

# SOAP vs REST

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# Main Differences between SOAP and REST

## Introduction

Both SOAP (**S**imple **O**bject **A**ccess **P**rotocol) and REST (**R**epresentational **S**tate **T**ransfer) are methods of communication between two applications that allow access to data. SOAP is a protocol specification for exchanging structured information in computer networks. REST is the architectural style of the World Wide Web, and tries to simplify the method of requesting information. This document discusses some key differences between the two interfaces.

## Format

SOAP relies exclusively on XML, and uses transport protocols such as HTTP and SMTP to interact with applications. It is easier for SOAP models to access information through firewalls and proxies without alterations to the SOAP protocol, but it can also be slow due to its XML format. REST uses the architectural style through which data can be transmitted solely over a standardized protocol, such as HTTP. REST uses many different data formats, including JSON, which is a better fit for data and parses much faster. REST requests can be easily be debugged and tested with the use of an internet browser.

## Uses

SOAP is mostly used for Enterprise applications to integrate a wide number of applications and legacy systems. REST is based on URIs and HTTP, and is used by major web services on the World Wide Web.

## Requests

In REST, each unique URL is a representation of some object. The contents of that object can be retrieved using a GET request. Other request types such as, POST, PUT, or DELETE can be used to modify the object. Whereas, SOAP requires an XML wrapper around every request and response, resulting in an increased consumption of bandwidth. It requires specific knowledge of a new XML specification, and most developers will need a SOAP toolkit to form requests and parse the results. With REST, developers who understand HTTP, JSON, and XML can start building Web Services without needing any toolkit beyond what they normally use for Internet application development.

In order for developers to know what data types are needed and returned, both REST and SOAP need a corresponding document that outlines the input parameters and output data. REST usually returns the data in JSON data format, whereas SOAP returns an XML data structure. For SOAP, the data inside the requests must comply with the SOAP schema/structure/rules. There are no constraints or limits for the data structure inside the requests for REST.

## Security

Data that needs to be secure, should never be sent as a parameter in URIs. Even when REST requests are made via the HTTPS protocol, the administrator, firewall, or any intermediary is able to recognize the intent of each request by analyzing the HTTP command/URI. GET requests can be considered somewhat safe because it can not modify any data. It can only query data.

SOAP uses POST to transmit the data. Without looking into the SOAP envelope/packet (which is pretty time-consuming and is not built into firewalls), there is no way of knowing whether the request was to query data or delete entries from a database. SOAP supports more security tools, such as WS-Security which adds more enterprise security features.

## **Transferring Attachments**

SOAP makes transferring files easier. It can transport your text and binaries without any problems. REST, on the other hand, can also handle large amounts of data, but it can become quite cumbersome or might even be out of bounds within a URI.

## **Caching**

Since RESTful requests are simple GET requests, intermediate proxies or reverse proxies can cache their responses very easily. SOAP uses POST requests and require a complex XML request, which makes caching the responses a bit more difficult.

## References

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