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Salesforce Certified Technical Architect

Study Guide

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Contents

Section 1. Purpose of this Study Guide

This study guide is designed to help you evaluate if you are ready to successfully complete the Salesforce Certified Technical Architect program. This guide provides information about the target audience for the certification program, recommended training and documentation, and a complete list of exam objectives—all with the intent of helping you achieve a passing score. Salesforce highly recommends a combination of on-the-job experience and self-study to maximize your chances of passing the exam.

Section 2: About the Salesforce Certified Technical Architect Certification Program

The Salesforce Certified Technical Architect program is designed for experienced technical architects who would like to demonstrate their knowledge, skills, and capabilities in assessing customer architecture; designing secure, high performance technical solutions on the Force.com platform; communicating technical solutions and design tradeoffs effectively to business stakeholders; and providing a delivery framework that ensures quality and success.

The Salesforce Certified Force.com Developer credential is a prerequisite for the program.

The Salesforce Certified Technical Architect certification program has three components: (1) self-evaluation, (2) multiple-choice exam, and (3) review board presentation. To earn the Salesforce Certified Technical Architect credential, a candidate must successfully complete all three components.

1. **The Salesforce Certified Technical Architect Self-Evaluation**: The first step to earning the credential is to complete a non-proctored, online questionnaire. The self-evaluation allows candidates to evaluate their skills and ensure they have a baseline level of knowledge and experience before entering the program. This portion of the credential program must be passed successfully before a candidate can move to the next step—the multiple choice exam.
2. **The Salesforce Certified Technical Architect Multiple-Choice Exam**: The second step to earning the credential is to complete a multiple-choice/multiple-select, proctored exam. Candidates are required to have successfully passed the self-evaluation within one year of registering for the exam. The exam must be passed successfully before a candidate can move to the next step—the review board.
3. **The Salesforce Certified Technical Architect Review Board Presentation**: The third and final step to earning the credential is to complete an in-person or video-enabled, proctored exam followed by a presentation and interview with a panel of judges, offered at scheduled times throughout the year. The review board presentation is comprised of:
    - *Hypothetical Scenario Exam, Presentation, and Discussion*—When candidates arrive at the review board, they receive the hypothetical scenario and exam instructions from their proctor. Candidates are given 2 hours (120 minutes) to read, evaluate, design, and document a high-level architectural solution for the hypothetical scenario. Candidates will then have 45 minutes to present their solution to the review board judges, followed by 40 minutes of Q&A and discussion.

    The hypothetical scenario presentation and discussion will be evaluated and scored by the review board judges as the final step of the Salesforce Certified Technical Architect certification program.

The Salesforce Certified Technical Architect credential will be granted to a candidate upon successful completion of all three parts of the program.

Section 3. Audience Description: Salesforce Certified Technical Architect

A Salesforce Certified Technical Architect assesses the architecture environment and requirements; and designs secure, high-performing technical solutions on the Force.com platform. The architect has experience communicating technical solutions and design tradeoffs to business stakeholders and providing a delivery framework for an end-to-end solution. The candidate has a current Salesforce Developer credential and is interested in demonstrating his/her expertise as a Force.com Technical Architect.

The Salesforce Certified Technical Architect has the experience and skills outlined below:

- 5+ years of implementation experience, including development, across the full software development lifecycle
- 3+ years of experience in an architect role
- 2+ years of experience on the Force.com platform with at least one of those in a lead architect role, implementing Salesforce applications and technologies
- Has held a technical architect role on multiple complex deployments, OR has gained equivalent knowledge through participation and exposure to these types of projects
    - Either with single or multiple projects
- Experience guiding a development team on the appropriate use of platform technology
- Identify and mitigate technical risks across the architecture
- Understanding of architecture options, design trade-offs, and ability to communicate design choices
- Exposure to globalization considerations on a project
- Understanding of Web 2.0 and cloud architecture paradigms
- Experience with different types of development patterns / principles
- Experience with object-oriented design patterns
- Awareness of platform-specific design patterns and limits
- Experience developing code on the Force.com platform
- Ability to identify development-related risks, considerations, and limits for the platform
- Experience with multiple development languages (e.g. .net, java, or ruby) and design frameworks
- Experience with common integration patterns; experience with integration on the Force.com platform
- Understanding of and ability to architect a solution to address security complexities, mechanisms, and capabilities on the Force.com platform as part of a functional security model
- Understanding of data migration considerations, design trade-offs, and common ETL tools
- Awareness of large data volume considerations, risks, and mitigation strategies
- Awareness of general mobile solutions and architecture and understanding of on-platform mobile solutions and considerations
- Awareness of common third party solution providers for Salesforce
- Understanding of test plan design and evaluating effectiveness
- Experience with project and development lifecycle methodologies

