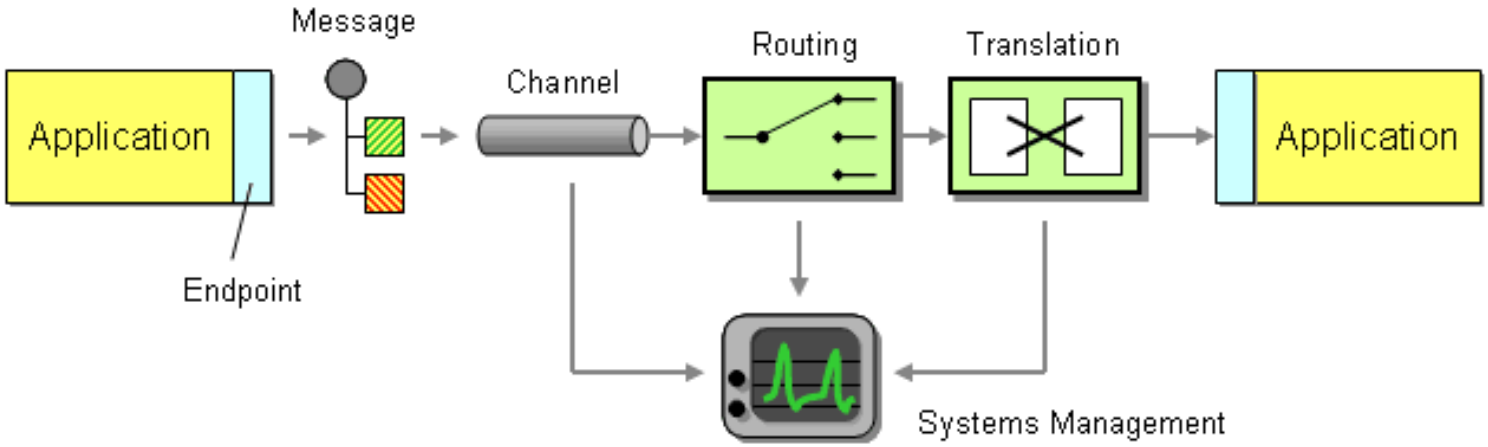
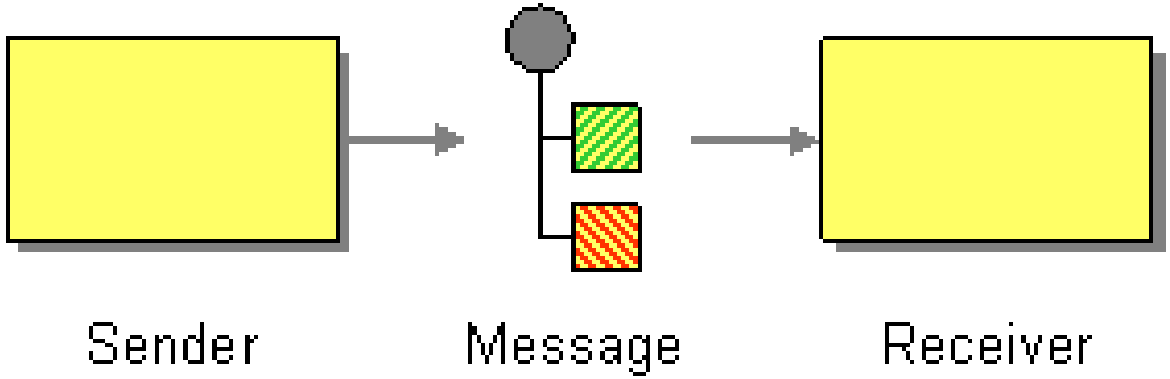
Messaging Systems

Basiselementerne i en integrationsløsning



Kommunikation med Message



Messagestruktur

Header : Information der anvendes af messaging systemet. Beskriver data der transmitteres, oprindelse, destination og m.m.m.

