Improving Performance and Memory Use with Streams

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Coming Up

- Advantages of working with streams
- Using streams when reading data
- Using streams when sending data
- Testing performance improvements
- Improving performance with compression

Stream

An abstraction of a sequence of bytes, such as a file, an input/output device or network traffic

Advantages of Working with Streams

Classes derived from Stream hide specific details of the operating system and the underlying devices

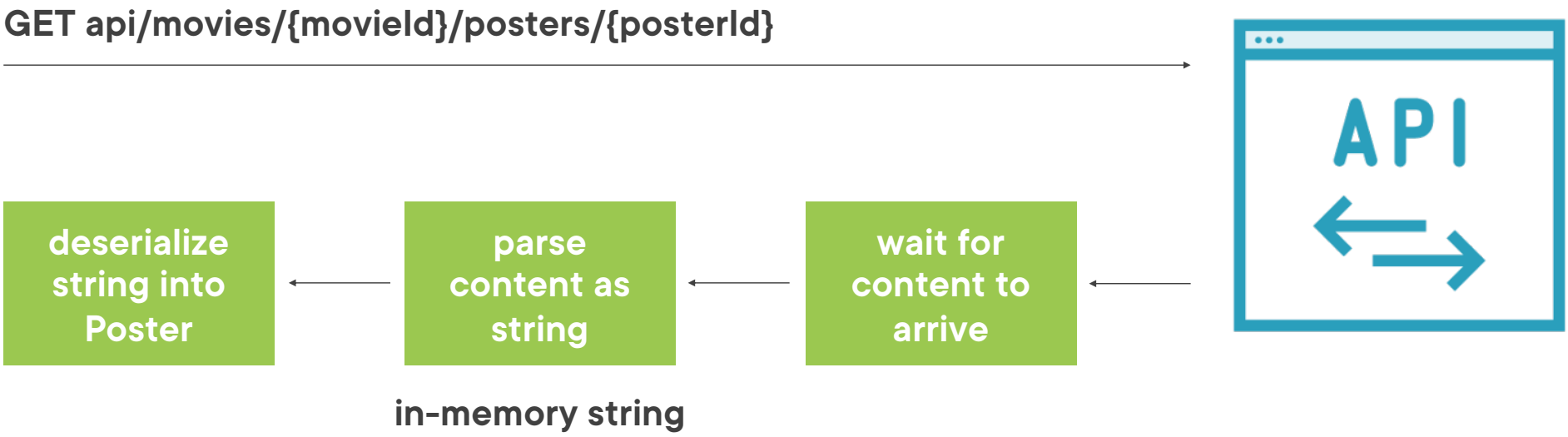
Advantages of Working with Streams

Streams help with avoiding large in-between variables

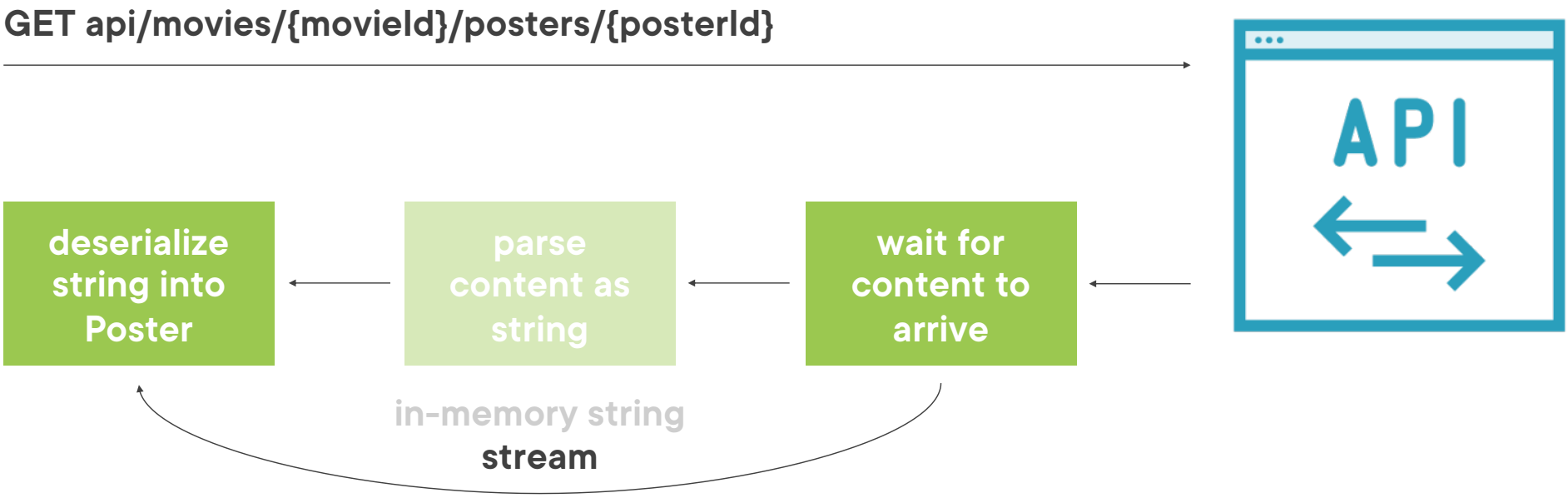
- **Better for memory use**
- **Better for performance**

The API doesn't need to work with streams to get these advantages at client level

