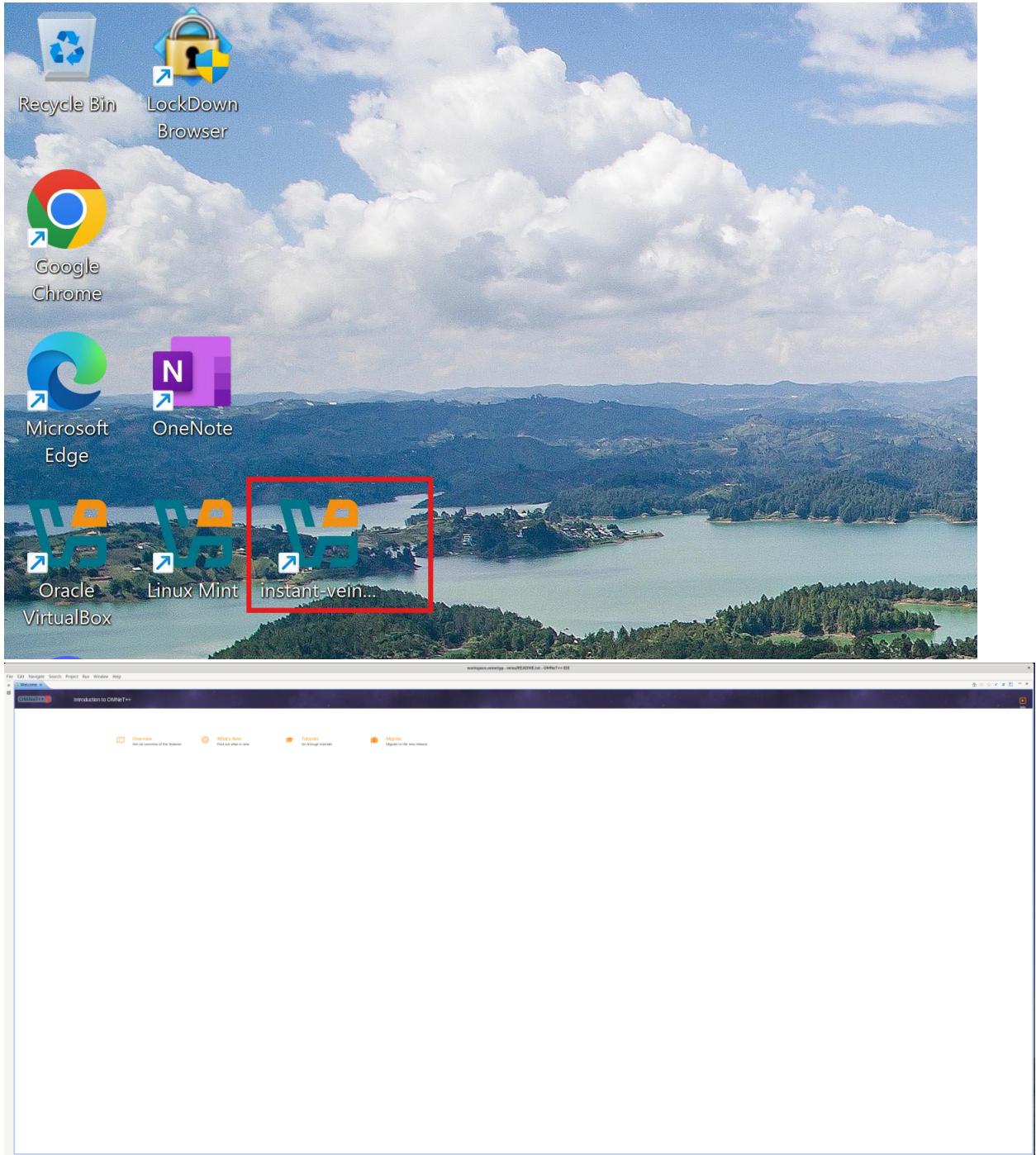


Lab 10 – Omnet ++ Simulation

CSCI 4406_60L – Computer Networks Lab

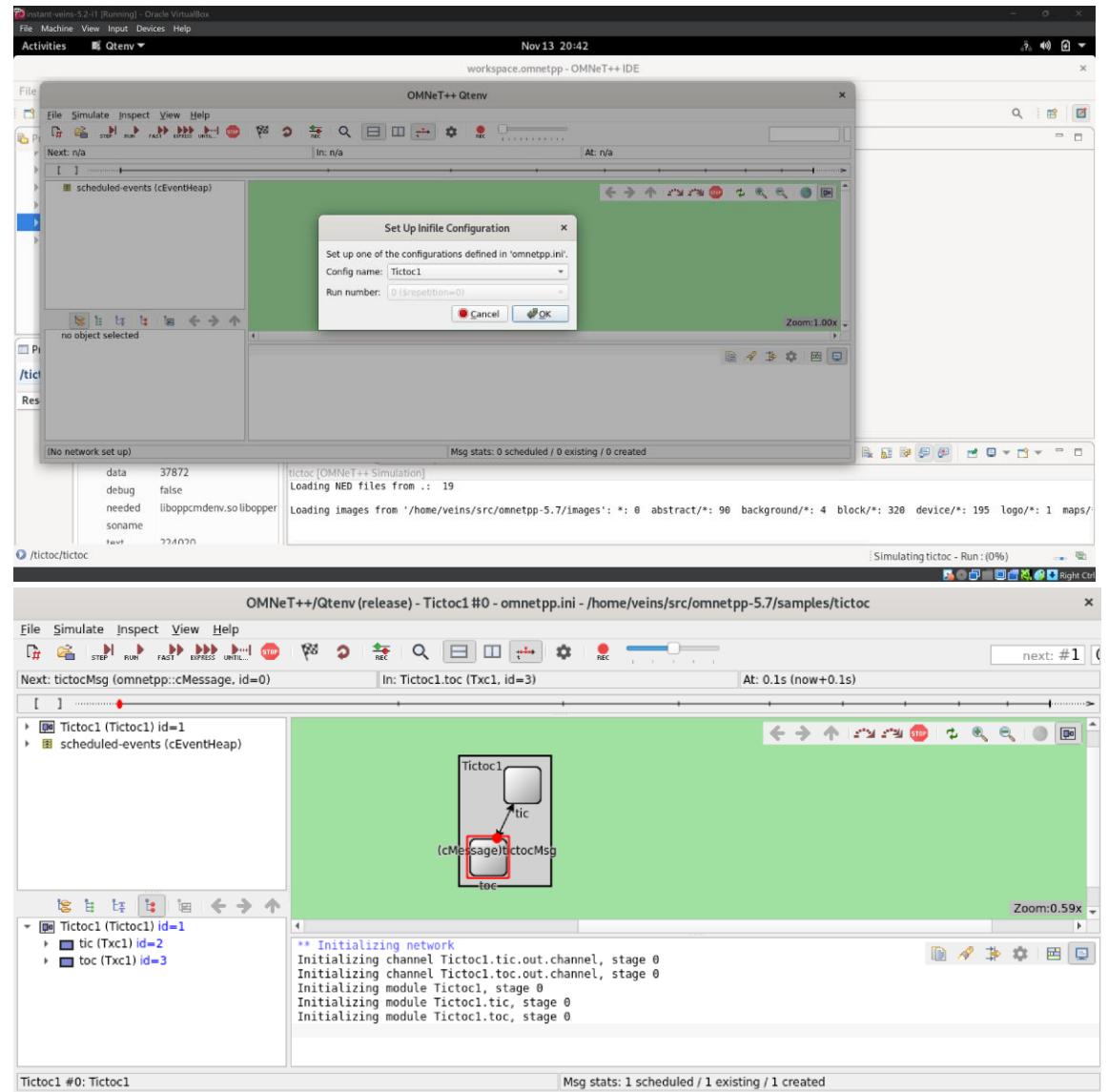
Joshua Ludolf