Body : Data der transmitteres

MSMQ Header Properties

MSMQMessage Properties

ArrivedTime

BodyLength

CorrelationId

Destination

DestinationQueueInfo

Id

Label

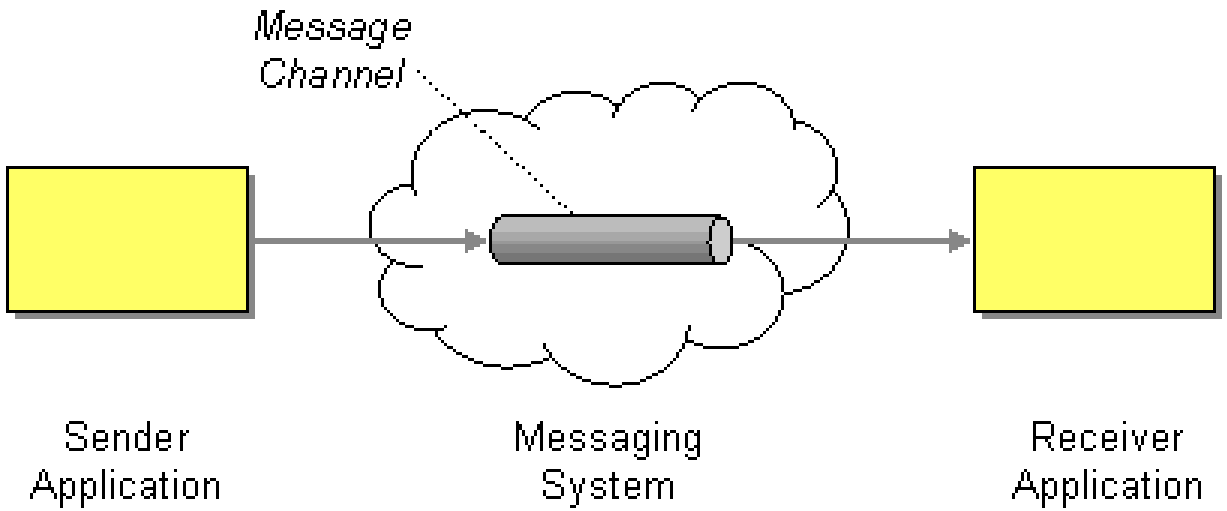
Priority

ResponseDestination

ResponseQueueInfo

SentTime

Message Channel



Connect the applications using a *Message Channel*, where one application writes information to the channel and the other one reads that information from the channel