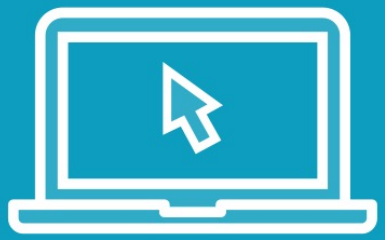
Using Streams When Reading Data



Using Streams When Reading Data

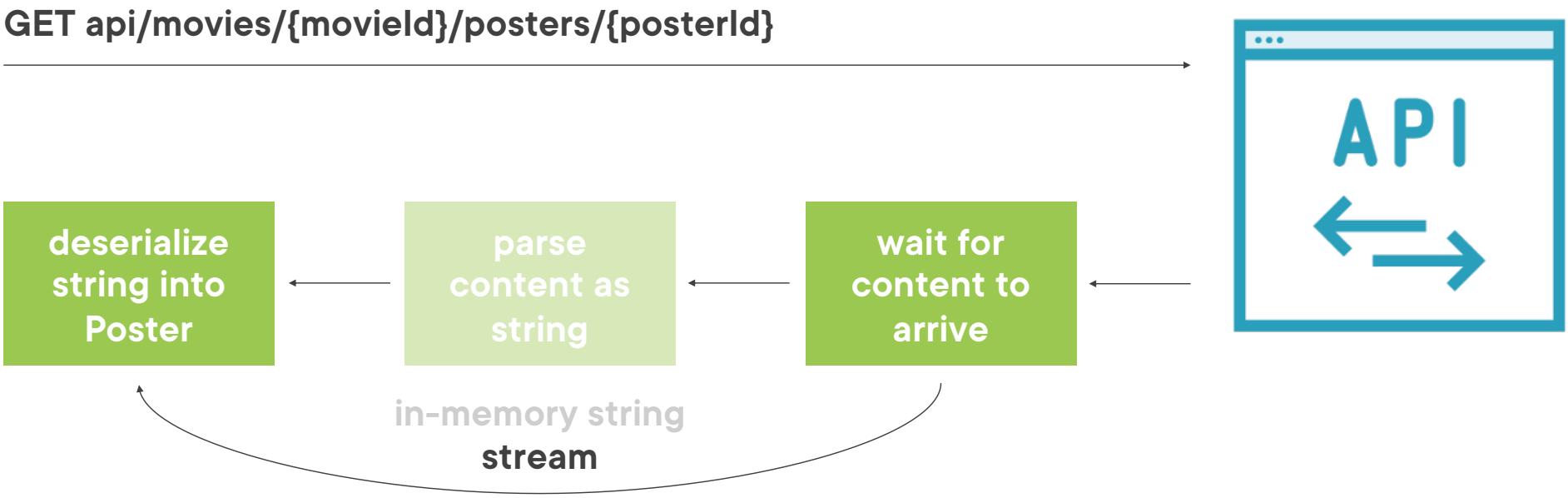


Demo



Using streams when reading data

Improving Memory Use and Performance with HttpCompletionMode



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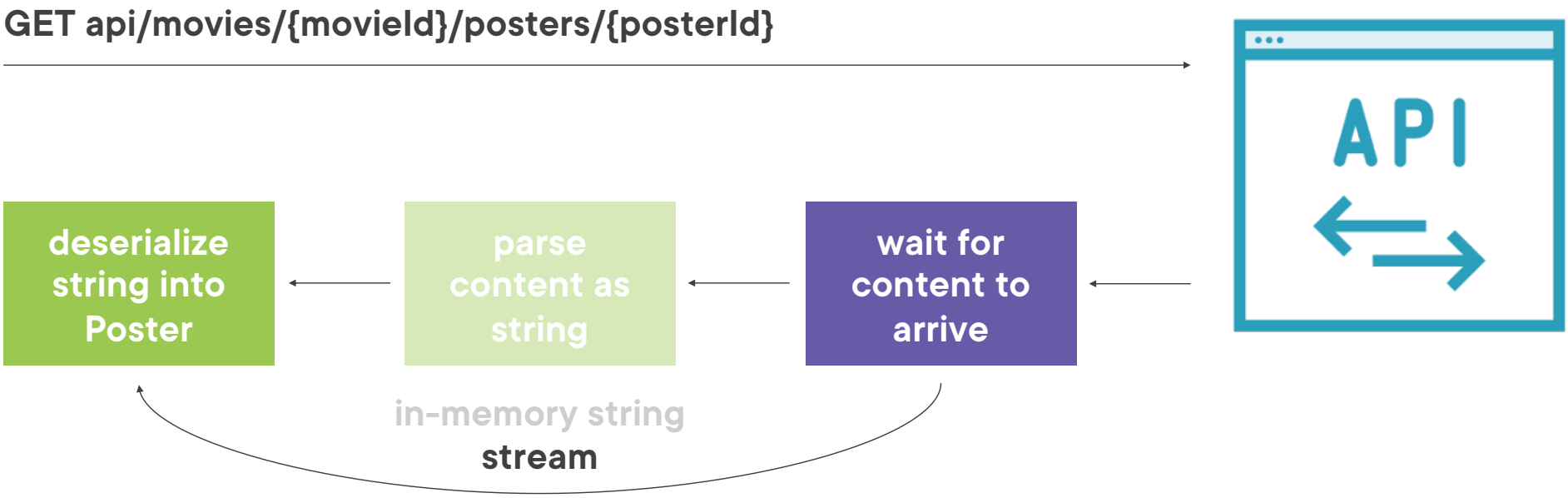

