Zapp Case Study

Victor Stan / CTO Telemobil

Zapp™

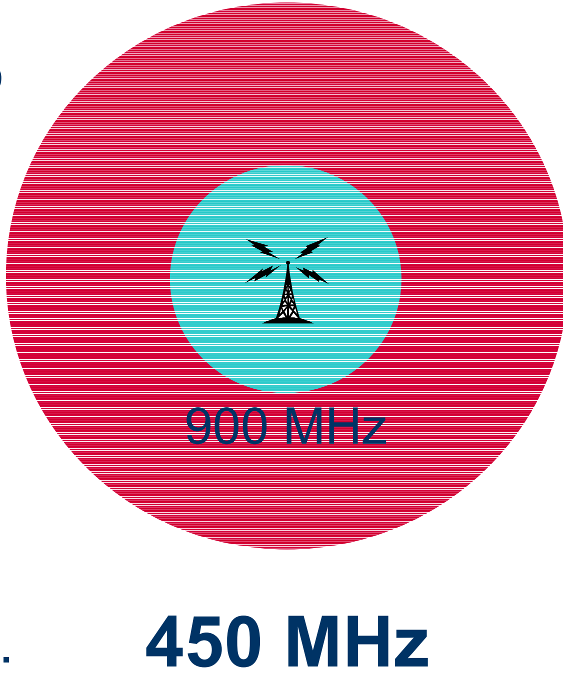
THE NEXT GENERATION NETWORK

Past & Future Milestones

- December 2001 – launching the world first CDMA450 network based on Lucent's 3G1x products portfolio.
- July 2002 – re-launching the CDMA450 products & services focusing on business market segment.
- March 2003 – reaching first 100,000 subscribers.
- April 2004 – launching first BREW enabled handset and ZappMe services.
- Q4/2004 – launching first EV-DO data services.
- Q1/2005 – launching first PTT handset and services.

Key enablers

- Based on the Free Space Loss calculations, 450 offers larger coverage footprints comparing to 900 using the same technology – *enabling less cell sites count in open areas.*
- CDMA2000 RF capacity operating 3 CDMA carriers (3.75MHz) is higher than GSM RF capacity operating 62 GSM channels (12.5MHz) – *enabling less cell sites count in urban areas*.
- CDMA link budget is better than GSM even for the same band – *enabling the HSPD margins*.
- Packet based encapsulation for Voice & Data provides better system efficiency - *enabling cost effective transport and services.*
- Resulting network CAPEX and OPEX are much lower than equivalent GSM figures – *enabling competitive positioning for buying the market-share from existing GSM operators.*



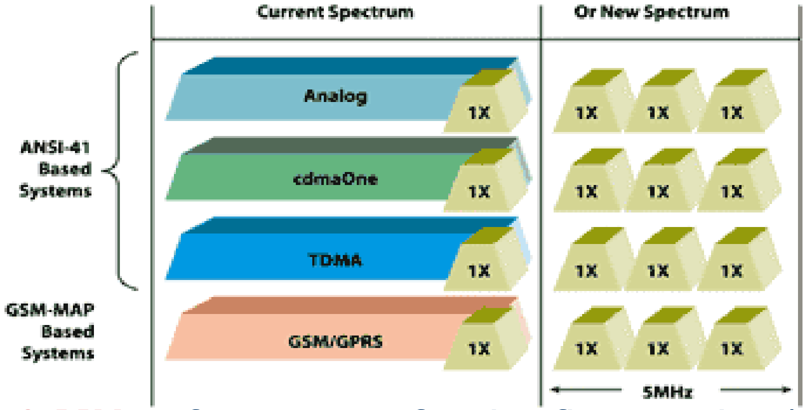
THE NEXT GENERATION NETWOR

Strategic considerations

- CDMA2000 can operate in **multiple bands**

These bands include:

- 450 MHz
- 700 MHz
- 800 MHz
- 900 MHz
- 1700 MHz
- 1800 MHz
- 1900 MHz
- 2100 MHz



- CDMA needs only **1.8 MHz** of spectrum for the first carrier (1.25 MHz plus the guard bands) while 450 MHZ spectrum can host **up to four CDMA carriers**
- Based on its cost efficiency, CDMA2000/450 can cover and serve all the **NICHE markets** left underserved by GSM due to its capacity and/or coverage limitations (on both mobile voice & data markets).
- Due to the poor fixed infrastructure available in Romania & CEE countries, CDMA2000/450 can provide the most cost effective solution for the "**Universal Service**" initiative.
- **Broadband data** capability allows CDMA2000/450 to substitute equivalent fixed data solutions (ISDN, CATV, xDSL etc) where these are unavailable.