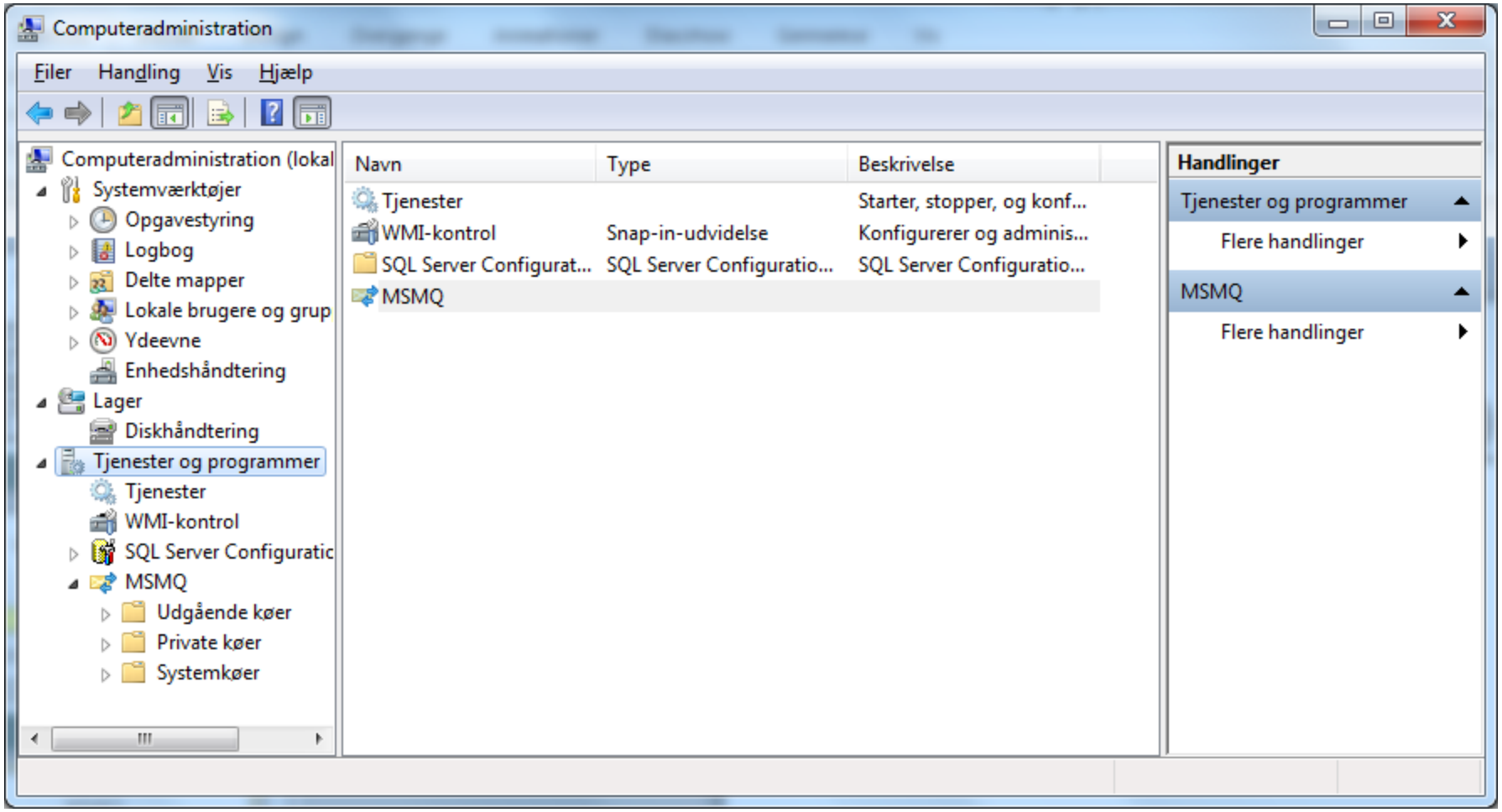
MSMQ

```
using System.Text;
using System.Messaging;                                                    // Import Messaging bibliotek med klasser til MSMQ
                                                                           //   System.Messaging skal tilføjes i References
namespace BluffCitySpike
{
    class Program
    {
        static void Main(string[] args)
        {

            MessageQueue messageQueue = null;                              // sæt lokal variabel for MessageQueue klasse
            if (MessageQueue.Exists(@".\Private$\BluffCitySpikeQueues"))   // tjek om kø er oprettet
            {
                messageQueue = new MessageQueue(@".\Private$\BluffCitySpikeQueues");   // oprette instans af MessageQueue klassen m/sti til kø
                messageQueue.Label = "BluffCity Queue";                    // beskrivelse af køen i Property Label
            }
            else
            {
                // Create the Queue
                MessageQueue.Create(@".\Private$\BluffCitySpikeQueues");   // opret køen hvis den ikke eksisterer
                messageQueue = new MessageQueue(@".\Private$\BluffCitySpikeQueues");   // oprette instans af MessageQueue klassen m/sti til kø
                messageQueue.Label = "NyOprettet Queue";                   // beskrivelse af køen i Property Label
            }

            messageQueue.Send("Besked sendt til MSMQ", "Titel");           // send besked til køen m/Label og Body
        }
    }
}
```

