

URAN-2003:

Organization

Technical aspects

Financial principles

Perspectives of connection to GÉANT

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Scientific secretary of URAN User Association

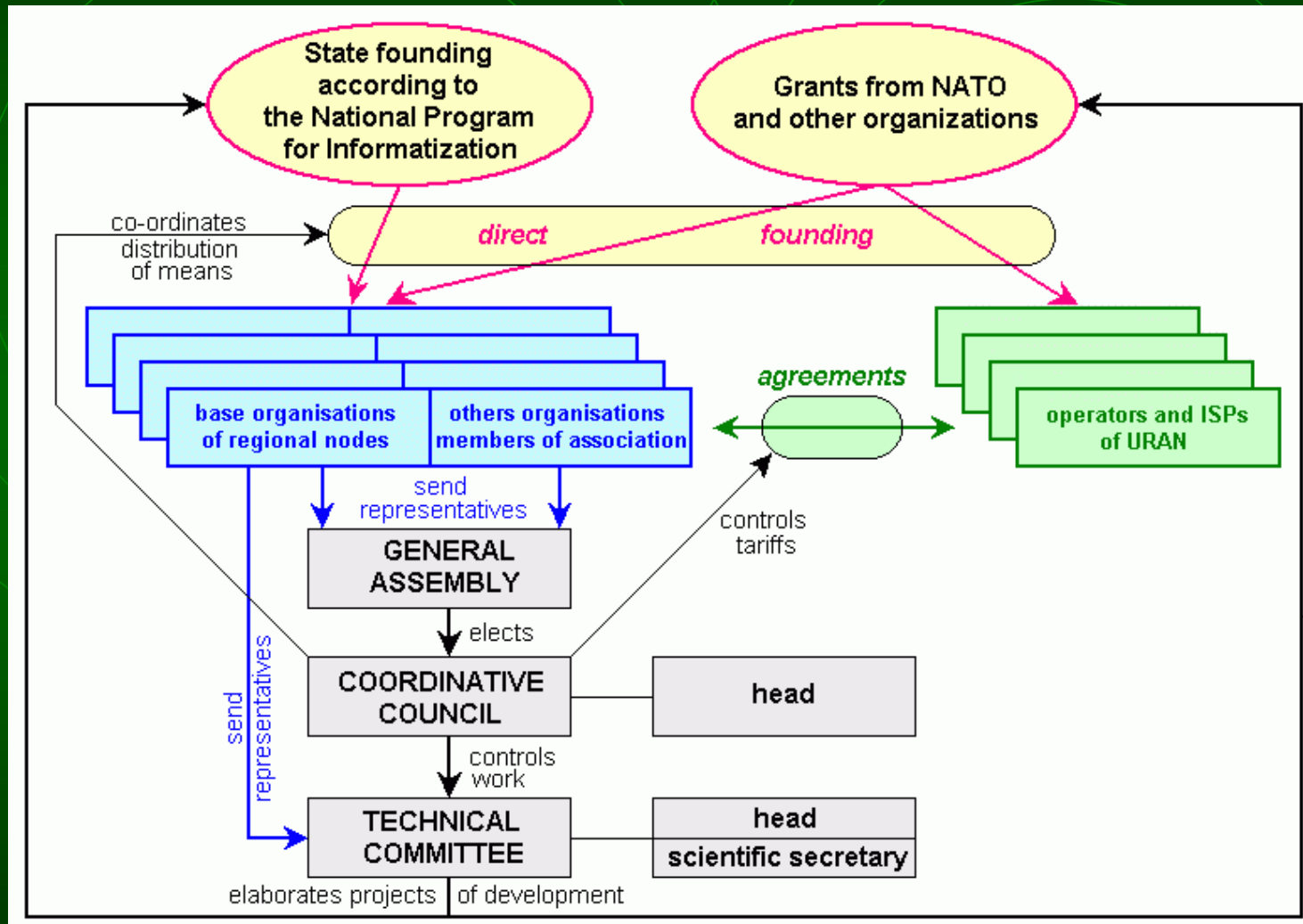
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Head of URAN technical committee