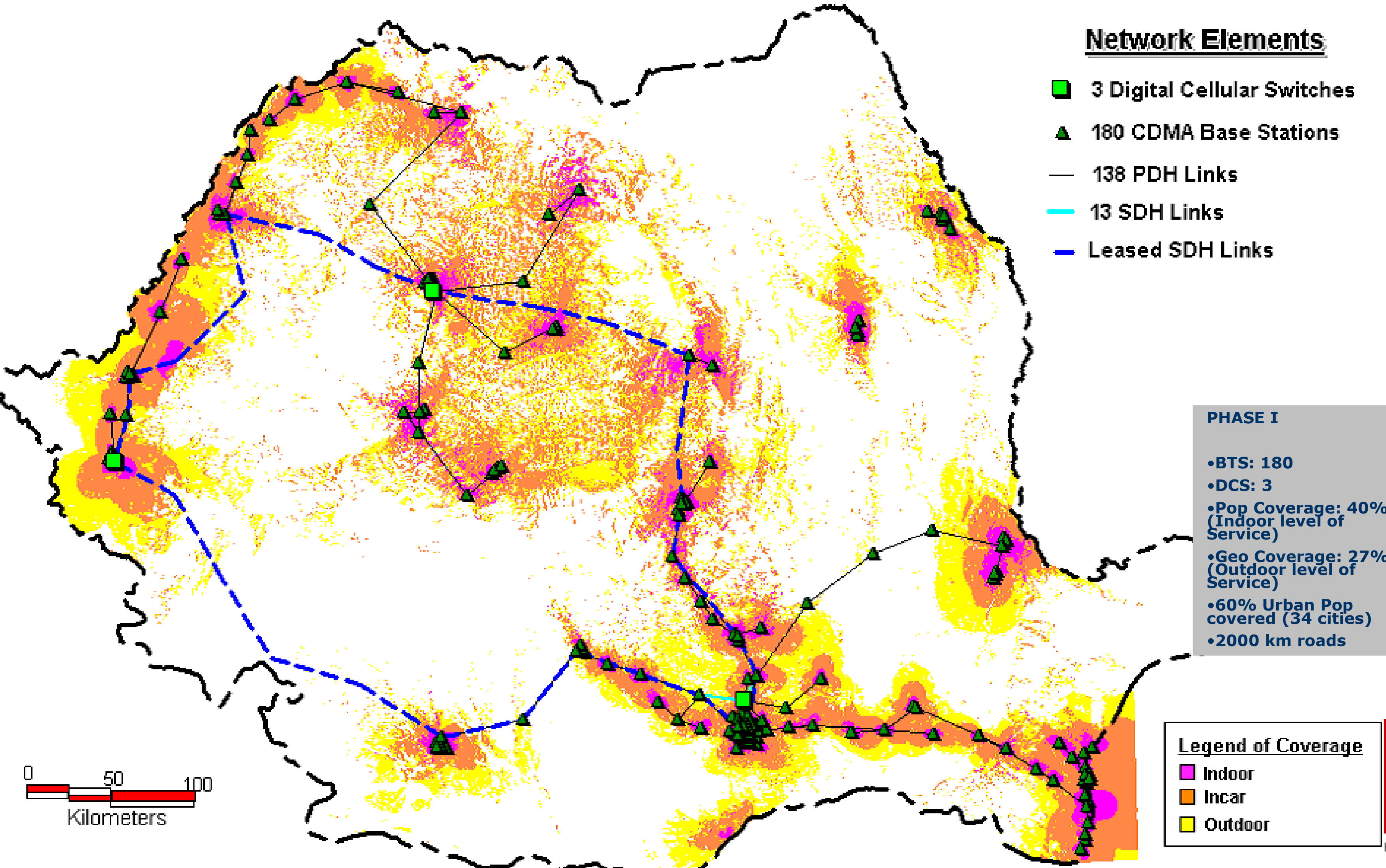
THE NEXT GENERATION NETWOR

Network Rollout

Zapp™

THE NEXT GENERATION NETWORK

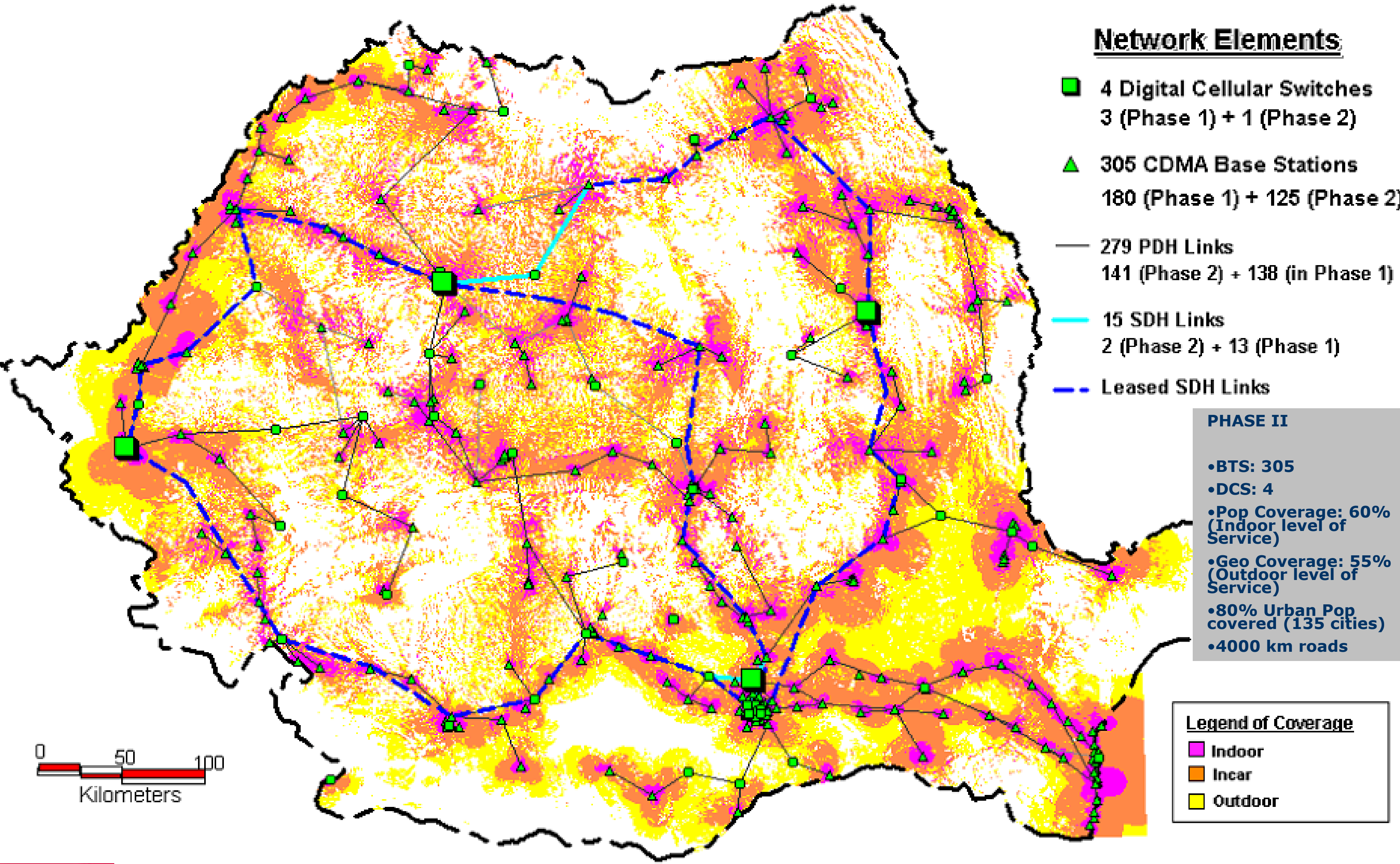
PHASE 1



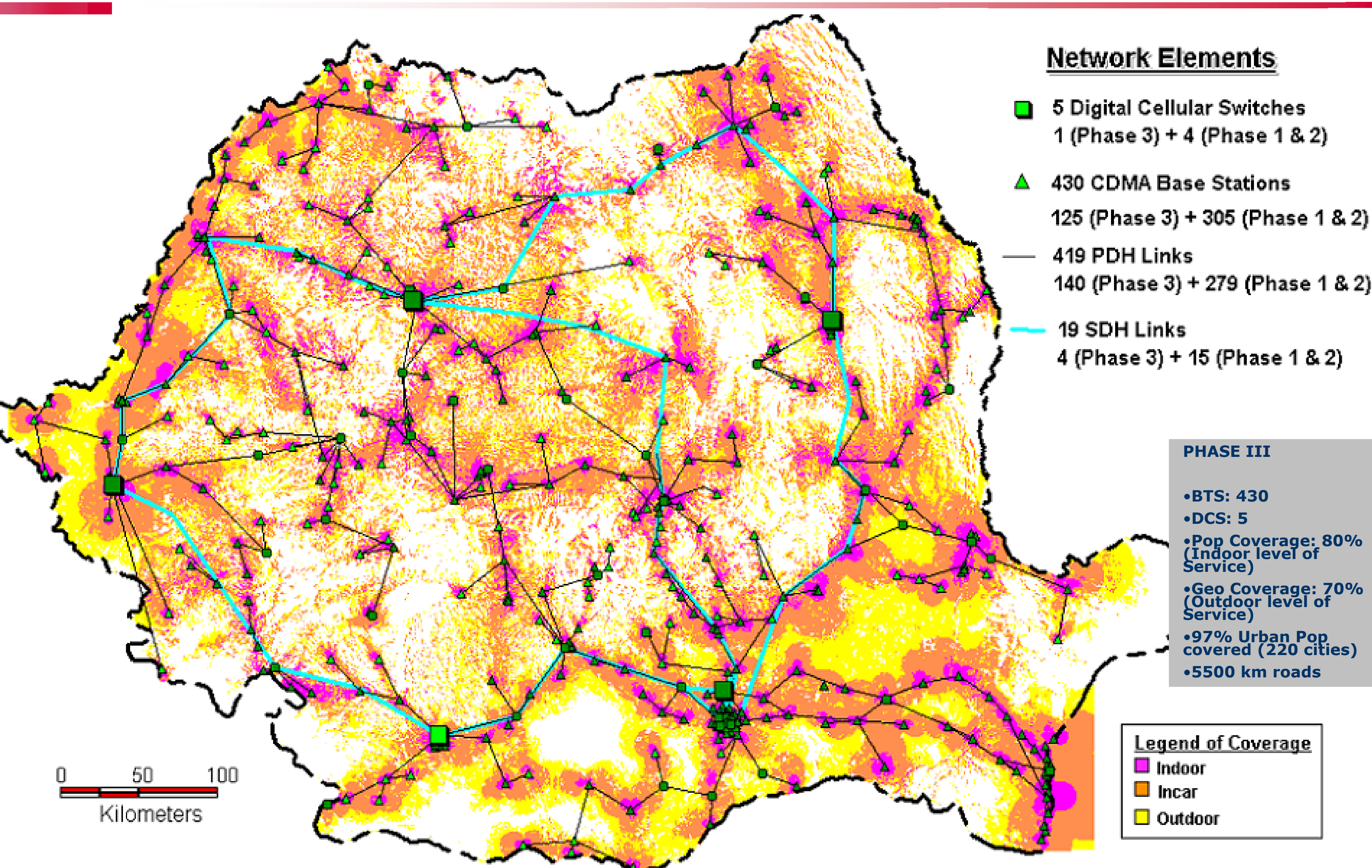
PHASE I

•BTS: 180
•DCS: 3
•Pop Coverage: 40% (Indoor level of Service)
•Geo Coverage: 27% (Outdoor level of Service)
•60% Urban Pop covered (34 cities)
•2000 km roads

PHASE 2


Network Elements
4 Digital Cellular Switches
3 (Phase 1) + 1 (Phase 2)
305 CDMA Base Stations
180 (Phase 1) + 125 (Phase 2)
279 PDH Links
141 (Phase 2) + 138 (in Phase 1)
15 SDH Links
2 (Phase 2) + 13 (Phase 1)
Leased SDH Links
PHASE II
•BTS: 305
•DCS: 4
•Pop Coverage: 60% (Indoor level of Service)
•Geo Coverage: 55% (Outdoor level of Service)
•80% Urban Pop covered (135 cities)
•4000 km roads
Legend of Coverage
Indoor
Incar
Outdoor
0
50
100
Kilometers

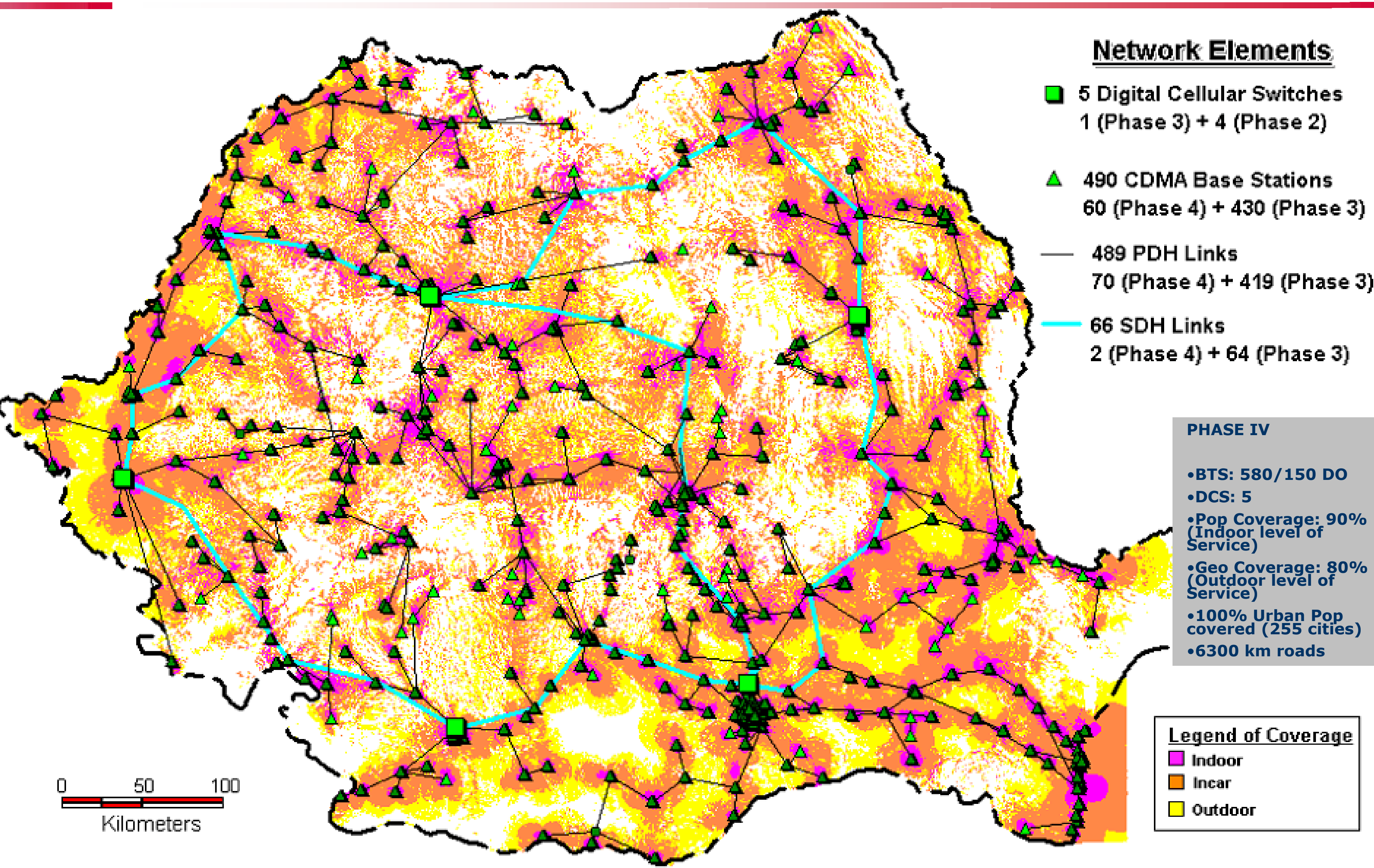
PHASE 3



PHASE III

- BTS: 430
- DCS: 5
- Pop Coverage: 80% (Indoor level of Service)
- Geo Coverage: 70% (Outdoor level of Service)
- 97% Urban Pop covered (220 cities)
- 5500 km roads

