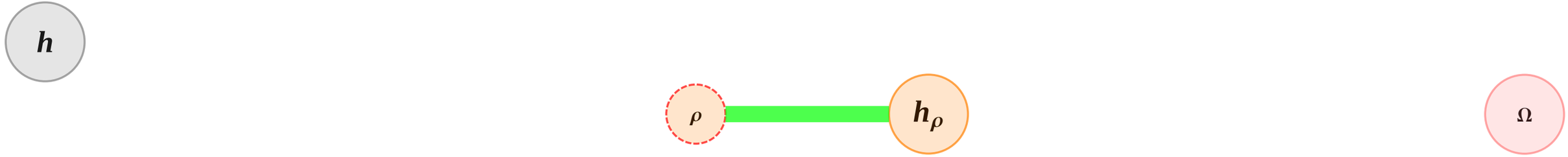
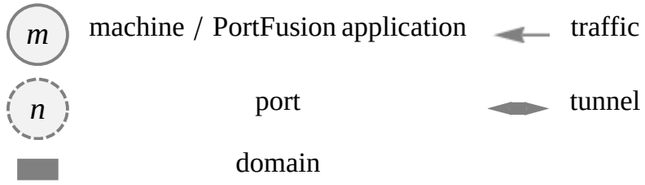
PortFusion + UltraVNC Network Schema

we are running in Berlin a PortFusion host h_ρ at port ρ

real host h in Vietnam and real client Ω in Heidelberg are on

Out[3089]=





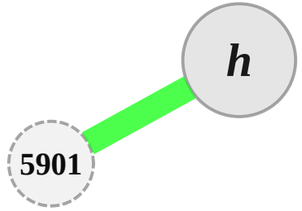
name	description	domain
h	real host machine in Vietnam	gray
Ω	real client machine in Heidelberg	pink
h_ρ	PortFusion host in Berlin	orange
c_ρ	PortFusion client in Vietnam	gray

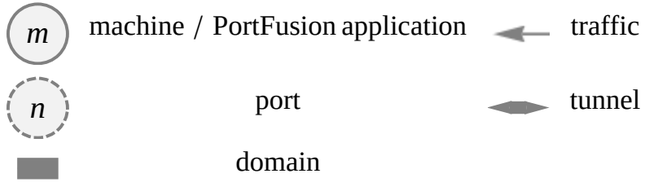
–	5900	5901	ρ	υ
h		VNC server		
Ω				VNC viewer
h_ρ	VNC server (proxy)		PortFusion	
c_ρ			PortFusion	VNC viewer (proxy)

PortFusion + UltraVNC Network Schema

we start our pre−configured UltraVNC server
in Vietnam on real host h at port 5901

Out[3089]=





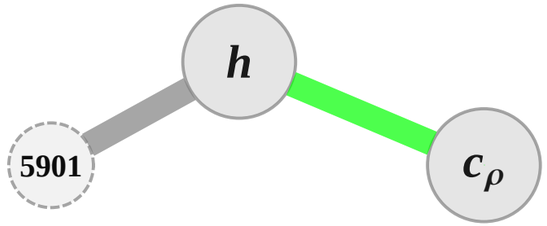
name	description	domain
h	real host machine in Vietnam	gray
Ω	real client machine in Heidelberg	pink
h_ρ	PortFusion host in Berlin	orange
c_ρ	PortFusion client in Vietnam	gray

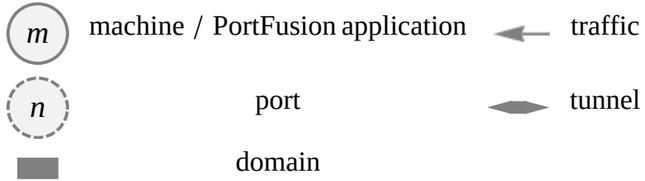
–	5900	5901	ρ	υ
h		VNC server		
Ω				VNC viewer
h_ρ	VNC server (proxy)		PortFusion	
c_ρ			PortFusion	VNC viewer (proxy)

