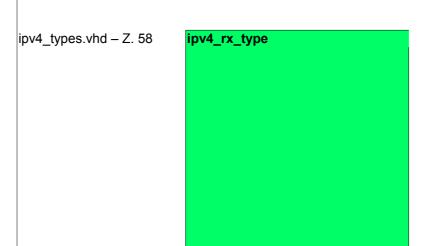
UDP/IP-Stack Datentypen

IPv4

Konstanten ipv4_types.vhd - Z.13 IPv4 TX Strukturen ipv4_tx_header_type ipv4_types.vhd - Z. 26 axi.vhd – Z axi_out_type ipv4_types.vhd - Z. 32 ipv4_tx_type Konstanten ipv4_types.vhd - Z. 21 IPv4 RX Strukturen ipv4_types.vhd - Z. 48 ipv4_rx_header_type

Seite 1





Konstantenipv4_types.vhd – Z

UDP TX	
	Strukturen
ipv4_types.vhd – Z. 77	udp_tx_header_type

axi.vhd – Z. 19	axi_out_type
ipv4_types.vhd – Z. 86	udp_tx_type
	Konstanten
	ipv4_types.vhd - Z. 72

Strukturen ipv4_types.vhd – Z. 48 axi_in_type ipv4_types.vhd – Z. 58 udp_rx_type

Tabelle1		
arp_types.vhd – Z. 37	arp_control_type	
ipv4_types.vhd – Z. 63	ip_control_type	
ipv4_types.vhd – Z. 115	udp_control_type	
ARP lookup types	Strukturen	
arp_types.vhd – Z. 19	arp_req_req_type	
arp_types.vhd – Z. 25	arp_req_rslt_type	
arp_types.vhd – Z. 32	arp_entry_t	
arp_types.vhd – Z. 37	arp_control_type	
ARP store types	Strukturen	
arp_types.vhd – Z. 44	arp_store_rslt_t	

arp_entry_t arp_types.vhd - Z. 32

arp_types.vhd – Z. 46	arp_store_rdrequest_t
arp_types.vhd – Z. 52	arp_store_wrrequest_t
arp_types.vhd – Z. 58	arp_store_result_t

ARP network types	Strukturen
arp_types.vhd – Z. 66	arp_nwk_rslt_t
arp_types.vhd – Z. 32	arp_entry_t
arp_types.vhd – Z. 68	arp_nwk_request_t
arp_types.vhd – Z. 74	arp_nwk_result_t

IP_BC_ADDR	std_logic_vector (31 downto 0)	x"ffff_ffff"
MAC_BC_ADDR	std_logic_vector (47 downto 0)	x"ffff_ffff_ffff"

protocol	std_logic_vector (7 downto 0)
data_length	std_logic_vector (15 downto 0)
dst_ip_addr	std_logic_vector (31 downto 0)

data_out	std_logic_vector (7 downto 0)
data_out_valid	std_logic
data_out_last	std_logic

hdr	ipv4_tx_header_type	
		protocol
		data_length
		dst_ip_addr
data	axi_out_type	
		data_out
		data_out_valid
		data_out_last

werden im Modul IPv4_TX an dem Port ip_tx_result ausgegeben im IPv4 Modul wird der Port ip_tx_restult v

IPTX_RESULT_NONE	std_logic_vector (1 downto 0)	"00"
IPTX_RESULT_SENDING	std_logic_vector (1 downto 0)	"01"
IPTX_RESULT_ERR	std_logic_vector (1 downto 0)	"10"
IPTX_RESULT_SENT	std_logic_vector (1 downto 0)	"11"

protocol	std_logic_vector (7 downto 0)
data_length	std_logic_vector (15 downto 0)
src_ip_addr	std_logic_vector (31 downto 0)
is_valid	std_logic

is_broadcast	std_logic
num_frame_errors	std_logic_vector (7 downto 0)
last_error_code	std_logic_vector (3 downto 0)

data_in	std_logic_vector (7 downto 0)
data_in_valid	std_logic
data_in_last	std_logic

hdr	ipv4_rx_header_type		
		protocol	
		data_length	
		src_ip_addr	
		is_valid	
		is_broadcast	
		num_frame_errors	
		last_error_code	
data	axi_in_type	axi_in_type	
		data_in	
		data_in_valid	
		data_in_last	