MSMQ


Computeradministration
Filer
Handling
Vis
Hjælp
Computeradministration (lokal
Systemværktøjer
Opgavestyring
Logbog
Delte mapper
Lokale brugere og grup
Ydeevne
Enhedshåndtering
Lager
Diskhåndtering
Tjenester og programmer
Tjenester
WMI-kontrol
SQL Server Configuratic
MSMQ
Udgående køer
Private køer
Systemkøer
Navn
Type
Beskrivelse
Tjenester
Starter, stopper, og konf...
WMI-kontrol
Snap-in-udvidelse
Konfigurerer og adminis...
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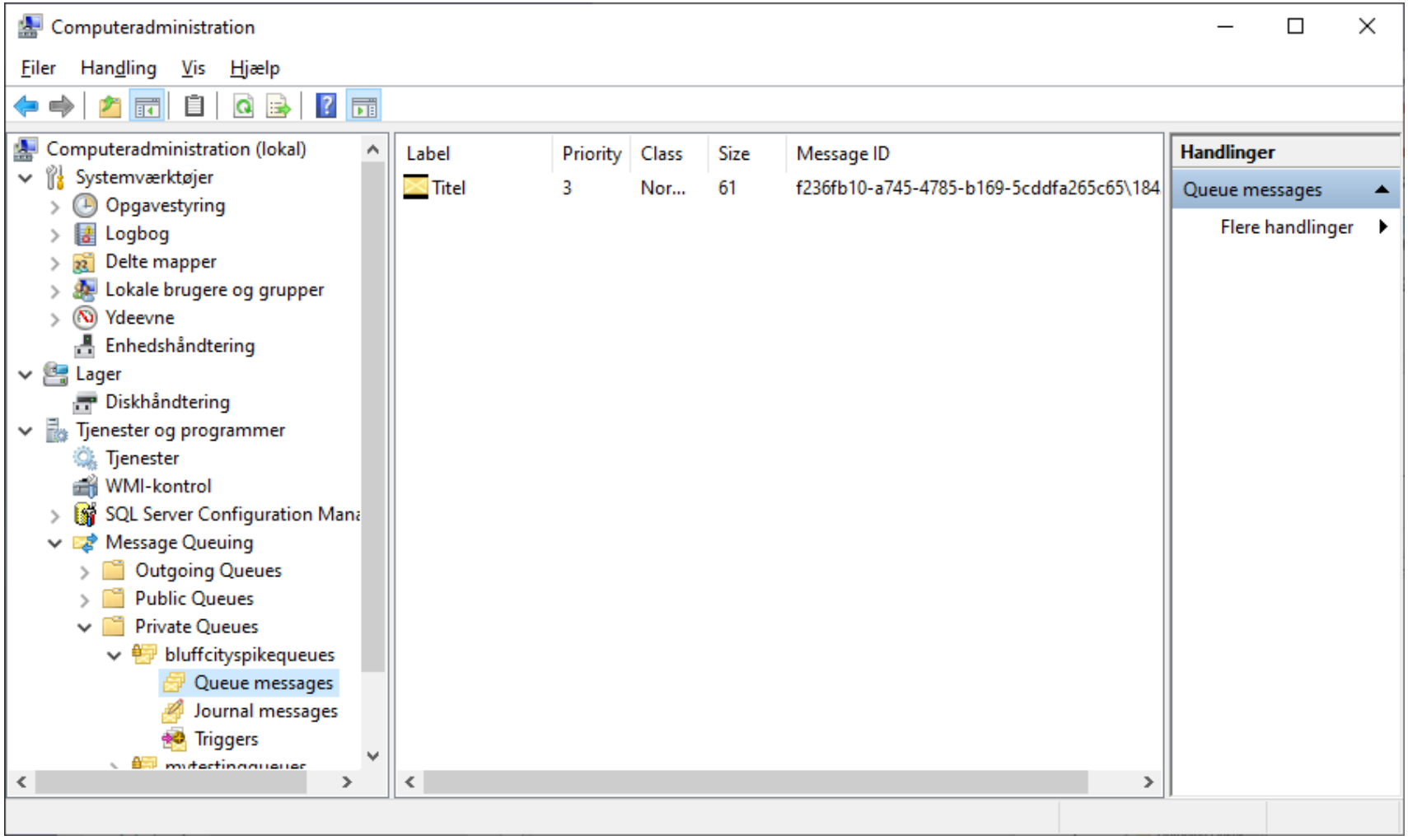
SQL Server Configuratio...
MSMQ
Handlinger
Tjenester og programmer
Flere handlinger
MSMQ
Flere handlinger