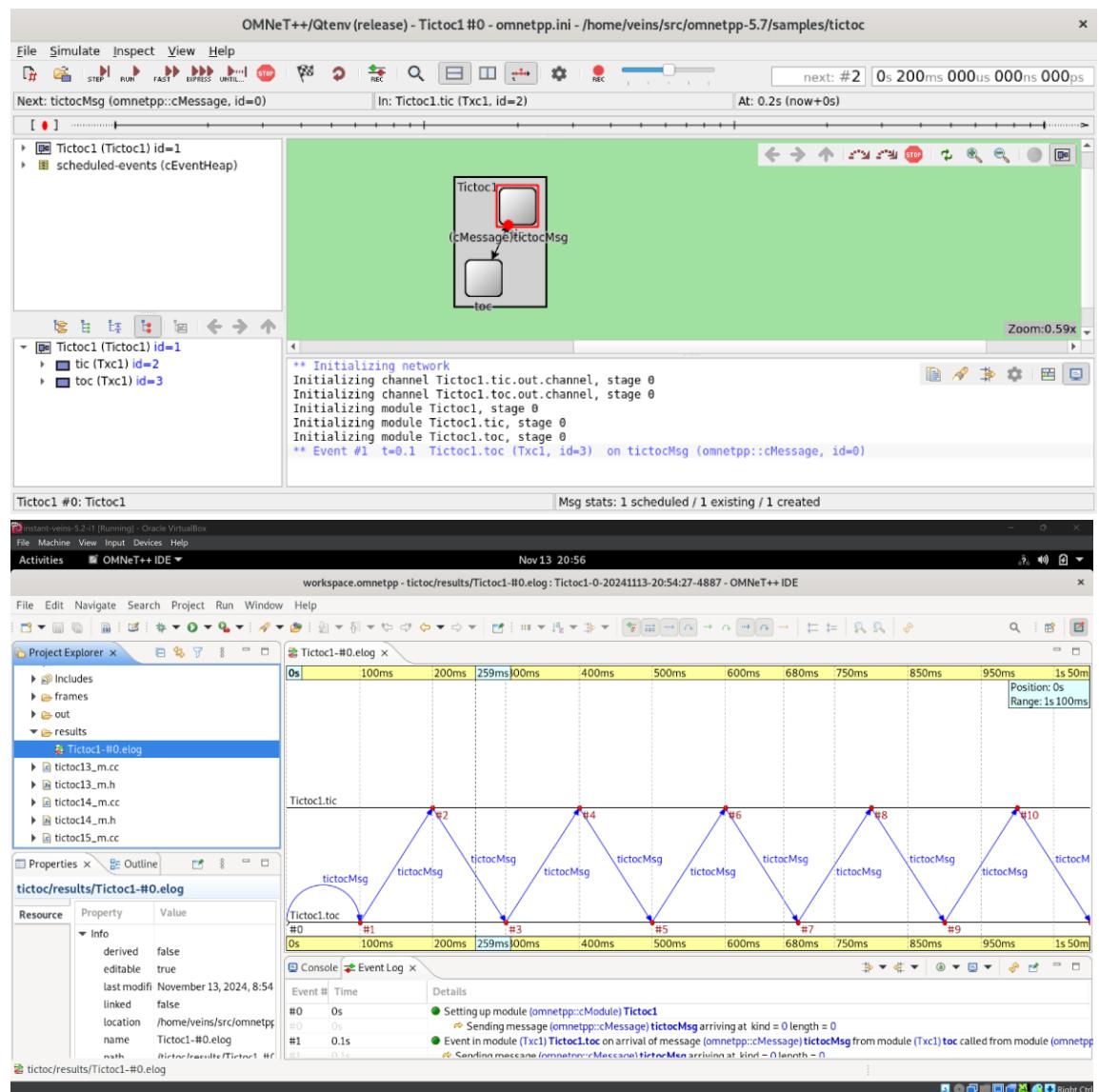
- To start this lab, I installed Veins/Omnet (no issues, I did the virtual image option 😊):



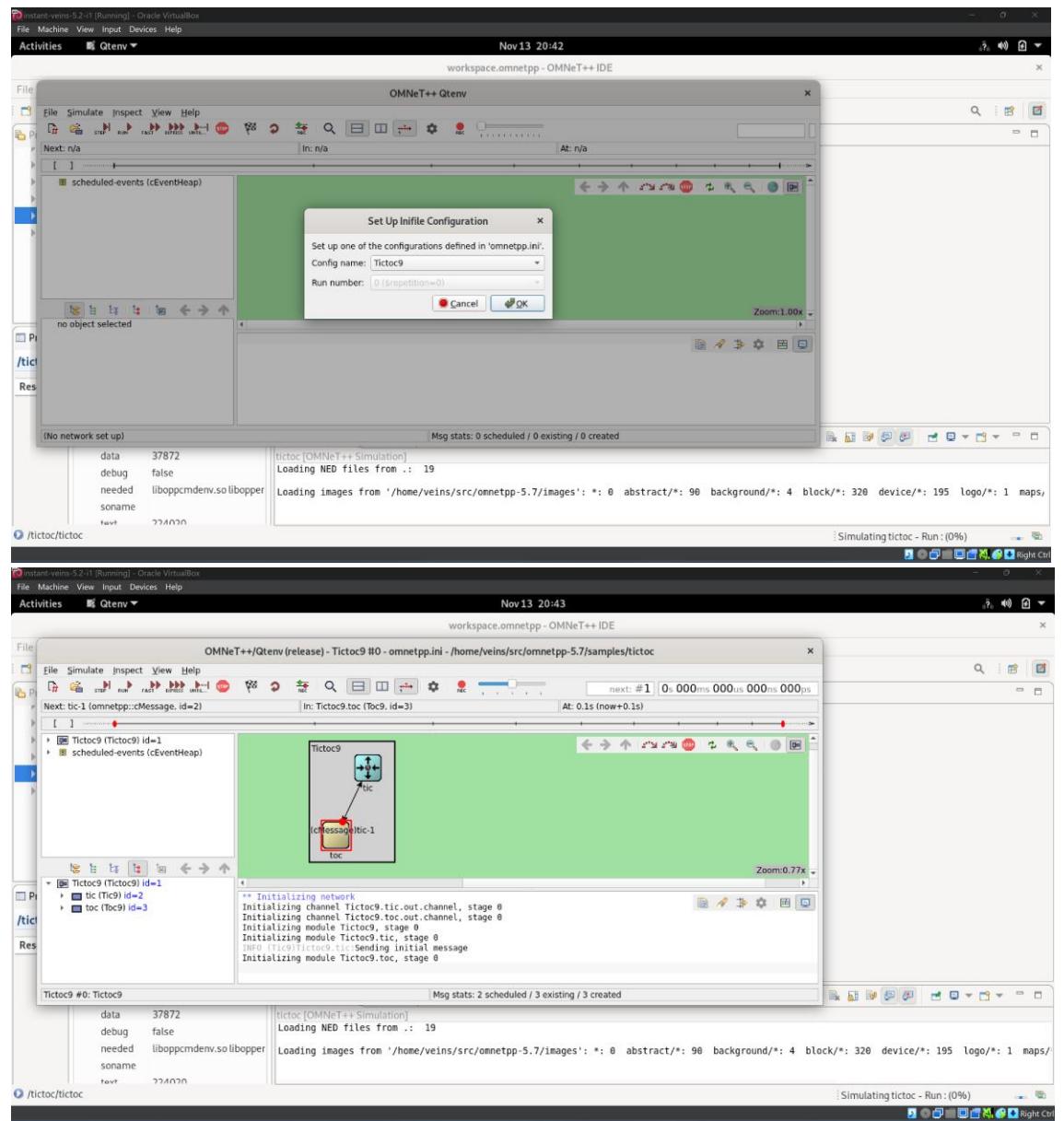
- From there, I opened and ran tic toc simulation (took me a bit, since I am very new to Omnet, but eventually got to record the events of the message passing in Tictoc, however no issues after that 😊):