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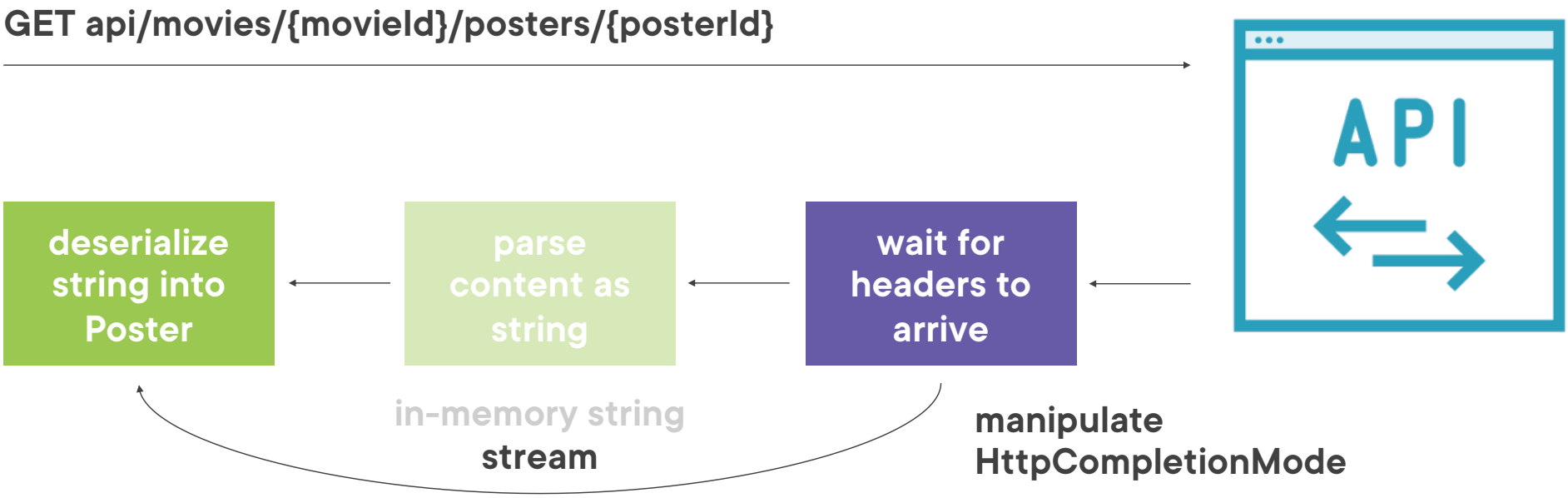

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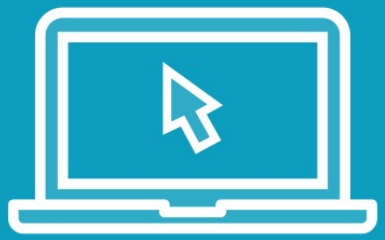

Improving memory use and performance with HttpCompletionMode

