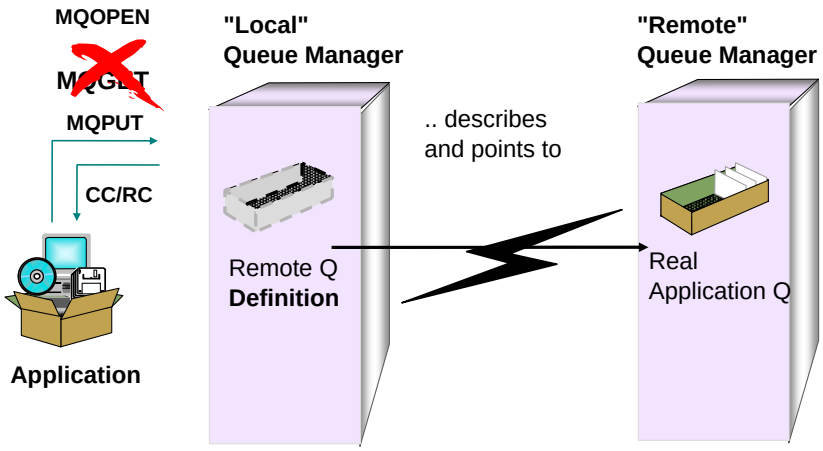
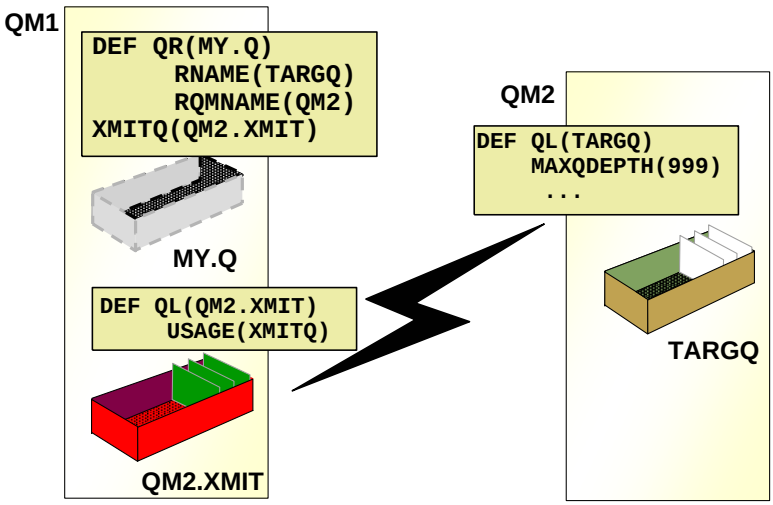
Overview