clear_cache	std_logic

arp_controls	arp_control_type	
		clear_cache

RX_EC_NONE	std_logic_vector (3 downto 0)	X"0"
RX_EC_ET_ETH	std_logic_vector (3 downto 0)	X"1"
RX_EC_ET_IP	std_logic_vector (3 downto 0)	X"2"
RX_EC_ET_USER	std_logic_vector (3 downto 0)	X"3"

data_length	std_logic_vector (15 downto 0)
dst_ip_addr	std_logic_vector (31 downto 0)
dst_port	std_logic_vector (15 downto 0)
src_port	std_logic_vector (15 downto 0)
checksum	std_logic_vector (15 downto 0)

data_out	std_logic_vector (7 downto 0)
data_out_valid	std_logic
data_out_last	std_logic

hdr	udp_tx_header_type		
		data_length	
		dst_ip_addr	
		dst_port	
		src_port	
		checksum	
data	axi_out_type	axi_out_type	
		data_out	
		data_out_valid	
		data_out_last	

UDPTX_RESULT_NONE	std_logic_vector (1 downto 0)	"00"
UDPTX_RESULT_SENDING	std_logic_vector (1 downto 0)	"01"
UDPTX_RESULT_ERR	std_logic_vector (1 downto 0)	"10"
UDPTX_RESULT_SENT	std_logic_vector (1 downto 0)	"11"

data_length	std_logic_vector (15 downto 0)
src_ip_addr	std_logic_vector (31 downto 0)
dst_port	std_logic_vector (15 downto 0)
src_port	std_logic_vector (15 downto 0)
is_valid	std_logic

data_in	std_logic_vector (7 downto 0)
data_in_valid	std_logic
data_in_last	std_logic

ndr	udp_rx_header_type	udp_rx_header_type	
		data_length	
		src_ip_addr	
		dst_port	
		src_port	
		is_valid	
data	axi_in_type		

		data_in data_in_valid data_in_last
clear_cache	std_logic	
arp_controls	arp_control_type	
		clear_cache
ip_controls	ip_control_type	
		arp_controls

lookup_req	std_logic
ip	std_logic_vector (31 downto 0)
got_mac	std_logic
mac	std_logic_vector (47 downto 0)
got_err	std_logic
ip	std_logic_vector (7 downto 0)
mac	std_logic_vector (7 downto 0)
mao	sta_togio_vector (or adwrite o)
clear_cache	std_logic

IDLE,BUSY,SEARCHING,FOUND,NOT FOUND

ip	std_logic_vector (7 downto 0)
mac	std_logic_vector (31 downto 0)

req	std_logic
ip	std_logic_vector (31 downto 0)

rep	std_logic	
entry	arp_entry_t	
		ip
		mac

status	arp_store_rslt_t	IDLE,BUSY,SEARCHII
entry	arp_entry_t	ip mac

IDLE,REQUESTING,RECEIVED,ERROR

ip	std_logic_vector (7 downto 0)
mac	std_logic_vector (31 downto 0)

req	std_logic
ip	std_logic_vector (31 downto 0)

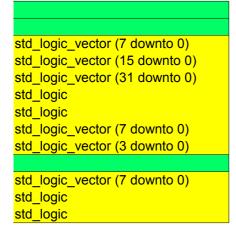
status	arp_nwk_rslt_t	IDLE,REQUESTING,RE
entry	arp_entry_t	
		ip
		mac

IP-BroadCast ADDResse
MAC-BroadCast ADDResse

std_logic_vector (7 downto 0)
std_logic_vector (15 downto 0)
std_logic_vector (31 downto 0)
std_logic_vector (7 downto 0)
std_logic

veiter nach Aussen gereicht

std_logic



std_logic

std_logic_vector (15 downto 0)
std_logic_vector (31 downto 0)
std_logic_vector (15 downto 0)
std_logic_vector (15 downto 0)
std_logic_vector (15 downto 0)
std_logic_vector (7 downto 0)
std_logic_vector (7 downto 0)
std_logic

std_logic_vector (15 downto 0)
std_logic_vector (31 downto 0)
std_logic_vector (15 downto 0)
std_logic_vector (15 downto 0)
std_logic