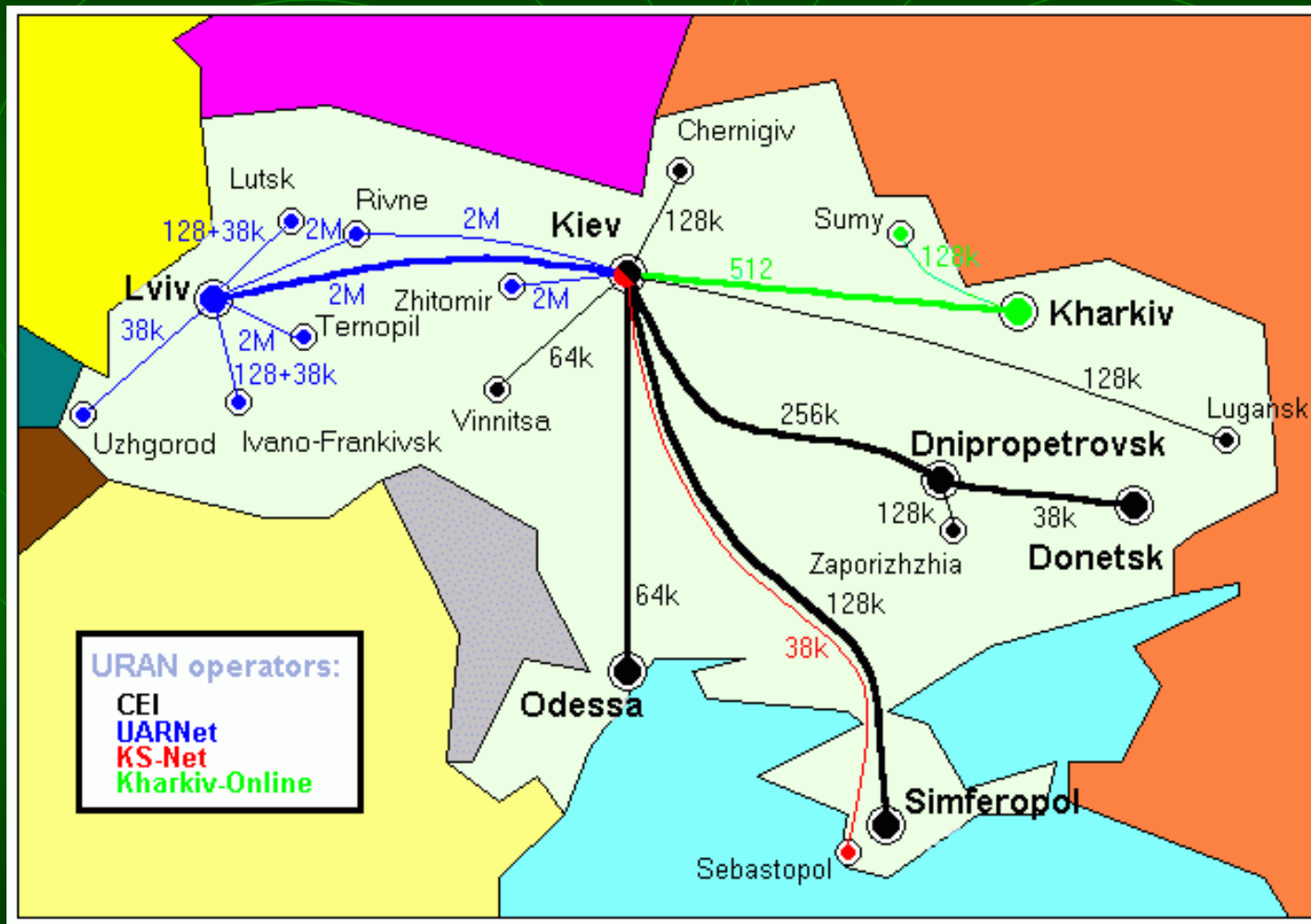
URAN: Organization

- User Association
- Operators
- 3-level network structure

URAN Users Association



URAN-2003: operators



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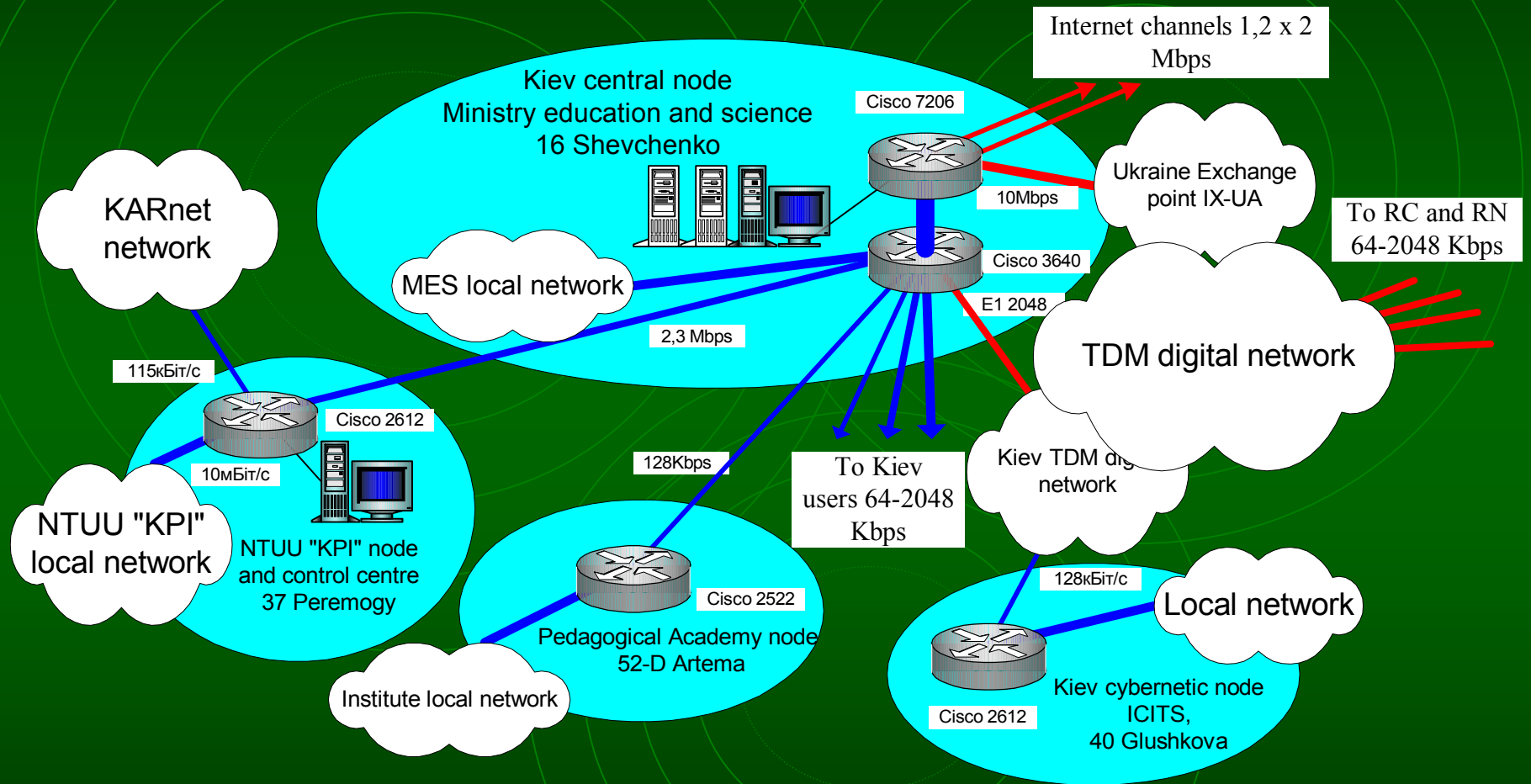
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Backbone structure

