

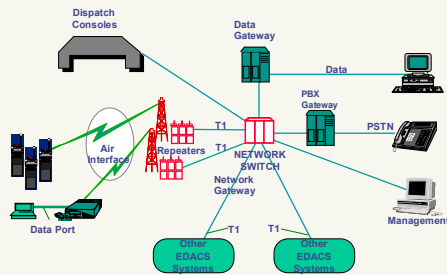
E-Comm Public Safety Wide Area Radio Network

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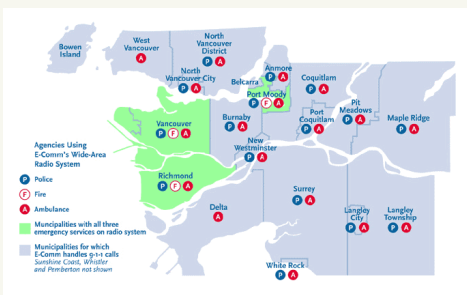
A. Objectives

- New user behaviour prediction model
- Lower new call blocking probability
- Lower handover call blocking probability
- Higher network resource utilization
- Prioritized call admission control

B. E-Comm Network



E-Comm network architecture

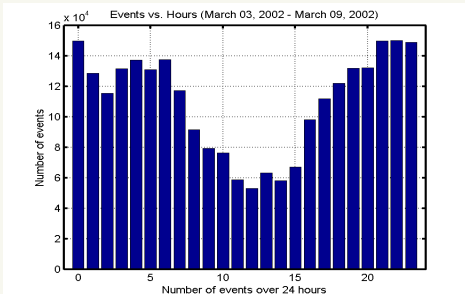


E-Comm network coverage

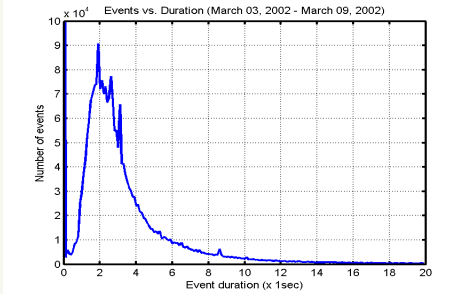
C. E-Comm Data

Event UTC At	Node Id		Call Type	Network Call	Multi-System Call	Preempt Call	Dropout Pn	Cause Bill
	Source Id	Dest Id						
Authenticated System Id	System Id	Call Id	Call Status	Call Direction	Reconnected Call	Missed Call	Queue Depth	Cause Code
2002-03-08 00:00:00.000	2479	33	0	0	0	0	0	0
2002-03-08 00:00:00.000	2479	33	0	0	0	0	0	0
2002-03-08 00:00:00.000	2479	33	0	0	0	0	0	0
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2002-03-08 00:00:00.000	2479	33	0	0	0	0	0	0
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2002-03-08 00:00:00.000	2479	33	0	0	0	0	0	0
2002-03-08 00:00:00.000	2479	33	0	0	0	0	0	0
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2002-03-08 00:00:00.000	2479	33	0	0	0	0	0	0
2002-03-08 00:00:00.000	2479	33	0	0	0	0	0	0
2002-03-08 00:00:00.000	2479	33	0	0	0	0	0	0
2002-03-08 00:00:00.000	2479	33	0	0	0	0	0	0
2002-03-08 00:00:00.000	2479	33	0	0	0	0	0	0
2002-03-08 00:00:00.000	2479	33	0	0	0	0	0	0
2002-03-08 00:00:00.000	2479	33	0	0	0	0	0	0
2002-03-08 00:00:00.000	2479	33	0	0	0	0	0	0

Data sample



Daily activity



Distribution of event durations

D. Two Approaches

Analysis and Prediction

- Analyze network activity data
- Build the pattern of user behavior
- Construct prediction model

Simulation and Improvement

- Study the deployed network
- Build customized simulation tools
- Enhance the current CAC algorithm to accommodate large number of:
 - group calls
 - confirmed calls

E. Tools

- Customized simulation tools
- Linux 8.0 + PostgreSQL 7.2.3
- Matlab, AutoClass, S-PLUS
- Microsoft SQL Server 2000

F. References

- E-Comm: <http://www.ecomm.bc.ca>.
- M/A-Com: <http://www.macom-wireless.com>.
- PostgreSQL: <http://www.postgresql.org>.