

Grid Computing & Satellite Communication with ProActive

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Outline

- Context and motivation
- Test bed
- Results
- Perspective and conclusion

Context & motivations

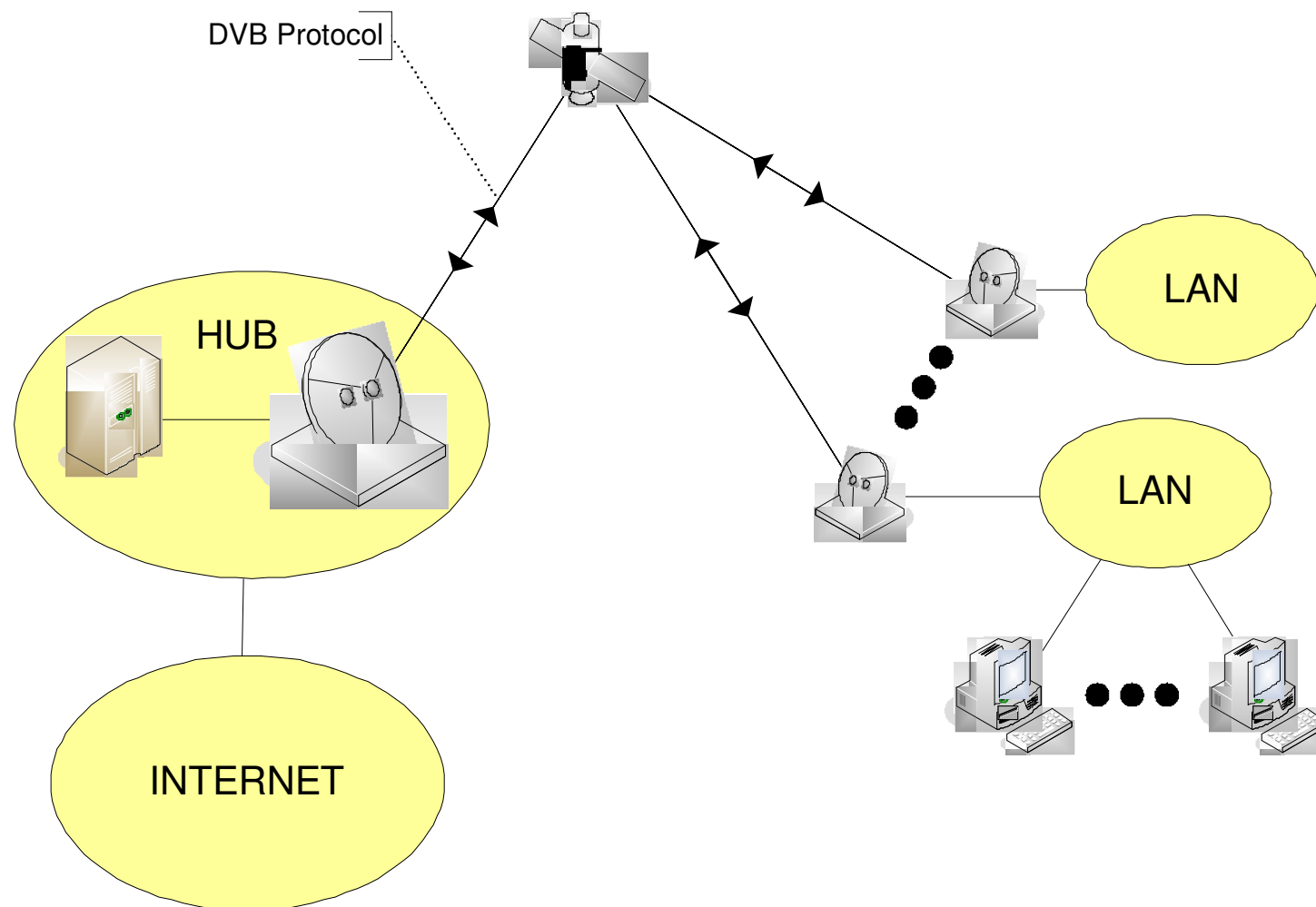
Alcatel Alenia Space

- French company.
- Second worldwide satellite manufacturer.
- Make telecommunication application.
- Focused on vertical markets.

Motivations

- Alcatel is trying to enhance its collaborative environment.
- ProActive has several non functional interesting characteristics.
- Is ProActive working well with satellite communications constraints ?