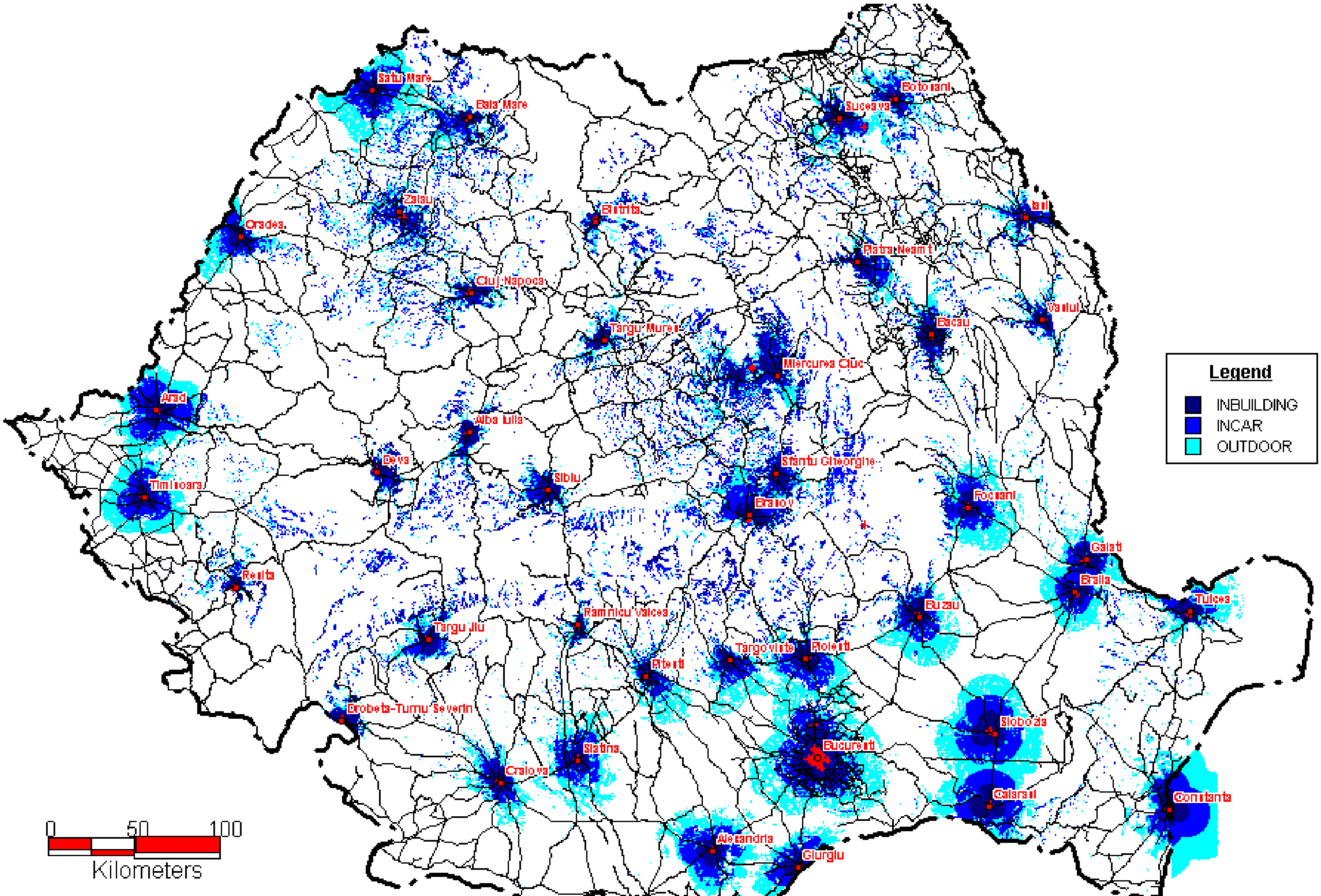
PHASE 4



PHASE IV

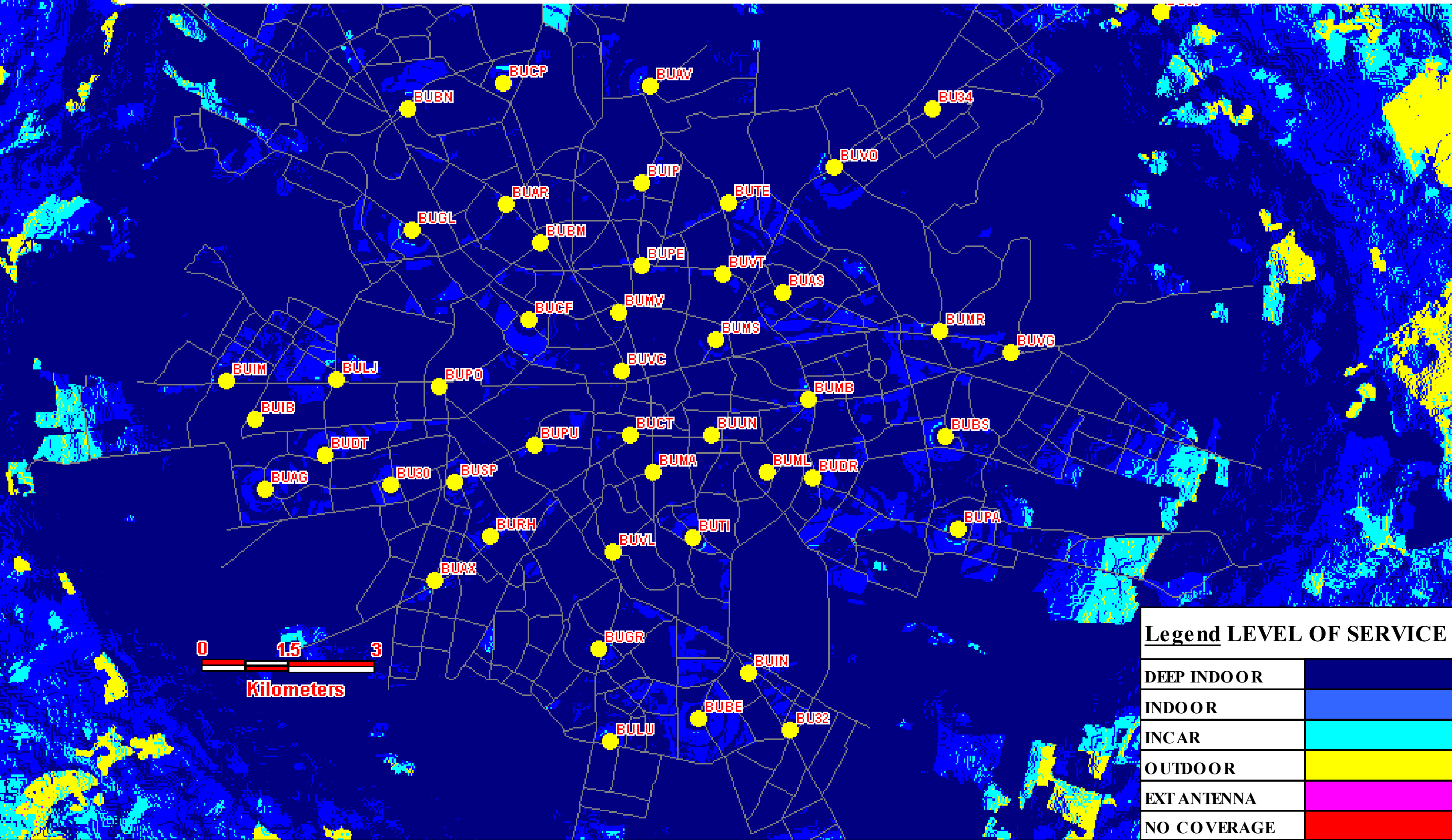
- BTS: 580/150 DO
- DCS: 5
- Pop Coverage: 90% (Indoor level of Service)
- Geo Coverage: 80% (Outdoor level of Service)
- 100% Urban Pop covered (255 cities)
- 6300 km roads

1xEV-DO Coverage (2004)



