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Development of Resource/Commander Agents

For AgentTeamwork Grid Computing Middleware



Funded By



National Science Foundation
WHERE DISCOVERIES BEGIN



What is AgentTeamwork ?

1. A grid-computing middleware system

2. Dispatch a collection of mobile agents

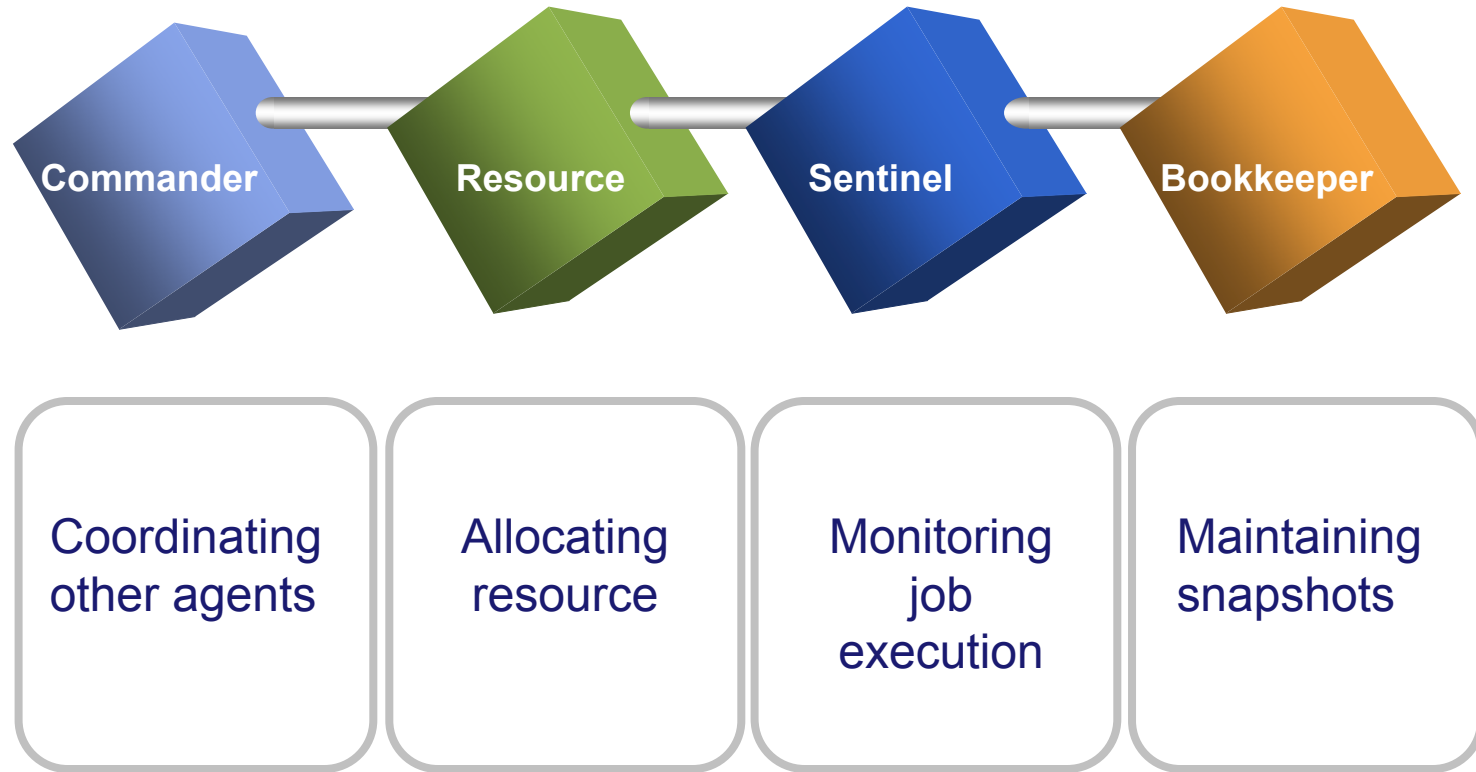
3. Coordinate user job in decentralized manner