- Star-like structure with Main Network Operational Centre (NOC) in Kiev
- Regional Centres (RC) in the bigger cities (7 RC)
- Regional nodes (RN) in the regional town (7 RN at the moment, 20 RN in the future)
- Digital leased connection between centres and nodes

Structure of the Main NOC in Kiev

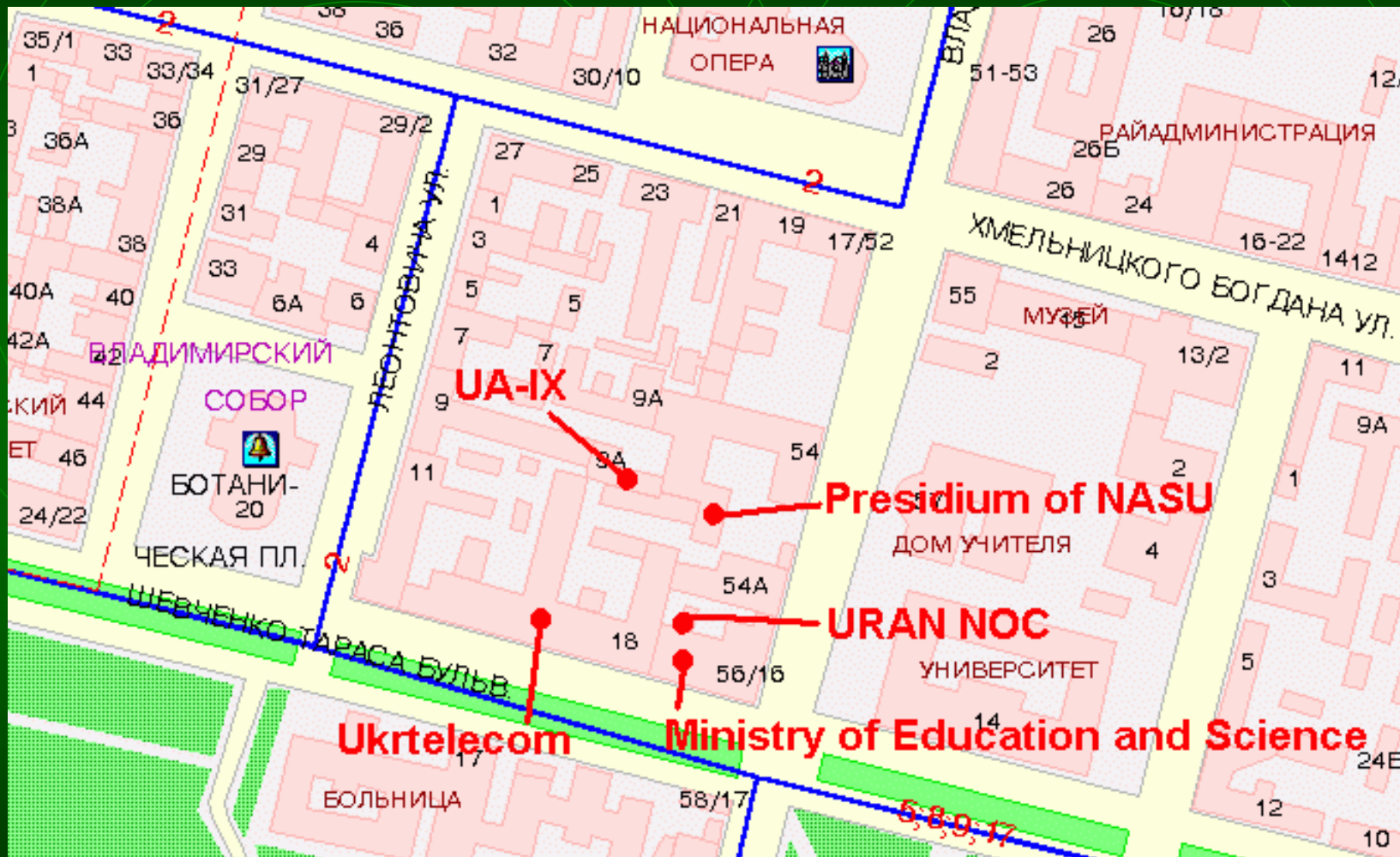


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Location of the Main NOC in Kiev