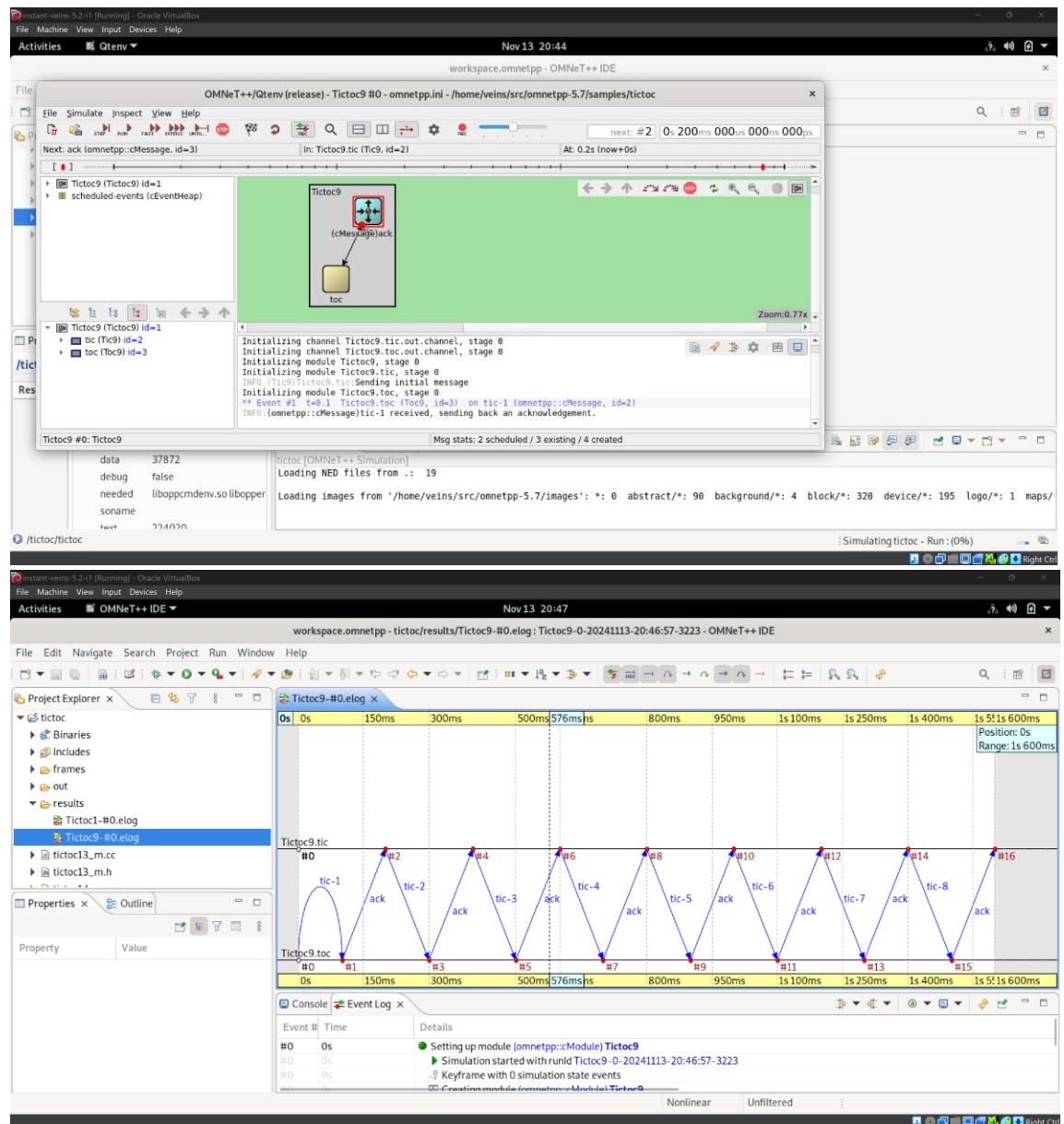
- Tictoc with two nodes (TicToc #1):



