Introducing WebSphere MQ

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hardcore dev and IT training

Introducing WebSphere MQ

Enterprise-grade messaging

Cross-platform server: Windows, Unix, Linux, IBM

Supports **complex configurations**

Goals

WebSphere MQ overview

Feature set and usage

Installation and configuration

Deployment on Windows

.NET client library

Structure and usage

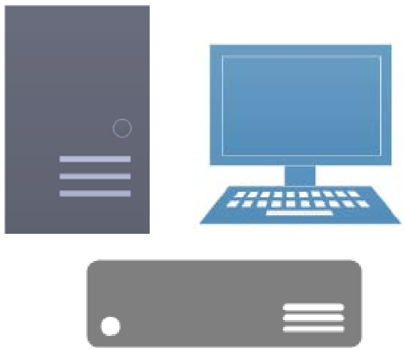
Pattern support

Fire-and-forget, request-response, publish-subscribe

What is WebSphere MQ?

p

On-premise
messaging

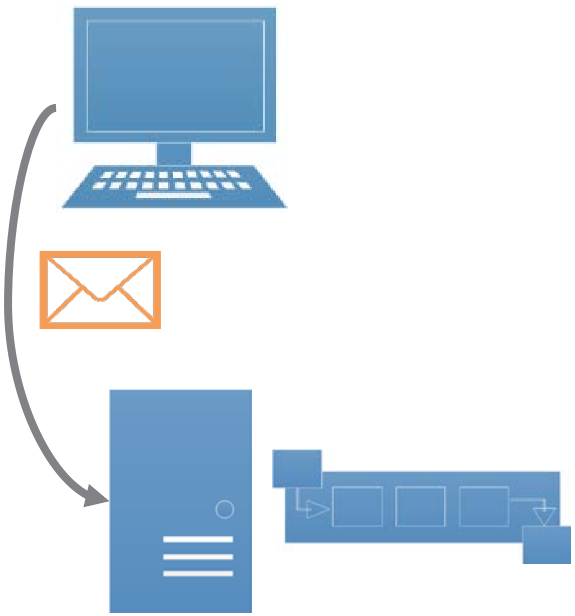


Client-server
platform support

3

Connected queue
technology

How Configurable is WebSphere MQ?

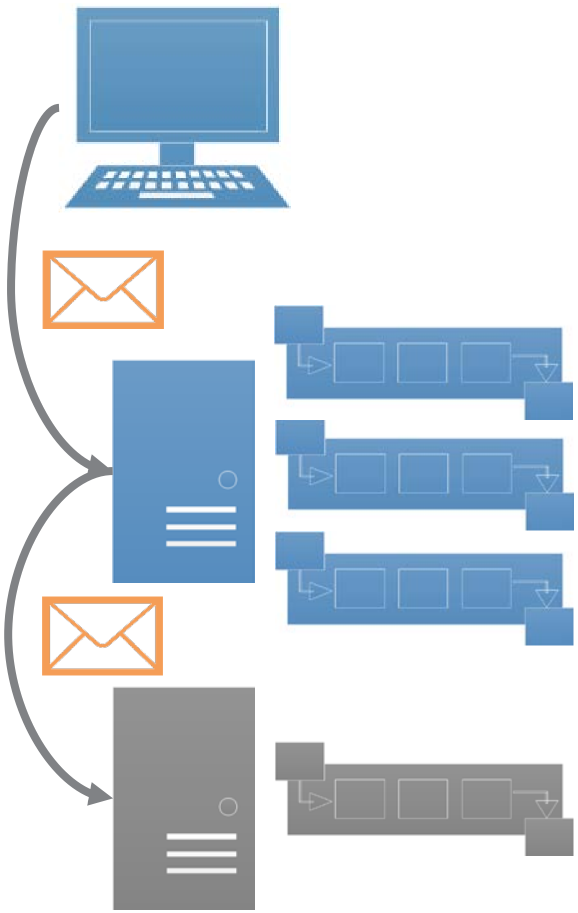


Queue Manager

Hosts queues

Manages client connections

How Configurable is WebSphere MQ?



Queue Manager

Hosts queues

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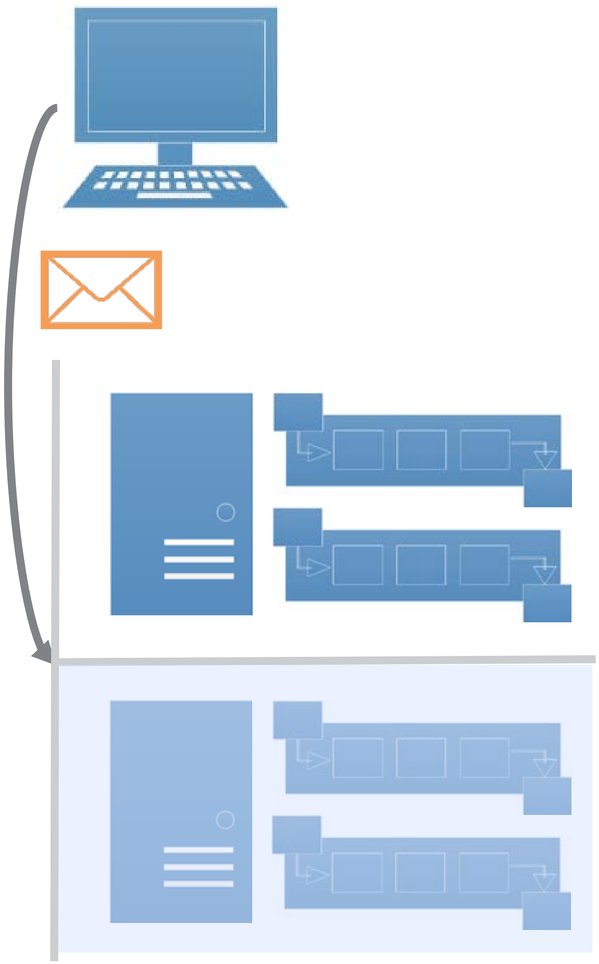
Remote queues

Remote Queue Manager

How Configurable is WebSphere MQ?