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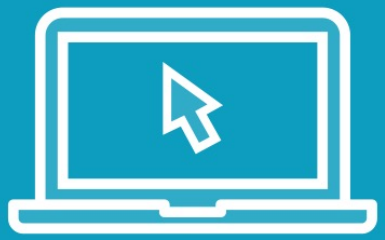
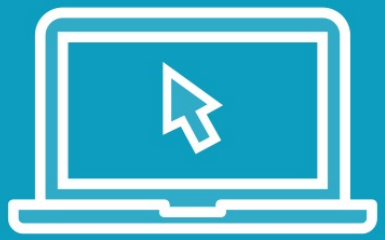


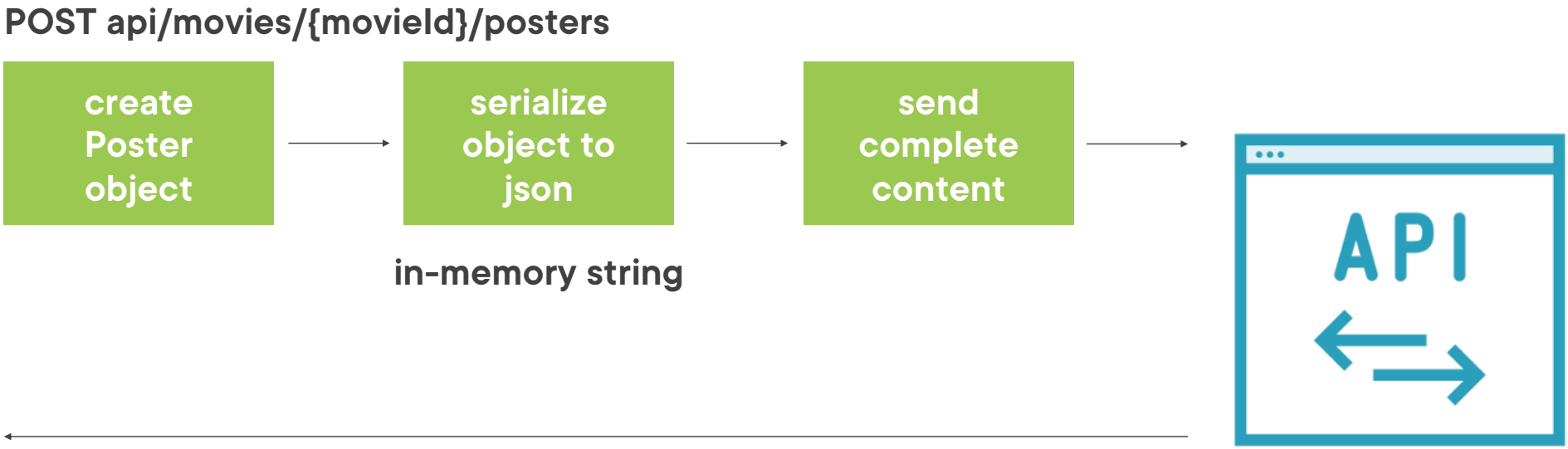
Improving code reuse with an extension method