- Experience presenting architectural solutions to a technical and non-technical audience
- Portfolio of deployed project and references

Section 4. About the Exam

Candidates who successfully pass the Salesforce Certified Technical Architect self-evaluation are invited to take the multiple-choice exam component of the credential. Candidates who successfully complete the multiple-choice exam will be invited to the review board.

The **Salesforce Certified Technical Architect self-evaluation** has the following characteristics:

- Content: 40 multiple-choice/multiple-select, survey-style questions
- Time allotted to complete the exam: 30 minutes
- Prerequisites: Current Salesforce Certified Force.com Developer credential

The **Salesforce Certified Technical Architect multiple-choice exam** has the following characteristics:

- Content: 60 multiple-choice/multiple-select questions
- Time allotted to complete the exam: 120 minutes
- References: No hard-copy or online materials may be referenced during the exam
- Prerequisites: Current Salesforce Certified Force.com Developer credential and successful completion of the Salesforce Technical Architect Self-Evaluation.

The **Salesforce Certified Technical Architect review board** presentation has the following characteristics:

- Content: One hypothetical scenario exam and presentation, followed by a question and answer session in an interview-style format from review board judges.
- Time allotted to complete the exam: 4 hours
- References: No hard-copy or online materials may be referenced during the exam
- Prerequisites: Current Salesforce Certified Force.com Developer credential and successful completion of the Salesforce Technical Architect multiple-choice exam.

Section 5. Recommended Training and References

Experience as a Salesforce Technical Architect on the Force.com platform will provide the best preparation for this credential. The resources listed below will provide important information to help prepare for this credential; however, candidates should consider implementation projects completed to date relative to the objectives listed in the Exam Outline section when preparing for the exam components.

Salesforce Training and Certification recommends the following training as preparation for the exam:

- Building Applications with Force.com and Visualforce (DEV401) modules:
  - Designing Applications
  - Data Management
  - Enhancing the User Interface Using Visualforce
- Apex and Visualforce Controllers (DEV501) modules:
  - Apex

  - VF Controllers
  - Managing Development Lifecycle
- Force.com Integrations (DEV502)
- Introduction to Force.com

Additional resources:

- Developerforce Technical Library: Architect Core Resource Library
- Developerforce Technical Library: Ten Common Mistakes Architects Make When Building a Force.com Application
- Developerforce Whitepaper: The Force.com Multitenant Architecture
- Developerforce Webinar: Multitenant Magic - Under the Covers of the Force.com Data Architecture
- Developerforce: Integration Patterns and Practices
- Developerforce: Integrating with the Force.com Platform
- Developerforce: Extreme Force.com Data Loading, Part 1: Tune Your Data Model
- Developerforce: Extreme Force.com Data Loading, Part 2: Loading into a Lean Salesforce Configuration
- Developerforce: Best Practices for Deployments with Large Data Volumes
- Developerforce: Maximizing the Performance of Force.com SOQL, Reports, and List Views
- Developerforce: How to Implement Single Sign-On with Force.com
- Developerforce Technical Library: Building your Web sites on Force.com
- Help: Query & Search Optimization Cheat Sheet
- Dreamforce Video: Introduction to Force.com Canvas Apps
- Documentation: Search for topics related to the objectives listed in the Exam Outline section

Courses and Documentation are available through the Help site in your Salesforce CRM application by clicking on the "Help & Training" link in the top-right corner of your screen (requires login).