Queue Manager

Hosts queues

Manages client connections

Remote queues

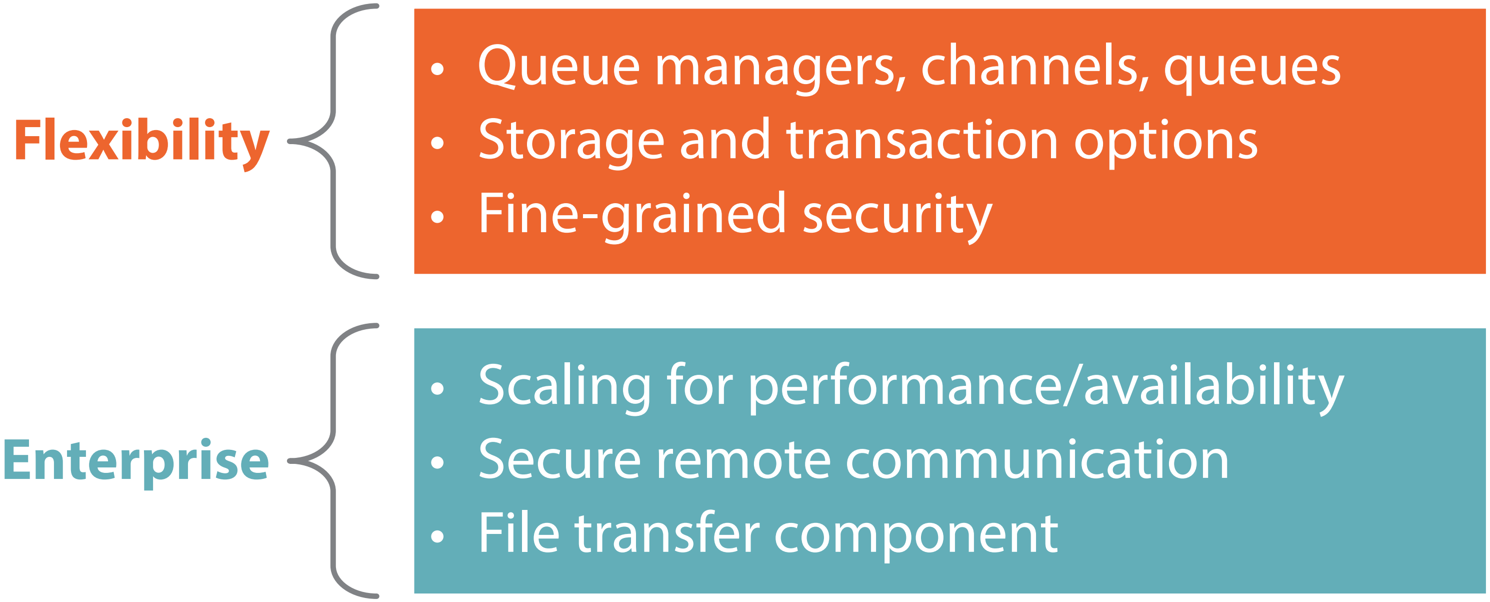
Remote Queue Manager

Clusters

High availability

Scale

WebSphere MQ Features



Flexibility

- Queue managers, channels, queues
- Storage and transaction options
- Fine-grained security

Enterprise

- Scaling for performance/availability
- Secure remote communication
- File transfer component

WebSphere MQ Features

Practical

- Dynamic response queues
- Optimized receive by correlation ID
- Large messages & segmentation

Administration

- Rich UI portal (Eclipse)
- Honours security model
- Command line (MQSC) & PowerShell