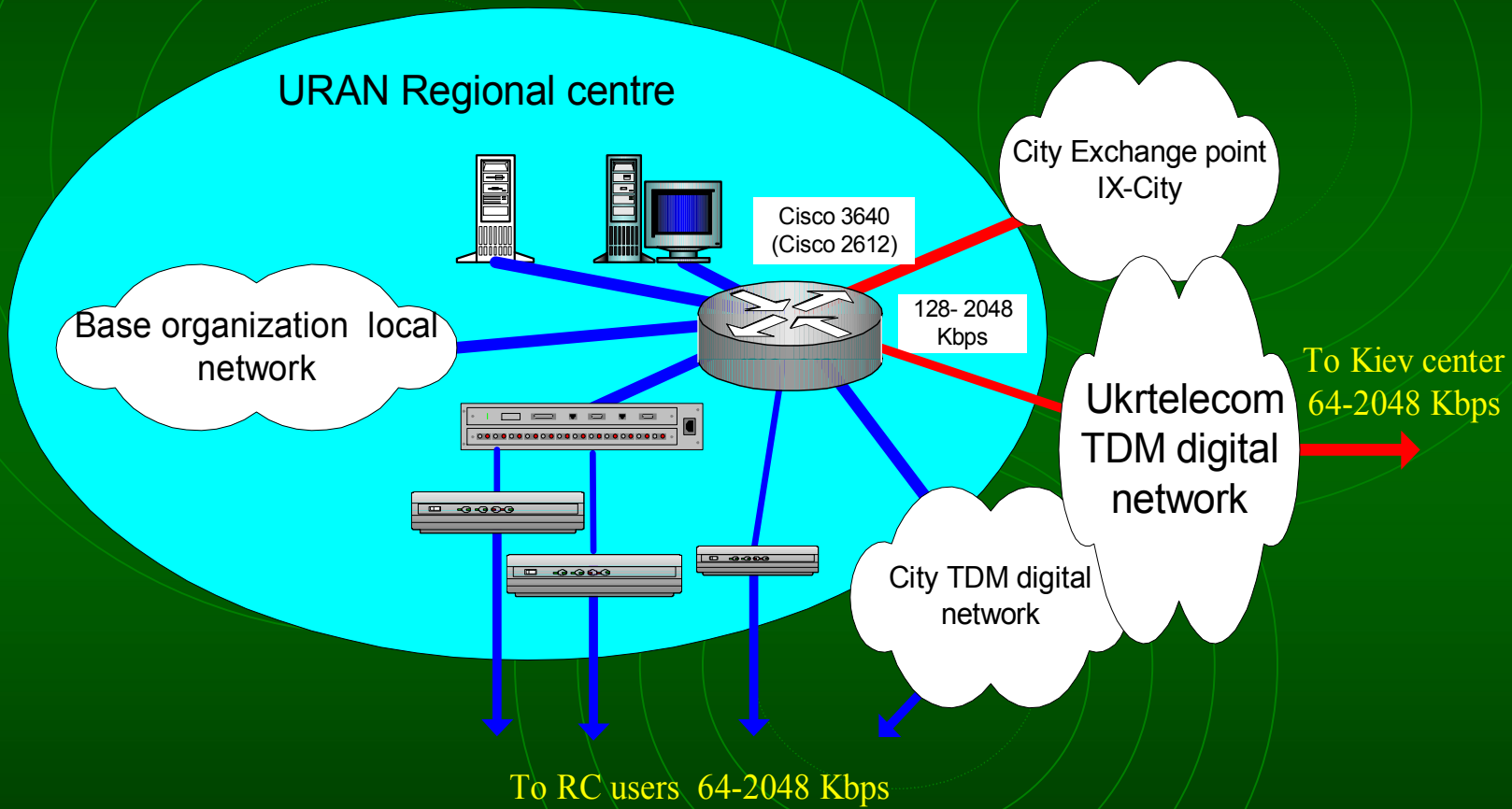


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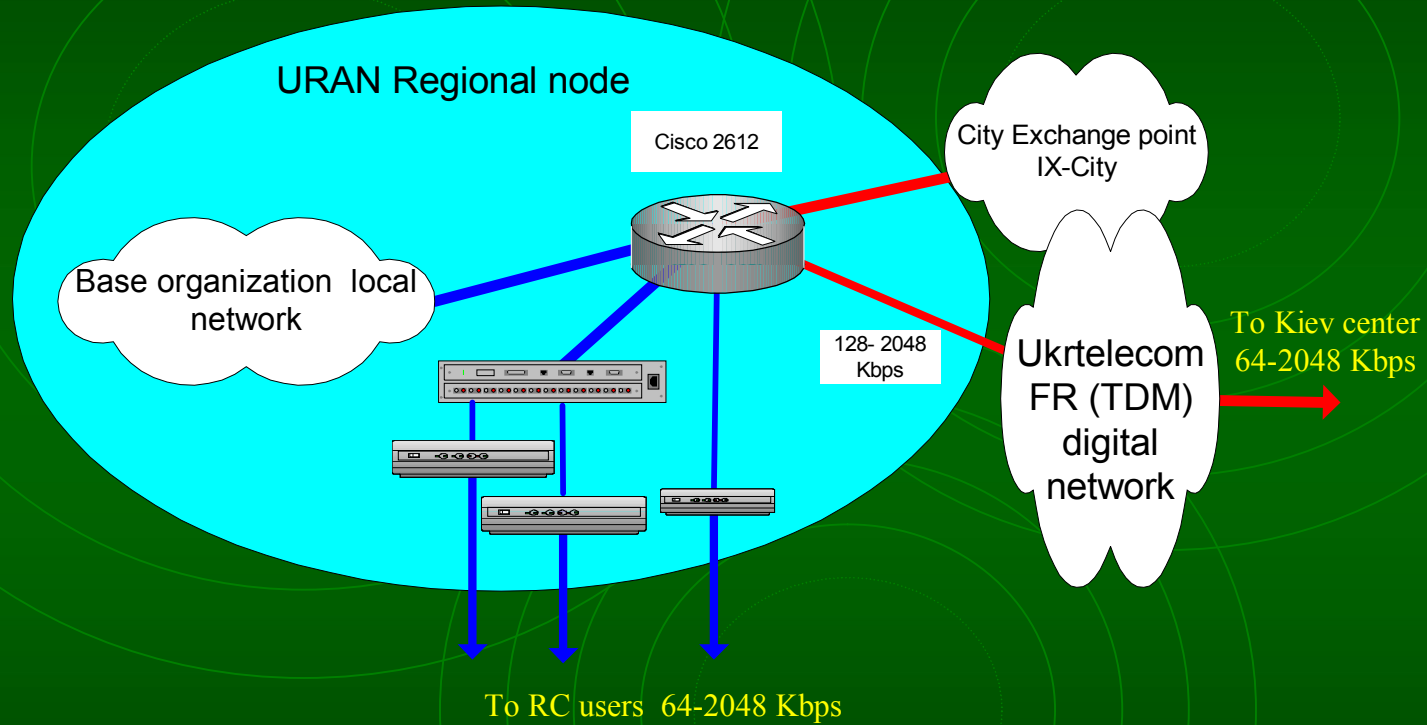
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Typical structure of RC



