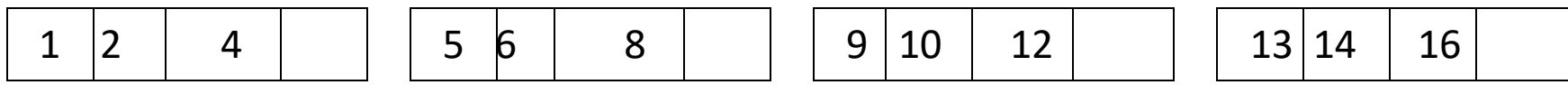
# Original Stream



## Među Stream



## Prijem Streama



## rekonatruisani Stream