Demo 1: Deploying WebSphere MQ

Feature

Install and configure WebSphere MQ

Task

Install WebSphere MQ version 7.5 on Windows

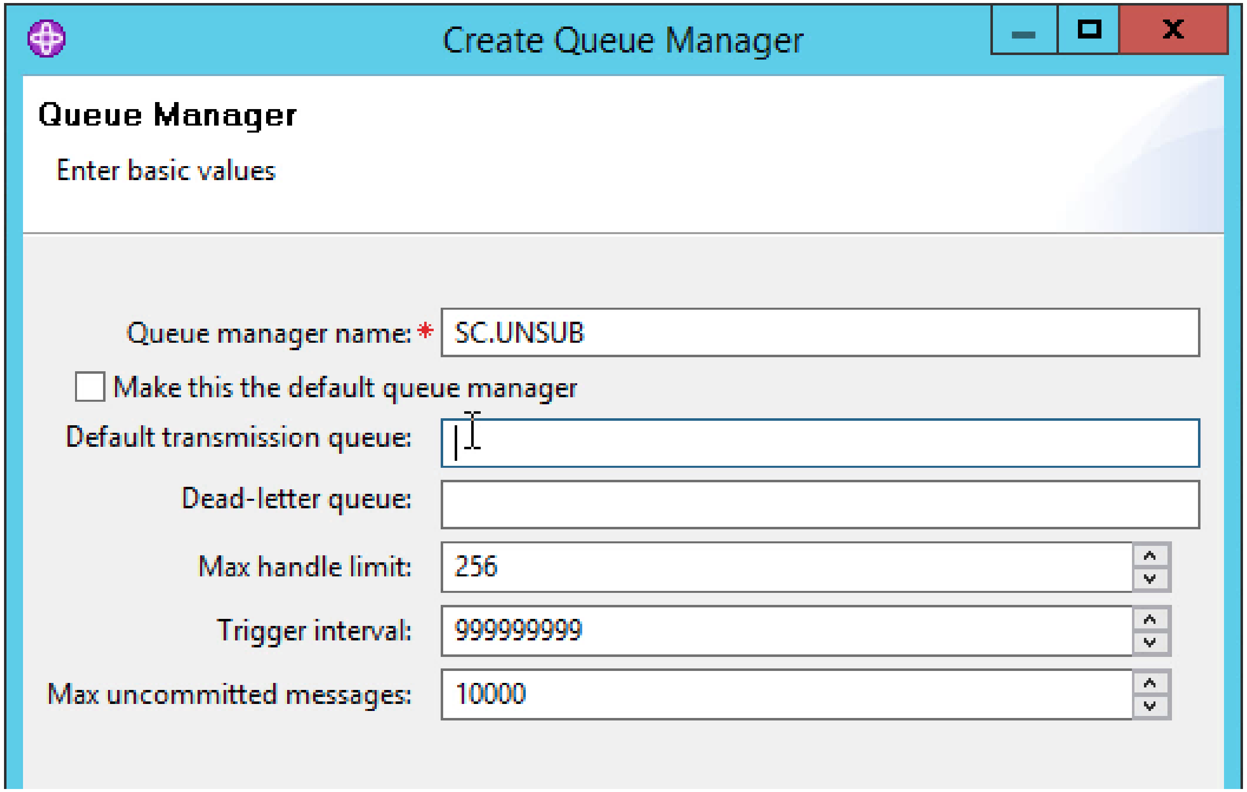
Task

Use MQ Explorer to create Queue Manager, Channel and Queue

Demo 1: Deploying WebSphere MQ

Demo 1: Deploying WebSphere MQ

- Create Queue Manager



Queue Manager

Enter basic values

Queue manager name: * SC.UNSUB

□ Make this the default queue manager

Default transmission queue:

Dead-letter queue:

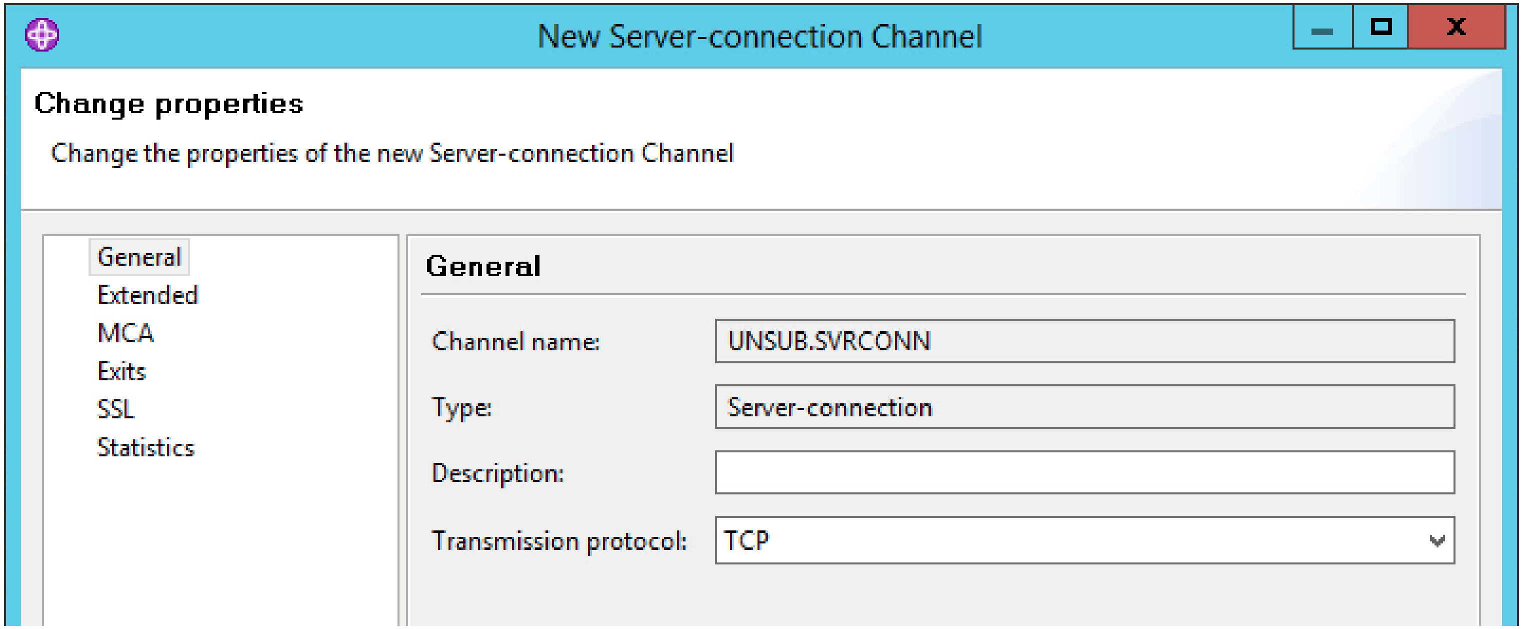
Max handle limit: 256

Trigger interval: 999999999

Max uncommitted messages: 10000

Demo 1: Deploying WebSphere MQ

- Channel Configuration



Change properties

Change the properties of the new Server-connection Channel

General

Channel name: UNSUB.SVRCONN

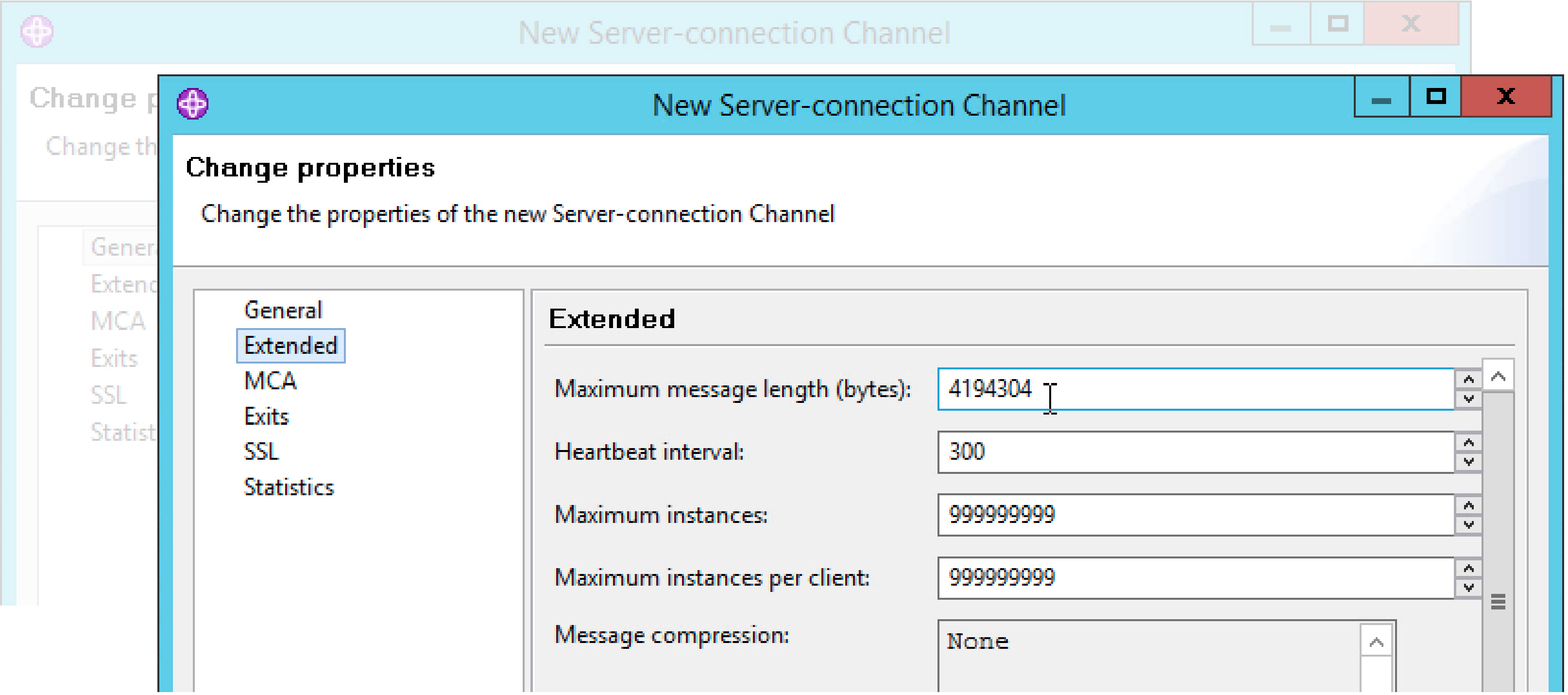
Type: Server-connection

Description:

Transmission protocol: TCP

Demo 1: Deploying WebSphere MQ

- **Channel Configuration**



New Server-connection Channel

Change properties

Change the properties of the new Server-connection Channel

Extended

Maximum message length (bytes): 4194304

Heartbeat interval: 300

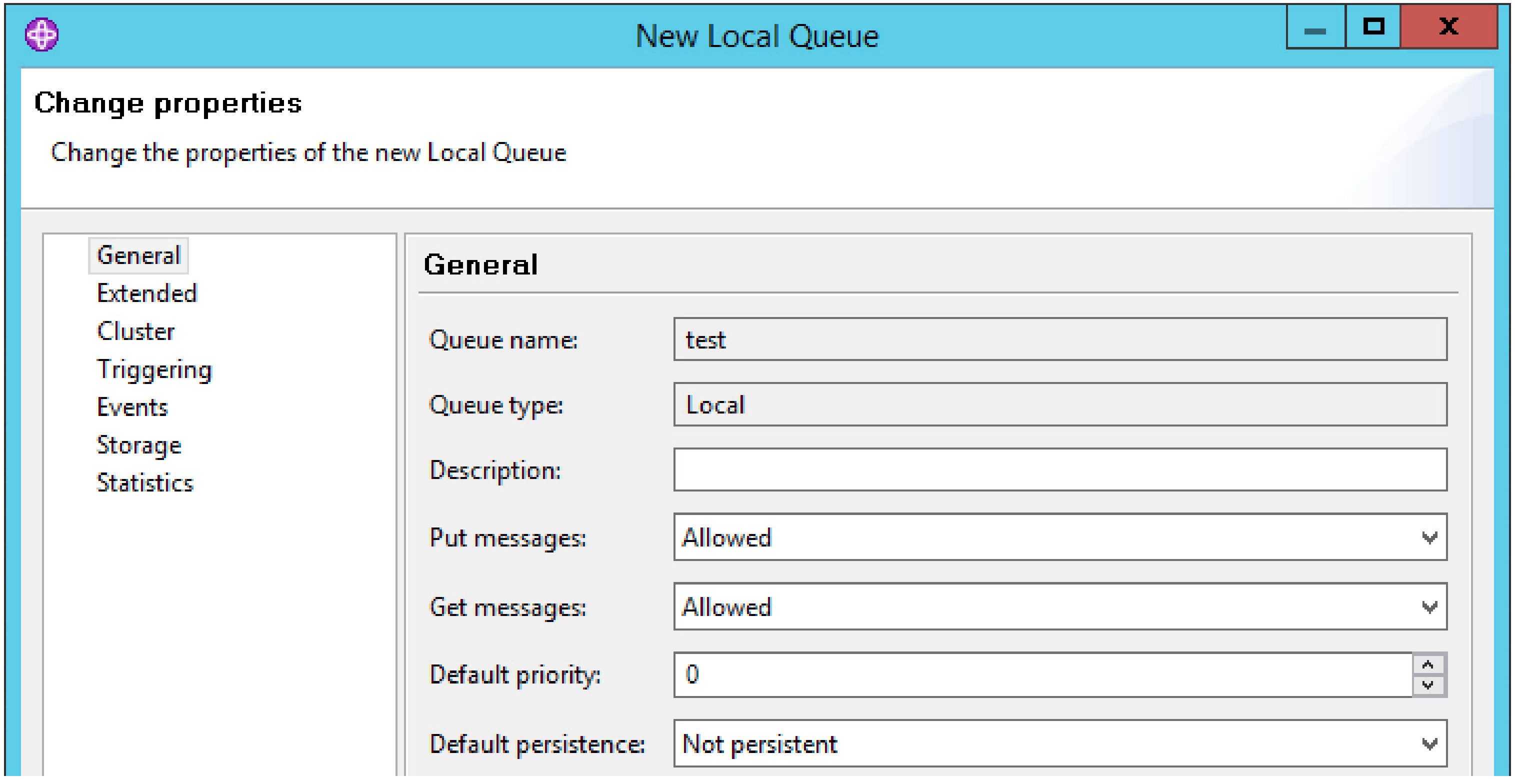
Maximum instances: 999999999

Maximum instances per client: 999999999

Message compression: None

Demo 1: Deploying WebSphere MQ

- Queue Configuration



Change properties

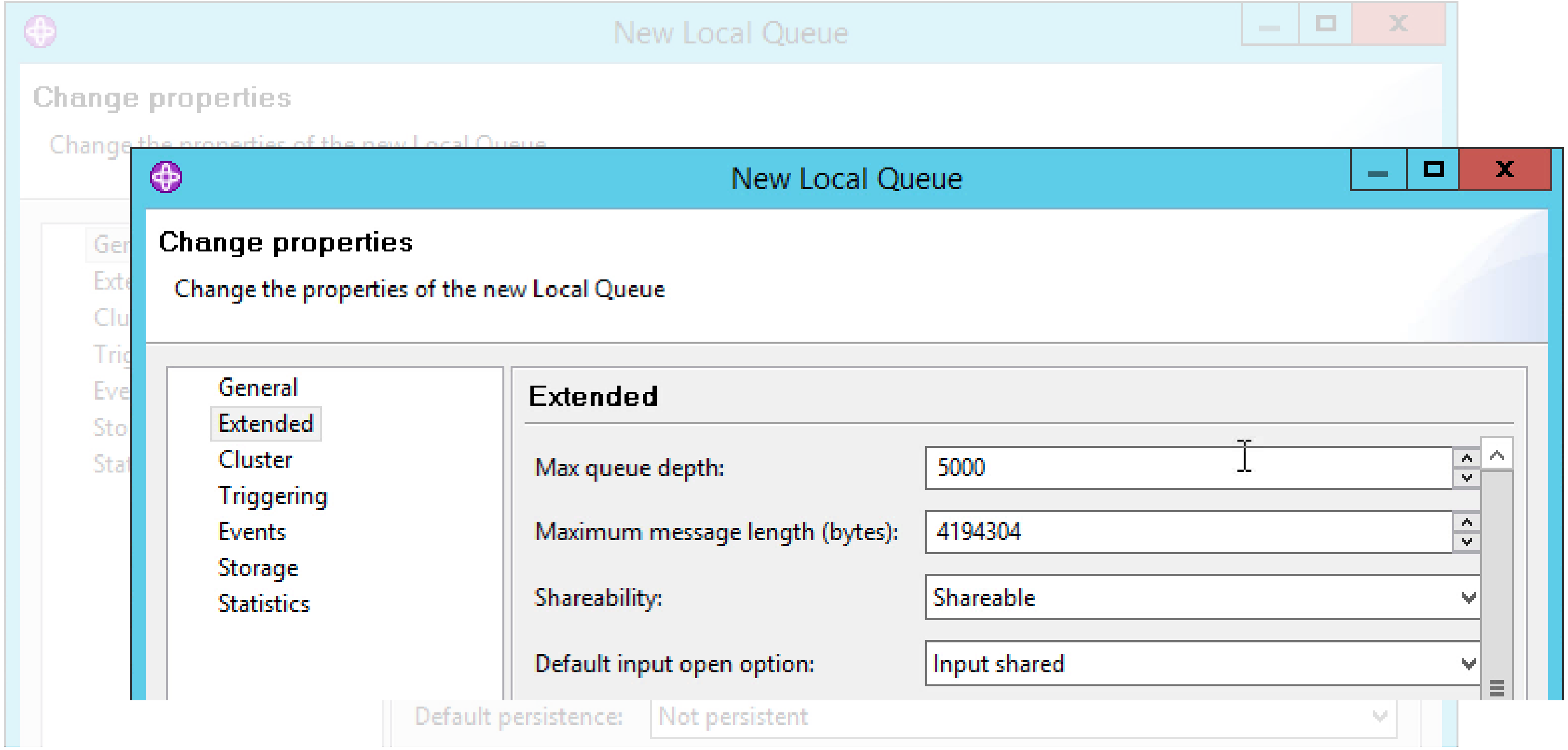
Change the properties of the new Local Queue