MSMQ


Computeradministration
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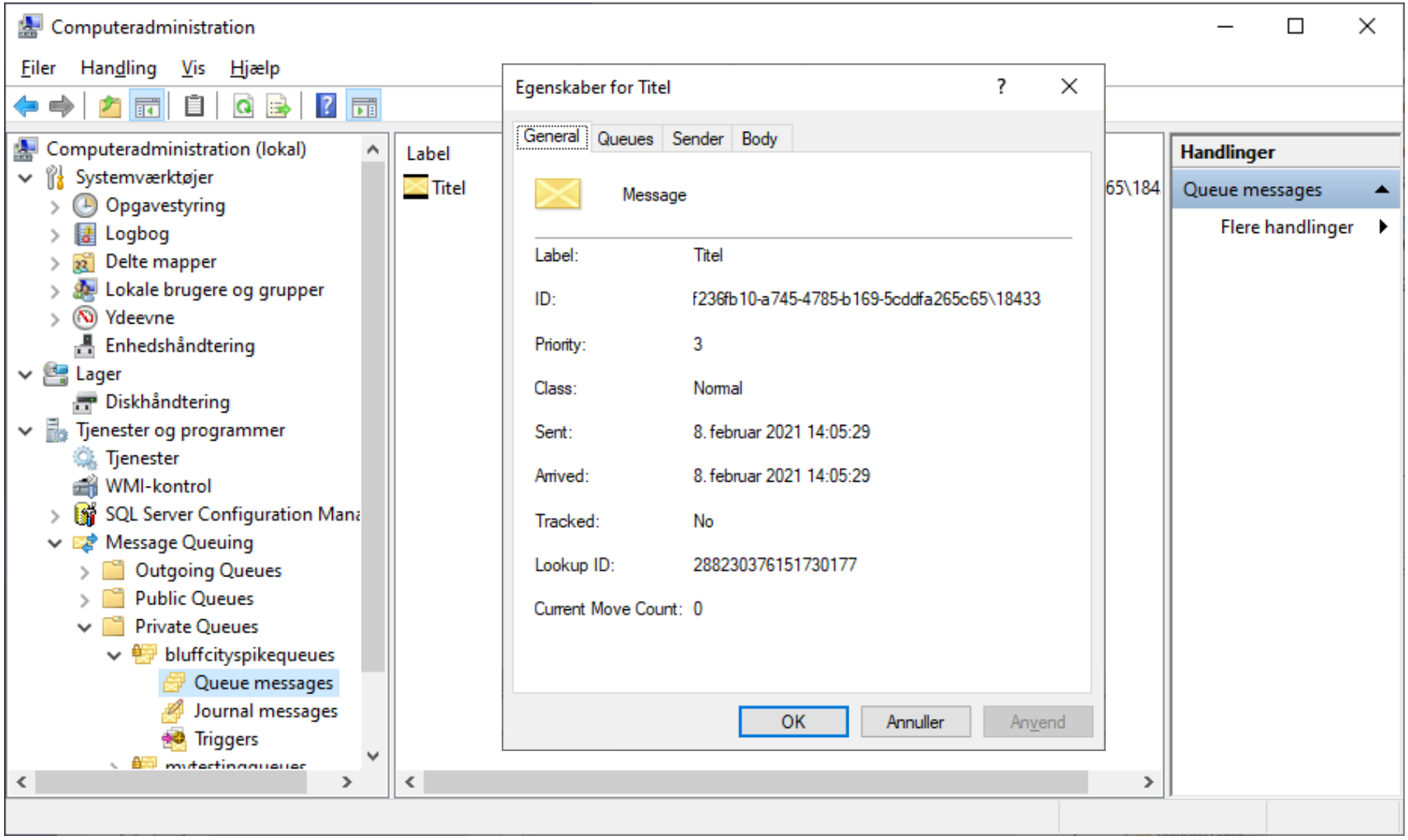
Tjenester og programmer
Tjenester
WMI-kontrol
SQL Server Configuration Mana
Message Queuing
Outgoing Queues
Public Queues
Private Queues
bluffcityspikequeues
Queue messages
Journal messages
Triggers
Label Priority Class Size Message ID
Titel 3 Nor... 61 f236fb10-a745-4785-b169-5cddfa265c65\184
Handlinger
Queue messages
Flere handlinger