	Tabelle	1	
std_logic_vector (7 downto 0) std_logic std_logic			
std_logic			
and a setual time.			
arp_control_type	clear_cache	std_logic	



std_logic_vector (7 downto 0) std_logic_vector (31 downto 0)

G,FOUND,NOT_FOUND

std_logic_vector (7 downto 0) std_logic_vector (31 downto 0)

CEIVED,ERROR

std_logic_vector (7 downto 0) std_logic_vector (31 downto 0)

UDP_Complete_nomac

UDP TX signals	
	udp_tx_start udp_txi udp_tx_result udp_tx_data_out_ready
UDP RX signals	
	udp_rx_start udp_rxo
IP RX signals	
	ip_rx_hdr
System signals	
	rx_clk tx_clk reset our_ip_address our_mac_address control
status signals	
	arp_pkt_count ip_pkt_count
MAC Transmitter	
	mac_tx_tdata mac_tx_tvalid mac_tx_tready mac_tx_tfirst mac_tx_tlast
MAC Receiver	
	mac_rx_tdata mac_rx_tvalid mac_rx_tready mac_rx_tlast

IP_complete_nomac

IP Layer signals	
a, c. c.ga.c	IP Layer signals
	ip_tx_start
	ip_tx
	ip_tx_result
	ip_tx_data_out_ready
	ip_rx_start
	ip_rx
System signals	
	rx_clk

	tx_clk reset our_ip_address our_mac_address control
Status signals	
	arp_pkt_count ip_pkt_count
MAC Transmitter	
	mac_tx_tdata mac_tx_tvalid mac_tx_tready mac_tx_tfirst mac_tx_tlast
MAC Receiver	
	mac_rx_tdata mac_rx_tvalid mac_rx_tready mac_rx_tlast

UDP_TX

UDP Layer signals	
	udp_tx_start udp_txi udp_tx_result udp_tx_data_out_ready
system signals	
	clk reset
IP layer TX signals	
	ip_tx_start ip_tx ip_tx_result ip_tx_data_out_ready

UDP_RX

UDP Layer signals	
	udp_rx_start udp_rxo
System signals	
	clk reset
IP layer RX signals	
	ip_rx_start ip_rx

IPv4

ID I account to the	
IP Layer signals	
	<pre>ip_tx_start ip_tx ip_tx ip_tx_result ip_tx_data_out_ready ip_rx_start ip_rx</pre>
System control signals	
	rx_clk tx_clk reset our_ip_address our_mac_address
System status signals	
	rx_pkt_count
ARP lookup signals	
	arp_req_req arp_req_rslt
MAC layer RX signals	. = .=
	mac_data_in mac_data_in_valid mac_data_in_last
MAC layer TX signals	
	mac_tx_req mac_tx_granted mac_data_out_ready mac_data_out_valid mac_data_out_first mac_data_out_last mac_data_out

ARP

Lookup request signals	
	arp_req_req
	arp_req_rslt
MAC layer RX signals	
	data_in_clk reset data_in data_in_valid data_in_last
MAC layer TX signals	
	mac_tx_req mac_tx_granted data_out_clk data_out_ready

data_out_valid data_out_first data_out_last data_out

lookup request signals

our_mac_address our_ip_address control req_count

tx_arbitrator

clk reset
req_1 grant_1 data_1 valid_1 first_1 last_1
req_2 grant_2 data_2 valid_2 first_2 last_2
data valid first

```
in std_logic
in udp tx type
out std_logic_vector (1 downto 0)
out std_logic
out std_logic
out udp_rx_type
out ipv4_rx_header_type
in STD_LOGIC
in STD_LOGIC
in STD_LOGIC
in STD_LOGIC_VECTOR (31 downto 0)
in std_logic_vector (47 downto 0)
in udp_control_type
out STD_LOGIC_VECTOR(7 downto 0)
out STD_LOGIC_VECTOR(7 downto 0)
out std_logic_vector(7 downto 0)
out std_logic
in std_logic
out std_logic
out std_logic
in std_logic_vector(7 downto 0)
in std_logic
out std_logic
in std_logic
```

