Chapter IX

Comparing the Security Architectures of Sun ONE and Microsoft .NET

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ABSTRACT
Platforms for web services have been reduced to two basic approaches: Microsoft .NET and Sun ONE (J2EE). We compare here these two platforms with respect to the security they provide to the web services that use them. We arrive to the conclusion that although the basic security architectures are fairly similar, their actual implementations differ. Microsoft’s approach appears weaker because of their self-contained approach, and a failure to follow good principles of software and secure systems design.

INTRODUCTION
Several companies have announced strategies for supporting web services. They all use one of two basic architectures: Microsoft’s .NET or Sun ONE.
Microsoft’s architecture is also an implementation, while Sun ONE is an architecture with several implementations based on Java. Comparisons of these architectures barely mention security (Mougin, 2001; Sessions, 2001). We believe this aspect is one of the most fundamental factors in their success or failure and we look here at the security features in Microsoft .NET and Sun ONE web services architectures.

The basic purposes of an architecture to support web services are:

- Store the web service programs on shared systems, where users can find and access them.
- Some systems also need to store the user’s data on these shared systems.
- Some systems store web services repositories or catalogs.

This brings up the typical security issues, which now have the following objectives:

- **Confidentiality:** The web service data may only be accesses by authorized users.
- **Integrity:** Web services data, code, or descriptions may only be altered by authorized users.
- **Code control:** The program code must not be able to perform illegal actions when invoked.
- **Access control:** Only paying subscribers can use the service.
- **Availability:** Code and data stored on the server must be available when needed.

Some of these issues should be resolved in the upper layers, where web services are defined. These layers are based on standards under development and we do not discuss these aspects here because they apply to both architectures. A survey of security aspects of web services is given in Fernandez (2002).

Because both the Microsoft .NET and Sun ONE architectures are quite new, there are many aspects still not tested in practice. These two platforms are still evolving and some of our specific conclusions may not be true anymore, but unless there is a change in their fundamental design our main conclusions should still hold.

The next section provides a general overview of both architectures. We then consider in detail the security architectures of Sun ONE and .NET, relating them to the standard work on security models. We end with a general discussion of both approaches.