PortFusion + UltraVNC Network Schema

we start our pre−configured PortFusion client c_ρ
in Vietnam on real host h

Out[3089]=





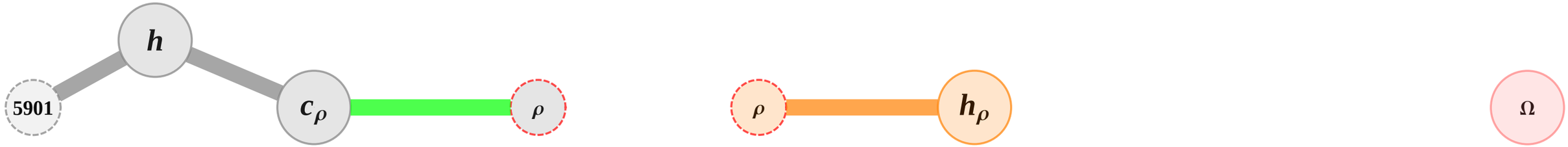
name	description	domain
h	real host machine in Vietnam	gray
Ω	real client machine in Heidelberg	pink
h_ρ	PortFusion host in Berlin	orange
c_ρ	PortFusion client in Vietnam	gray

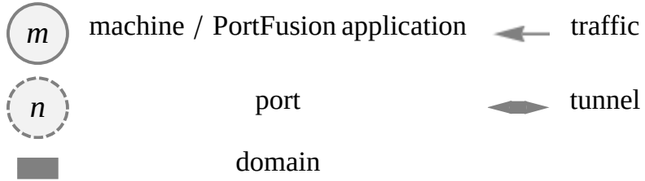
–	5900	5901	ρ	υ
h		VNC server		
Ω				VNC viewer
h_ρ	VNC server (proxy)		PortFusion	
c_ρ			PortFusion	VNC viewer (proxy)

PortFusion + UltraVNC Network Schema

PortFusion client c_ρ gets assigned on real host h a free port ρ

Out[3089]=





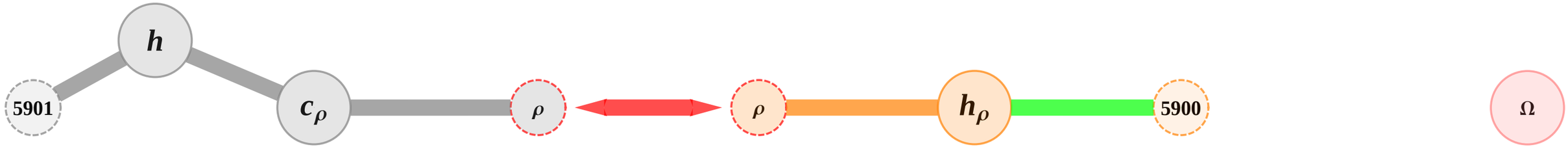
name	description	domain
h	real host machine in Vietnam	gray
Ω	real client machine in Heidelberg	pink
h_ρ	PortFusion host in Berlin	orange
c_ρ	PortFusion client in Vietnam	gray

–	5900	5901	ρ	υ
h		VNC server		
Ω				VNC viewer
h_ρ	VNC server (proxy)		PortFusion	
c_ρ			PortFusion	VNC viewer (proxy)

PortFusion + UltraVNC Network Schema

we connect PortFusion client c_ρ with PortFusion host h_ρ and
open port h_ρ:5900 as a proxy of our VNC server on h at h:5901
>> this opens a tunnel through the firewall of real host h <<

Out[3089]=



m	machine / PortFusion application	traffic
n	port	tunnel
	domain	

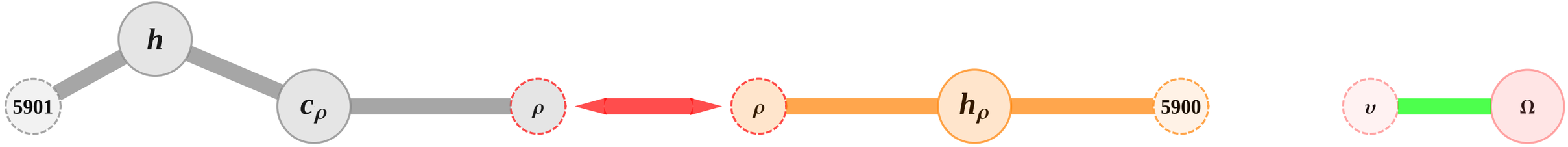
name	description	domain
h	real host machine in Vietnam	gray
Ω	real client machine in Heidelberg	pink
h_ρ	PortFusion host in Berlin	orange
c_ρ	PortFusion client in Vietnam	gray