- Präsentation: WMQ Kommunikation mit Client- und Server-Verbindungen

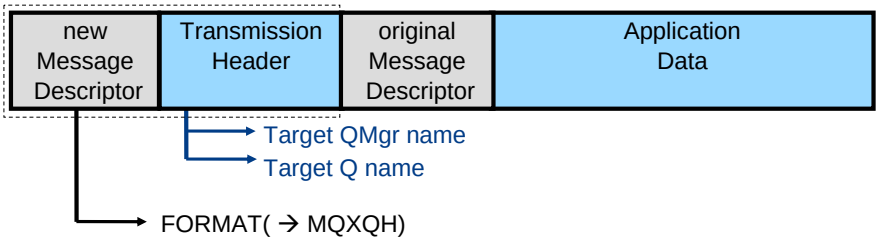
Remote Queues

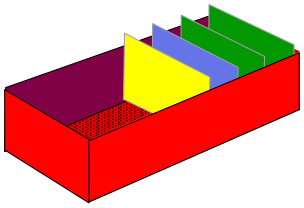


Remote Queues



Transmission Header

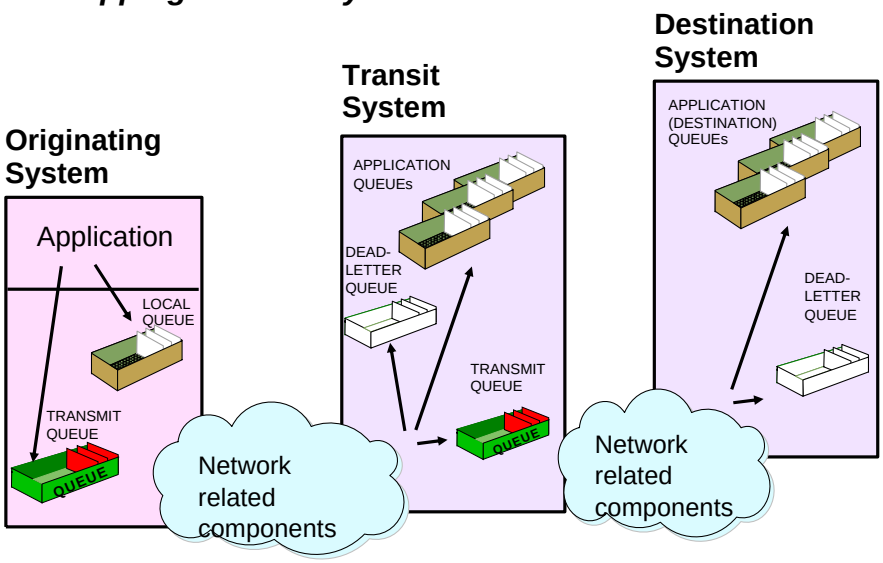




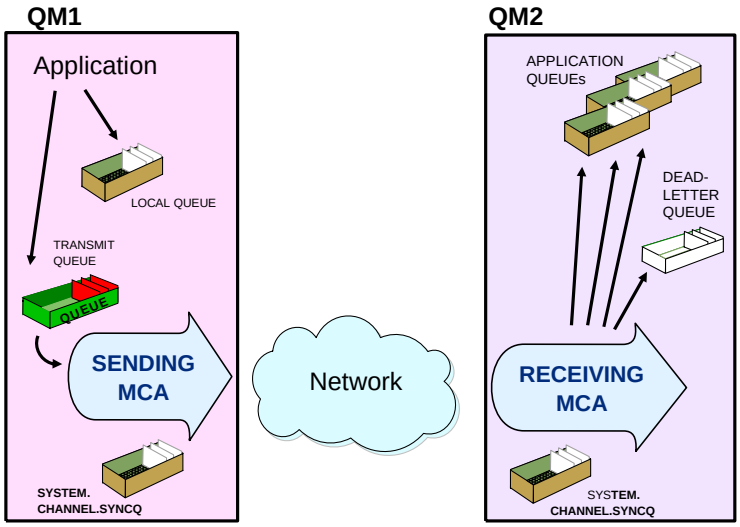
QM2.XMIT

- Messages on a Transmission Queue
  - may have multiple originators
  - may be for different destination queues
  - will be sent to one adjacent QMgr

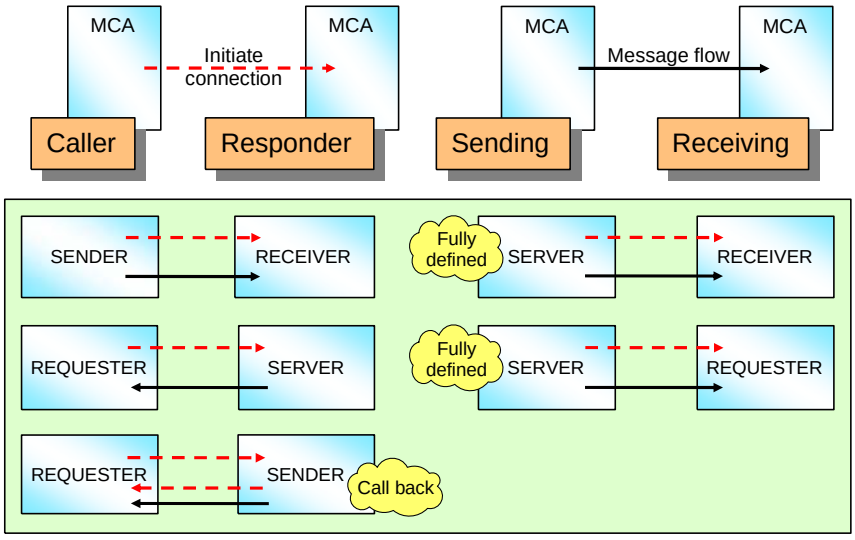
Multi Hopping- Transit Systems



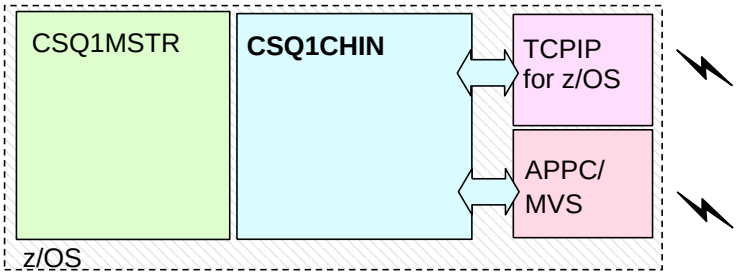
Connecting Queue Managers



MCA Types and Their Roles



WebSphere MQ Channel Initiator



SCSQPROC(CSQ4CHIN)