4. No centralized server

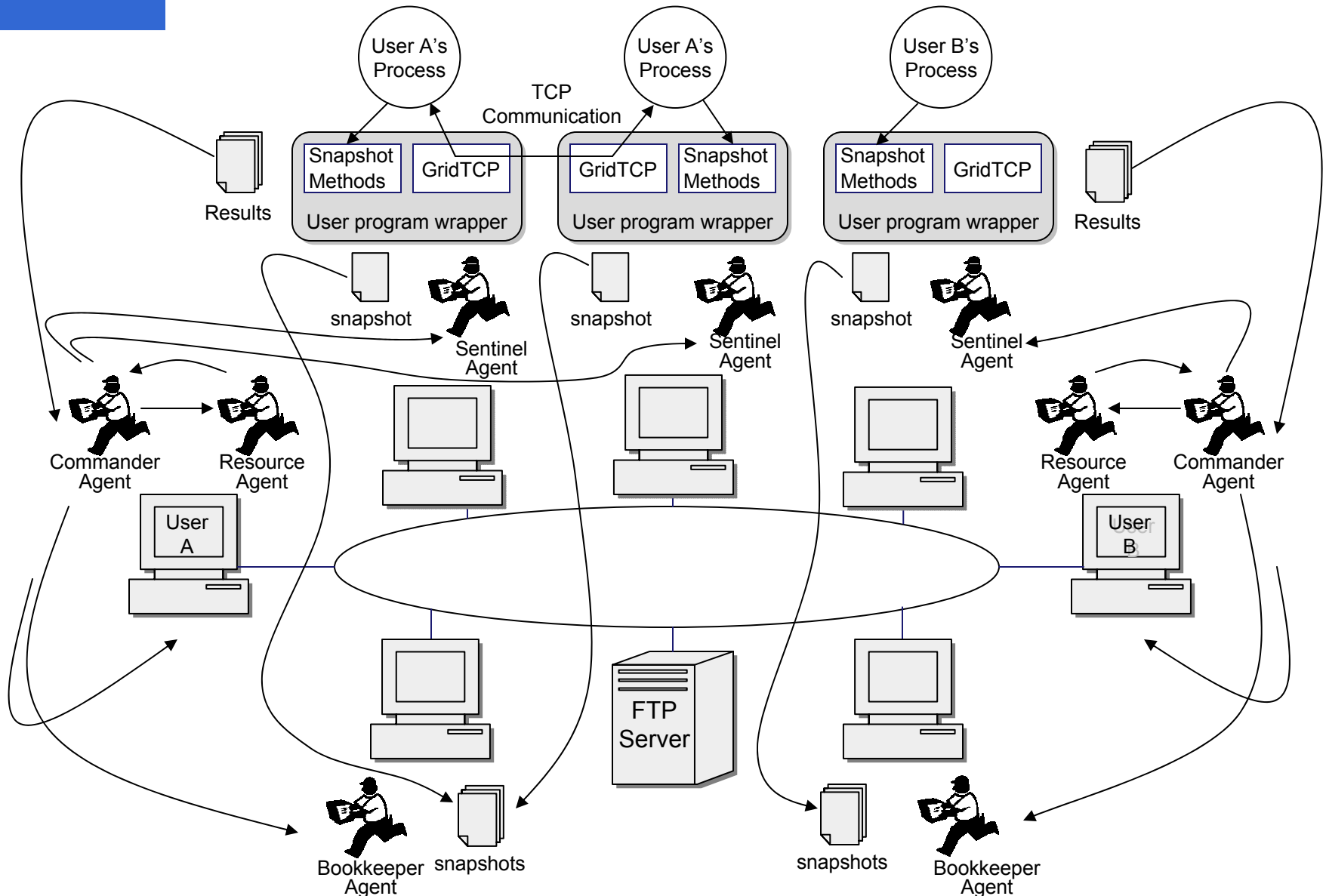
5. Maintain high availability

6. Dynamic balancing of resource allocation

Mobile agents



AgentTeamwork System Overview





Resource Agent Tasks

1. Access to a central FTP server

2. Download new resource XML files

3. Maintains the XML files in local database