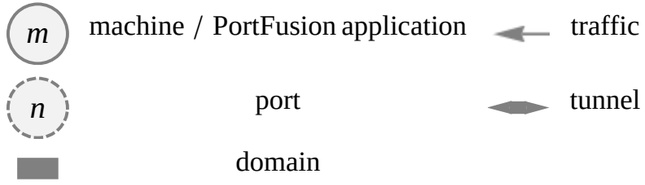
–	5900	5901	ρ	υ
h		VNC server		
Ω				VNC viewer
h_ρ	VNC server (proxy)		PortFusion	
c_ρ			PortFusion	VNC viewer (proxy)

PortFusion + UltraVNC Network Schema

we start our VNC viewer
in Heidelberg on real client Ω
it gets assigned an unknown free port υ

Out[3089]=





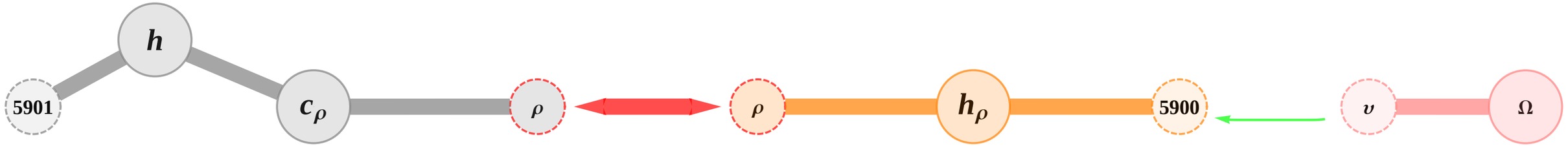
name	description	domain
h	real host machine in Vietnam	gray
Ω	real client machine in Heidelberg	pink
h_ρ	PortFusion host in Berlin	orange
c_ρ	PortFusion client in Vietnam	gray

–	5900	5901	ρ	υ
h		VNC server		
Ω				VNC viewer
h_ρ	VNC server (proxy)		PortFusion	
c_ρ			PortFusion	VNC viewer (proxy)

PortFusion + UltraVNC Network Schema

we connect
our VNC viewer on real client Ω to
our VNC server proxy at h_ρ:5900

Out[3089]=



m	machine / PortFusion application	traffic
n	port	tunnel
	domain	

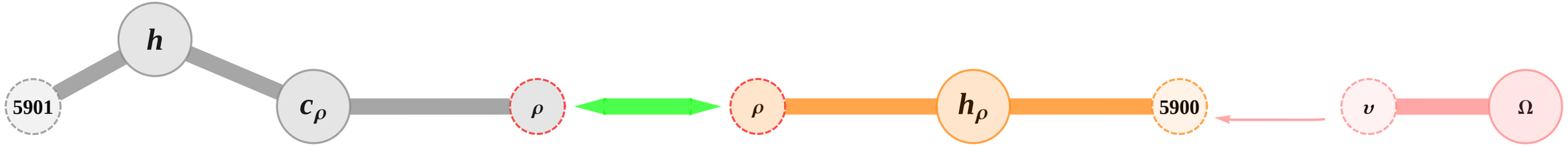
name	description	domain
h	real host machine in Vietnam	gray
Ω	real client machine in Heidelberg	pink
h_ρ	PortFusion host in Berlin	orange
c_ρ	PortFusion client in Vietnam	gray

–	5900	5901	ρ	υ
h		VNC server		
Ω				VNC viewer
h_ρ	VNC server (proxy)		PortFusion	
c_ρ			PortFusion	VNC viewer (proxy)

PortFusion + UltraVNC Network Schema

h_ρ hands the traffic over to c_ρ using the channel
opened from within real host h bypassing
the firewall of the gray domain

