ECAP470: Cloud Computing

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Learning Outcomes

After this lecture, you will be able to,

- ✓ explore resource abstraction, resource scheduling and management in cloud computing

- ✓ know about service level agreements in cloud computing

Resource Abstraction in Cloud Computing

Abstraction can be considered as a key feature where the resources are defined independently from the target OS. In other words, while writing any manifest file the user need not worry about the target machine or the OS, which is present on that particular machine.

Resource Abstraction in Cloud Computing

- An abstraction layer simplify the creation and use of Virtual Machines (VM) in cloud, and also make interoperability between providers from the view of users.

- Abstraction also enables opportunities for creating optimization layer (substituting, brokering) between the abstraction layer and cloud middleware.

Resource Abstraction in Cloud Computing

- Abstraction of cloud resources

- Abstraction of complex systems

Resource Management in Cloud Computing

- Process of allocating computing, storage, networking and indirectly energy resources to a set of applications.

Resource Management in Cloud Computing

- **Conceptual framework** that provides a high level view of the functional component of cloud resource management systems and all their interactions.

- Critical function.

Resource Management in Cloud Computing

Affects 3 basic criteria for evaluation of a system:

- Functionality

- Performance

- Cost

Resource Management in Cloud Computing

- Requires **complex policies and decisions** for multi-objective optimization.
- **Challenges.**

Resource Management in Cloud Computing

Resource Scheduling decides **how to allocate resources of a system,** such as CPU cycles, memory, secondary storage space, I/O and network bandwidth, between users and tasks.

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- Policies and mechanisms

Resource Management in Cloud Computing

- Resource Management Policies

- Resource Management Mechanisms

Service Level Agreements (SLAs)

- Contract between a service provider (either internal or external) and the end user.

- Defines the level of service expected from the service provider.
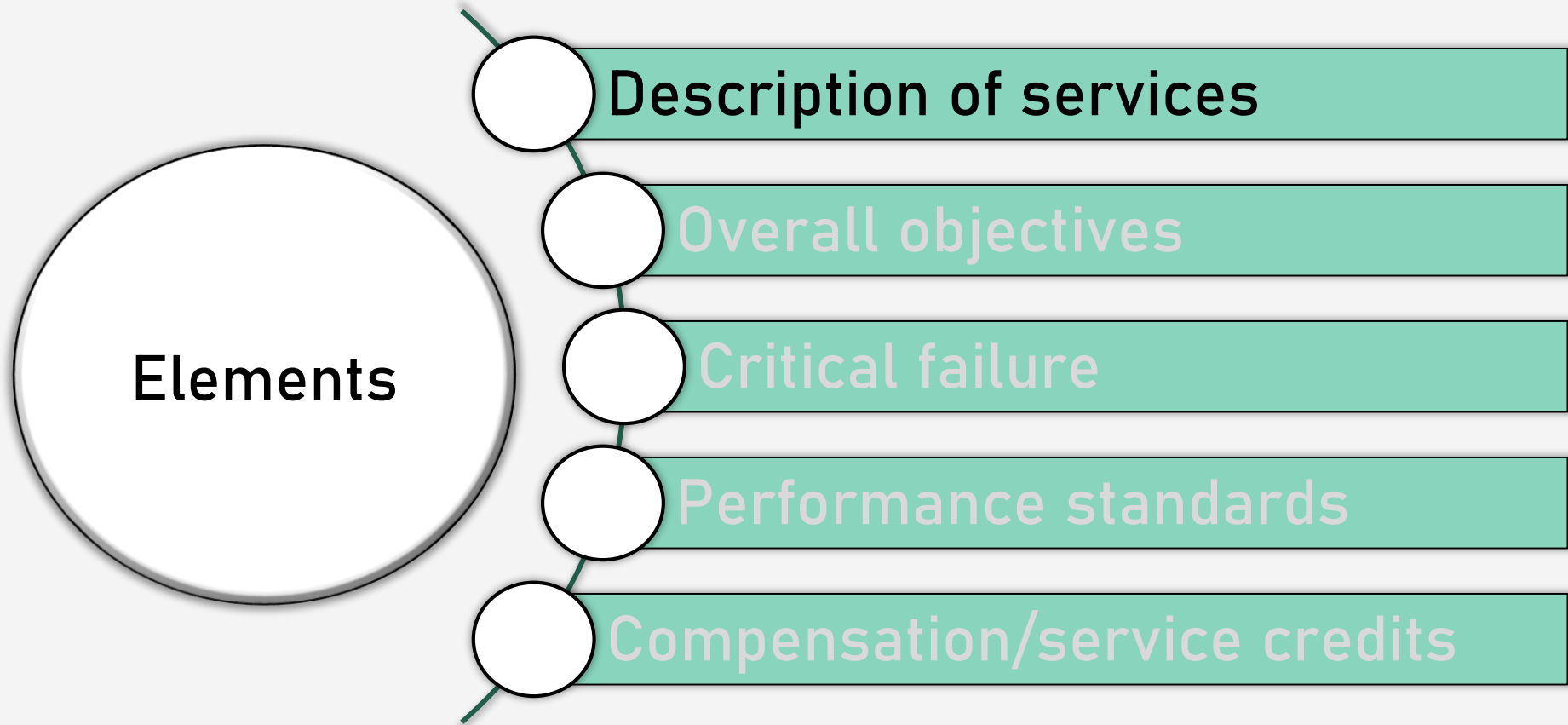
Service Level Agreements (SLAs)