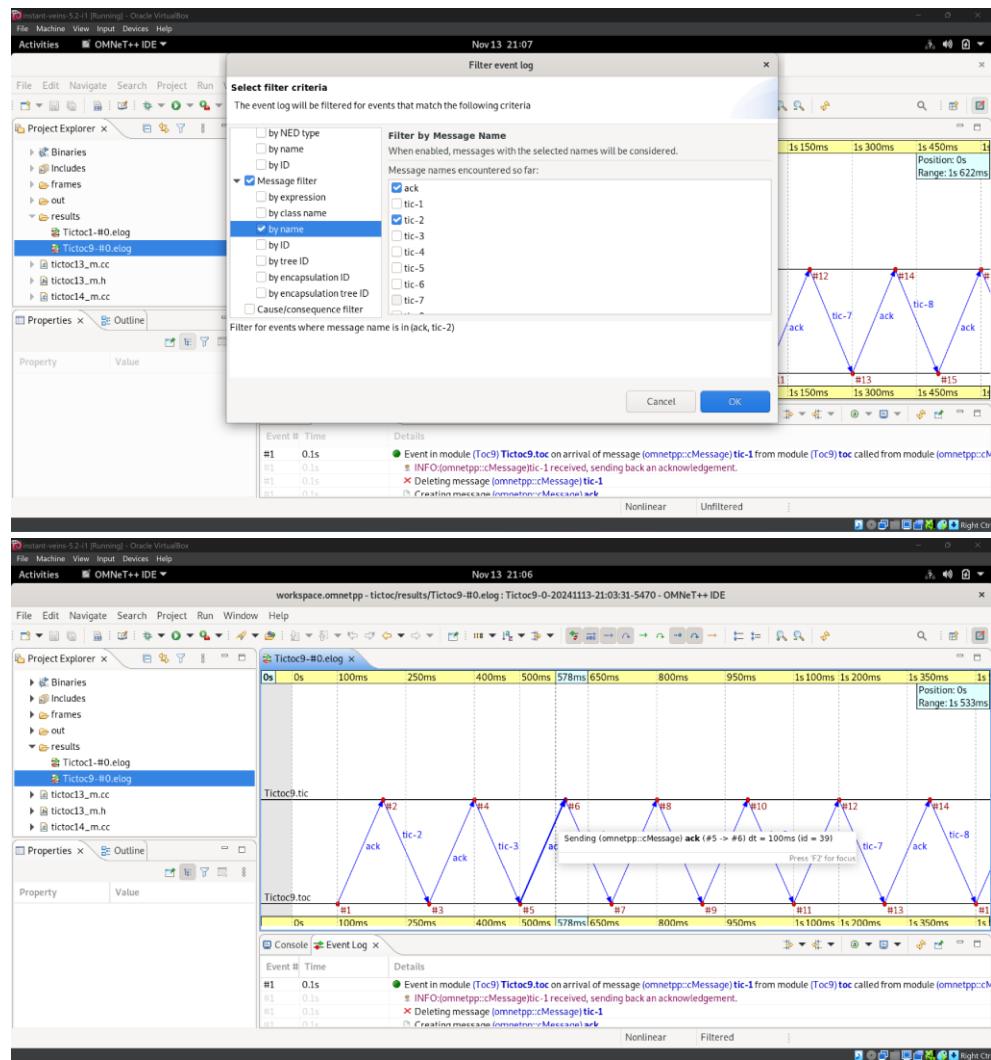


- Tictoc with six nodes (Tictoc #9), this one started with a self-message instead of immediately sending a message from initialize to another node:

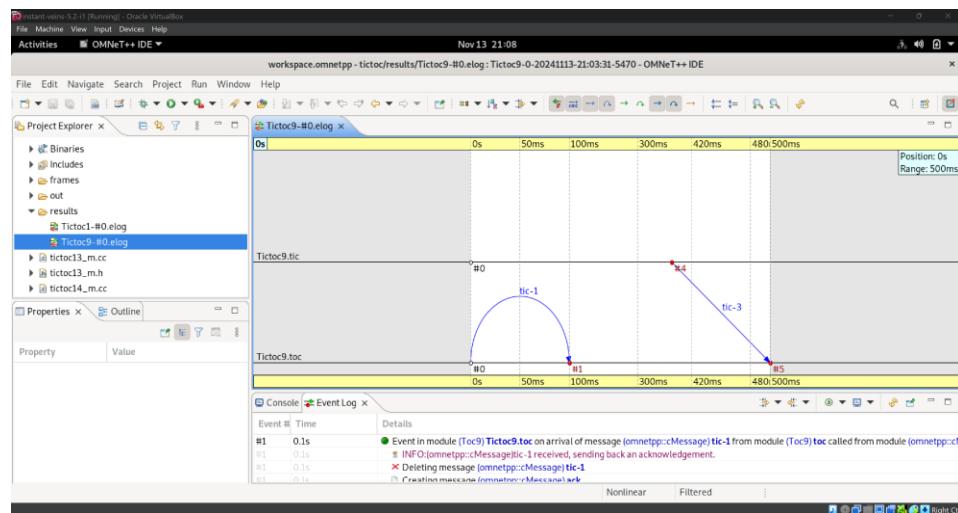




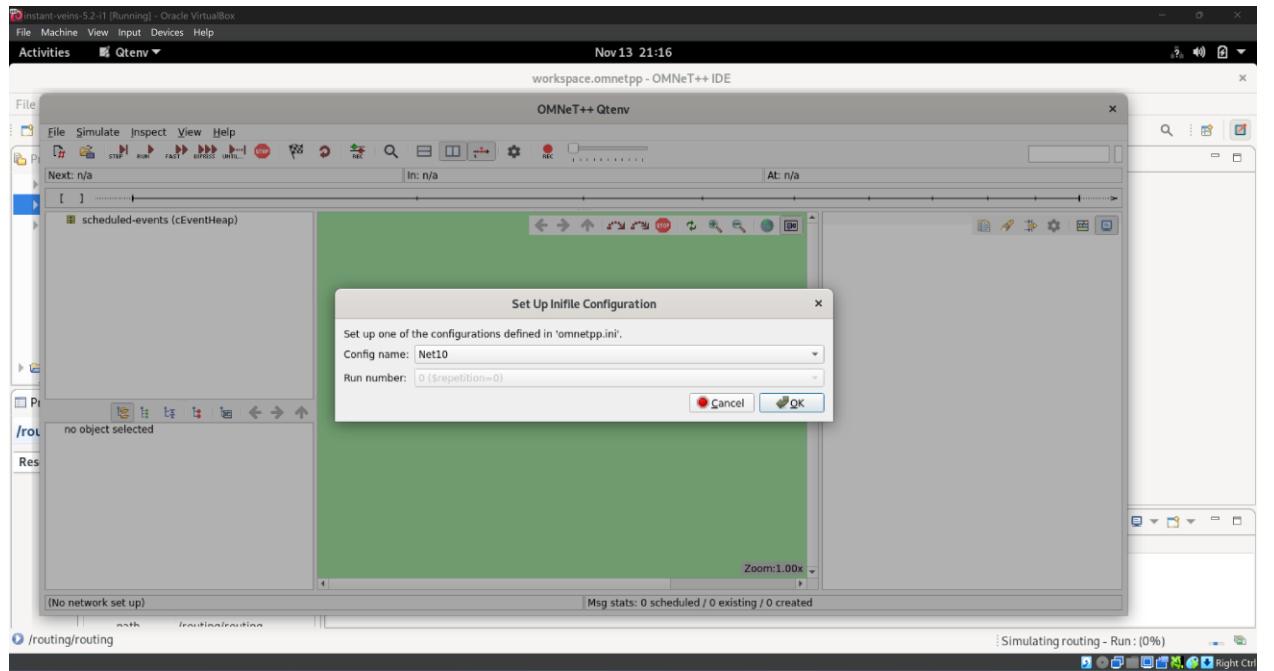
- I applied filtering on the chart for ack and node “2” (as it was different from user guide example):