Section 6. Exam Outline

The Salesforce Certified Technical Architect exam measures a candidate's knowledge and skills related to the objectives listed below. A candidate should have hands-on experience as a Salesforce Technical Architect on the Force.com platform, and have demonstrated the application of each of the features/functions below.

Multiple Choice Exam Objectives
General Architecture Concepts
Given a scenario, describe the considerations when working in an environment that requires a call from an external application to an enterprise application behind a firewall.
Given a set of business requirements, describe how Web technologies should be applied, taking into consideration internet standards.
Given a scenario, describe how to design an integration interface that leverages the internet as its transportation layer.
Platform Architecture Concepts
Given a scenario, determine the relevant platforms and related architecture considerations and tradeoffs.

Multiple Choice Exam Objectives
When working within the constraints of the platform, describe the applicable design considerations and trade-offs.
Describe the benefits, considerations, and constraints when working in a multi-tenant platform.
Describe the architectural considerations when org planning and defining a single or multi-org strategy.
Describe the design considerations, implications, and optimization methods used when working with large data volumes.
Describe the differences between a native and a hybrid application, and the implications for a solution.
Given a scenario, recommend the appropriate data backup strategy and business continuity plan.
Given a scenario, describe how to design a solution incorporating mobile requirements.
Describe the benefits of the social capabilities of the platform and how they can be incorporated into a solution.
Given a set of requirements, describe the capabilities and constraints of license types, and design a solution taking best practices into consideration.
Given a set of business requirements, determine the appropriate document management solution.
Describe the capabilities and limitations of the platform's internationalization functionalities.
Security
Given a scenario, describe how to incorporate the platform security features into a solution to meet data security requirements.
Given a set of requirements, describe the appropriate identity management mechanisms to apply within a solution.
Describe the concepts behind Web application security and common risk mitigation strategies.
Describe how internet security impacts solution architecture.
Given a scenario, describe how to map business requirements to the appropriate security mechanisms.
Describe the platform compliance certifications and how they are relevant to a customer.
Application Design Patterns
Given a set of business requirements, describe the appropriate combination of declarative and programmatic functionality within a solution.
Given a scenario, describe the business and technical trade-offs when justifying the combination of declarative and programmatic functionality used within a solution.
Given a scenario, describe the best practices and implications of database design and modeling.
Given a scenario, determine the appropriate methods to use when architecting for usability and performance.
Describe how to architect a solution for optimal performance, scalability, maintainability, and reuse.
Describe the object-oriented design principles and design patterns that were taken into consideration when determining the appropriate architecture for a solution.
Given a scenario, describe the practical implications of using the MVC design pattern.
Given a set of business requirements, determine the appropriate controller design.
Given a scenario, describe when to apply the appropriate Apex functionality, such as custom settings, asynchronous Apex, and batch Apex.
Describe the implications of the order of execution of transactions within the platform.
Integration Patterns and Best Practices
Given a scenario, describe the platform integration capabilities available and the implementation considerations.
Evaluate a customer integration environment; recommend the appropriate strategy and technology components based on common integration patterns.
Given a scenario, describe the capabilities and limitations of the Force.com APIs and language toolkits and determine the appropriate approach.
Development Lifecycle and Deployment Planning
Describe how to map requirements for traceability throughout the full test-driven development lifecycle.
Describe the platform tools, use cases, limitations, and best practices for environment management.
Describe testing strategies and considerations when designing a comprehensive test plan.
Describe the components of a successful deployment strategy.
Given a scenario, determine the data migration strategy, considerations, and appropriate tools to use.
Describe the core components of a governance model, such as configuration change management and governance board.
Describe the options available for source control management and common tools for release management.
Describe the benefits and risks of the different development methodologies and recommend the appropriate methodology based on the customer environment.
Communication

Multiple Choice Exam Objectives

Describe how to effectively conduct an architectural assessment to uncover business requirements and strategy.
Articulate the benefits, limitations, considerations, and design choices for a solution architecture and handle objections related to the design.
Demonstrate the ability to socialize an architecture design across a broad set of stakeholders.
Demonstrate how visualization and documentation tools can be used to articulate the solution architecture.
Demonstrate the ability to handle unexpected roadblocks and to determine the appropriate next steps.
Demonstrate the ability to share knowledge and learning through experience and mentorship.