Properly drafted & well-thought SLA should:

- State business objectives to be achieved in the provision of the services.

- Describe in detail the service deliverables.

- Define performance standards the customer expects in the provision of services by the service provider.

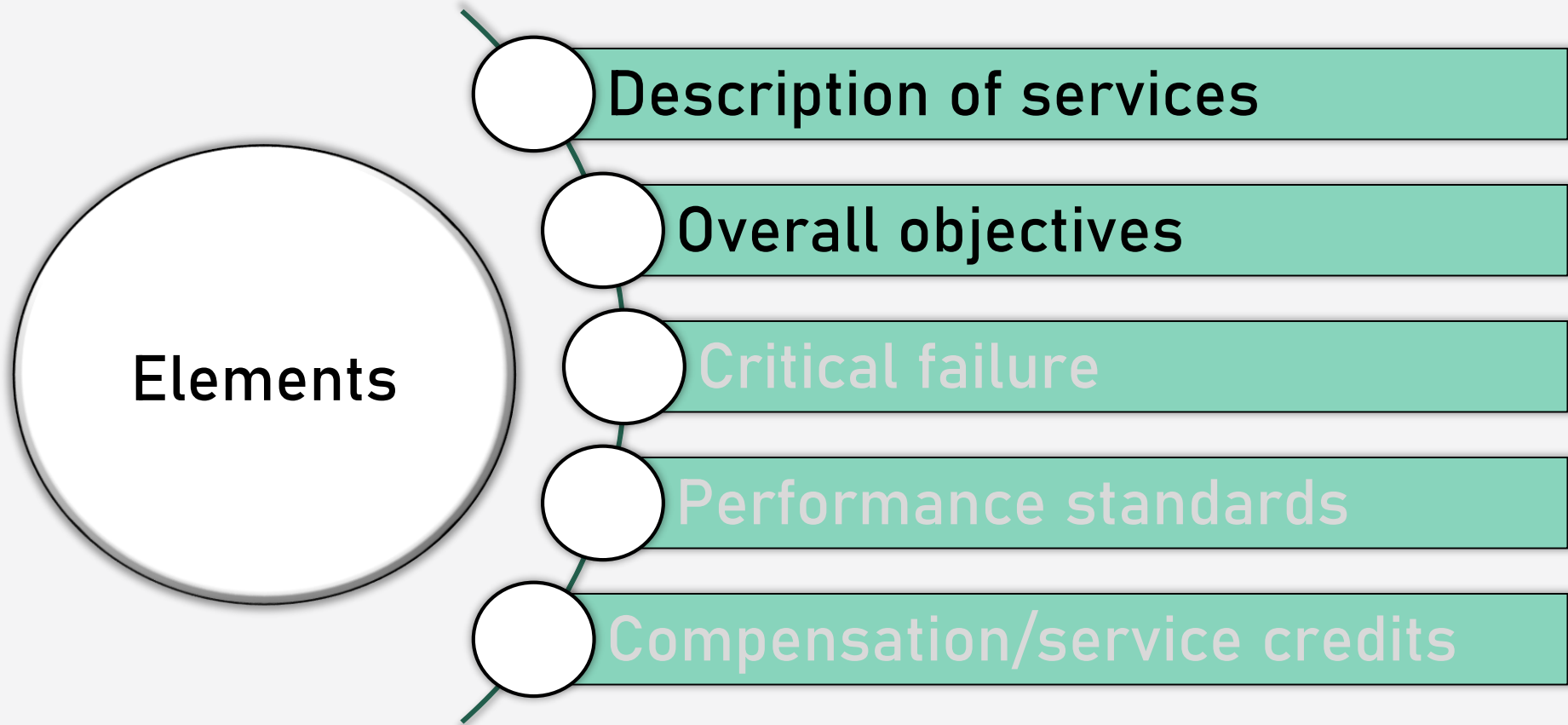- Provide an ongoing reporting mechanism for measuring the expected performance standards.