Typical structure of RN



URAN: Technical aspects

- Backbone channels
- Users channels
- Equipment
- Software and protocols
- Services
- Traffics

Backbone channels

- Backbone long-distance channels
 - digital TDM 64 - 2048 Kbps
 - digital Frame Relay 128 Kbps
- External channels
 - Satellite 1-2 Mbps
 - Peer connection to UA-IX (10-100 Mbps)

Users channels

- Digital TDM 64 - 2048 Kbps
- Digital Frame Relay 128 Kbps
- Copper leased line xDSL 0,25-2,3 Mbps
- Maximum speed technology approach
(user connection on maximal possible speed of the physical line, fee doesn't depend from connection speed)

No radio channels still

No optical channel still

Equipment

- Cisco routers in RC and RN
- Intel PC platform network servers in RC
- Ethernet switches with 802.1Q for user line distribution over
- Short range modem-bridges based on xxDSL technology
- Short range xxDSL modem for last mile long distance digital channel connection

Software and protocols

- Cisco Internetworking operating system on IP and TCP level.
- FreeBSD and Linux on servers.
- IP-based user traffic accounting system
- Linux and Microsoft intranet in users networks
- TCP/IP, Frame relay, PPP, SNMP, Ethernet, BGP4, OSPF

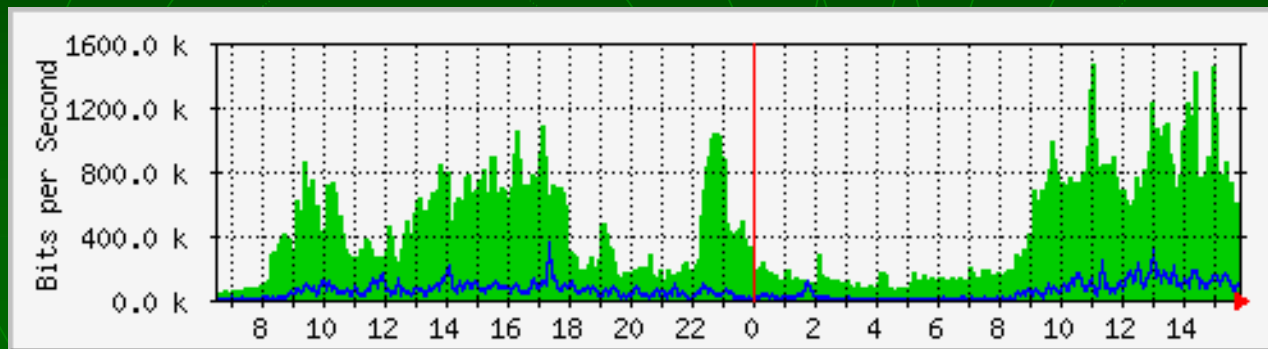
Services

- WEB, FTP, SMTP, DNS, NEWS
- TCP-connection, tunnel-connection
- “Secondaring” users DNS servers.
- “Relaying “ the E:mail (on demand).
- Network addresses translations (on demand)
- Including undepended IP addresses users blocks in AS URAN (on demand)

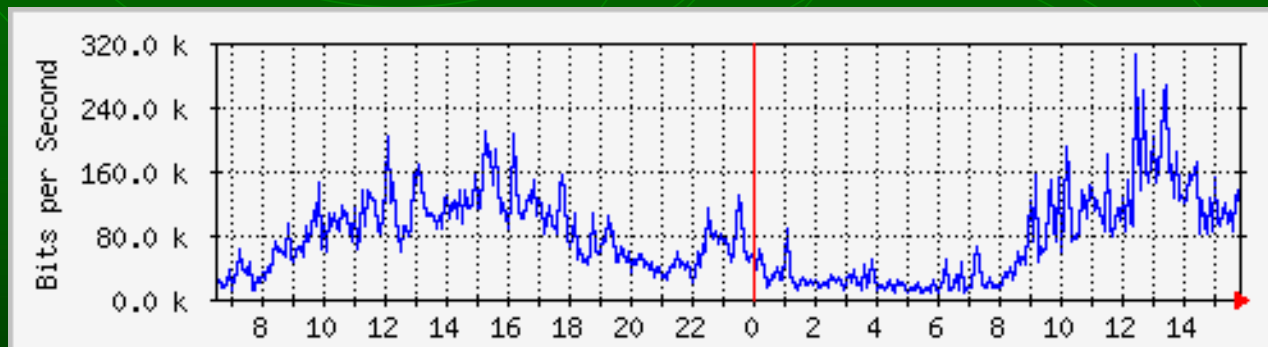
Services

- BGP4 user connection
- Access lists (on demand)
- Traffic accounting
- Traffic control
- Shaping of bandwidth (on demand)

CEI Internet traffic (03.09.02)