Drive Test & Prediction Results

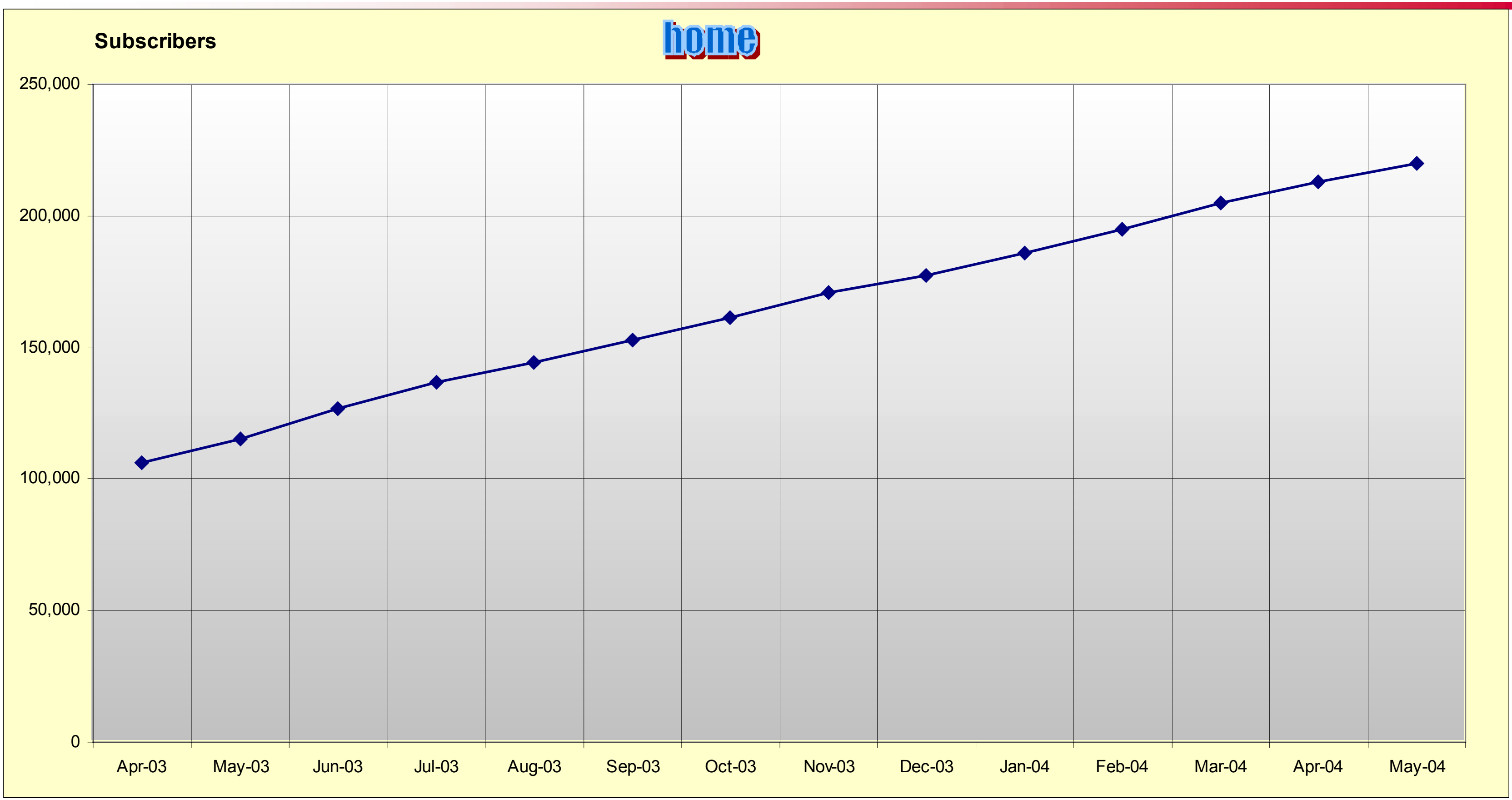
Omni Configuration Coverage



Traffic & Performance

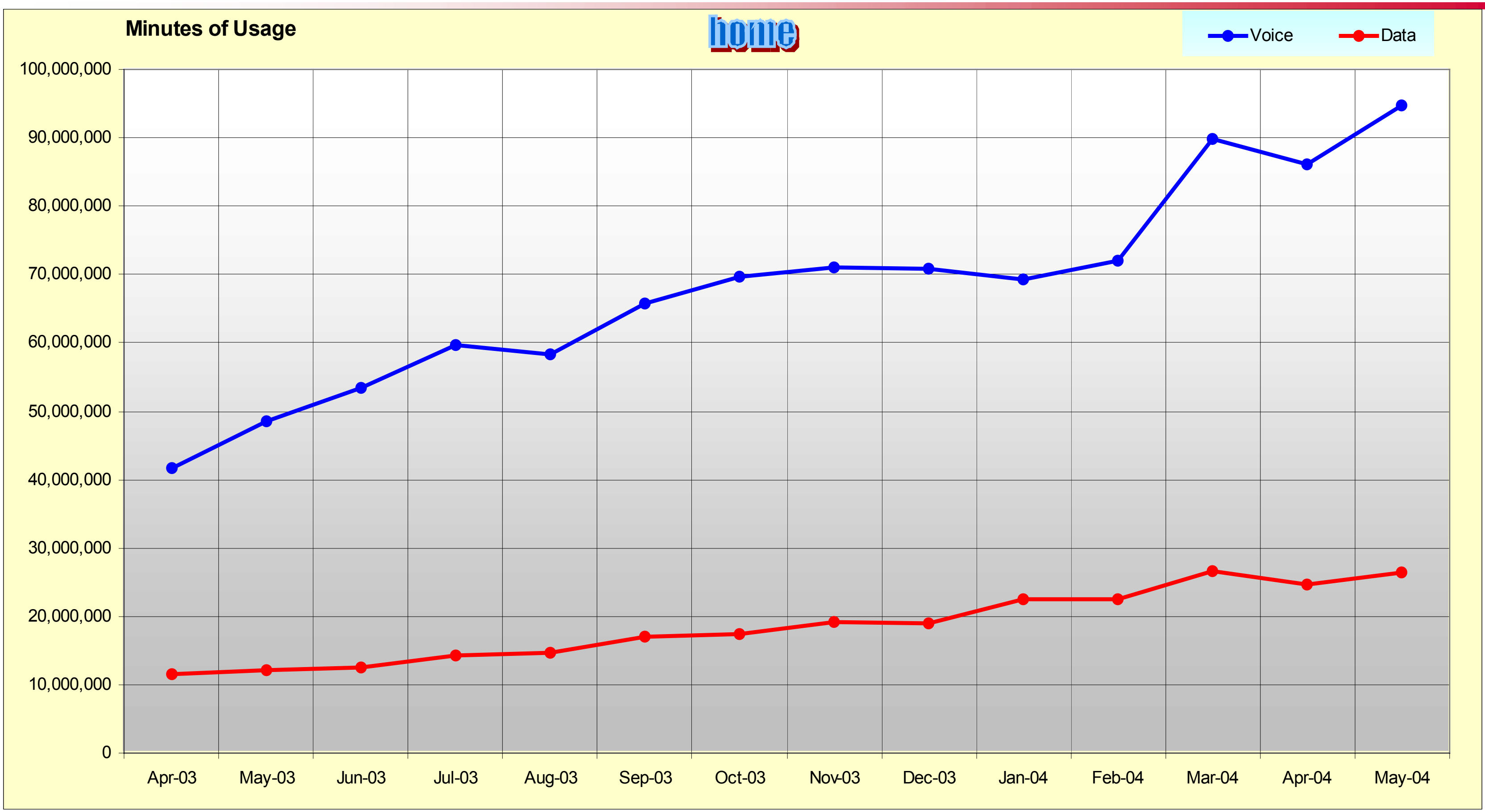
Zapp™
THE NEXT GENERATION NETWORK

Subscribers



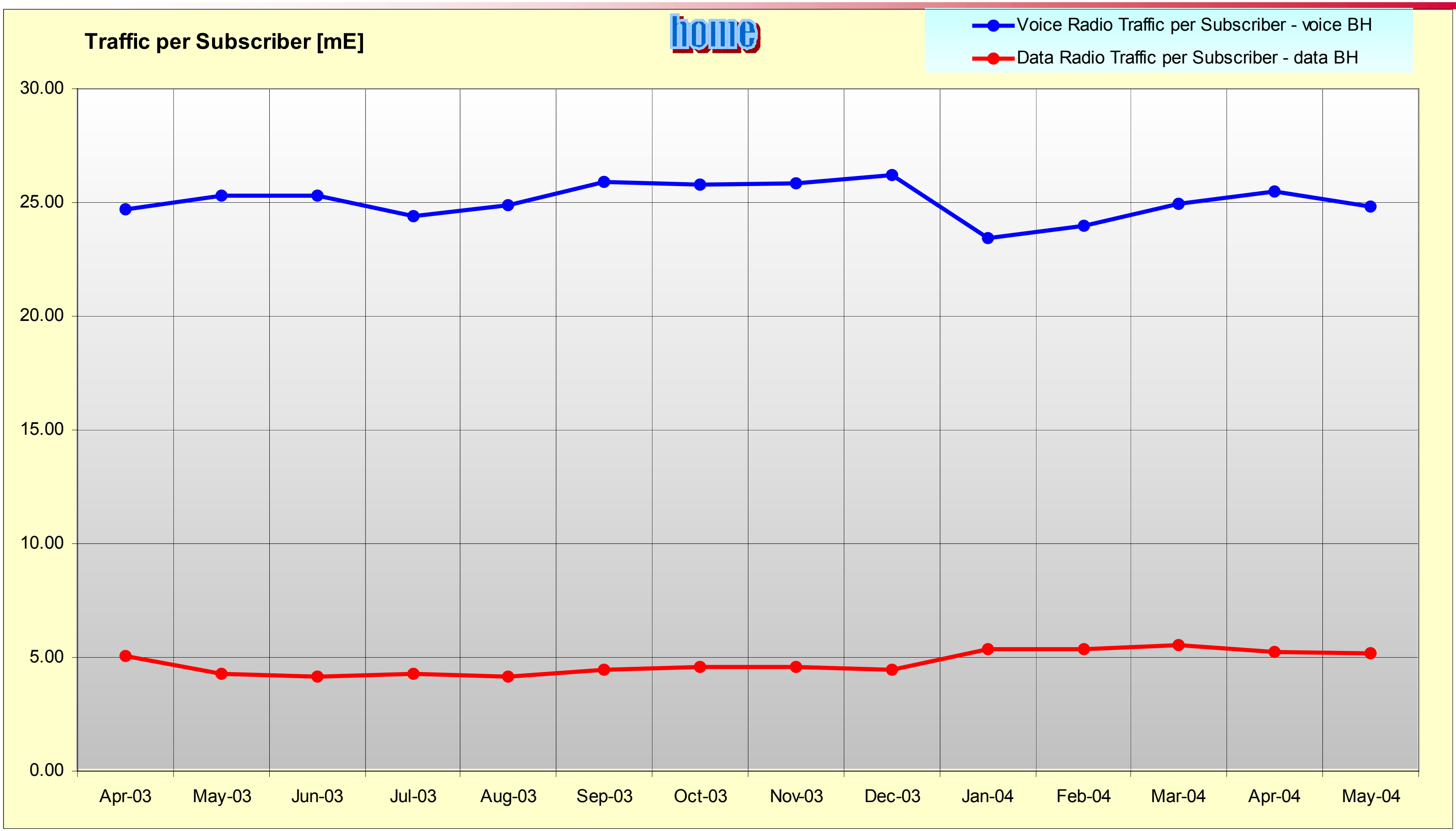
Zapp™
THE NEXT GENERATION NETWORK

Minutes Of Usage



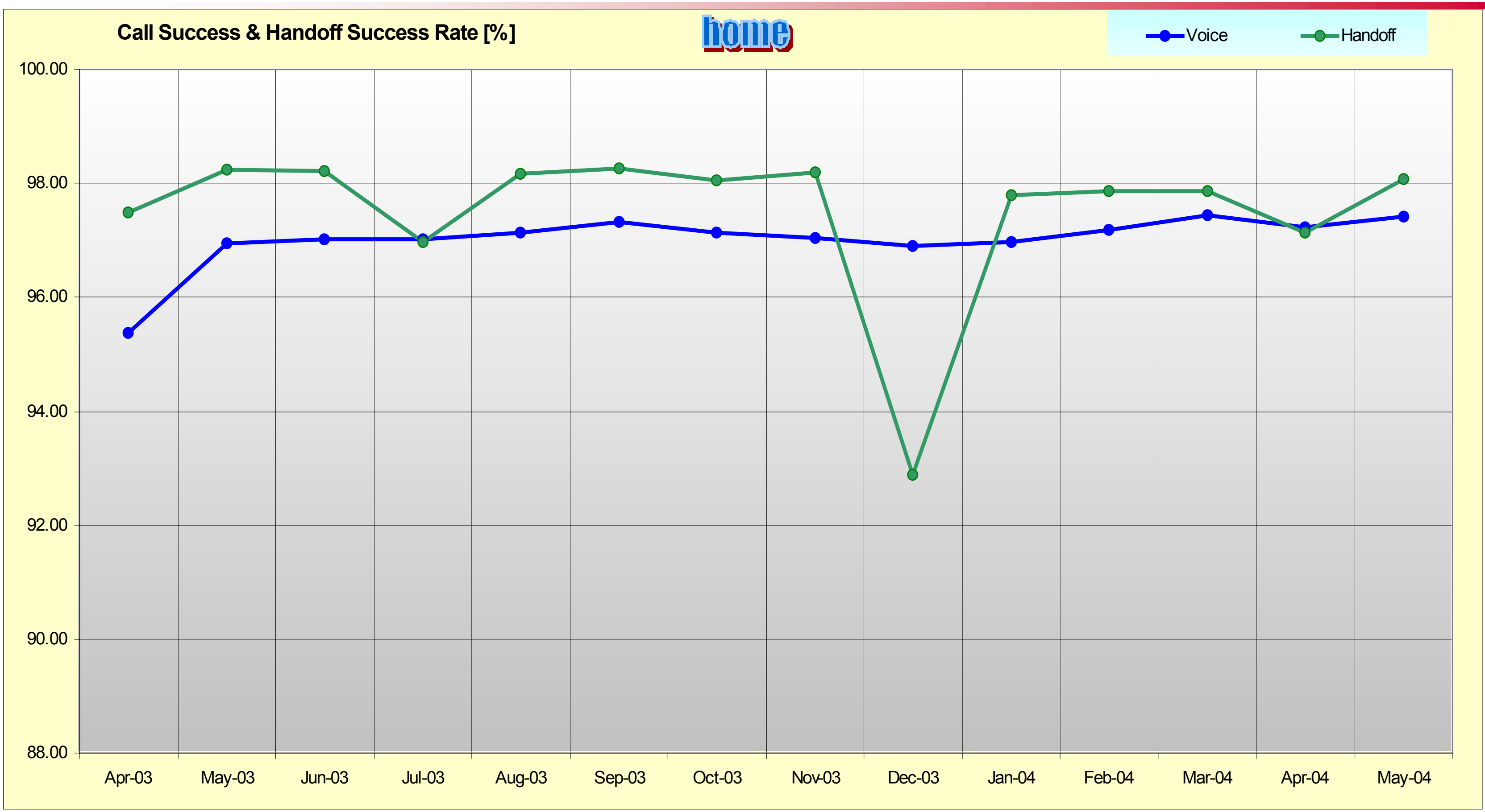
THE NEXT GENERATION NETWORK