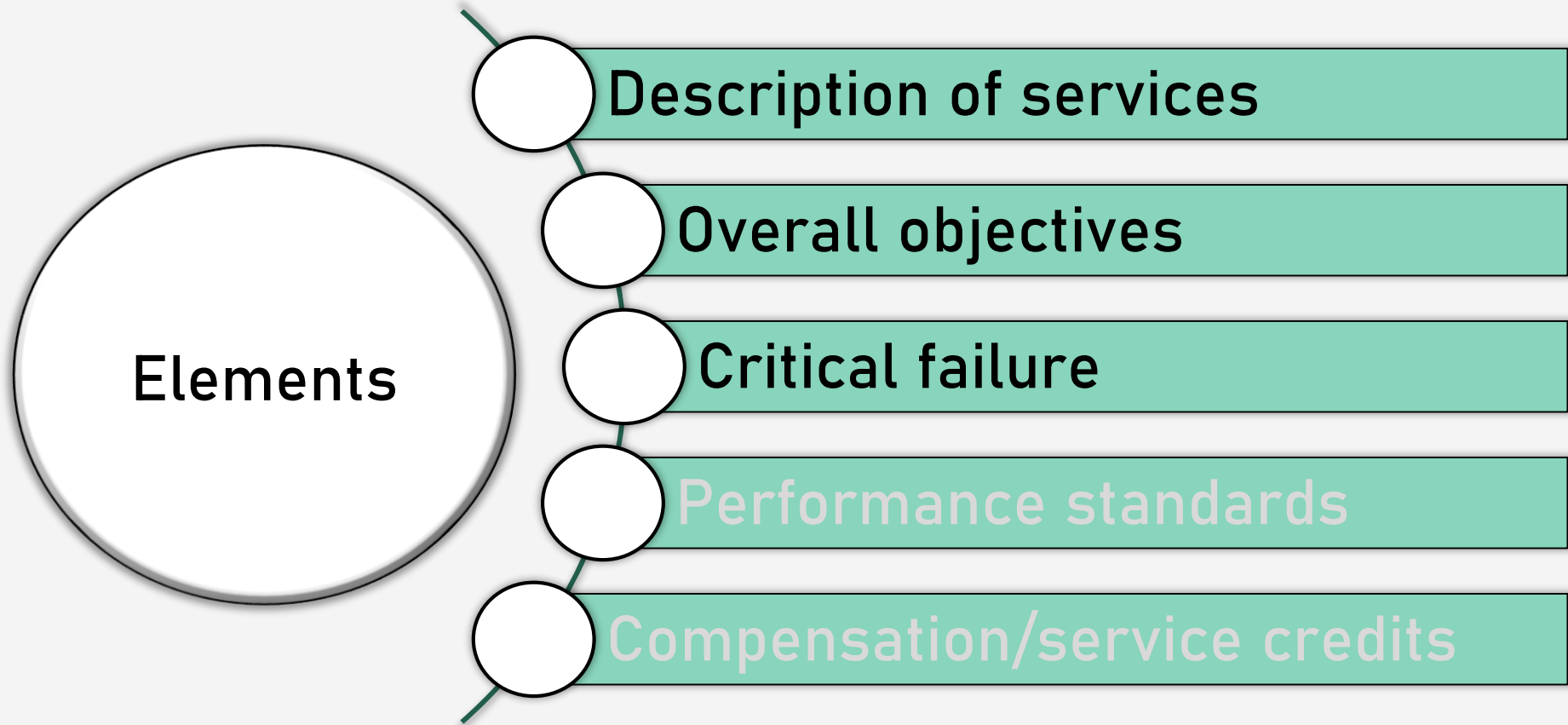# Service Level Agreements (SLAs)