Demo

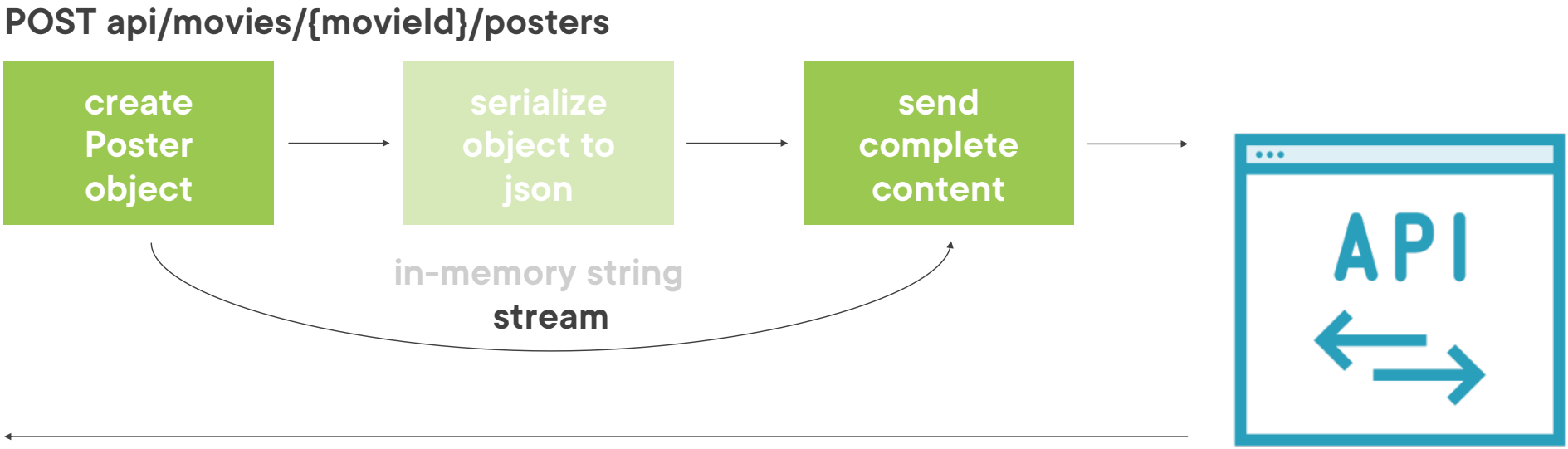


Testing performance improvements when reading data

Using Streams When Sending Data



Using Streams When Sending Data