Out[3089]=



m	machine / PortFusion application	traffic
n	port	tunnel
	domain	

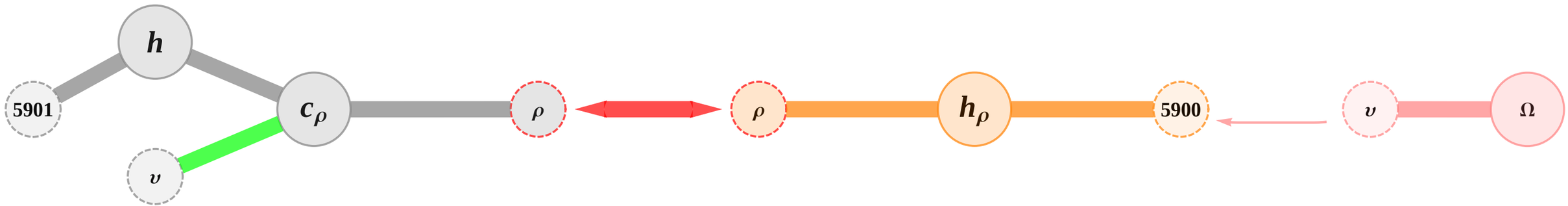
name	description	domain
h	real host machine in Vietnam	gray
Ω	real client machine in Heidelberg	pink
h_ρ	PortFusion host in Berlin	orange
c_ρ	PortFusion client in Vietnam	gray

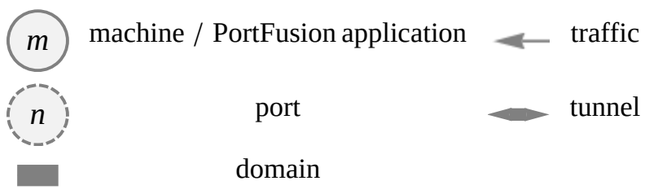
–	5900	5901	ρ	υ
h		VNC server		
Ω				VNC viewer
h_ρ	VNC server (proxy)		PortFusion	
c_ρ			PortFusion	VNC viewer (proxy)

PortFusion + UltraVNC Network Schema

c_ρ opens a local dedicated port c_ρ:υ on h
this serves as an 'h−local' copy of Ω:υ i.e.
as a Vietnam−local proxy
of our real VNC viewer in Heidelberg

Out[3089]=





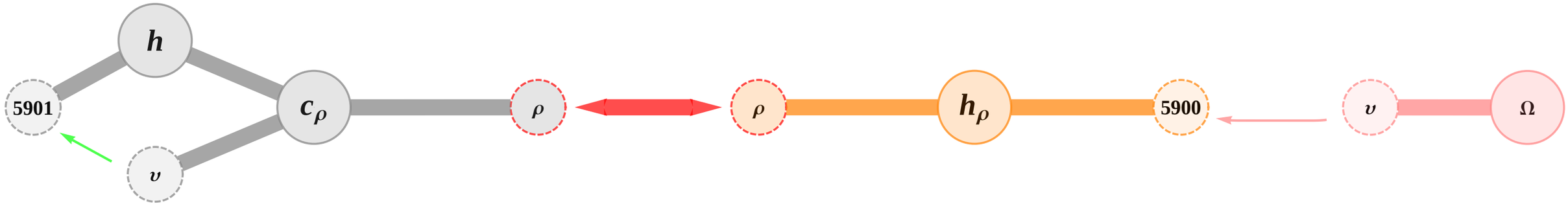
name	description	domain
h	real host machine in Vietnam	gray
Ω	real client machine in Heidelberg	pink
h_ρ	PortFusion host in Berlin	orange
c_ρ	PortFusion client in Vietnam	gray

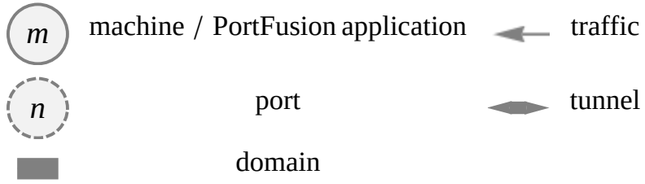
–	5900	5901	ρ	υ
h		VNC server		
Ω				VNC viewer
h_ρ	VNC server (proxy)		PortFusion	
c_ρ			PortFusion	VNC viewer (proxy)

PortFusion + UltraVNC Network Schema

c_ρ delivers the traffic from our VNC viewer at Ω:υ
via our proxy VNC viewer at c_ρ:υ
to the real VNC server at h:5901