4. Query the local database with the user job requirements

5. Return a list of computing resource to Commander Agent

6. Perform periodic probing the remote computers

Implementation Time Schedule

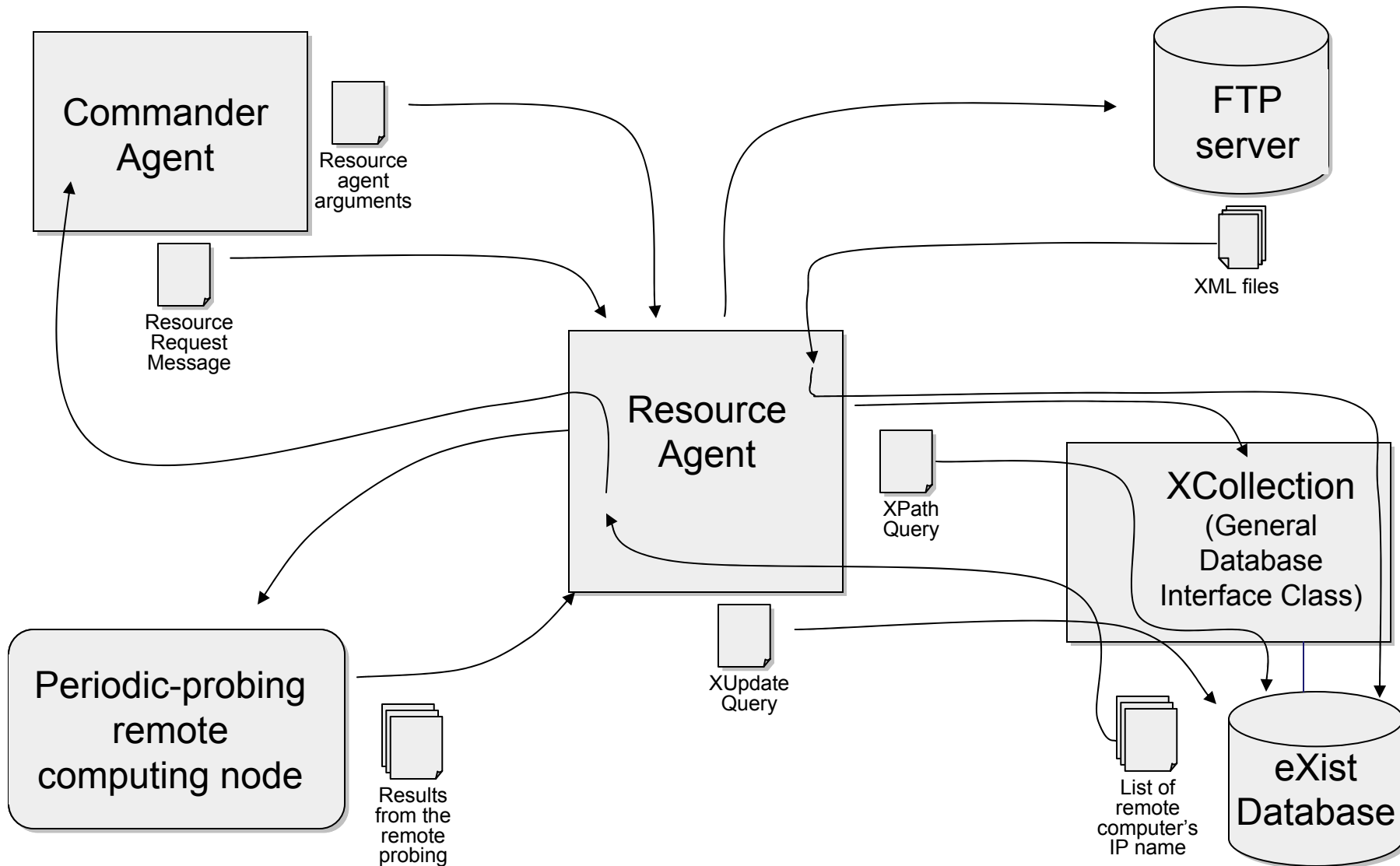
Phase 0

- 1. Understanding and porting previous assistant's work onto medusa cluster**
- 2. Reinstall the local**