Traffic/Subscriber - Voice & Data



THE NEXT GENERATION NETWORK

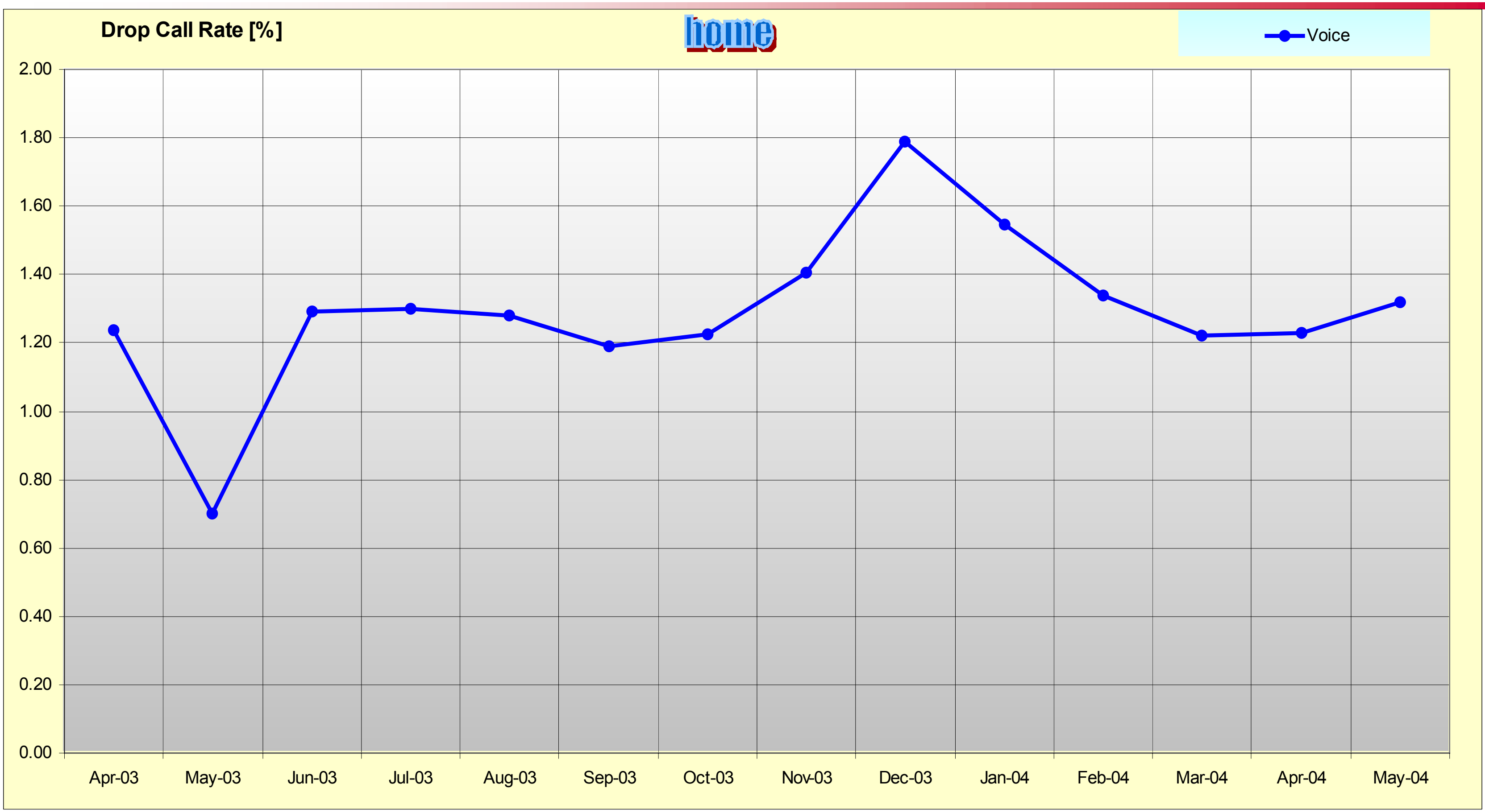
Call Performance



Zapp™

THE NEXT GENERATION NETWORK

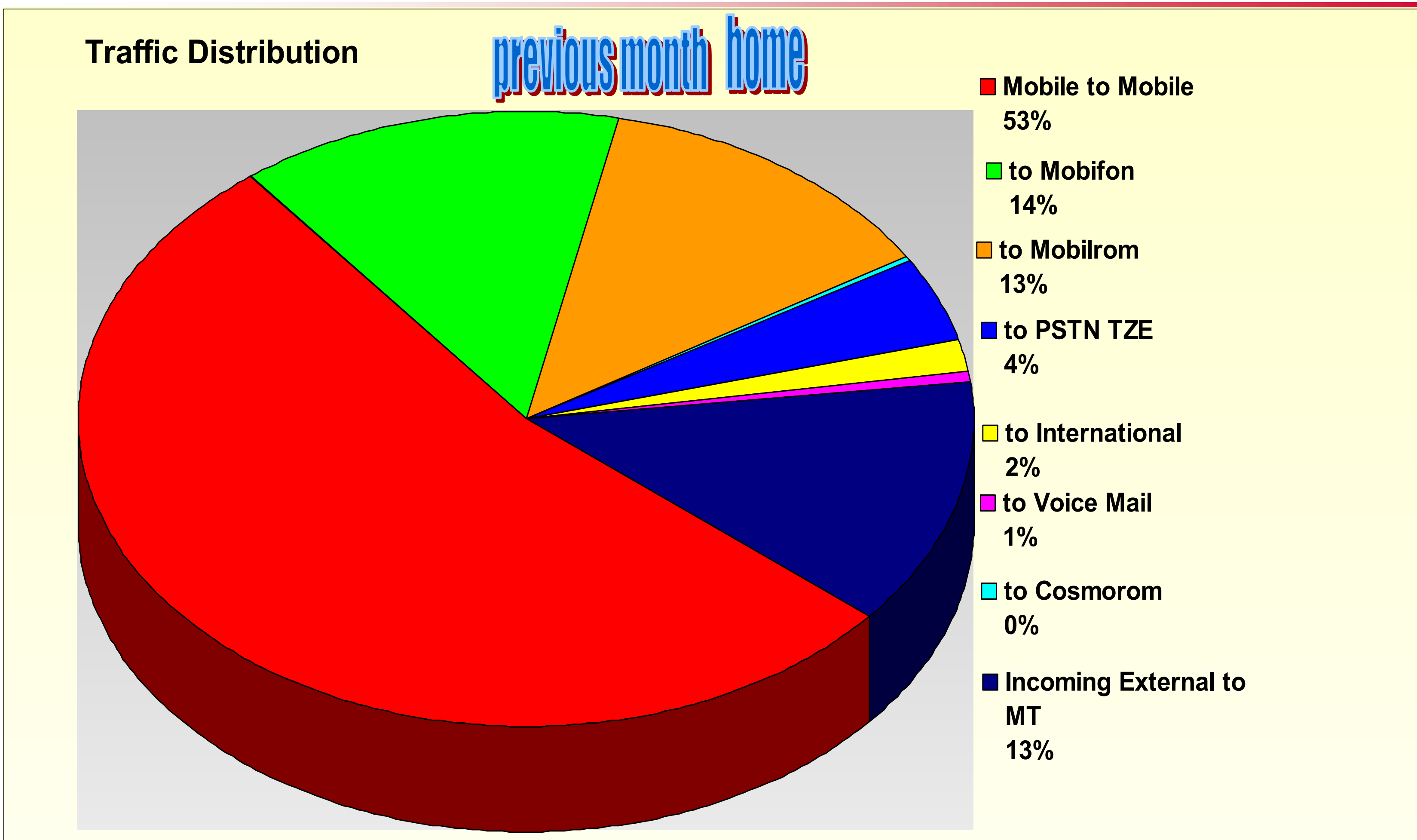
Drop Call Rate



Zapp™

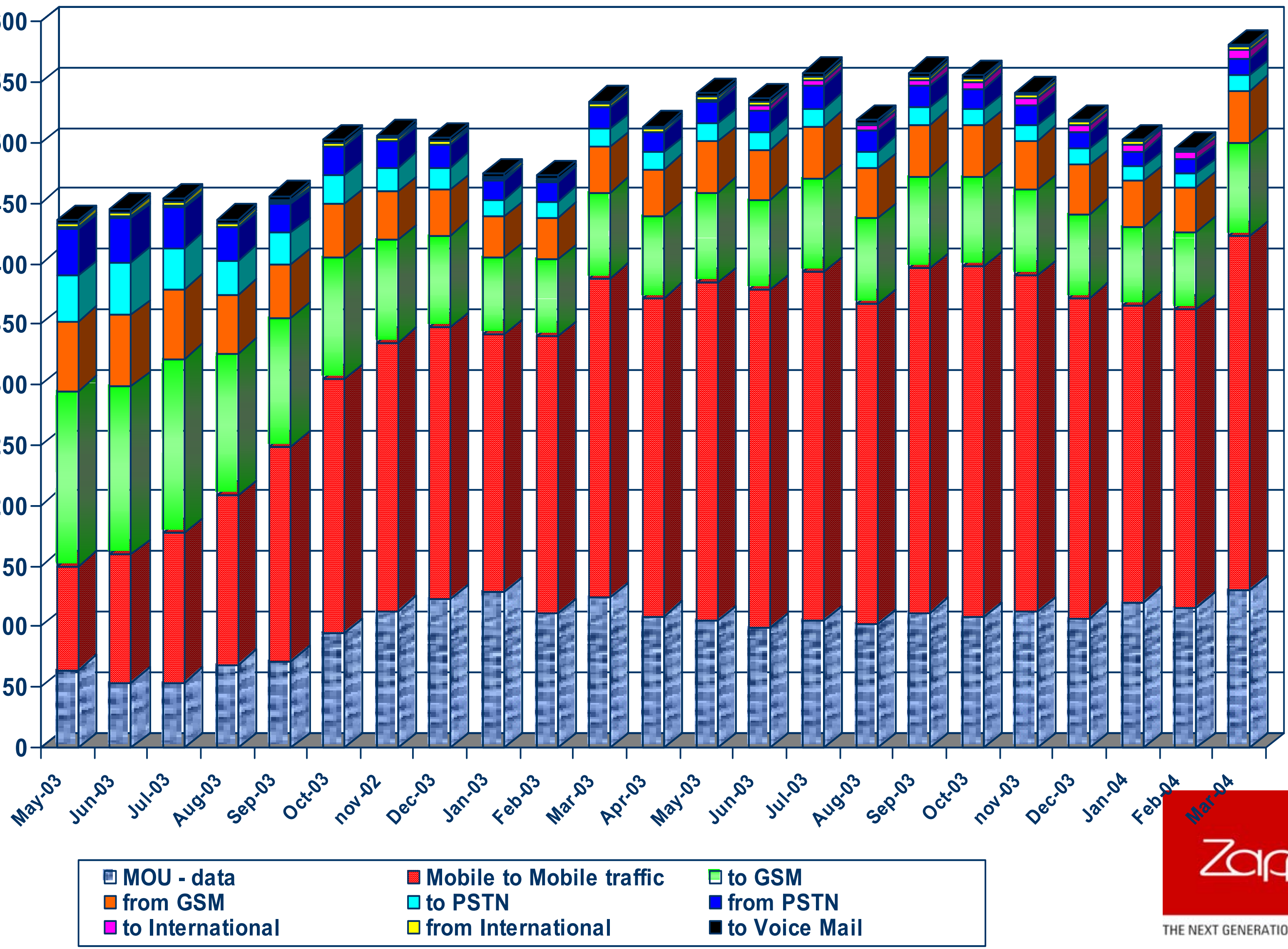
THE NEXT GENERATION NETWORK

Voice Traffic per Destination



THE NEXT GENERATION NETWOR