Out[3089]=





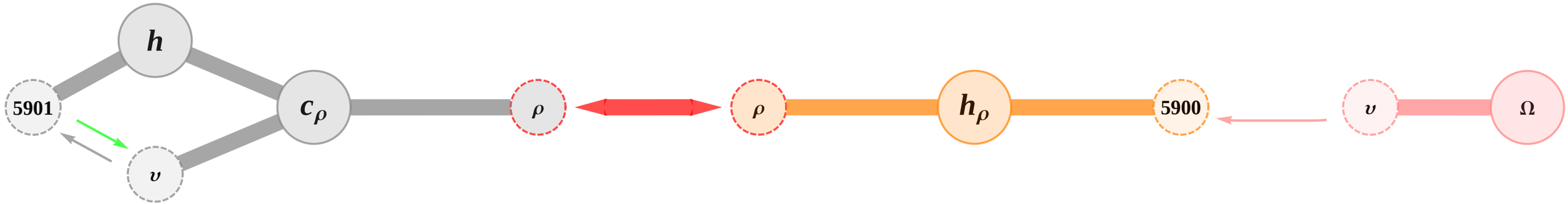
name	description	domain
h	real host machine in Vietnam	gray
Ω	real client machine in Heidelberg	pink
h_ρ	PortFusion host in Berlin	orange
c_ρ	PortFusion client in Vietnam	gray

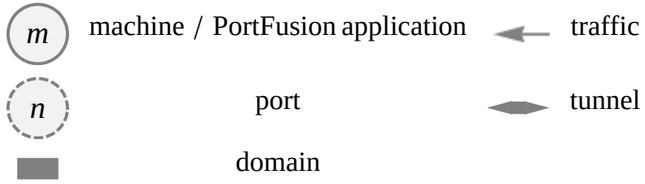
–	5900	5901	ρ	υ
h		VNC server		
Ω				VNC viewer
h_ρ	VNC server (proxy)		PortFusion	
c_ρ			PortFusion	VNC viewer (proxy)

PortFusion + UltraVNC Network Schema

c_ρ takes the response traffic
from the real VNC server at h:5901
via the proxy VNC viewer at c_ρ:υ

Out[3089]=





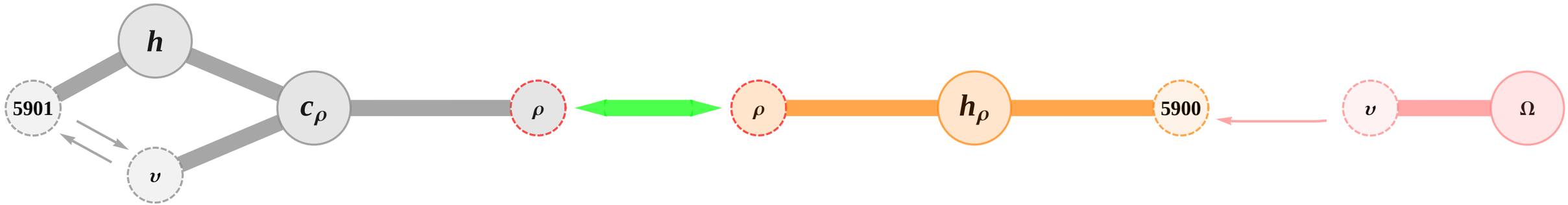
name	description	domain
h	real host machine in Vietnam	gray
Ω	real client machine in Heidelberg	pink
h_ρ	PortFusion host in Berlin	orange
c_ρ	PortFusion client in Vietnam	gray

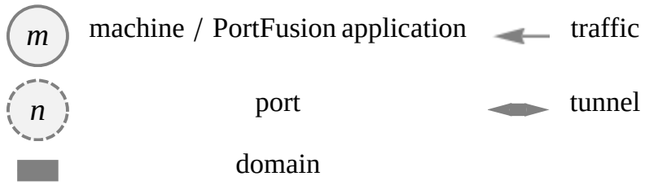
–	5900	5901	ρ	υ
h		VNC server		
Ω				VNC viewer
h_ρ	VNC server (proxy)		PortFusion	
c_ρ			PortFusion	VNC viewer (proxy)