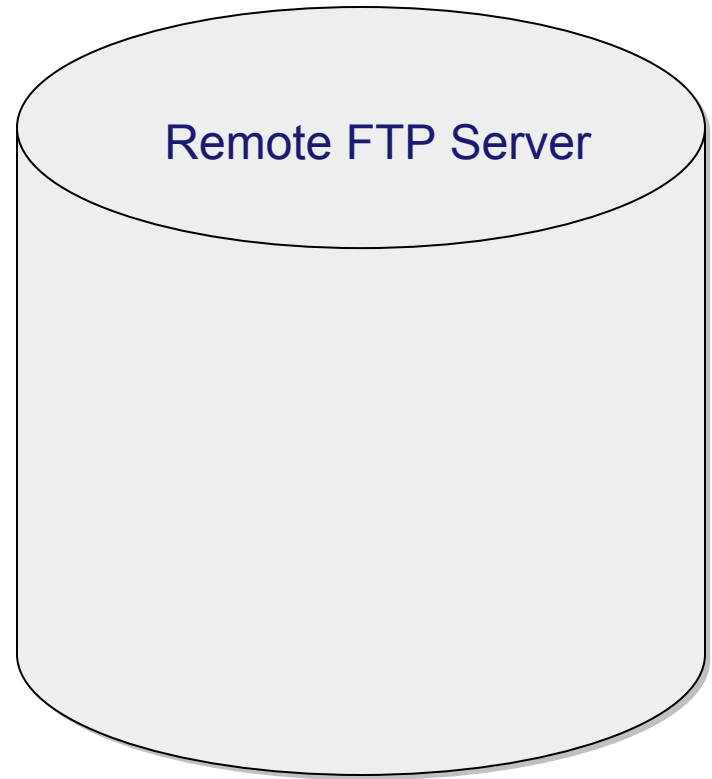
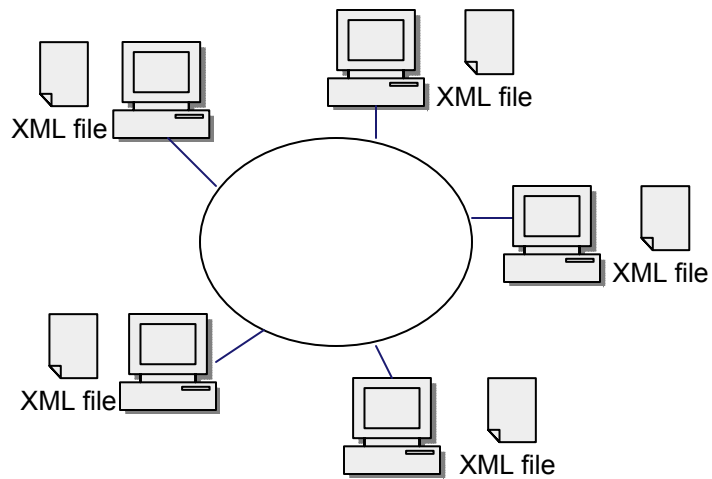
Phase 1

- 1. Implement a general eXist database interface class (XCollection)**
- 2. Able to create/remove collection**