Review Board Exam Objectives

System Architecture
Given a scenario, determine the appropriate mix of systems, including both on and off-platform components, taking into consideration the Salesforce platform capabilities, constraints, and limits.
Given a scenario, describe the design and platform considerations, trade-offs, and risks for reporting and analytics.
Given a scenario, describe the architectural considerations when planning, defining, or working within a single or multi-org environment.
Given a scenario, describe the design considerations, trade-offs, and risks for mobile solutions and recommend the appropriate mobile platform.
Given a set of requirements, recommend the correct mix of required license types taking into account the capabilities, trade-offs and constraints.
Given a set of requirements, describe the capabilities, trade-offs, and constraints to determine the appropriate document management solution.
Security
Given a set of requirements, architect a solution that utilizes the appropriate platform security mechanisms.
Given a scenario, identify the security considerations and risks, and leverage the appropriate security capabilities to design a secure portal architecture including access by both internal and external users.
Given a scenario, identify the declarative platform security features that can be used to meet record-level security requirements.
Given a scenario, identify the programmatic platform security features that can be used to meet security requirements.
Given a scenario, describe how to incorporate the platform security features into a solution to give users the appropriate object and field access permissions.
Given a set of requirements, design and justify an end-to-end identity management solution.
Data
Given a scenario, describe the platform architecture considerations, platform impact and optimization methods used when working with large data volumes.
Given a scenario, describe data modeling concepts and implications of database design and modeling.
Given a scenario, determine the data migration strategy, considerations, and appropriate tools to use.
Solution Architecture
Given a set of business requirements, describe the appropriate combination of declarative and programmatic functionality within a solution.
Given a scenario, describe the benefits, considerations, and trade-offs of incorporating external applications into an application architecture.
Integration
Given a set of requirements, recommend the appropriate enterprise integration landscape and describe associated risks, trade-offs, and business and technical considerations within a customer environment.
Given a scenario, describe the capabilities of the appropriate technology and justify their use as part of the overall integration architecture.
Given a scenario, recommend and justify the appropriate integration strategy and the use of common integration patterns.
Given a scenario, recommend and justify the appropriate platform-specific integration technology used to integrate with external systems and describe the capabilities, limitations and trade-offs.
Development Lifecycle and Deployment Planning
Given a scenario, identify the project risks and mitigation strategies.
Given a customer project environment and development methodology, identify the technical considerations, risks, and impact

Review Board Exam Objectives
on the technical work streams.
Given a scenario, recommend an appropriate comprehensive test strategy and discuss how testing mitigates any project risks.
Given a scenario, describe the considerations, stakeholders, and impact of decisions around a technical solution relative to customer project governance.
Given a scenario, describe the platform tools, use cases, limitations, and best practices for environment management.
Describe the common tools, benefits, and rationale for using source control and continuous integration for release management.
Communication
Articulate the benefits, limitations, considerations, and design choices for a solution architecture and handle objections related to the design.
Demonstrate how visualization and documentation tools can be used to articulate the technical solution.
Demonstrate the ability to handle unexpected roadblocks and determine the appropriate next steps.

Section 7. Sample Exam Questions

The following questions are representative of those on the Salesforce Certified Technical Architect multiple-choice exam. These questions are not designed to test your readiness to successfully complete the certification exam, but should be used to become familiar with the types of questions on the exam. The actual exam questions may be more or less difficult than the questions below.

1. Universal Containers has 5,000 employees across five business divisions. Each business division operates independently with unique business processes to serve different industry verticals. Data for each business division is restricted to users within that division; however, there is a group of specialist resources that require access to data across business division.