ZAPP – Minutes of Usage per Subscriber



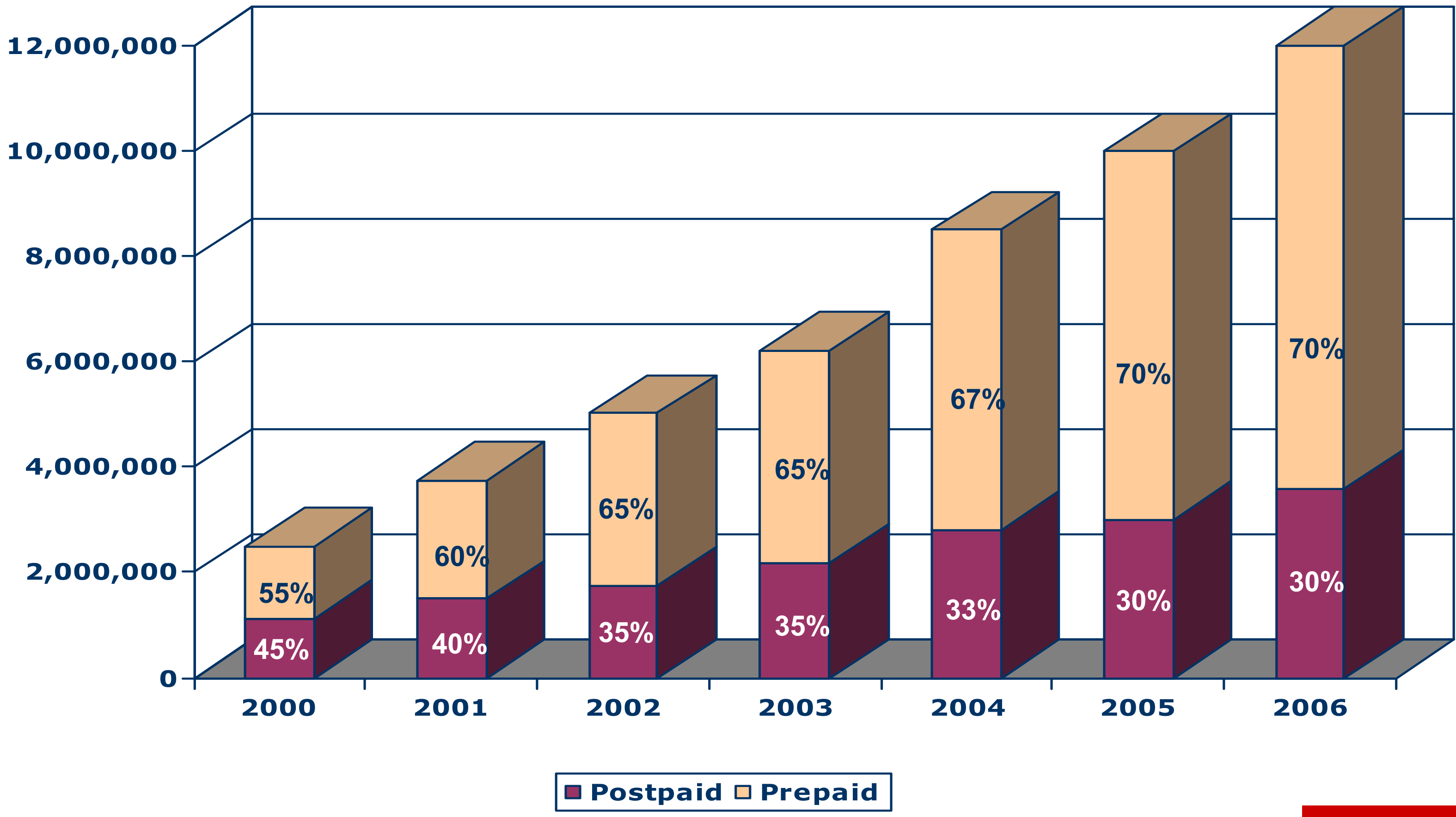
Zapp™
THE NEXT GENERATION NETWORK

Market Status & Trends

Zapp™

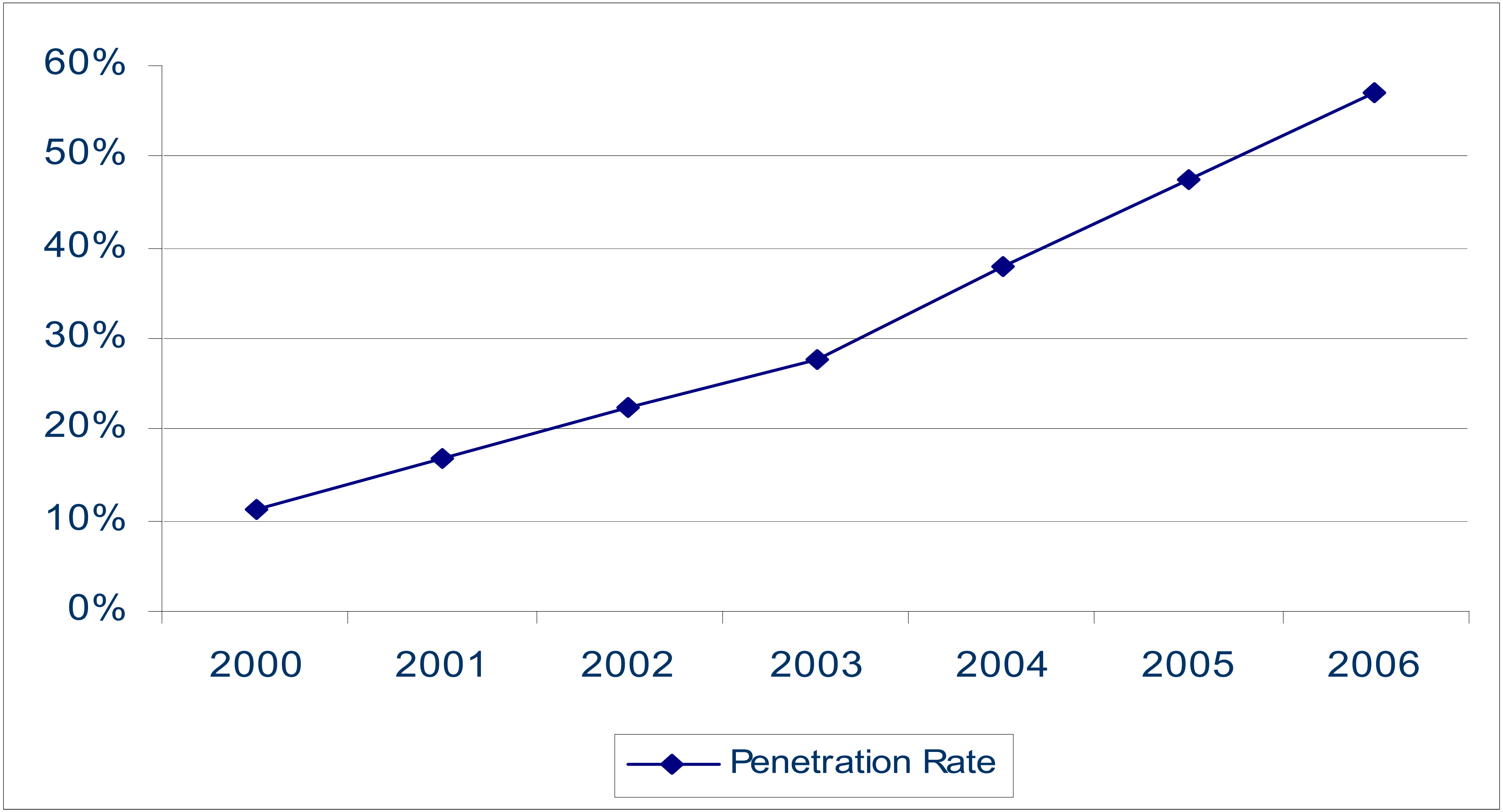
THE NEXT GENERATION NETWORK

Romanian Mobile Phone Market



Zapp™
THE NEXT GENERATION NETWORK

Mobile Phone Penetration



Zapp™
THE NEXT GENERATION NETWORK

CONNEX

Competitors

Subscribers: 4 million (June 04)