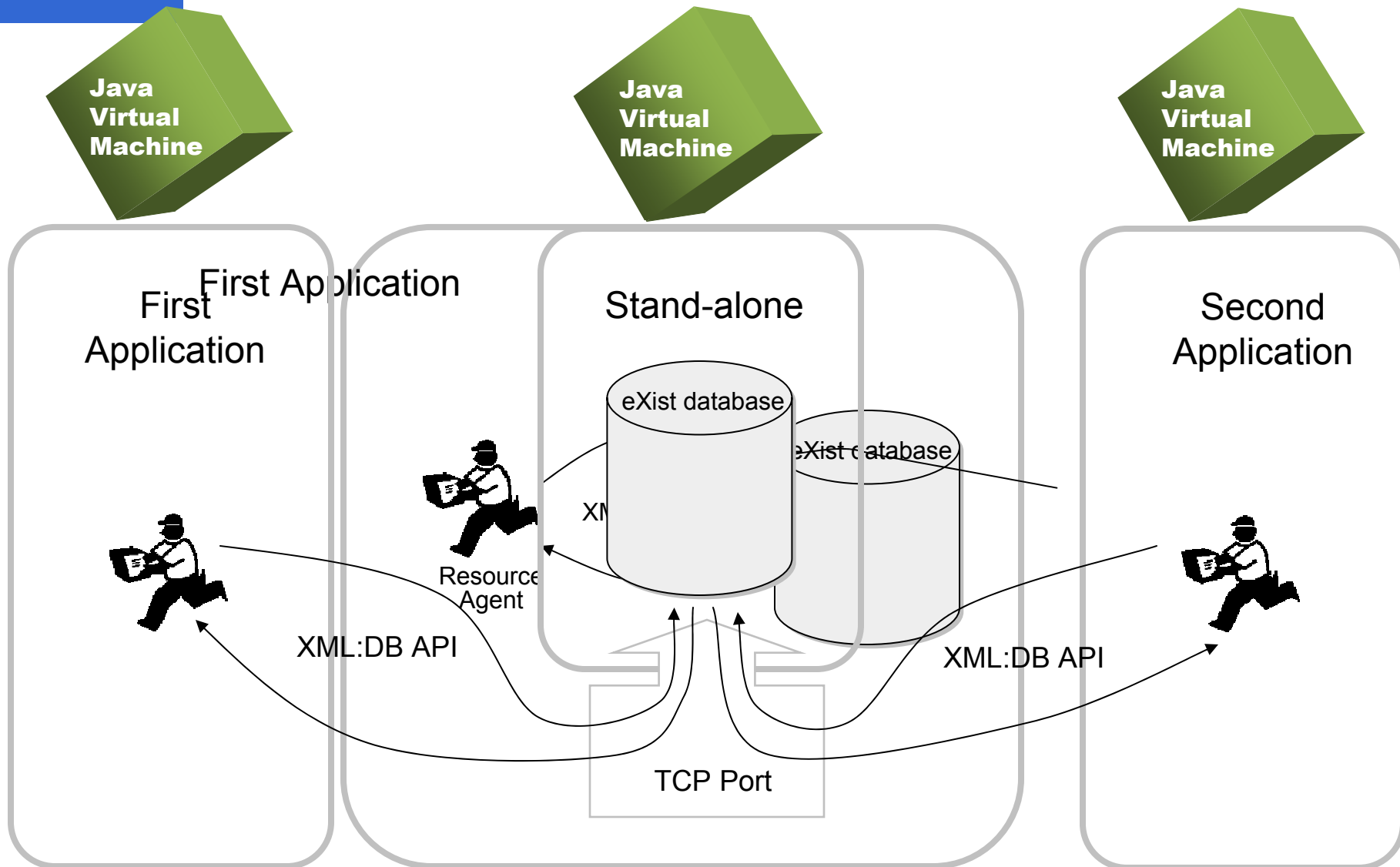
Resource Agent Workflow



Ftp Server



eXist Database Server



Distribution of remote computing node

No. of nodes required

Backup multiplier

2

1

1.5

2

3

Agents that will be spawned