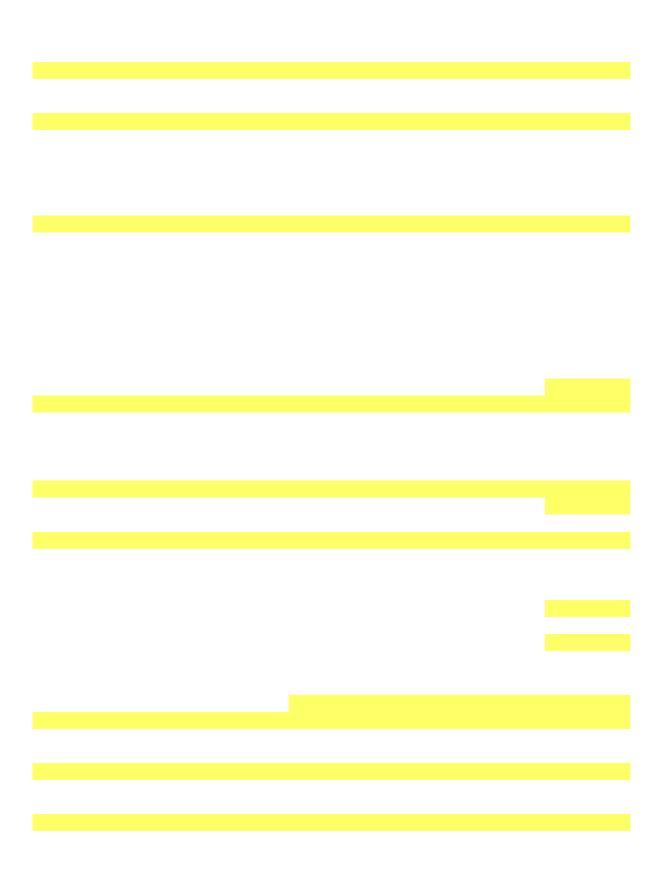
```
in std_logic
in ipv4_tx_type
out std_logic_vector (1 downto 0)
out std_logic
out std_logic
out ipv4_rx_type
```