UkrSat
+
UA-IX



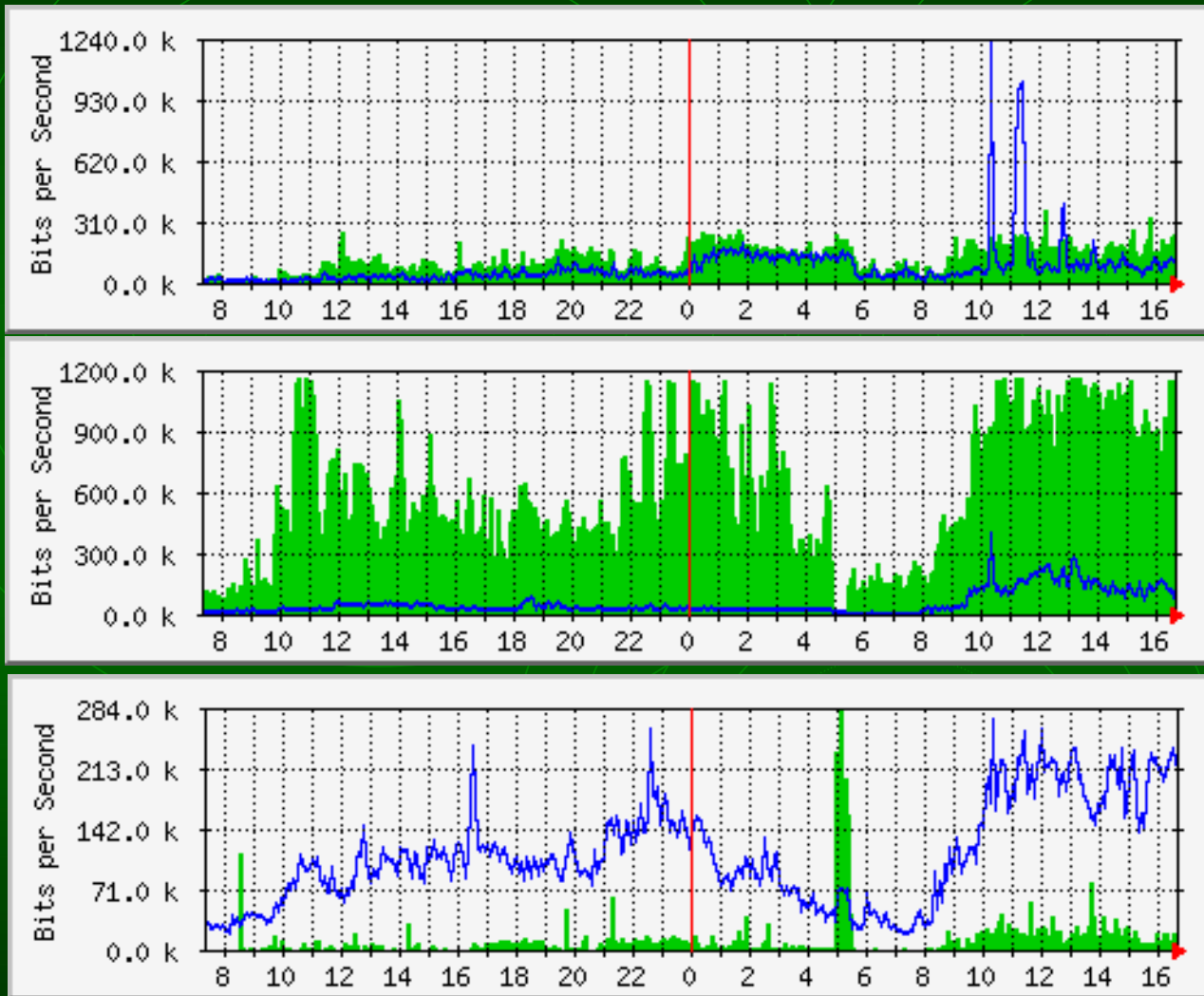
SkyVision

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CEI Internet traffic (31.03.03)