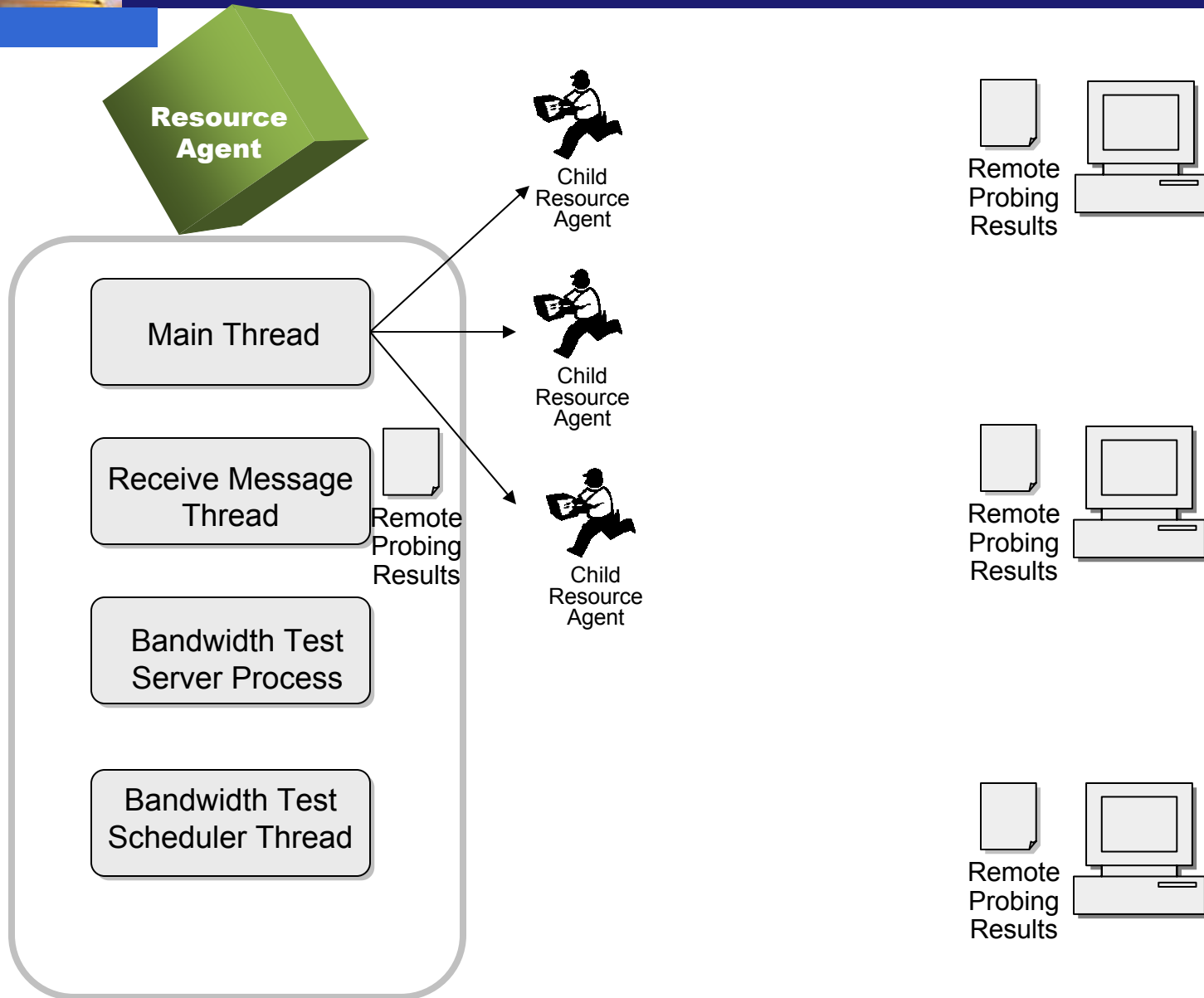
Sentinel
0

Bookkeeper
0

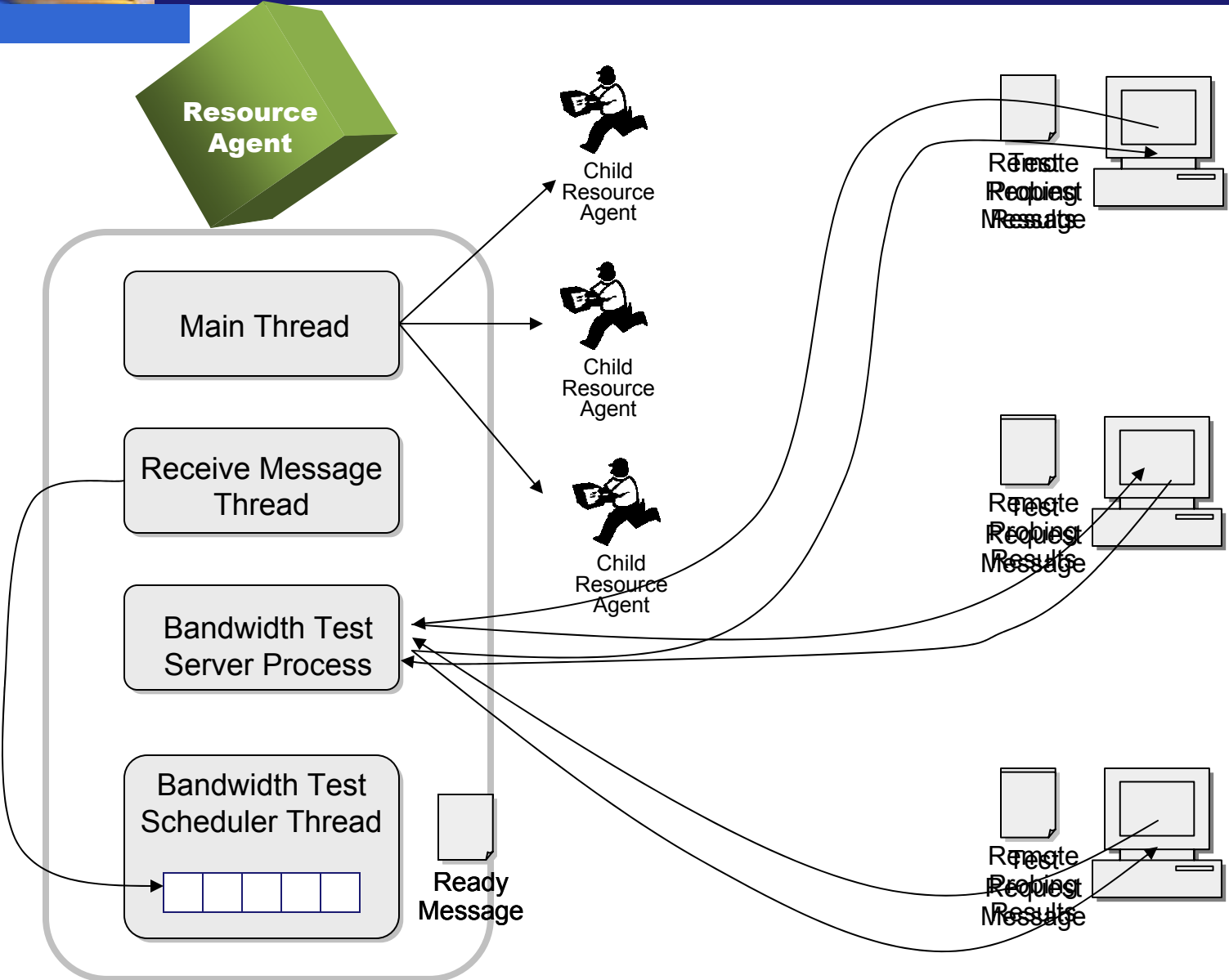
Sentinel
1

Bookkeeper
1

Remote Probing Workflow



Remote Probing Bandwidth Test



Conclusion

Result

- 1. The first version of resource agent was developed for the AgentTeamwork project**
- 2. Commander agent was enhanced in order to cooperate with Resource agent**
- 3. AgentTeamwork is now able to perform a complete sequence of job execution**

Questions?