MSMQ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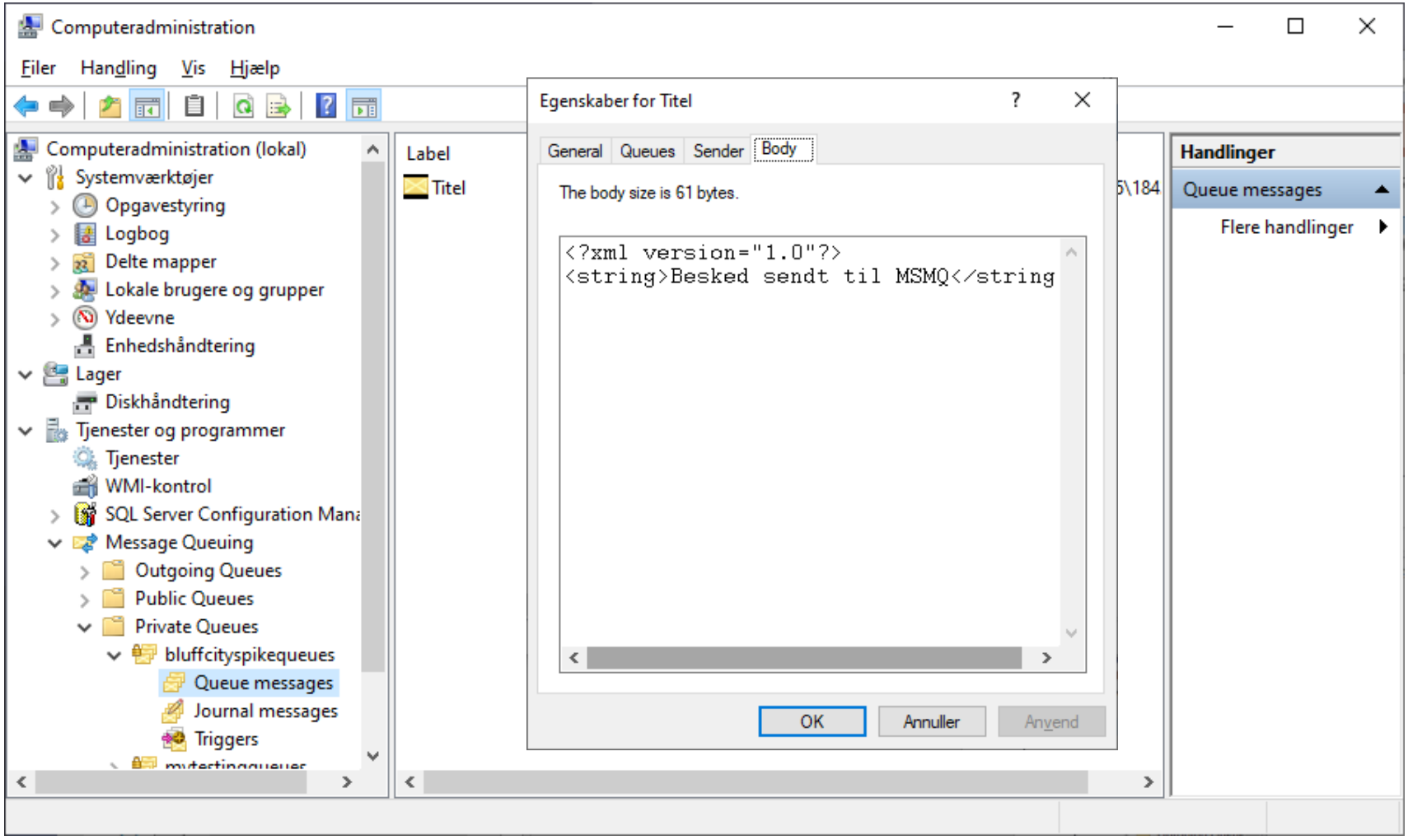
Label
Titel
65\184
Handlinger
Queue messages
Flere handlinger
Egenskaber for Titel
General Queues Sender Body
Message
Label: Titel
ID: f236fb10-a745-4785-b169-5cddfa265c65\18433
Priority: 3
Class: Normal
Sent: 8. februar 2021 14:05:29
Arrived: 8. februar 2021 14:05:29
Tracked: No
Lookup ID: 288230376151730177
Current Move Count: 0
OK
Annuller
Anvend