General

Queue name:	test
Queue type:	Local
Description:	
Put messages:	Allowed
Get messages:	Allowed
Default priority:	0
Default persistence:	Not persistent

Demo 1: Deploying WebSphere MQ

- **Queue Configuration**



New Local Queue

Change properties

Change the properties of the new Local Queue

Extended

Max queue depth: 5000

Maximum message length (bytes): 4194304

Shareability: Shareable

Default input open option: Input shared

Default persistence: Not persistent

Client Libraries

C

Client libraries for Java and .NET (etc.)

Java

JMS-style API for Java and .NET

IBM®

Native API - **feature parity** in .NET and Java

MQQueueManager

C

IBM.WMQ

Queue Manager connection

Specified channel

Connection properties

Administration

Change configuration

Create queues

Indirectly via model queues

MQQueue

C

IBM.WMQ

Messaging operations

Created from MQQueueManager

Context-bound to one queue

MQMessage

Define content format

Write body directly

Send and receive

Persistence options

Transactional options

Demo 2: Using WebSphere MQ with .NET

Feature

Explore messaging with WebSphere MQ and .NET

Task

Send and receive string messages with MQQueue

Task

Check basic performance for different reliability

Demo 2: Using WebSphere MQ with .NET

Demo 2: Using WebSphere MQ with .NET

- **Send messages**
  - Build connection properties for Queue Manager

```
var properties = new Hashtable();
properties.Add(MQC.HOST_NAME_PROPERTY, "127.0.0.1");
properties.Add(MQC.CHANNEL_PROPERTY, "UNSUB.SVRCONN");
```

  - Connect to Queue Manager & Queue
  - Specifying *MQOO_OUTPUT* option

```
var queueManager = new MQQueueManager("SC.UNSUB", properties);
var queue = queueManager.AccessQueue("test", MQC.MQOO_OUTPUT);
```

Demo 2: Using WebSphere MQ with .NET

- **Send messages**
  - □ Build message

```
var message = new MQMessage();
message.Format = MQC.MQFMT_STRING;
message.WriteString("message");
```

  - □ Send

```
queue.Put(message);
```

Demo 2: Using WebSphere MQ with .NET

- **Receive messages**
  - □ Build connection properties for Queue Manager

```
var properties = new Hashtable();
properties.Add(MQC.HOST_NAME_PROPERTY, "127.0.0.1");
properties.Add(MQC.CHANNEL_PROPERTY, "UNSUB.SVRCONN");
```

  - □ Connect to Queue Manager & Queue
  - □ Specifying *MQOO_INPUT** option

```
var queueManager = new MQQueueManager("SC.UNSUB", properties);
var queue = queueManager.AccessQueue("test", MQC.MQOO_INPUT_AS_Q_DEF);
```

Demo 2: Using WebSphere MQ with .NET

- **Receive messages**
  - Build message

```
var message = new MQMessage();
message.Format = MQC.MQFMT_STRING;
message.WriteString("message");
```

  - Receive

```
queue.Get(message);
```

  - Read body

```
message.ReadString(message.MessageLength).Dump("Body");
```

Demo 2: Using WebSphere MQ with .NET

- **Transactional messaging**
  - Specify *SYNCPOINT* option on Put

```
var options = new MQPutMessageOptions()
{
        Options = MQC.MQPMO_SYNCPOINT
};
queue.Put(message, options);
```

