Week 1 Summary

This text appears to be a comprehensive overview of distributed systems, covering various aspects such as system models, middleware, and technologies used in distributed computing.

Here is a summarized outline of the main points:

I. System Models

* **General System Model**: Distributed systems are often organized into a layered structure, with each layer providing services to the layers above.
 + Platform: Provides local resource management and communication means between computers.
 + Middleware: Connects different kinds of applications and provides distributed transparency.

II. Key Concepts

* **Concurrency Control**: The ability to process multiple tasks at the same time.
* **Failure Handling**: Detecting, masking, tolerating, recovering from failures in a distributed system.
* **Concurrency Transparency**: The concealment of concurrency control mechanisms from users and applications.

III. Middleware Models

* **Early Models**:
 + Unix File Systems: Treats everything as a file, hiding network communication.
 + Remote Procedure Calls (RPCs): Hides network communication by allowing a process to call a procedure on a remote machine.
* **Recent Models**:
 + Distributed Objects: Hides internal details of objects from users and provides transparent invocation of remote objects.
 + Distributed Documents (WWW): Organizes information into documents, with each document residing at a machine in the world.

IV. Middleware Services

* **Communication Services**: Provides high-level communication services that hide low-level message passing through computer networks.
* **Naming**: Allows entities to be shared and looked up (similar to phone books).
* **Persistence**: Special facilities for storage referred to as persistence.
* **Distributed Transactions**: Facilities for distributed transactions, allowing multiple read and write operations to occur atomically.

V. Examples of Middleware

* Sun RPC
* OMG CORBA
* Microsoft D-COM
* Sun Java RMI
* Manjrasoft Aneka (for Cloud computing)
* IBM WebSphere
* Microsoft .NET
* Sun J2EE
* Google AppEngine, etc.

Overall, this text provides a detailed overview of the key concepts and technologies used in distributed systems, including system models, middleware, and communication services.