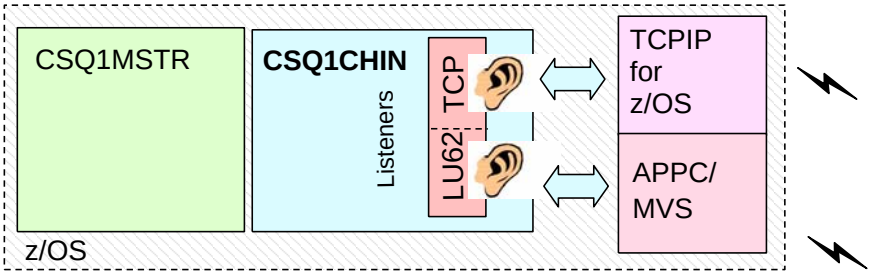
```
//PROCSTEP EXEC PGM=CSQXJST,REGION=0M
//*****************************************************************
//STEPLIB   DD DSN=++THLQUAL++.SCSQANLE,DISP=SHR
//          DD DSN=++THLQUAL++.SCSQAUTH,DISP=SHR
//          DD DSN=++THLQUAL++.SCSQMVR1,DISP=SHR
//          DD DSN=++LEQUAL++.SCEERUN,DISP=SHR
//          DD DSN=++SSLQUAL++.SGSKLOAD,DISP=SHR
//*
//* SYSTEM INITIALIZATION INPUT DATA SETS                         *
//*****************************************************************
//CSQINPX   DD DSN=++THLQUAL++.SCSQPROC(CSQ4INPX),DISP=SHR
//CSQOUTX   DD SYSOUT=++OUTCLASS++
//*
//* USER EXIT LIBRARY                                             *
//*****************************************************************
//CSQXLIB   DD DSN=++EXITLIB++,DISP=SHR
```


Controlling Channel Initiator Startup

```
+CSQ1 START QMGR PARM(CSQZCSQ1)
...
+ALTER QMGR LUNAME(....) LU62CHL(n)
            TCPNAME(....) TCPCHL(n)
                          TCPSTACK(SINGLE|MULTIPLE)
                  IPADDRV(IPV4|IPV6)
+CSQ1 START CHINIT
```

```
IEF403I GN39CHIN - STARTED - TIME=13.09.43
CSQX000I GN39 CSQXJST IBM WebSphere MQ for z/OS
CSQX001I GN39 CSQXJST Channel initiator starting
CSQX070I GN39 CSQXGIP CHINIT parameters ...
.....
CSQX011I GN39 CSQXGIP Client attachment feature available
CSQX141I GN39 CSQXADPI 8 adapter subtasks started, 0 failed
CSQX410I GN39 CSQXREPO Repository manager started
CSQX151I GN39 CSQXSSLI 0 SSL server subtasks started, 0 failed
CSQX015I GN39 CSQXSPRI 5 dispatchers started, 0 failed
CSQX022I GN39 CSQXSUPR Channel initiator initialization complete
```

WebSphere MQ for z/OS Listeners




```
+CSQ1 START QMGR PARM(CSQZPARM)
...
[+CSQ1] START CHINIT
...
[+CSQ1] START LISTENER TRPTYPE(TCP) PORT(2005)
        [+CSQ1] START LISTENER TRPTYPE(LU62) LUNAME(MQ5CON)
```

contained in CSQINP2 data of ....MSTR procedure

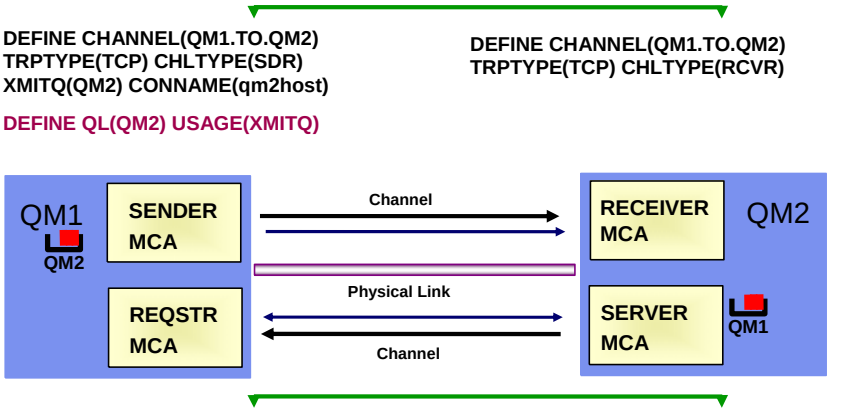
contained in CSQINPX data of ....CHIN procedure