  - Commit

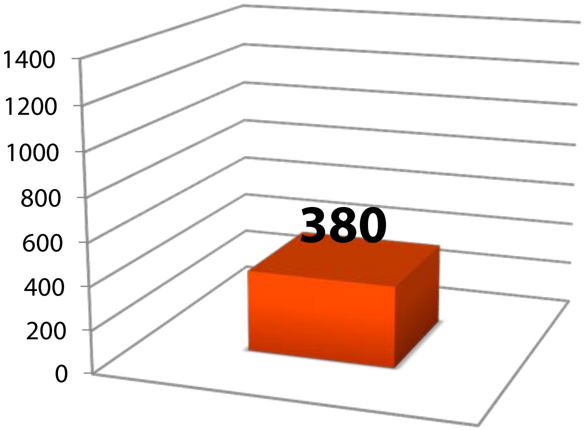
```
queueManager.Commit();
```

Demo 2: Using WebSphere MQ with .NET

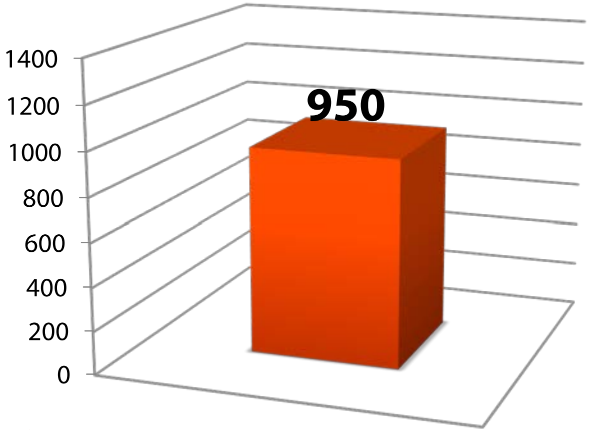
- **Durable messaging**
  - □ Specify Persistence option on message

```
var message = new MQMessage();
message.Persistence = MQC.MQPER_NOT_PERSISTENT; //0;
message.Persistence = MQC.MQPER_PERSISTENT; //1
message.Persistence = MQC.MQPER_PERSISTENCE_AS_Q_DEF; //2;
```