Tariff Plans: 63% prepaid vs 37% postpaid

Coverage: population: 97%
geographic: 77%

Roaming: 97 countries

Distribution: 11 own shops
600 dealers
3500 POS for prepaid

	2002	2003
Total revenues (USD in millions)	425.6	529.5

Zapp™
THE NEXT GENERATION NETWORK

orange™

Competitors

Subscribers: 3,9 million (June 04)

Tariff Plans: 65% prepaid vs 35% postpaid

Coverage: population: 96%

geographic: 77,7%

Roaming: 107 countries

Distribution: 17 own shops

700 dealers

7000 POS for prepaid

	2002	2003
Total revenues (USD in millions)	393	527

Competitors

Subscribers: 85,169 (June 04)

Tariff Plans: 63% prepaid vs 37% postpaid

Coverage: population: 69%

geographic: 55%

Roaming: 43 countries

Distribution: 3 own shops

48 dealers

ROMTELECOM

Competitors

Subscribers: 4,3 million phone lines

Coverage: population: 20%

Roaming: -

Distribution: Postal Offices

	2002	2003
Total revenues (USD in millions)	958.7	797.4

Zapp™
THE NEXT GENERATION NETWORK

Target Group

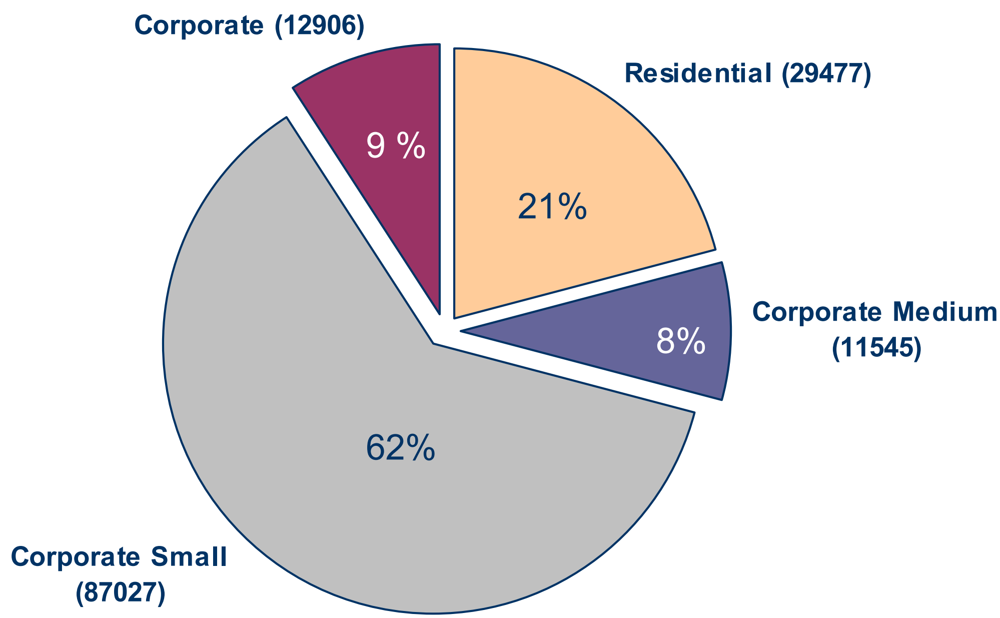
<table>
<tr><th>Market Segments</th><th>Number</th><th>Needs</th><th>Opportunities for Zapp</th></tr>
<tr><td>Corporate
>200 employees</td><td>3.100</td><td>Cheap offer</td><td>Segment occupied by GSM operators with extremely low prices. Due to high interconnection fees, Zapp is not competitive.
Niche for Mobile Data</td></tr>
<tr><td>Medium size companies
50-200 employees</td><td>7.700</td><td rowspan="3">Dedicated tariff plan with CUG
Cheaper prices than Residential</td><td rowspan="3">High potential for Zapp since GSM operators focus on Residential and large Corporates

Mobile & Fixed Data potential</td></tr>
<tr><td>Small size companies
6-50 employees</td><td>52.400</td></tr>
<tr><td>Home offices
< 6 employees</td><td>720.000</td></tr>
<tr><td>Residential</td><td>11.000.000</td><td>No monthly fee (90% prepaid)</td><td>Segment occupied by prepaid offer of GSM operators.
Niche for Fixed Broadband Data</td></tr>
</table>

Source: Romanian Government

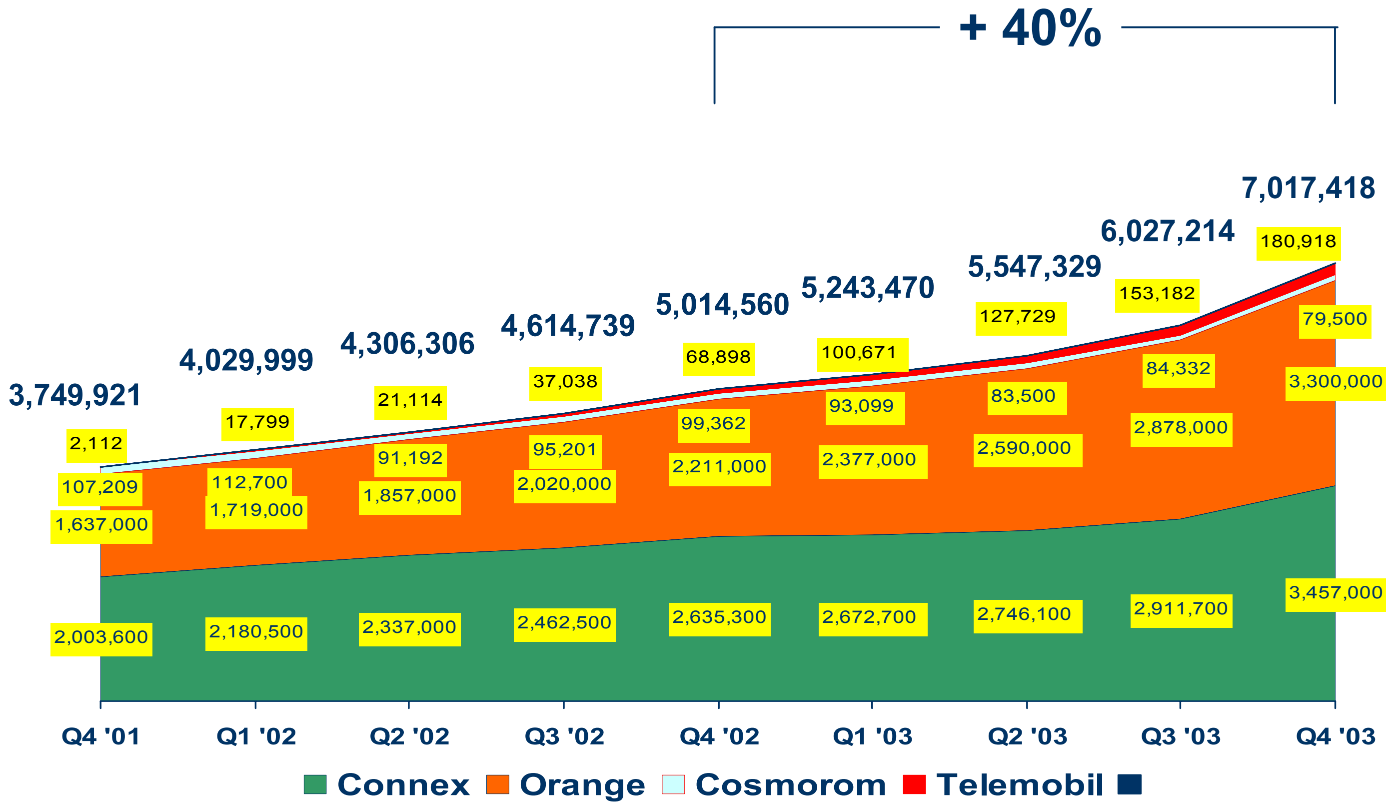
Zapp™
THE NEXT GENERATION NETWORK

Sales by Segments 2003



Mobile Market Subscribers

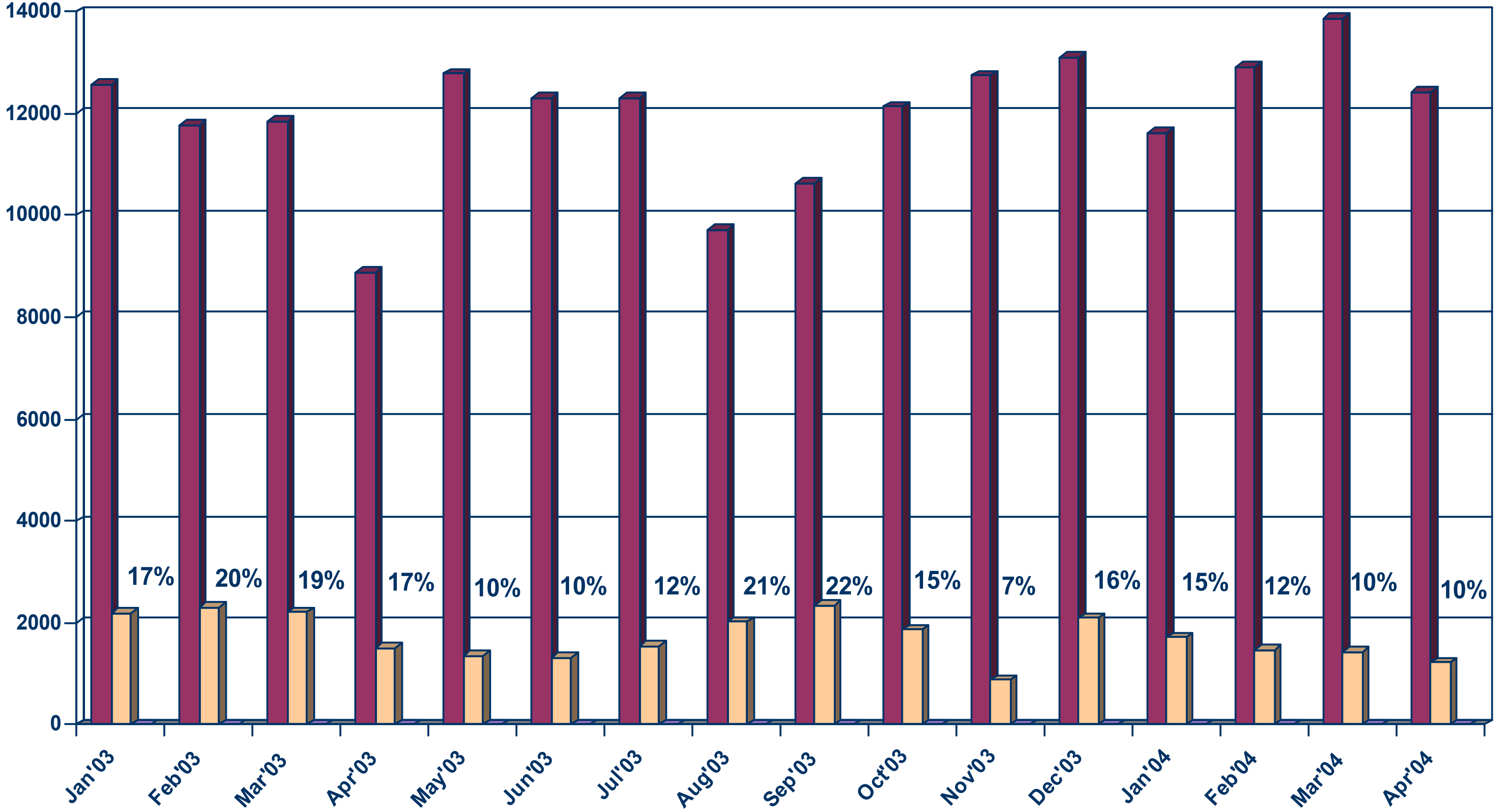
Growth in Customer Base (Postpaid+Prepaid)



Source: TIW, ORANGE and OTE quarterly financial reports

THE NEXT GENERATION NETWOR

Voice versus Data



Zapp™

THE NEXT GENERATION NETWORK

Challenges during Startup

THE NEXT GENERATION NETWORK

Coverage, Handsets and Roaming issues

Most visible issues, blocking the late-entrants CDMA450 operators to grow as fast as GSM, is the lack of competitive coverage and terminals (including second-hand market) – these also prevents them to enter the residential market segment which is the largest one in all emerging markets.