DISPLAY CHINIT

```
CSQX830I GN39 CSQXRDQM Channel initiator active
CSQX831I GN39 CSQXRDQM 8 adapter subtasks started,
                       8 requested
CSQX832I GN39 CSQXRDQM 5 dispatchers started, 5 requested
CSQX840I GN39 CSQXRDQM 28 channels current, maximum 200
CSQX841I GN39 CSQXRDQM 26 channels active, maximum 200,
                       including 0 paused
CSQX842I GN39 CSQXRDQM 0 channels starting,
                       1 stopped, 1 retrying
CSQX836I GN39 CSQXRDQM Maximum channels -
                       TCP/IP 200, LU 6.2 200
CSQX845I GN39 CSQXRDQM TCP/IP system name is TCPIP
CSQX846I GN39 CSQXRDQM TCP/IP listener started,
                       for port 7822 address *
CSQX849I GN39 CSQXRDQM LU 6.2 listener not started
CSQ9022I GN39 CSQXCRPS ' DIS CHINIT' NORMAL COMPLETION
```

- ISPF panels: 1-Display/ Type=SYSTEM / 1-Distributed Queuing

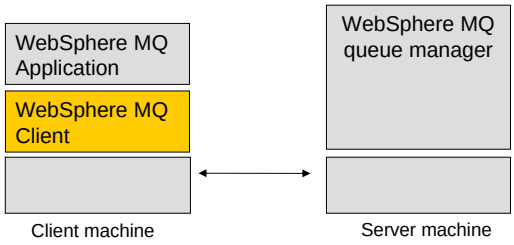
Defining Channels



Starting Channels

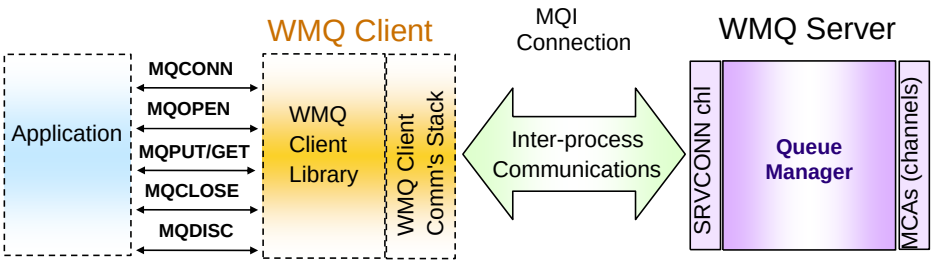
- **SENDER** automatically started through MQ triggering, with the associated XMITQ as the "originating queue" and the Channel Initiator acting as trigger monitor
- **RECEIVER** by the sender's ATTACH request through the local listener
- **REQUESTER** always by a START channel command - issued
  - by an application
  - by an installation supplied monitor
  - or manually
- **SERVER** by the requester's ATTACH request through the local listener, or by command (if fully configured)

What is A WMQ Client?



- A WMQ client is a component which can be installed on a system where no queue manager runs to enable the application to connect to the a queue manager, which is running on another system

What is A WMQ Client?



WMQ Platforms

AIX
Compaq OpenVMS AXP
Compaq OpenVMS VAX
Compaq Tru64 UNIX
HP-UX (including Stratus Continuum)
Linux
NCR UNIX
OS/2 Warp
SINIX and DC/OSx
Sun Solaris
Windows 3.1, 95 and 98
Windows NT and Windows 2000

Both WMQ clients AND servers

z/OS (OS/390)
- Batch
- CICS
- IMS
- TSO

OS/400
Tandem NonStop Kernel
VSE/ESA

WMQ servers only - no client

DOS
Java
SunOS
TPF
VM/ESA
...