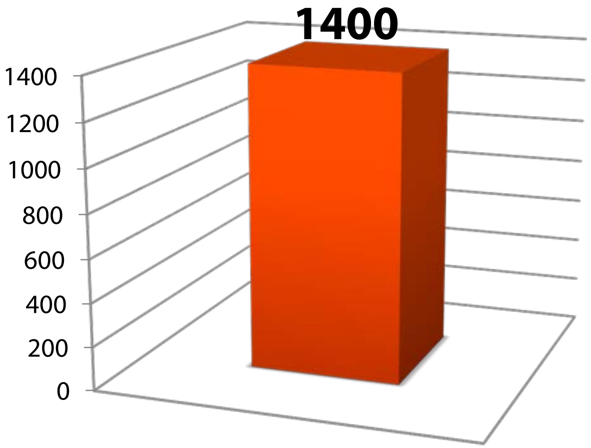
Demo 2: Using WebSphere MQ with .NET



Queue default
non-persistent



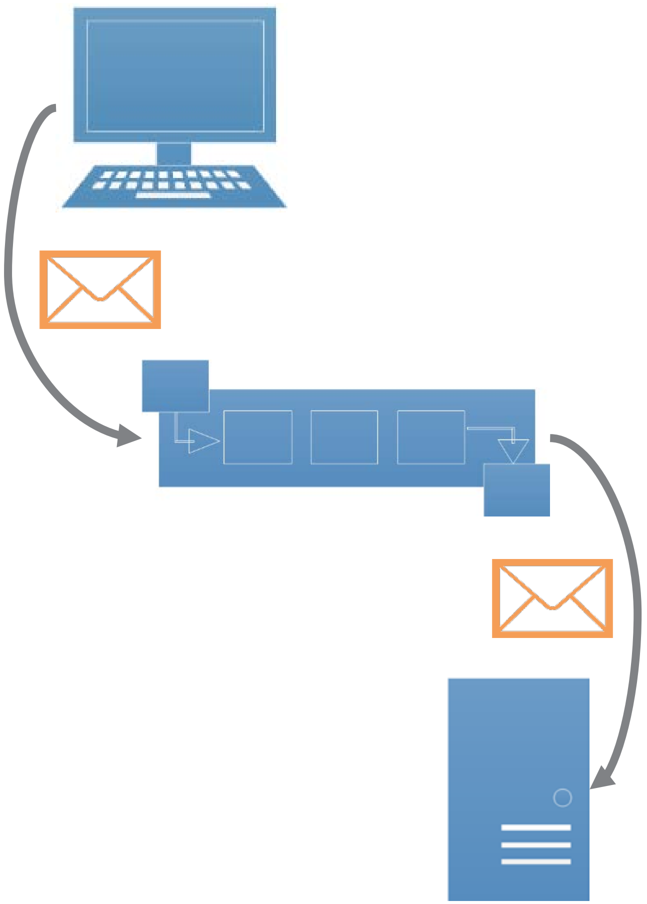
Persistent
messages



Syncpoint
queue access

🟧 - milliseconds to send 1,000 messages

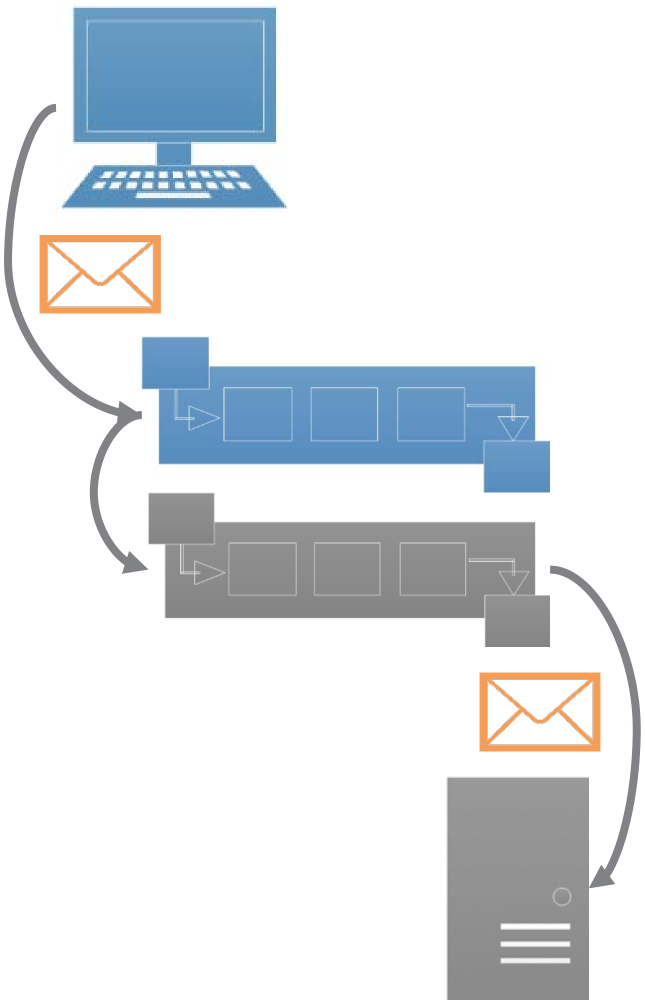
Messaging Pattern Support



Fire-and-forget

Standard support

Messaging Pattern Support

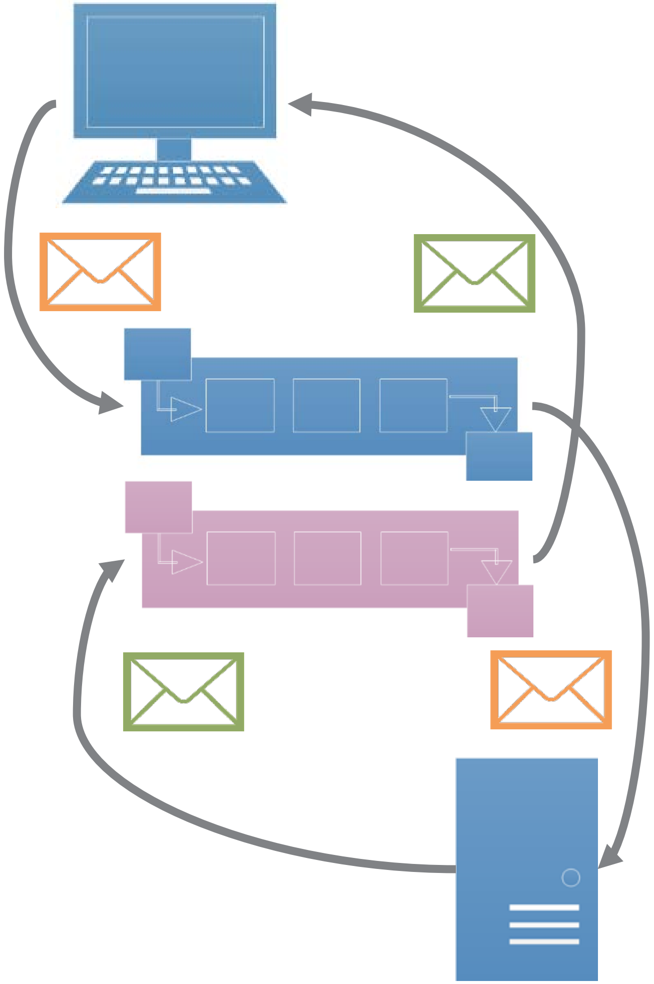


Fire-and-forget

Standard support

B2B with remote queues

Messaging Pattern Support



Fire-and-forget

Standard support

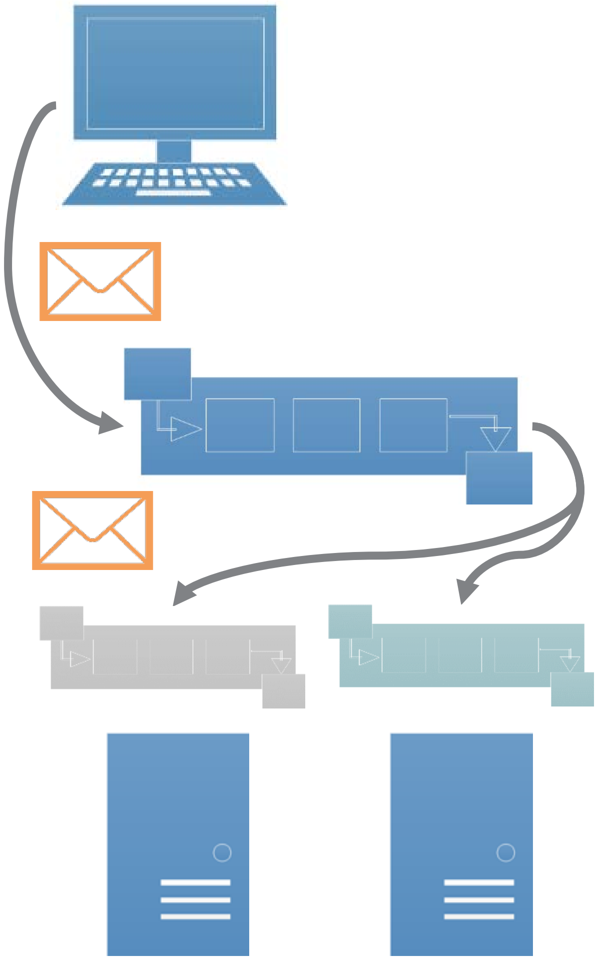
B2B with remote queues

Request-response

Shared response queue

Dynamic temporary response queue

Messaging Pattern Support



Fire-and-forget

Standard support

B2B with remote queues

Request-response

Shared response queue

Dynamic temporary response queue

Publish-subscribe

Topics coupled to queues

Summary

- **Introducing WebSphere MQ** ☑
  - Enterprise-grade messaging
  - Cross-platform client-server
- **Components** ☑
  - Queue Manager & channel
  - Queue – local, alias, model, remote
  - And lots more options
- **Usage** ☑
  - MQ Explorer
  - .NET client library
  - Performance

WebSphere MQ