Satellite Technology overview

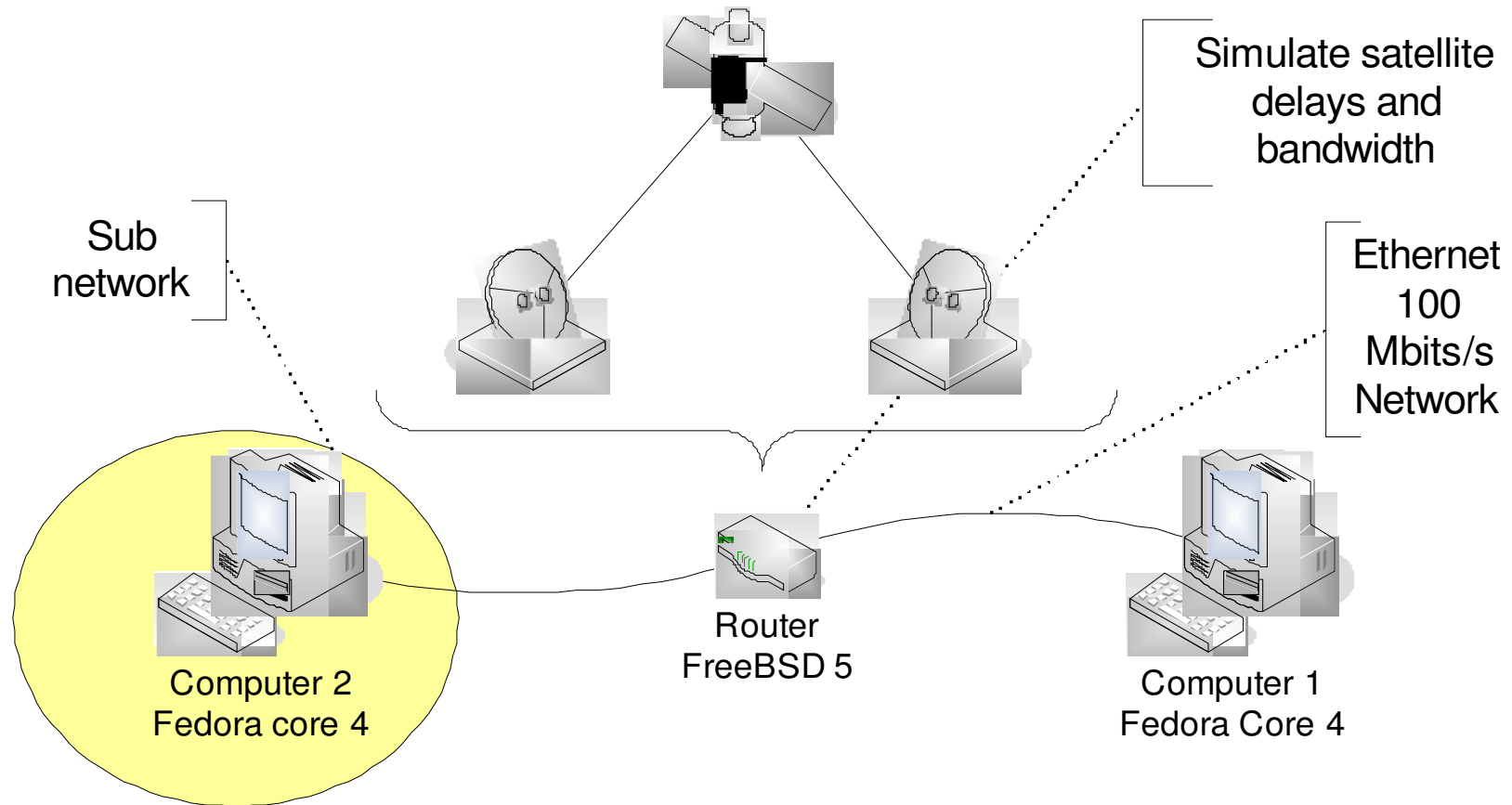


Satellite communication constraints

- Long delays.
- Bandwidth reservation.
- Asymmetric bandwidth.
- Number of packet by seconds.
- Traffic flow should be regular.