WMQ client only- no server

How the client connects to the server

- The application runs in synchronous because there must be a active connection between the client and server machine
- Issuing a MQCONN or MQCONNX call, establishes a connection via MQI channel and remains open until the application issues a MQDISC call

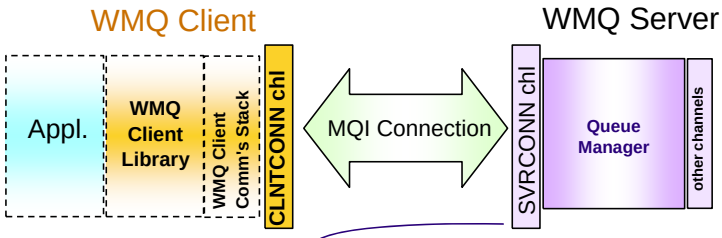
Extended transactional client

- A WebSphere MQ extended transactional client is a WebSphere MQ client with some additional function. This function allows a client application, within the same unit of work
  - to put messages to, and get messages from, queues that are owned by the queue manager to which it is connected
  - to update the resources of a resource manager other than a WebSphere MQ queue manager
- The unit of work must be managed by a external transaction manager like CICS, IMS or WebSphere
- the queue manager then acts only as a resource manager

Installation

- Install a WMQ client and a WMQ server system
  - Install WMQ server using the server CD-ROM
  - Install WMQ client using the client CD-ROM
- Install WMQ client and WMQ server on the same machine
  - Install WMQ server from the server CD-ROM
  - and select the WMQ clients you wish to install
- Install WMQ client from SupportPacs site
  - Download supportpac from http://www.ibm.com/software/integration/wmq/support//
  - Extract and run installation program

How To Connect Clients to Servers



If single server only:
MQSERVER=
chlname/trptype/conname

DEF CHL(CLIENT.TO.MQ00)
CHLTYPE(SRVCONN)
TRTYPE(TCP)

General method:

Client Definition File,
per default AMQCLCHL.TAB
MQCHLLIB=path to cd file
MQCHLTAB=cd file name

generate

DEF CHL(CLIENT.TO.MQ00)
CHLTYPE(CLNTCONN)
QMNAME(qmname)
TRTYPE(TCP)
CONNAME(server.ip.address(port))

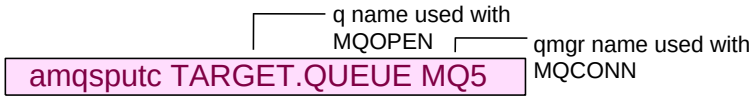
Determine The WMQ Server To Connect To

1. Use the MQCONNX call with the MQCNO option
   MQCNO → MQCD Channel Defintion structure
   - Channel Name
   - Connection Name
2. Use of the MQSERVER environment variable
   set MQSERVER=ChannelName/TransportType/ConnectionName
   - MQSERVER=SYSTEM.DEF.SRVCONN/TCP/127.0.0.1
   - MQSERVER=CLIENT.TO.MQ00/TCP/ls-europe.educmvs.ibm.de(2620)
   - MQSERVER=CLNT.TO.CSQI/LU62/A4OASMQI
3. Refer to an entry in the Channel Definition file

MQCONN(SALE) →
DEFINE CHANNEL(APLHA) CHLTYPE(CLNTCONN) TRPTYPE(TCP) CONNAME(9.20.4.26) QMNAME(SALE)
DEFINE CHANNEL(BETA) CHLTYPE(CLNTCONN) TRPTYPE(TCP) CONNAME(9.20.5.26) QMNAME(SALE)
DEFINE CHANNEL(GAMMA) CHLTYPE(CLNTCONN) TRPTYPE(TCP) CONNAME(9.20.7.48) QMNAME(OFFER)

Client Sample Programs

- amqsputc.exe write (PUT) messages to named queue
- amqsgetc.exe read (GET) messages from named queue



- hit enter; MQCONN and MQOPEN is performed
- if successful, the program displays:
  - sample AMQSPUTC start
  - target qname is TARGET.QUEUE
- now type some message text and press Enter
- repeat for multiple messages
- press Enter twice after the last message
- the program displays:
  - sample AMQSPUTC end

Why use MQ Clients? Benefits

- No need for installing a Queue Manager on the client machine
- Hardware requirements reduces on client machine
- System administration reduced
- MQ Client Applications can connect to multiple queue managers on different systems

- The full MQI is supported
  - This enables almost every application to run on a WebSphere Client system using the MQIC libs

- But be aware of synchpoint coordination which needs to be handled by a external transaction manager, when using WebSphere MQ Client system