

DEFINE LINK

The DEFINE LINK command defines and initializes a network connection device.

Syntax: `DEFine LINK ID=id ,IPaddr=ip4addr ,TYpe={CLAW|LCS|CTCa|OSAX|IPNET}
[,DEVIces=hexaddr] [,SYSid=num] [,MTU=num] [,FORCe]
[,OUTBufferS=4] [,HOSTName=name8] [,HOSTAppL=TCPIP]
[,WSName=name8] [,WSAppL=name8] [,INFactor=4]
[,OUTFactor=4] [,RETRY_Time=time] [,STOPPED]
[,STOPlan={Yes|No}] [,SHUTdown={Yes|No}]
[,VMReset={Yes|No}]
[,ALTIP=(ip4addr [,ip4addr,...,ip4addr])]
[,ROUTER=None|Primary|Secondary}] [,OSAPort={0|1}]
[,DATapath=cuu] [,PORTName=name8]`

Arguments	TYpe=	<ul style="list-style-type: none">- This required parameter indicates the type of link being defined.CLAW - Channel-connected CLAW interface to an RS/6000, Cisco, or other computer.LCS - LAN Channel Station controller or any other 3172-compatible communications controllers. These include all forms of the IBM Open Systems Adapter (OSA) except when running in QDIO mode (in which case, use "OSAX"). Allowable synonyms for LCS are "OSA", "OSA2", and "3172".OSAX - An IBM OSA Express running in QDIO modeCTCa - A channel-to-channel adapter connected to another TCP/IP. The other TCP/IP can be running on VSE, MVS, or VM.IPNET - A cross-partition link to another copy of <i>TCP/IP for VSE</i> running on the same VSE image.
	DEVIces=	<ul style="list-style-type: none">- Specifies the unit address at which the device resides. When the device requires multiple addresses, specify the lowest address. The system derives the additional addresses by repeatedly adding one until sufficient addresses are computed. For CTCA links, you can specify any two addresses, separated by commas and enclosed in parentheses.
	SYSid=	<ul style="list-style-type: none">- TYPE=IPNET only. Specifies an ID number identifying another <i>TCP/IP for VSE</i> running in another partition. This number is identical to the value specified for the ID= parameter in the EXEC card PARM field of the other <i>TCP/IP for VSE</i>.
	IPaddr=	<ul style="list-style-type: none">- Specifies the TCP/IP network address to be used with this link. Specification allows the TCP/IP host to appear as a different address for purposes of multi-homing. If omitted, the address specified by SET IPADDR= is used. If there are associated DEFINE ADAPTER commands, the IP address should be specified there, and not on the DEFINE LINK.
	MTU=	<ul style="list-style-type: none">- The Maximum Transmission Unit transmitted on this adapter. The maximum value for Ethernet is 1500. Other network types permit values up to 65,535. In all cases, the minimum value is 576. The MTU size of individual datagrams may be adjusted by gateways as they pass between physical networks. This adjustment is done by fragmentation. Since fragmentation reduces efficiency, avoid MTU size mismatch between your networks to the extent practical. You may use parameters on DEFINE ROUTE statements to make MTU adjustments based on path.

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- FORCe - When specified, directs the link driver to inspect the assigned PUB table entry. If the PUB entry is improperly defined, it is corrected. If FORCE is not specified, no inspection is performed. If the PUB entry is incorrect, the link driver may fail or function erratically. Exercise caution with this parameter. If you code the wrong device address, it is rendered unusable for other purposes until the next IPL.
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- RETRY_Time= - If link initialization fails, this parameter specifies the time interval before initialization is retried. If this parameter is omitted, the global value specified in the SET LINK_RETRY command is used. Permitted values range from 0 (no retry) to 500m (30000s).
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- STOPPED - The link driver will remain in the "stopped" state until the operator issues a START command. This is particularly useful for links that are not to be used immediately, such as TYPE=IPNET links used to communicate with test partitions running *TCP/IP for VSE*.
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- STOPlan= - When an LCS (or equivalent) is shut down, a STOPLAN command is issued to the device. If this causes problems with a shared device, or if the device does not support the STOPLAN command, then the STOPLAN can be prevented.
Yes - STOPLAN is issued. This is the default.
No - STOPLAN will not be issued during link shutdown. This setting should only be used if a problem is encountered.
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- SHUTdown= - When an LCS (or equivalent) is shut down, a SHUTDOWN command is issued to the device. If this causes problems with a shared device, or if the device does not support the SHUTDOWN command, then the SHUTDOWN command can be prevented.
Yes - SHUTDOWN is issued. This is the default.
No - SHUTDOWN will not be issued during link shutdown. This setting should only be used if a problem is encountered.
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- VMReset= - This parameter controls whether or not a CP RESET command will be used in conjunction with a CTCA link in a VM environment.
Yes - *TCP/IP for VSE* will issue CP RESET commands to virtual channel-to-channel adapters, when appropriate. This is the default.
No - The CP RESET command will not be used. Use this setting only when directed by Technical Support.
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The following parameters are used only with TYPE=CLAW:

- INFactor= - TYPE=CLAW only. This parameter controls the size of the input buffers for the CLAW interface. The value may range from 1 through 8 and represents the buffer size in kilobytes. The default and recommended value is 4. The optimum size for this value depends on the size of the data blocks. Setting too large a size wastes fixed storage. Setting too small a size increases the number of I/O's.
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- OUTFactor= - TYPE=CLAW only. This parameter controls the size of the output buffers for the CLAW interface. The value may range from 1 through 8 and represents the buffer size in kilobytes. The default and recommended value is 4. Setting too large a size wastes fixed storage.
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- OUTBuffers= - TYPE=CLAW only. The maximum number of output buffers that are chained together for the CLAW output operation. Specify a value between 1 and 16. The default is 4. Setting too large a size wastes fixed storage. Setting too small a size increase number of I/O's.
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- HOSTName= - TYPE=CLAW only. The 1- to 8-character name of the host computer system. This value must match the value expected by the workstation (set during workstation configuration). If the value you code is not acceptable to the workstation, TCP/IP for VSE will dynamically detect the correct name and retry the connection.
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- HOSTAppl= - TYPE=CLAW only. The 1- to 8-character name of the application running on the host computer system. This value must match the value expected by the workstation. The recommended value is TCPIP.
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- WSName= - TYPE=CLAW only. The 1- to 8-character name of the workstation. This value must match the value assigned to the workstation during the workstation's configuration. If the value you code is not correct, TCP/IP for VSE will correct it and retry the connection.
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- WSAppl= - TYPE=CLAW only. The 1- to 8-character name of the application running on the workstation. This value must match the value expected by the workstation. The correct value is probably TCPIP.
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The following parameters are used only with TYPE=OSAX:

- ALTIP= - Valid with TYPE=OSAX only. If your z/VSE system is a "multi-homed" host (known by more than one IP address) or if the *TCP/IP for VSE* stack will serve as a gateway to other stacks, you may assign up to nine additional IP addresses to this interface. Consult your OSA Express documentation for further information on the use of this parameter.
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- ROUTER= - Valid with TYPE=OSAX only. This parameter allows you to capture traffic addressed to "unknown" hosts. *TCP/IP for VSE* will then process it according to the routing parameters in effect. Consult your OSA Express documentation for further information on the use of this parameter.
- Primary - This link will be flagged as "primary". All inbound traffic for unknown hosts will be delivered to this link. If GATEWAY ON is in effect, any datagram not addressed to this stack will be passed through the routing table and then be routed accordingly.
- Secondary - This link will be flagged as "secondary". All inbound traffic for unknown hosts will be delivered to this link if no other active link has been specified as "primary". If GATEWAY ON is in effect, any datagram not addressed to this stack will be passed through the routing table and then be routed accordingly.
- None - This link will only receive datagrams specifically addressed to it. This is the default
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- OSAPort= - Valid with TYPE=OSAX only. If your OSA Express supports two ports per CHPID, this parameter can be used to select the port to be used. The default is "0".
- Consult your OSA Express documentation for further information on the use of this parameter.
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- DATapath= Valid with TYPE=OSAX only. This value indicates the OSA Express CUU address to be used for data transmission.
- Consult your OSA Express documentation for further information on the use of this parameter.
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PORTName= Valid with TYPE=OSAX only. This parameter allows you to specify the symbolic name of the OSA Express port to be used with this link. For most OSA Express adapters, this parameter is obsolete and is ignored.

Consult your OSA Express documentation for further information on the use of this parameter.

Example:

```
IPN237I  define link,id=linklcs,type=lcs,dev=(032,33)
IPN237I  define adapter,linkid=linklcs,number=0,type=ethernet, -
IPN237I      ip=192.168.1.161,mtu=1500
IPT100I  Internet Link Level (ILL) Processor LCS starting
IPL491I  OSA link LINKLCS started on devices 0032 - 0033
IPL491I  OSA link LINKLCS started adapter 0 as 192.168.1.161
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- Notes:
- Special attention is needed when defining an LCS controller, as this device can contain multiple adapters. You must identify these adapters by including at least one DEFINE ADAPTER command.
 - All DEFINE LINK commands that require DEFINE ADAPTER commands should be included in the initialization library member. Following initialization, the link driver routines are eligible for immediate startup. This means that if you enter an additional DEFINE LINK command after initialization, the appropriate link driver starts before you can enter any related DEFINE ADAPTER commands. If you must define an LCS-type link following initialization, create a library member containing the necessary commands and use the EXECUTE command to process it.
 - Use the DISCOVER command to find an appropriate MTU size between two hosts.
 - The DEFINE ROUTE command can be used to reduce the MTU and MSS sizes associated with a specific destination or route. For example, you may wish to use an MTU of 1500 for "local" devices and a smaller MTU for devices passing through a gateway onto the Internet.
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Related	DEFINE ADAPTER	- Creates an adapter definition within the scope of a DEFINE LINK.
Commands:	DEFINE ROUTE	- Add an entry to the TCP/IP routing table.
	DISCOVER	- Determine the "best" MTU size to a remote host.
	EXECUTE	- Execute an operator command script.
	SET IPADDR	- Establishes the default home address for the stack.
	SET LINK_RETRY	- Determines the default time interval between attempts to reinitialize a failed network link.