MSMQ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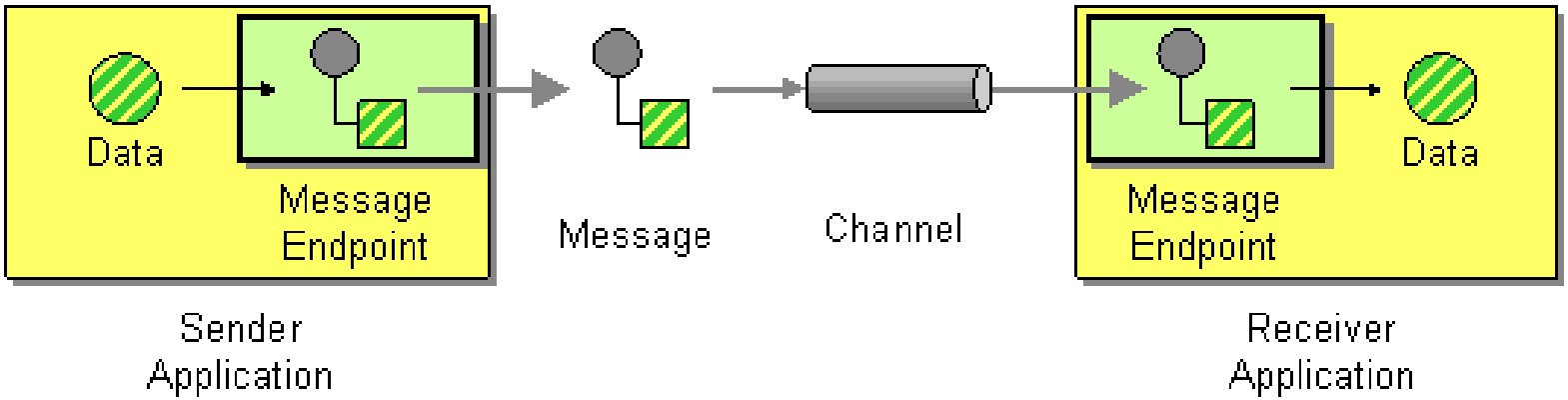
Message Queuing
Outgoing Queues
Public Queues
Private Queues
bluffcityspikequeues
Queue messages
Journal messages
Triggers
Label
Titel
Egenskaber for Titel
General Queues Sender Body
The body size is 61 bytes.
<?xml version="1.0"?>
<string>Besked sendt til MSMQ</string
OK
Annuller
Anvend
Handlinger
Queue messages
Flere handlinger

Message Endpoint



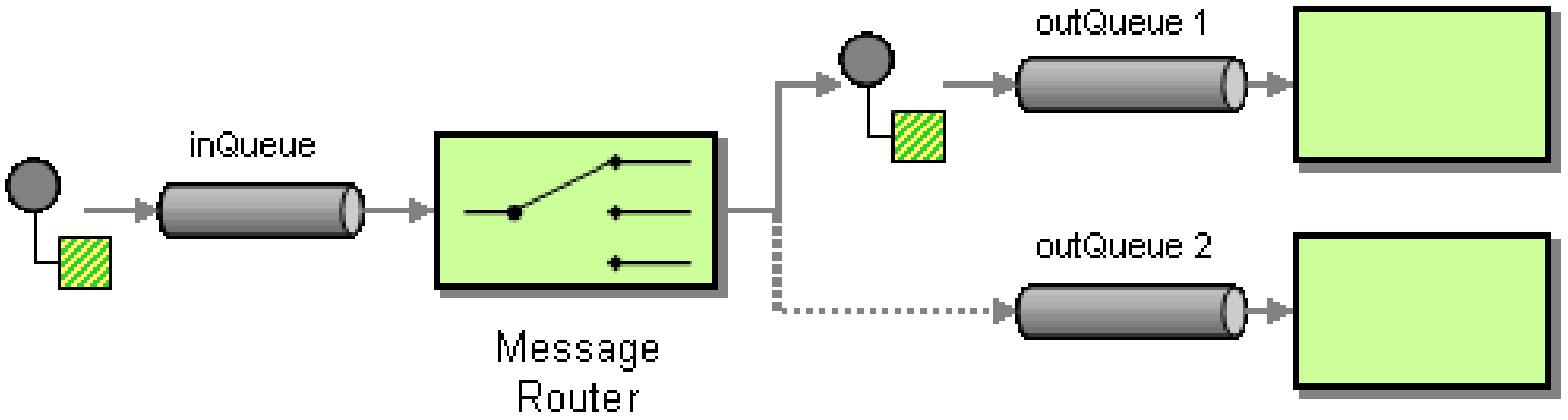
Connect an application to a messaging channel using a *Message Endpoint*, a client of the messaging system that the application can then use to send or receive messages