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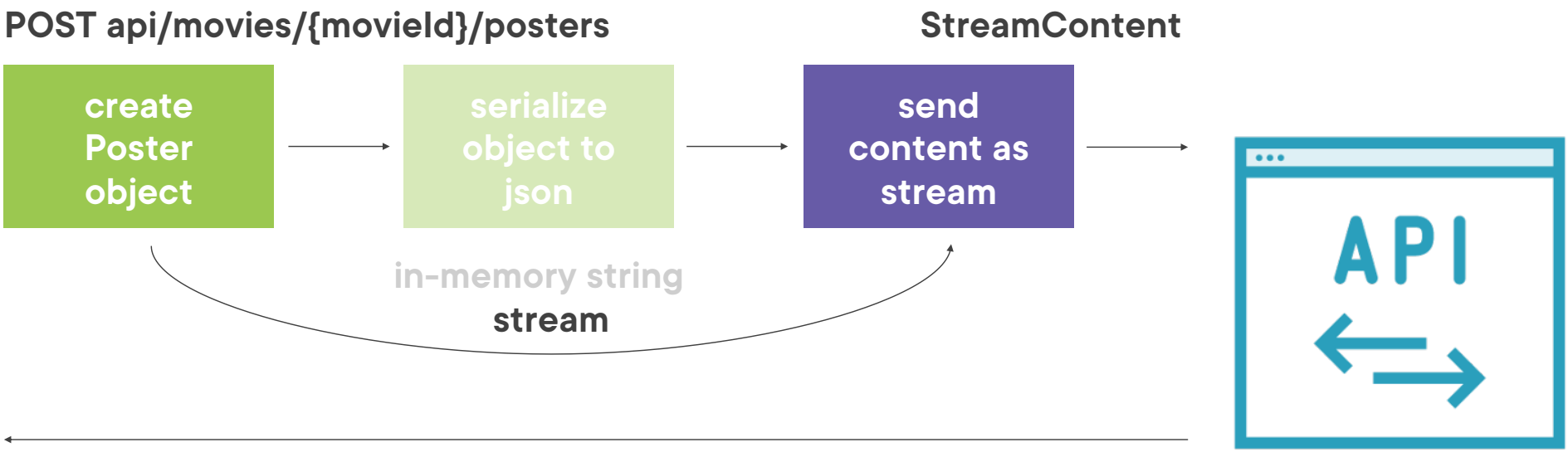
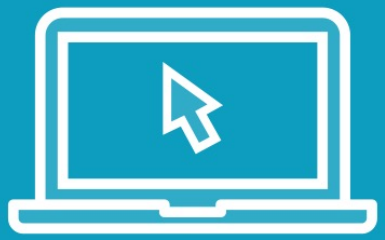
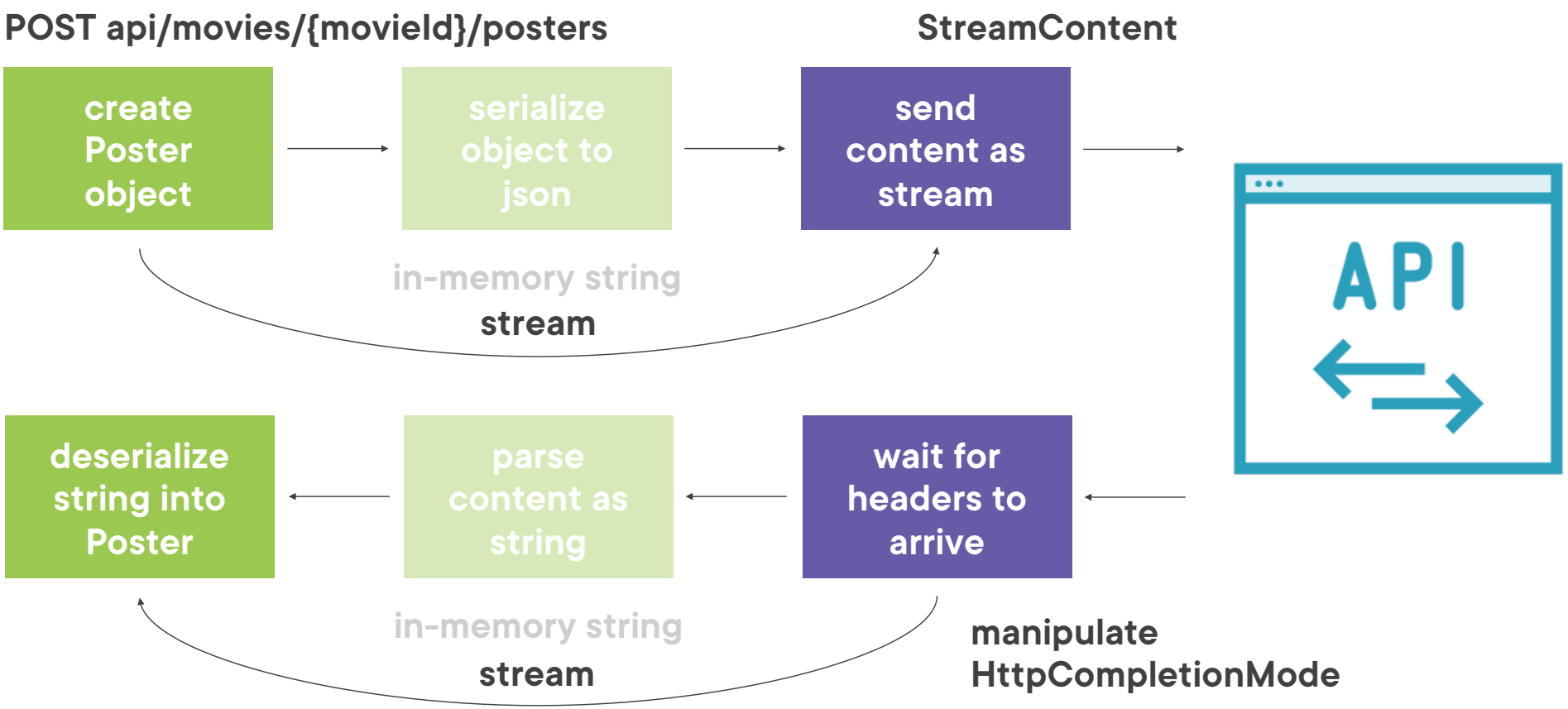