   Universal Containers is implementing Salesforce and projecting case volumes of two million records annually across divisions. The future data model will contain 200 or more custom objects. Senior management requires consolidated cross-division reporting.

   Based on these requirements, the Universal Containers project team would like to implement a single organization strategy with delegated administration allocated to a system administrator for each division.

   Which implication should an architect consider when reviewing the approach with the project team? (There are *two* correct answers.)

   A. A complex structure of roles, groups, and sharing rules will be required to provide data access within and across divisions.
   B. All business processes for each division will need to be standardized into a single set of business processes across divisions.
   C. Large data volume optimization will need to be implemented for key objects to improve report performance.
   D. Governance and change management processes will need to be applied separately to each division.

2. Universal Containers uses custom security tokens to allow employees to access internally hosted applications. The company would like to integrate with Salesforce, but does not want to change the existing security mechanism.

   Which option should be considered?
   (There are *two* correct answers.)

   A. Use the OAuth 2.0 API and protocol to decipher and translate tokens and establish user identity in Salesforce.

B. Use an AppExchange tool to translate the custom token to a token understood by the Salesforce authentication framework.
C. Use delegated authentication to handle login requests and validate the custom security token.
D. Use a custom Apex security service to decrypt tokens and authenticate against credentials stored on the Salesforce user record.

3. Universal Containers is building an Order Management System (OMS) in Salesforce and designing the order entry data model, which will require multiple data lookup relationships. The company has decided to use a third normal form (3NF) data model.

   Which performance impact should an architect communicate to Universal Containers related to this design?

   A. Performance when adding new orders
   B. Performance when updating existing orders
   C. Query performance when searching for orders
   D. Query performance when running order reports

4. Universal Containers is currently using an on-premise customer rewards system and would like to update the system with information from multiple objects in Salesforce when opportunities are closed-won. The customer rewards system exposes a set of Web services to receive the required data. Which integration approach will meet this requirement?
   (There are *two* correct answers.)

   A. Create a workflow rule on opportunities to send an outbound message to the customer rewards Web service.
   B. Create an Apex trigger on opportunities and invoke the customer rewards Web service synchronously.
   C. Create an Apex trigger on opportunities and invoke the customer rewards Web service asynchronously.
   D. Schedule a batch Apex process for unprocessed opportunities and invoke the customer rewards Web service.

5. Universal Containers is planning a data migration that will bring account and contact data from a legacy system into Salesforce and maintain the relationship that exists between account and contact records. Approximately 2 million account records and 15 to 20 million contact records will be migrated.

   Which approach should an architect recommend for the data migration?

   A. Load all records into Salesforce and write an Apex trigger to build the account and contact relationships.
   B. Load the account data and use an Apex SOA callout to retrieve related contact records from the legacy system on demand.
   C. Load all records into Salesforce and use batch Apex to build the account and contact relationships.
   D. Load the account and contact data and use the legacy ID as an external ID to build the account and contact relationship.

Section 8. Answers to Sample Exam Questions

1. A, C
2. B, C
3. D

4. A, C
5. D

Section 9. Maintaining a Certification

Successful completion of online, release-specific Salesforce Certified Force.com Developer exams is required to maintain the prerequisite to the Salesforce Certified Force.com Technical Architect credential. Release exams are published three times a year, one for each of the major product releases.

Successful maintenance of the prerequisite credential, Salesforce Certified Force.com Developer, is required to maintain this credential. An annual maintenance fee of $100 will be charged when registering for every third release exam, based on when the prerequisite credential was earned. The maintenance fee includes the three release exams and access to the supporting training material. Salesforce Certified professionals will be notified automatically when new release training material and exams become available.

In addition to maintaining the prerequisite credential, successful completion of online, architect-level release-specific exams, along with leadership contributions to the Architect Community through activities such as speaking engagements, authoring opportunities, and serving as a review board judge may be required to maintain the Salesforce Certified Technical Architect credential.