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## Middleware

Wireless middleware can make applications run more efficiently over wireless networks. Find out what middleware can do for your application—and when to use it.

### What Is Wireless Middleware?

Wireless middleware is software consisting of:

- A client component, installed on the mobile computer
- A server component, installed on a gateway (sometimes referred to as a mobile server)

### Types of Middleware

There are numerous wireless middleware solutions available.

#### General-Purpose Middleware

These work for a wide range of applications. They typically come with programming interfaces or languages that you can use to either adapt existing applications or create new ones.

Wireless Application Protocol (WAP) is an example of this type of middleware, though there are numerous other approaches available.

#### Application-Specific Middleware

Other middleware is designed to aid specific applications, such as e-mail and Web browsing.

Web-based optimization is an example of this type of middleware. For more information, see Optimization Considerations in [Application Development Considerations](#).

Middleware can also provide:

- Synchronization (e.g., calendar/schedule or e-mail)
- Rendering (e.g., conversion of HTML to WML)
- Security (e.g., VPNs)
- Mobility (e.g., ability to maintain sessions across multiple network types)
- Device management (e.g., client software updates)

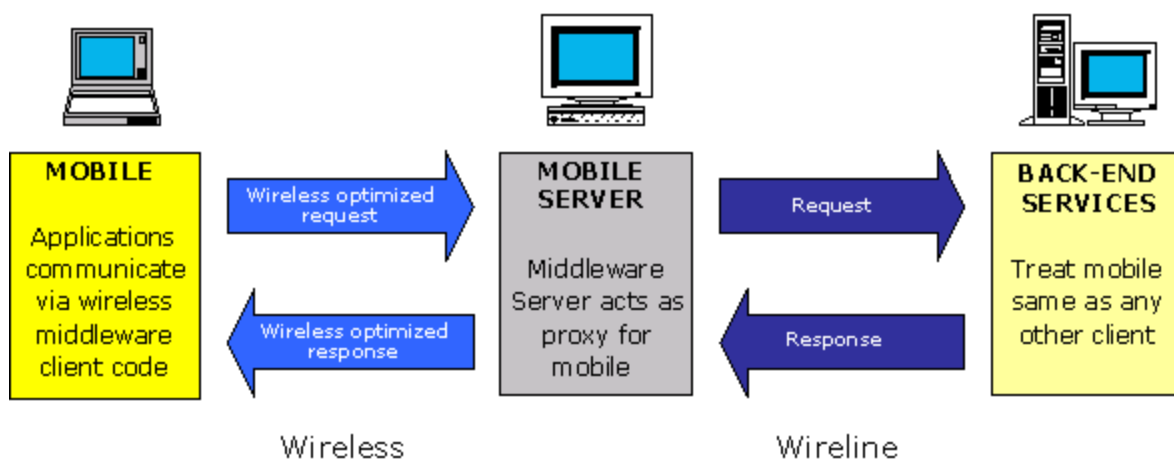
#### Wireless Optimization Middleware

Middleware designed specifically for wireless applications uses optimized protocols. These operate between the mobile client and the mobile server. Standard networking protocols operate between the mobile server and the fixed-end application service.

The protocols reduce the amount of traffic over the wireless connection. They can also buffer information in the event that the mobile device is not within wireless coverage.

Beyond these advantages, some middleware platforms can deliver content to alternate mobile platforms, e.g., PDAs and messaging devices.

#### A Diagram of Wireless Optimization Middleware



## When to Use Middleware

Many applications work just fine over wireless networks without middleware. On the other hand, certain applications may not perform well without it. You may want to consider middleware if your application:

- Involves high transaction volumes
- Is deployed to many users
- Has stringent reliability requirements

### Test First, Then Decide

There are costs associated with middleware, as well as some complexities. It's a good idea to test your application over the GPRS/EDGE network to see if middleware is needed.

For information on accessing our WAP Developer Gateway to test applications over the network, please see [Testing](#).

**Note:** Remember that certain applications (e.g., non-WAP applications) cannot be tested through the gateway. For these applications, you would need to rely on your own Quality Assurance testing, using the wireless devices your application is targeting. You may be able to take advantage of [discounted GPRS/EDGE wireless data service](#) for your testing purposes.

### Testing Data Throughput

It's helpful to know how much data—kilobytes (KBs)—your application requires during operation. There are a number of third-party tools that allow you to measure KB usage.

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