UA-IX

UkrSat

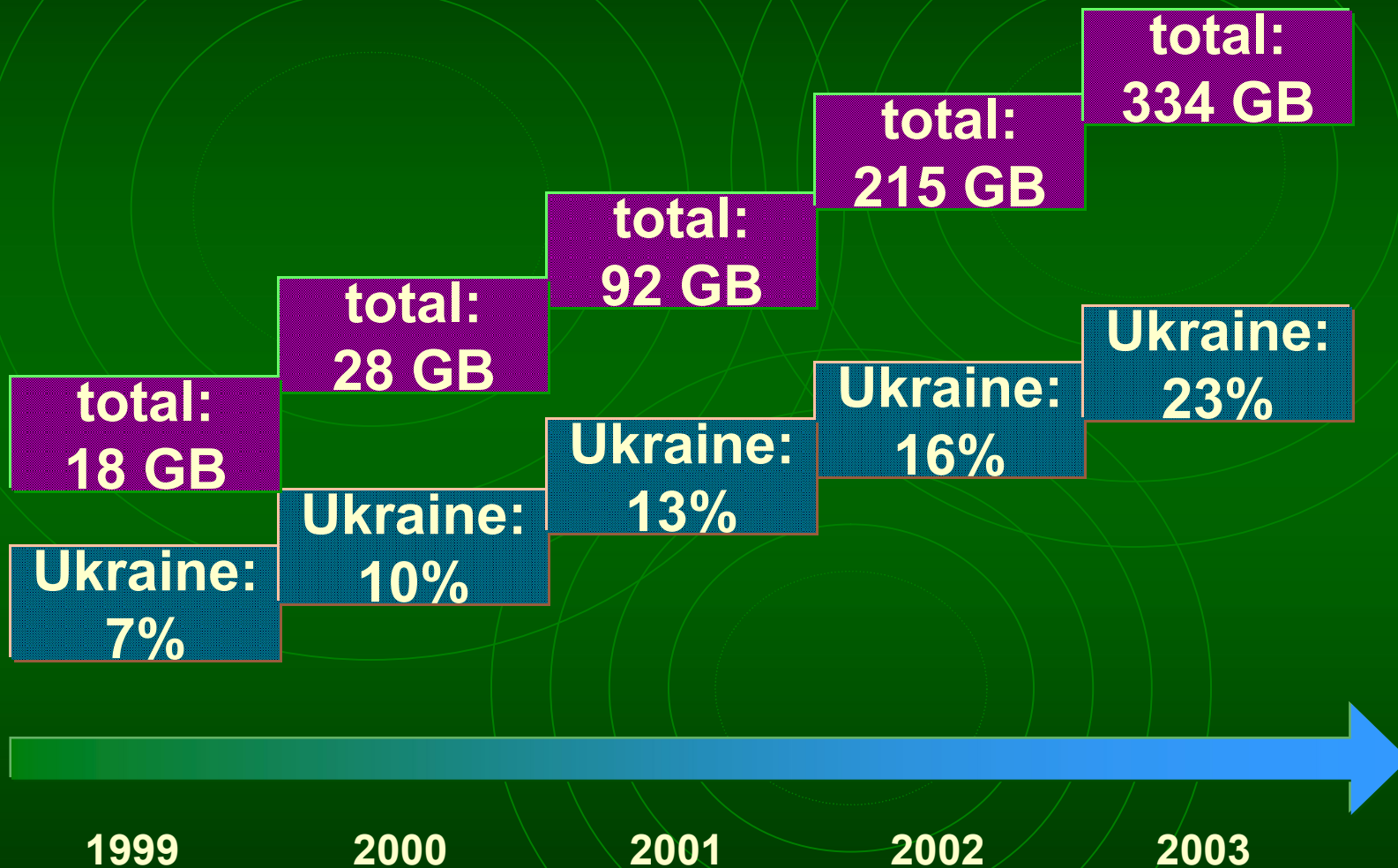
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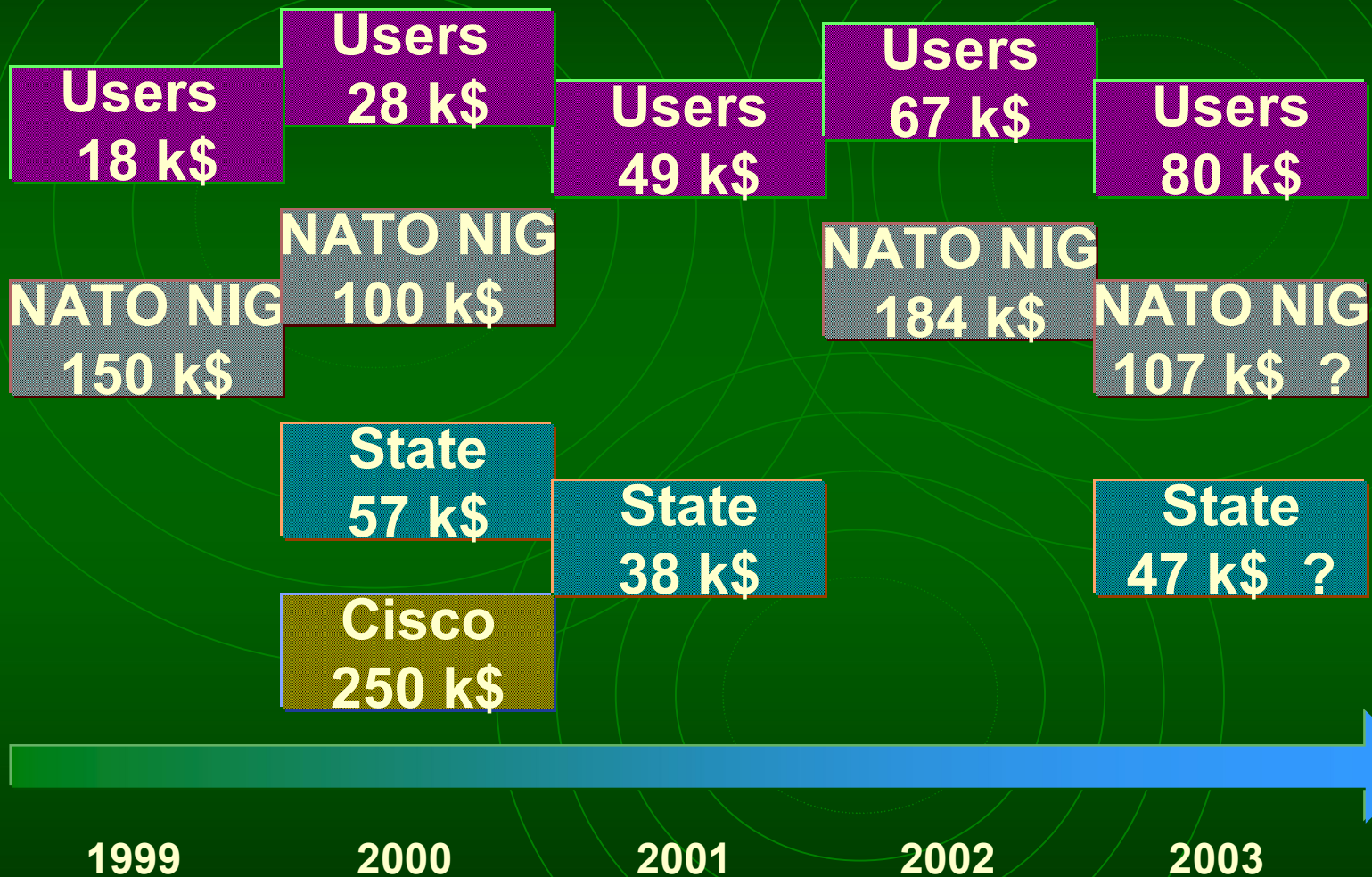
CEI: average monthly traffic



URAN: Financial principles

- Sources of founding
- Traffic tarifications
- Tariffs

URAN: sources of founding



CEI: traffic tariffication

Effective traffic:

$$V = V^{\text{in-D}} + 1.5 V^{\text{out-D}} + 0.5 V^{\text{in-N}} + 1.5 V^{\text{out-N}}$$

Typical correlation for user's traffic:

$$\text{in} : \text{out} = 5:1$$

$$\text{day} : \text{night} = 4:1$$

In this assumption the effective traffic is equal to the total bidirectional one

CEI: maximal tariffs 2002

Asynchronous lines 19-115 kbps		Synchronous lines 64-1024 kbps	
Monthly traffic, GB	Montly fee, \$ (ex.TVA)	Monthly traffic, GB	Montly fee, \$ (ex.TVA)
1	86	1,5	141
2	128	3	203
4	210	5	285
6	293	10	492
12	540	20	904