What should be included in an SLA?
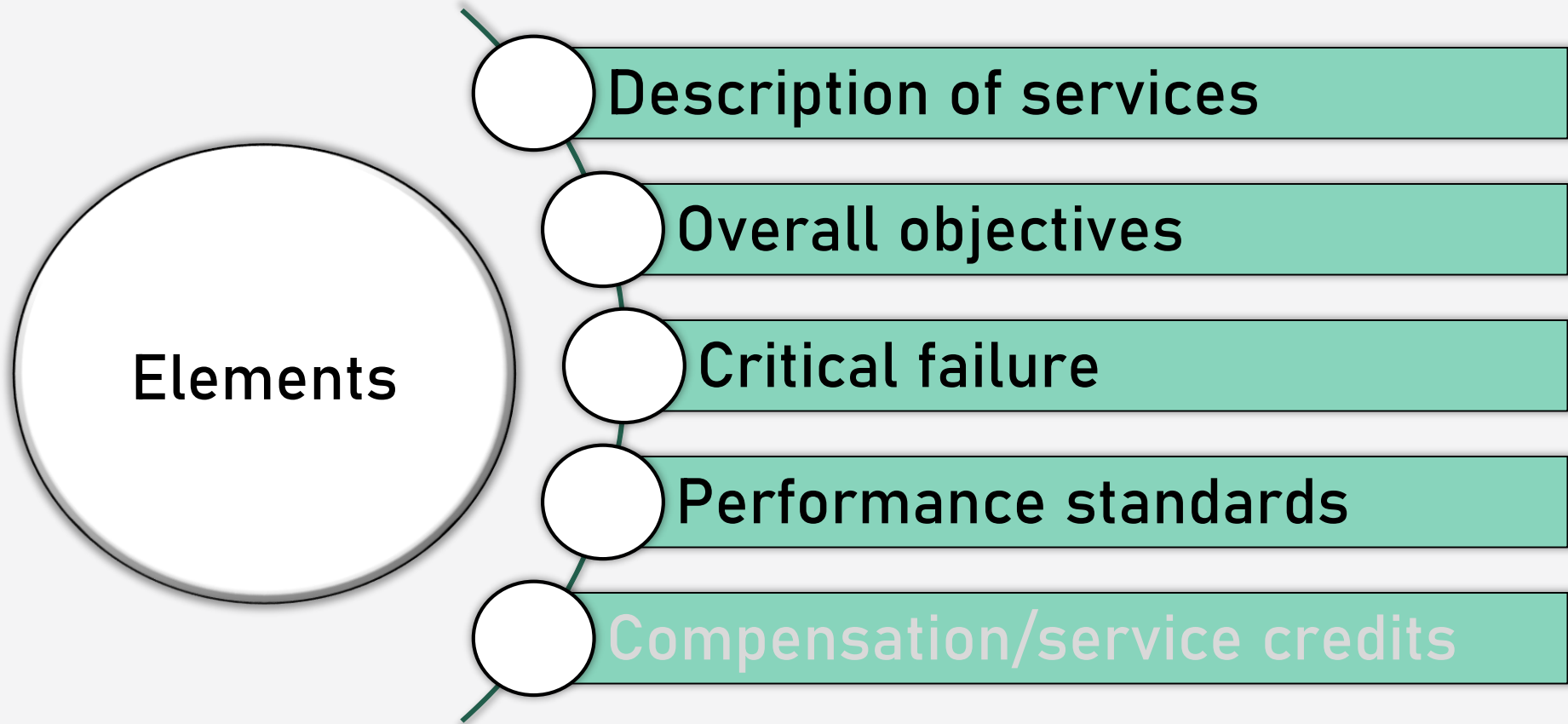
Elements of Good Service Level Agreement (SLA)

Elements

- Description of services
- Overall objectives
- Critical failure
- Performance standards
- Compensation/service credits

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Other Provisions in SLA

Changes to Pricing

Contract Management

Change Control Procedures

Sample Service Level Agreements (SLAs)

Windows Azure SLA

SQL Azure SLA

Conclusion

- Putting together an SLA can be a difficult process.

- Involves documenting processes which have previously arisen organically within an organization.

- Difficult to keep business objectives in mind and follow.

- SLA should enhance business relationships with service provider and help in receiving the service expected.

That's all for now…