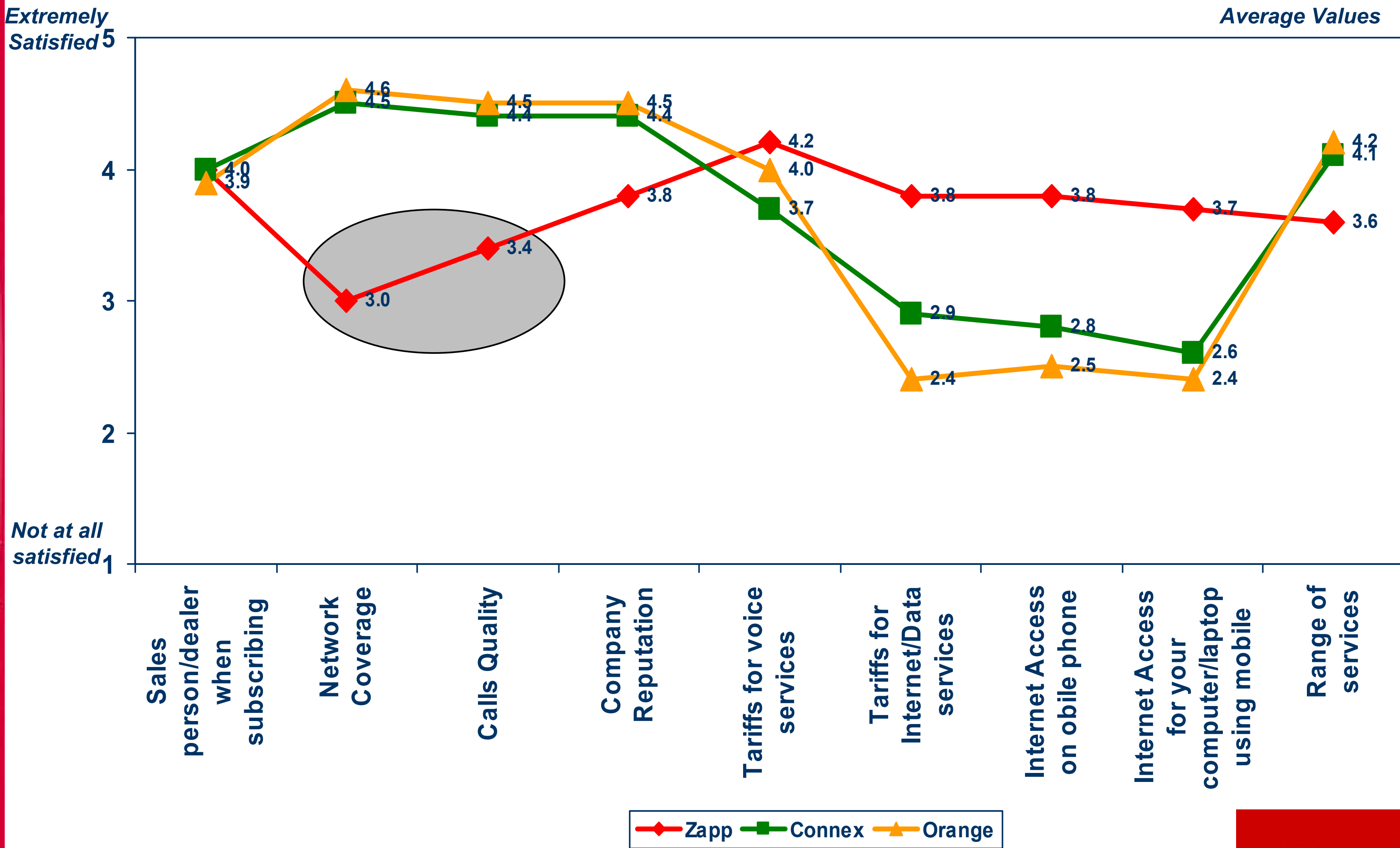
The lack of the roaming enabled devices is also captured into both of the above issues – since roaming is just another coverage enhancing tool while multi-mode/multi-band terminals are required to enable it.

Some business case models for CDMA450 are scheduling the coverage expansion following a certain subscriber growth in order to prove some success into the market place. Missing point here is that competitive COVERAGE is a mandatory pre-requisite for any wireless business and it should be addressed first, prior to any sales expectations.

Workaround solutions to avoid these challenges during startup – like focusing on down-sized/specialized market segments with less coverage requirements or focusing on "do-not-care" about terminals target groups – are lowering the perceived service value while the operator have to pay the price to compensate.

Churn - Operator Quality Strength (1)

How satisfied are you with the following aspects?

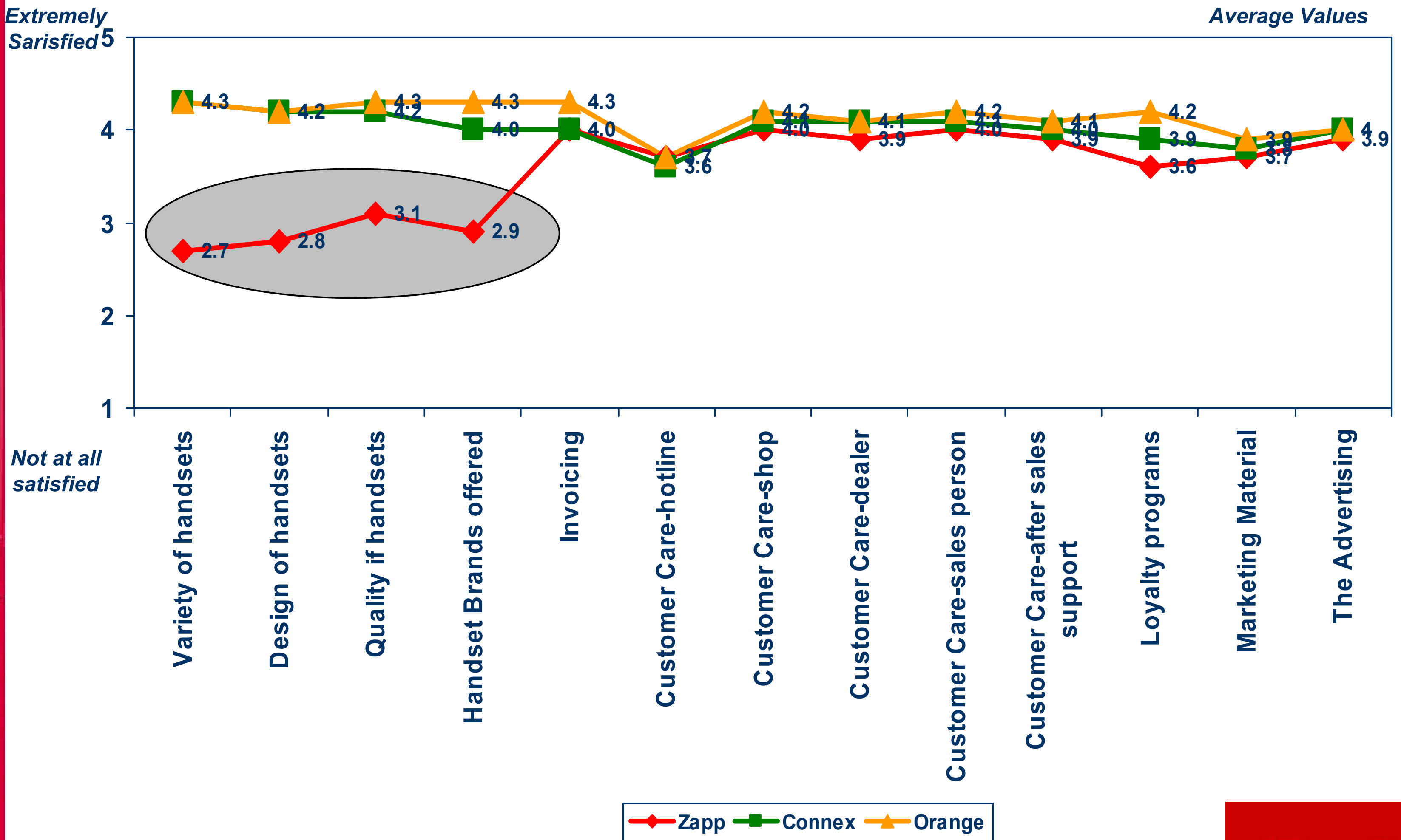


*Source: The Gallup Organization

THE NEXT GENERATION NETWORK

Churn - Operator Quality Strength (2)

How satisfied are you with the following aspects?



*Source: The Gallup Organization

Zapp™

THE NEXT GENERATION NETWORK

Terminals in 2004

	GSM	Zapp
High - end		
Medium - end		
Low-end		

Critical Mass issue

The subscribers relative count unbalance translates into the interconnect traffic unbalance, turning into expensive “royalties” paid to the dominant GSM players.

This is the main show-stopper to make CDMA tariff plans competitive against GSM since going below the interconnect fee is forbidden to the smaller/new operators while it is doable with profit margins for the larger ones.

The most effective incentive to attract the incoming traffic, thus balancing the interconnect traffic and revenues, remains by targeting an equal market-share with GSM (comparable amount of subscribers) – this is achievable by competing on the residential market which is dominated by prepaid.

Thank you