Message Endpoint

- Specialisering af en Channel Adapter
- Accepterer en request og tilhørende data
- Opretter en Message
- Send
- Modtag
- Sikrer indkapsling

Opgave 2 + 3

Message Router



Insert a special filter, a Message Router, which consumes a Message from one Message Channel and republishes it to a different Message Channel depending on a set of conditions

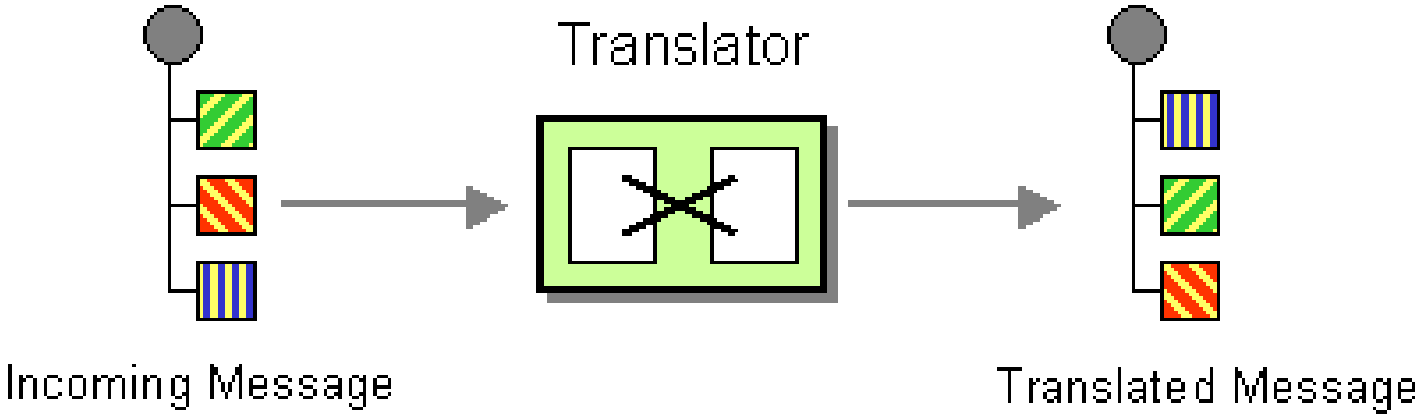
Message Router

- Én indgående Message Channel
- To eller flere udgående Channels
- Ofte Stateless
- Inkluderer Decision Logic
- Content-based Routers (message type)
- Context-based Routers (load balancing)

Message Router C#

```
class SimpleRouter
{
    protected MessageQueue inQueue;
    protected MessageQueue outQueue1;
    protected MessageQueue outQueue2;
    public SimpleRouter(MessageQueue inQueue, MessageQueue outQueue1, MessageQueue outQueue2)
    {
        this.inQueue = inQueue;
        this.outQueue1 = outQueue1;
        this.outQueue2 = outQueue2;
        inQueue.ReceiveCompleted += new ReceiveCompletedEventHandler(OnMessage);
        inQueue.BeginReceive();
    }
    private void OnMessage(Object source, ReceiveCompletedEventArgs asyncResult)
    {
        MessageQueue mq = (MessageQueue)source;
        Message message = mq.EndReceive(asyncResult.AsyncResult);
        if (IsConditionFulfilled())
            outQueue1.Send(message);
        else
            outQueue2.Send(message);
        mq.BeginReceive();
    }
    protected bool toggle = false;
    protected bool IsConditionFulfilled ()
    {
        toggle = !toggle;
        return toggle;
    }
}
```

Message Translator



Use a special filter, a Message Translator, between other filters or applications to translate one data format into another

Message Translator

- Behandler heterogenitet i systemer
- Anvender Adapter pattern (GoF)

Transformation

- Datastrukturer (entities, associations, ..)
- Datatyper (Field names, data types, constraints)
- Datarepræsentation (XML, ASCII, UniCode, EBCDIC, ..)
- Transportprotokoller (TCP/IP, HTTP, SOAP, JMS, …….)

Opgave 4+