Demo



Using streams when sending data

Using Streams When Sending and Reading Data



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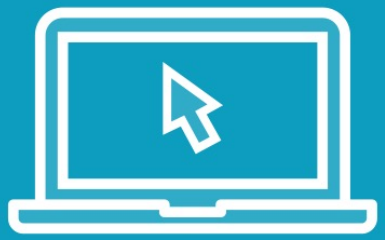
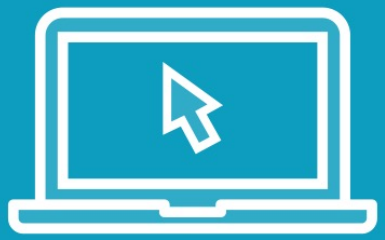


Combining streams when sending and reading data

Demo



Testing performance improvements when sending data

On Streaming, Memory Use and Performance

Creating and disposing streams can cause some overhead

- **You may see a direct impact on performance**

On Streaming, Memory Use and Performance

Using streams ensures memory use is kept low

Minimizing memory can also minimize garbage collection, which has a positive impact on performance

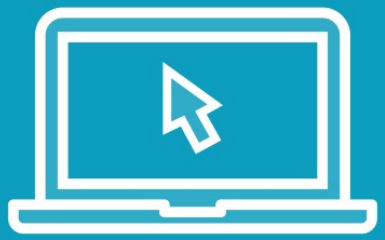
On Streaming, Memory Use and Performance

Always use streams when reading data

Also use streams when sending large amounts of data

If you're not sure, test

Demo



Working with compression

Summary

Streams are the preferred way of interacting with an API

- **Reduced memory footprint**
- **Improved performance**

Summary

Streams can be used both when reading and sending data

- **Use HttpCompletionMode to start streaming the response once response headers have arrived**

Summary

Enable compression by setting the Accept-Encoding header & enabling automatic decompression on the HttpClientHandler instance