CEI: special tariffs for RC

Effective traffic:

$$V = V^{\text{in}} + 1.5 V^{\text{out}}$$

23 \$ / GB (ex. TVA)

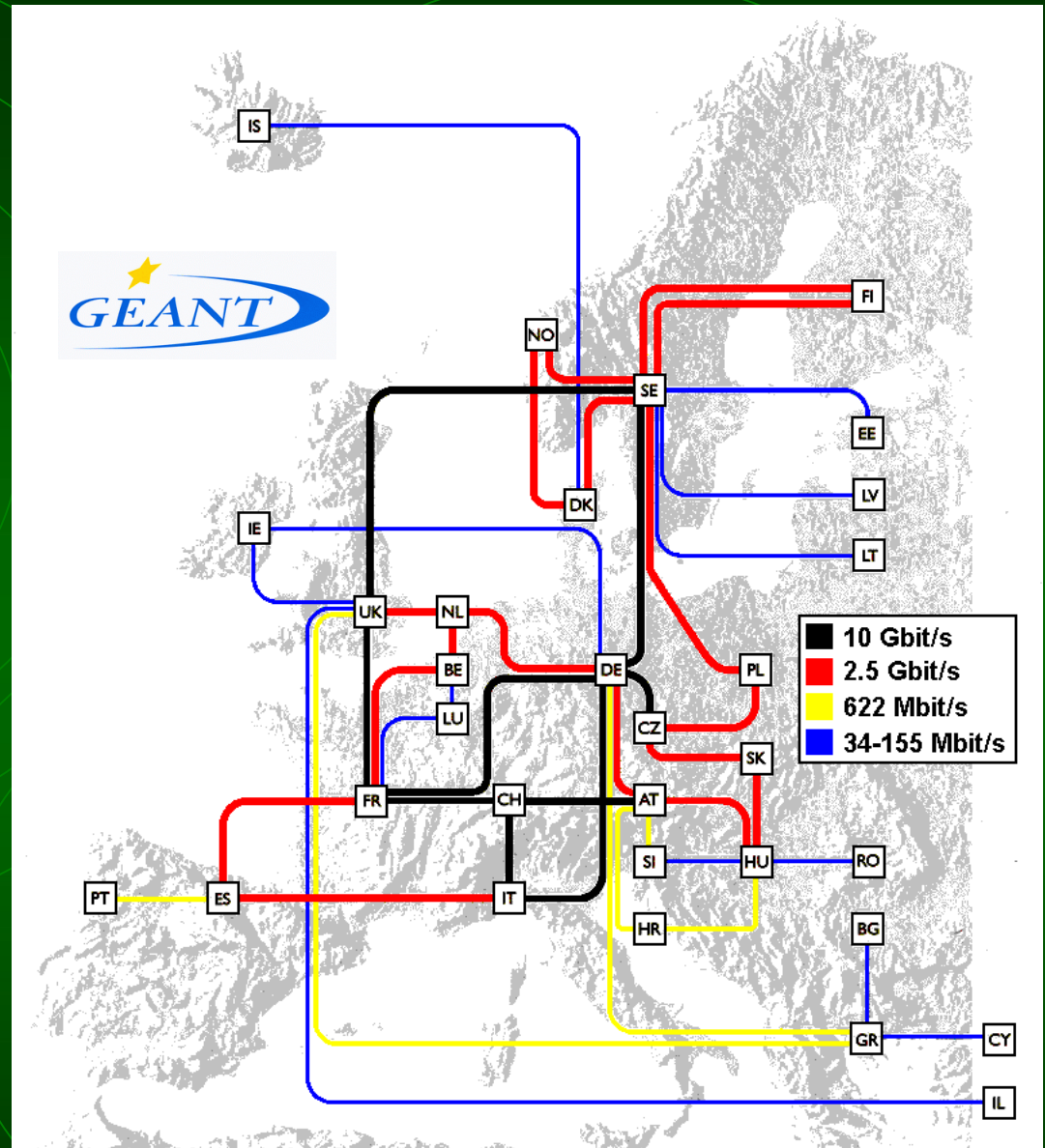
Monthly fee: 58 \$ (ex. TVA)

Perspectives of connection to GÉANT

- Technical possibilities
- New services
- Financing
- Questions ??

GÉANT

- multi-gigabit pan-European research network.
- 6.000 AS (from 70.000)
- connected 3000+ science and education institutes in Europe



Technical possibilities

- Nov 2002 - established Ukrtelecom channel to GEANT (to Vienna over ACOnet)
- There are ATM/FR Ukrtelecom network with STM1(4) connection to RC-cities from Kiev.
- Implementation of new URAN accounting system based on new Cisco IOS features which permits to estimate separately user's traffic to different channels and apply special low prices for GEANT traffic

New services and possibilities

- Distance learning
- Video conferencing
- Distance medical research and diagnostic
- Physical and biology researches
- Supercomputer resource sharing
- Others ?

Financing

- State contribution in Ukrainian science and education area is financial support of Ukrtelecom for channel to Vienna
- Part of NATO grant NIG # 978384 for URAN is redirected for connection to GEANT channel
- International support of Ukraine NREN's in directions: ATM/FR backbone connection equipment; optical lines; microwave city lines

Questions (1)

To Ukrtelecom:

- What is Ukrtelecom positions according to URAN collaboration and support?
- Is It possible to delivering the GEANT traffic to URAN for low price (10% from Internet)?
- Is it possible to implement ATM 155 Mbps connection URAN RC in 6-th cities?

To ACOnet, GEANT:

- How long we may hope for the free of charge Ukraine connection to GEANT due to ACOnet (GEANT) grant?

Questions (2)

To Ukraine state authority:

- May we hope for Ukraine state contribution to GEANT (up to 800.000 EURO per year) for long term connection ?

To members of URAN user association:

- Will profit be from GEANT connection for science and education processes in Ukraine and Europe?

Thanks for attention

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