PortFusion + UltraVNC Network Schema

c_ρ hands the traffic over to h_ρ using the PortFusion channel

Out[3089]=





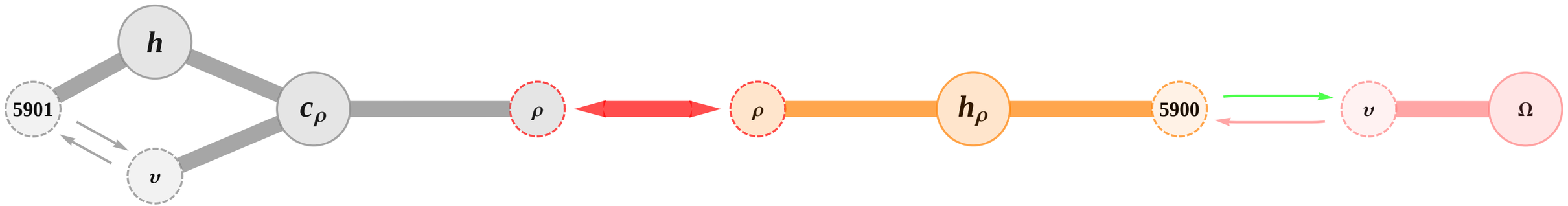
name	description	domain
h	real host machine in Vietnam	gray
Ω	real client machine in Heidelberg	pink
h_ρ	PortFusion host in Berlin	orange
c_ρ	PortFusion client in Vietnam	gray

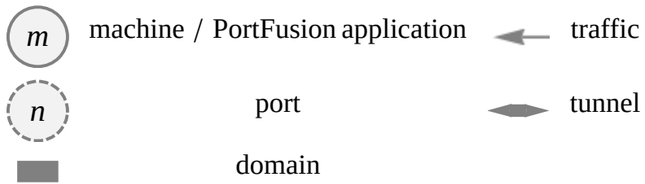
–	5900	5901	ρ	υ
h		VNC server		
Ω				VNC viewer
h_ρ	VNC server (proxy)		PortFusion	
c_ρ			PortFusion	VNC viewer (proxy)

PortFusion + UltraVNC Network Schema

h_ρ delivers the traffic from the
real VNC server at h:5901 in Vietnam
via the proxy VNC server at h_ρ:5900 in Berlin
to the real VNC viewer at Ω:υ in Heidelberg

Out[3089]=





name	description	domain
h	real host machine in Vietnam	gray
Ω	real client machine in Heidelberg	pink
h_ρ	PortFusion host in Berlin	orange
c_ρ	PortFusion client in Vietnam	gray

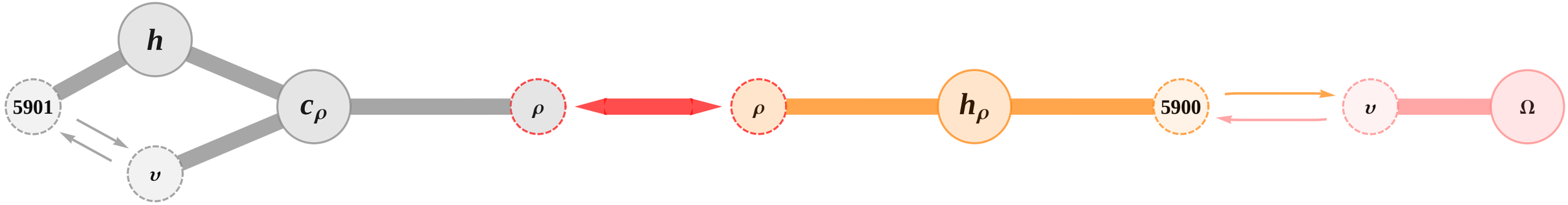
–	5900	5901	ρ	υ
h		VNC server		
Ω				VNC viewer
h_ρ	VNC server (proxy)		PortFusion	
c_ρ			PortFusion	VNC viewer (proxy)

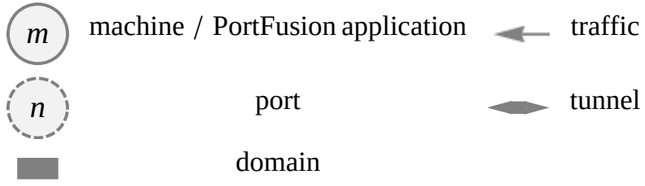
PortFusion + UltraVNC Network Schema

∗^o^∗ we successfully connected
Vietnam to Heidelberg via Berlin!!

all connections remain open as long as our session continues

Out[3089]=





name	description	domain
h	real host machine in Vietnam	gray
Ω	real client machine in Heidelberg	pink
h_ρ	PortFusion host in Berlin	orange
c_ρ	PortFusion client in Vietnam	gray

–	5900	5901	ρ	υ
h		VNC server		
Ω				VNC viewer
h_ρ	VNC server (proxy)		PortFusion	
c_ρ			PortFusion	VNC viewer (proxy)