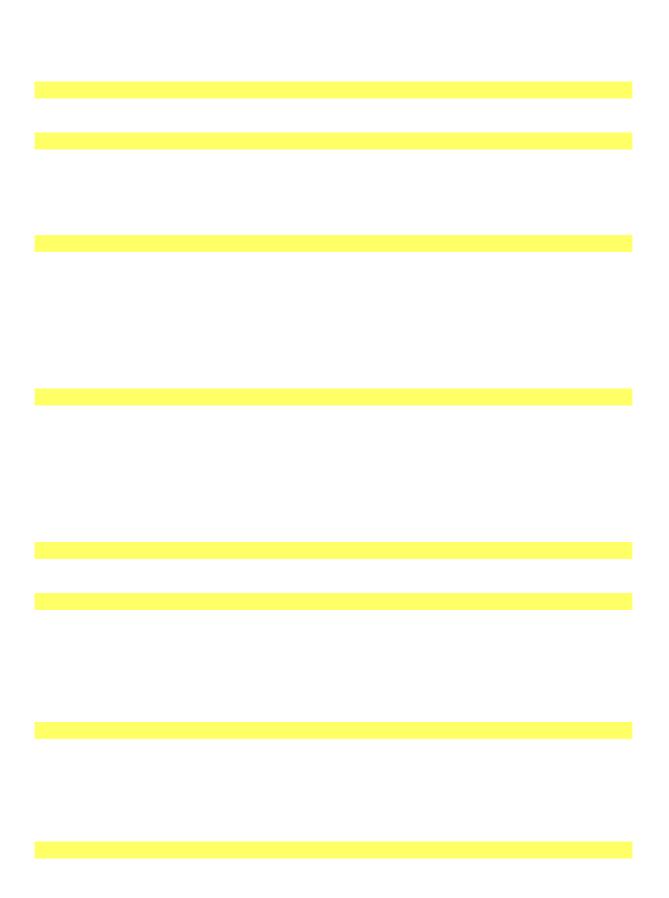
in std_logic

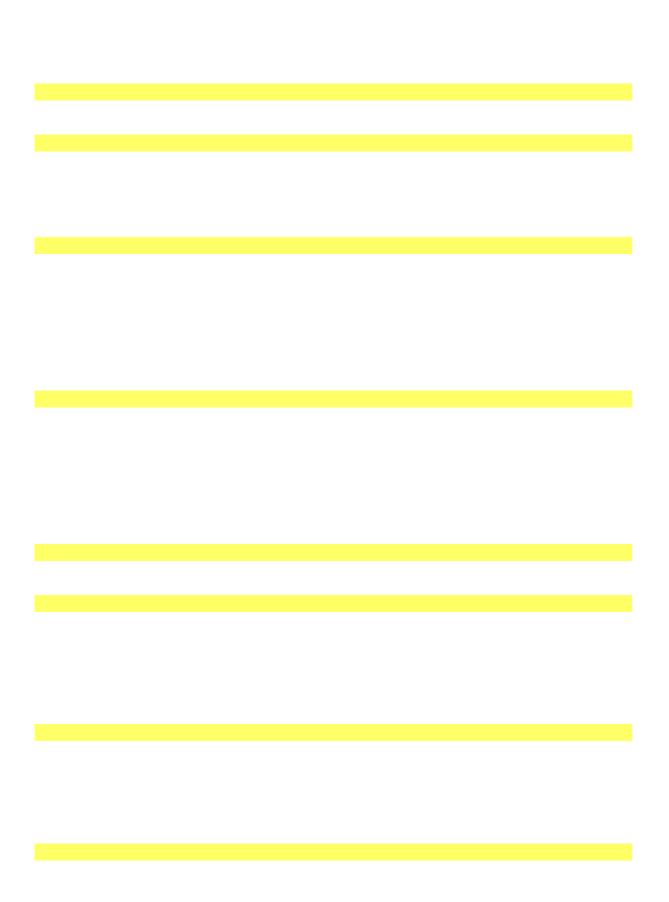
```
in std_logic
in std_logic
in std_logic_vector (31 downto 0)
in std_logic_vector (47 downto 0)
in ip_control_type
out std_logic_vector(7 downto 0)
out std_logic_vector(7 downto 0)
out std_logic_vector(7 downto 0)
out std_logic
in std_logic
out std_logic
out std_logic
in std_logic_vector(7 downto 0)
in std_logic
out std_logic
in std_logic
in std_logic
in udp_tx_type
out std_logic_vector (1 downto 0)
out std_logic
in STD_LOGIC
in STD_LOGIC
out std_logic
out ipv4_tx_type
in std_logic_vector (1 downto 0)
in std_logic
udp_rx_start
udp_rxo
clk
reset
ip_rx_start
ip_rx
```

```
in std_logic
in ipv4_tx_type
out std_logic_vector (1 downto 0)
out std logic
out std_logic
out ipv4_rx_type
in STD_LOGIC
in STD_LOGIC
in STD LOGIC
in STD LOGIC VECTOR (31 downto 0)
in std_logic_vector (47 downto 0)
out STD_LOGIC_VECTOR(7 downto 0)
out arp_req_req_type
in arp_req_rslt_type
in STD_LOGIC_VECTOR (7 downto 0)
in STD_LOGIC
in STD_LOGIC
out std_logic
in std_logic
in std_logic
out std_logic
out std logic
out std_logic
out std_logic_vector (7 downto 0)
in arp req req type
out arp_req_rslt_type
in std_logic
in std_logic
in std_logic_vector (7 downto 0)
in std_logic
in std_logic
out std_logic
in std_logic
in std_logic
in std_logic
```

```
out std logic
out std_logic
out std_logic
out std_logic_vector (7 downto 0)
in std_logic_vector (47 downto 0)
in std_logic_vector (31 downto 0)
in arp_control_type
out std_logic_vector(7 downto 0)
in std_logic
in std_logic
in std_logic
out std_logic
in std_logic_vector(7 downto 0)
in std_logic
in std_logic
in std_logic
in std_logic
out std_logic
in std_logic_vector(7 downto 0)
in std_logic
in std_logic
in std_logic
out std_logic_vector(7 downto 0)
out std_logic
out std_logic
```







	IP	tx