Test bed

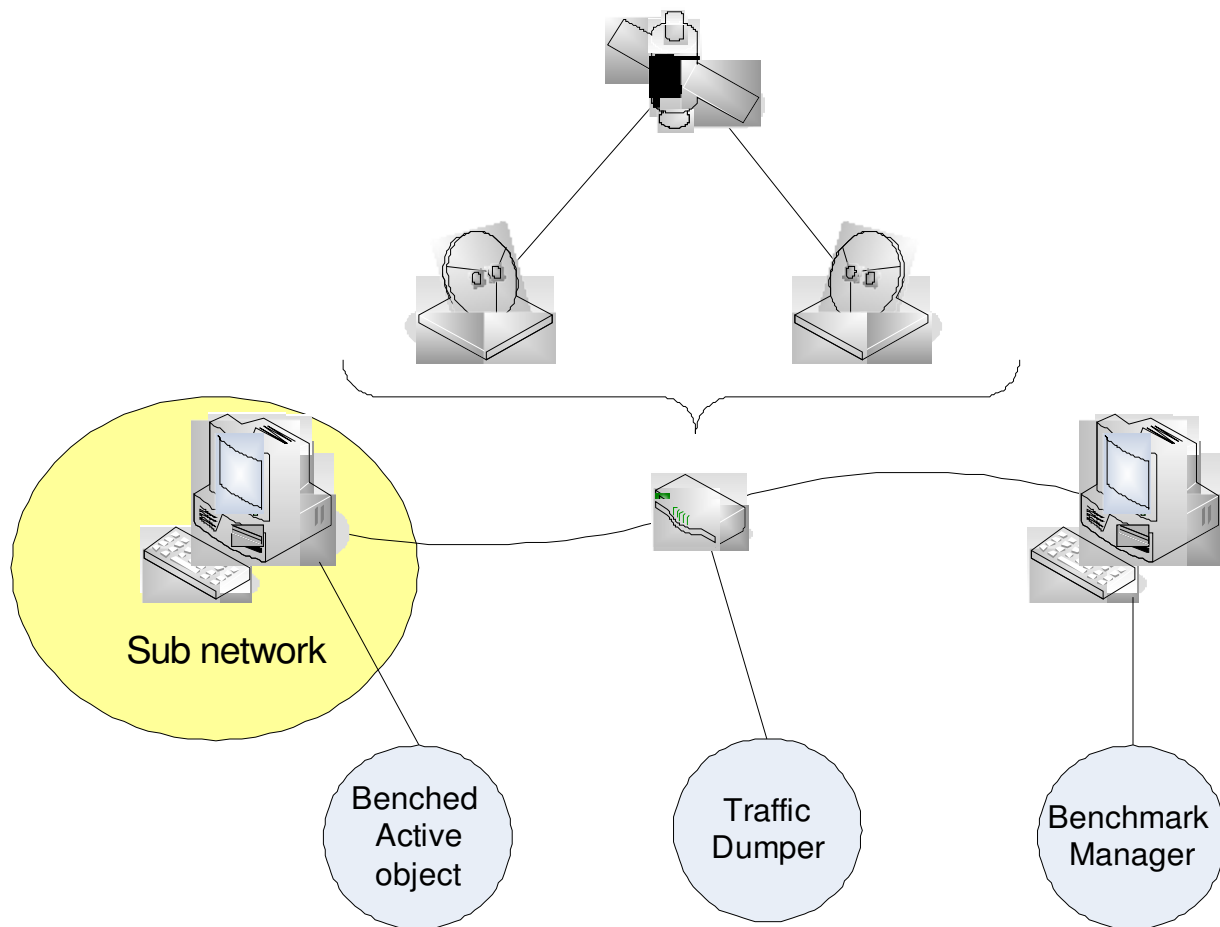
Satellite test bed



ProActive test bed

- Enhancement of existing ProActive benchmark API.
- “Ethereal” network traffic sniffer.
- Automated network capture analysis and rendering.

Objects deployments



What we will measure ?

- Bandwidth
- Bytes and packets statistics
- We try to evaluate the cost of using ProActive with satellite communication.

Results

ProActive call execution benchmark (in milliseconds)

Synchronous call	RMI	RMI/SSH	HTTP
Local network	13,9	24	24
Satellite link	1297	1575	3200

Asynchronous call	RMI	RMI/SSH	HTTP
Local network	8,9	15	23,8
Satellite link	618	682	1278

Experimentation analysis

- Asynchronous calls are more efficient.
- No time out problems experienced.
- Asymmetric network traffic flow property.
- Low bandwidth usage.

Perspectives & Conclusions

Perspective & Conclusion

- ProActive fit well with satellite communication constraints.
- Determine suitable applications for real experimentation.
- “Grid compliant” collaborative applications.

Any questions ?