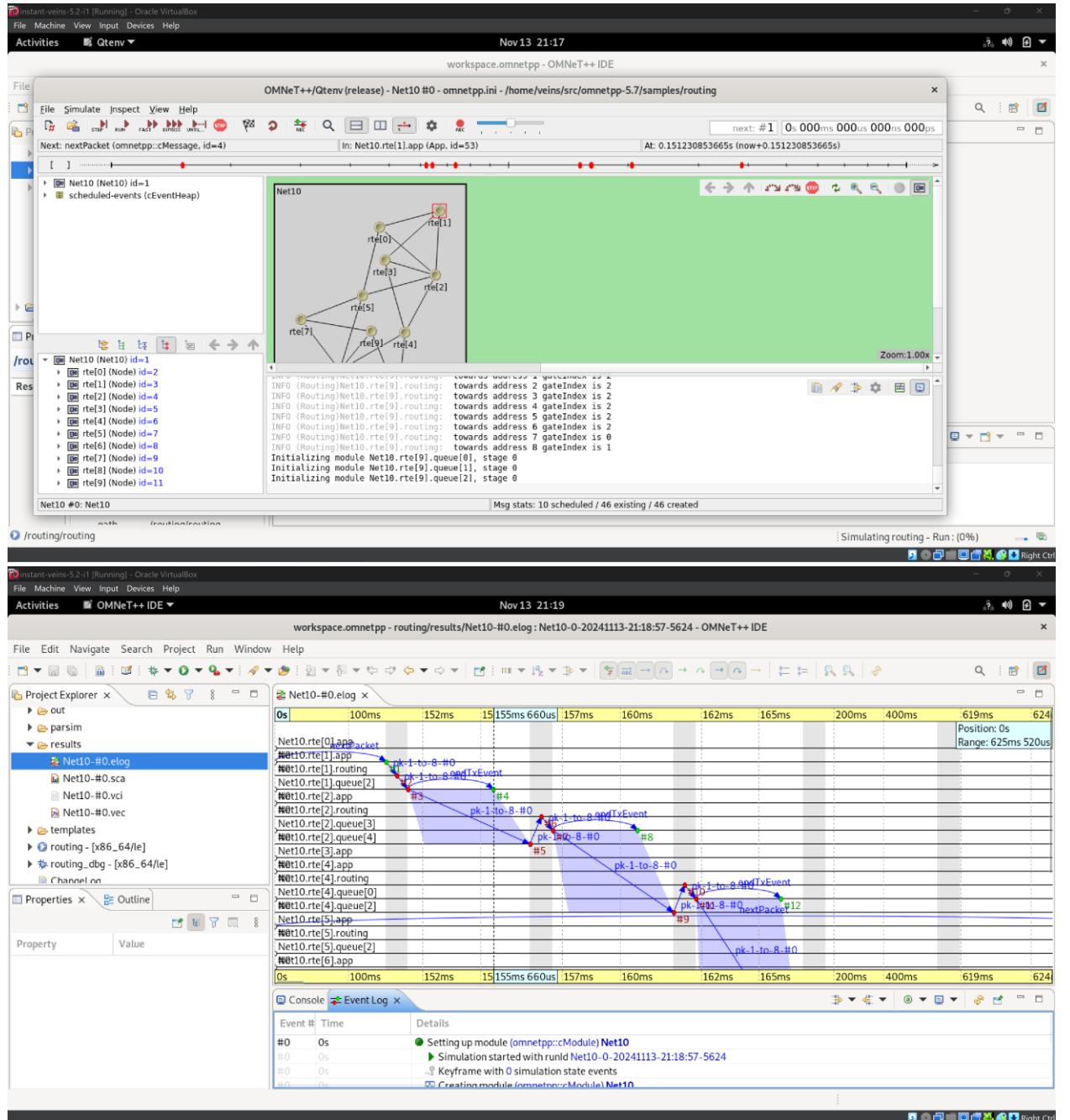


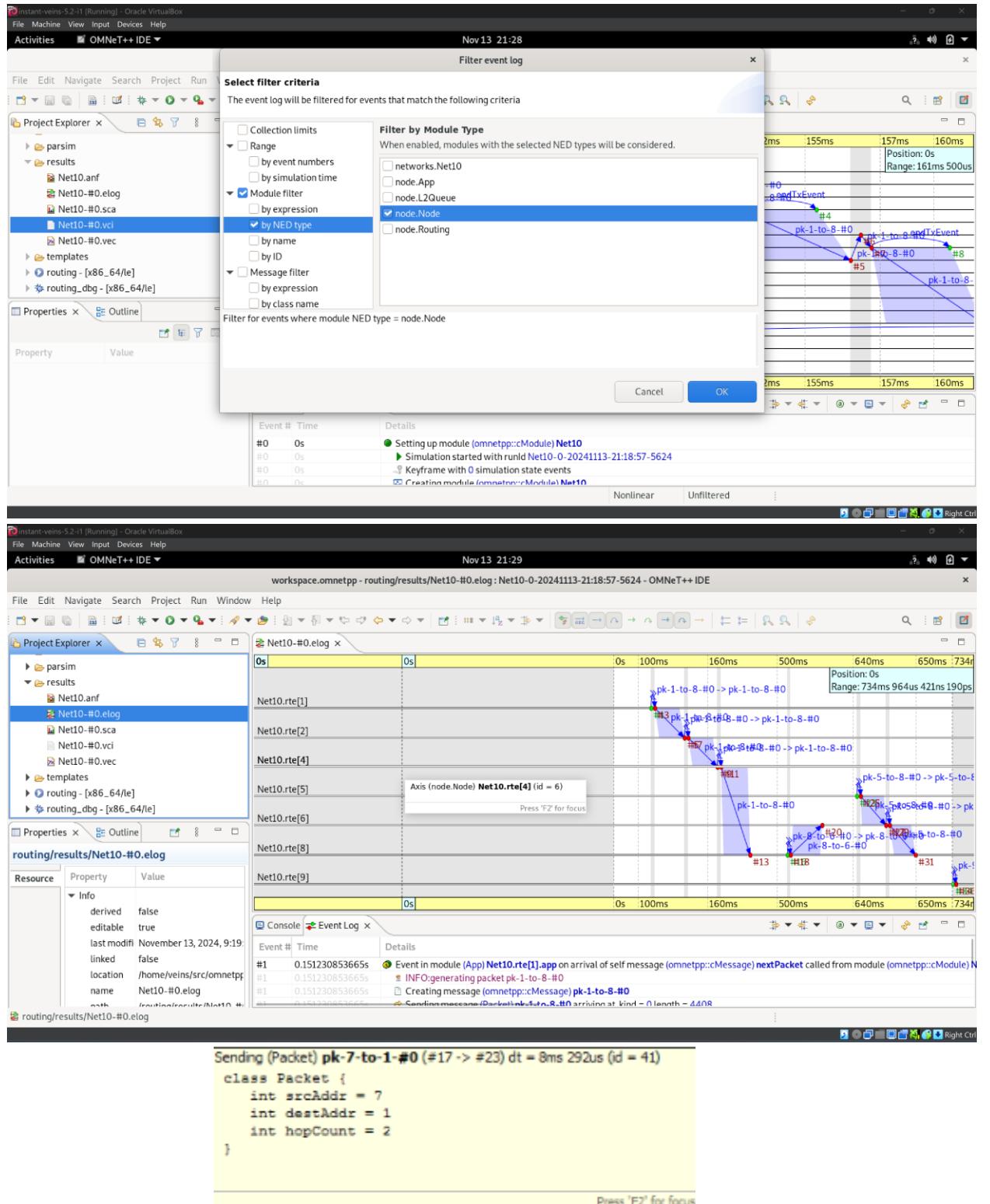
- This was what the filter looked like for node “1” & “3”:



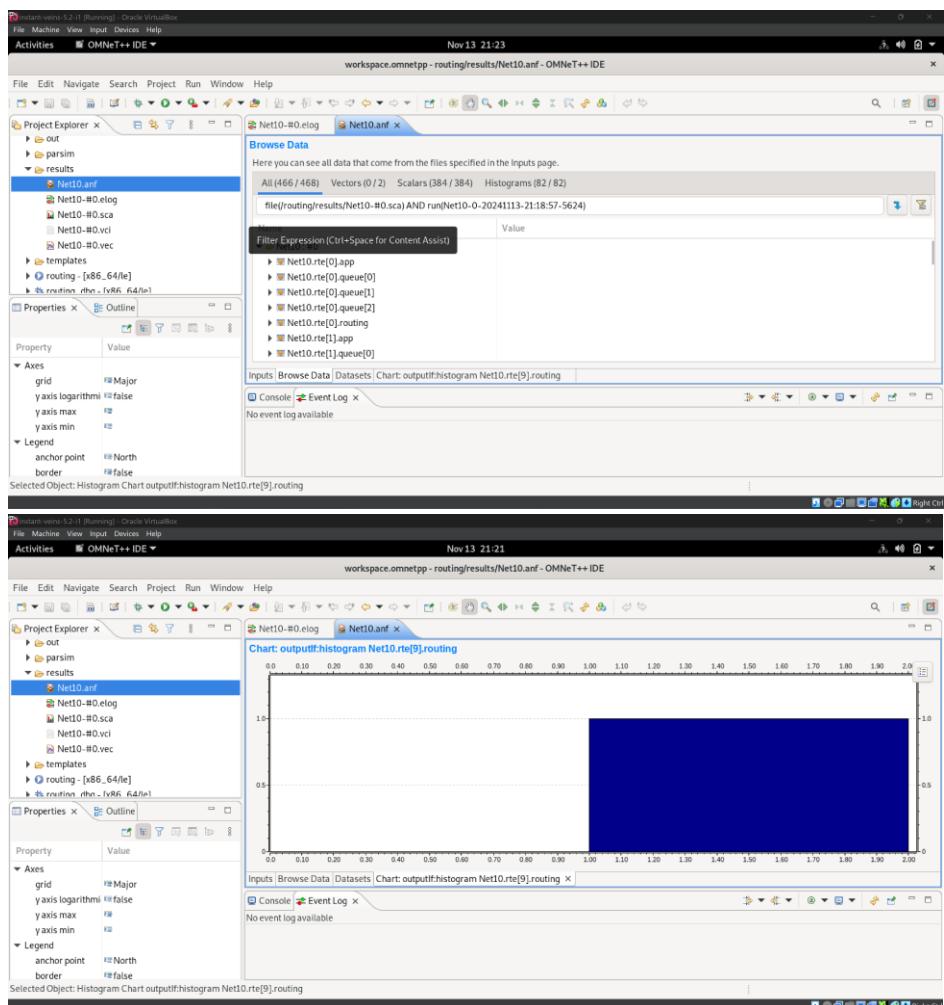
- Finally, I did the Routing example with 10 nodes (no issues 😊):







- Additionally, I analyzed other files (input for this was Net10-#0.sca/Net10-#0.vec files):



➤ From this lab I learned:

Through this lab exercise with the Tictoc example in OMNeT++, I gained a solid understanding of how to use and interpret Sequence Charts. By starting the simulation with the simplest configuration 'Tictoc1', I observed the interaction between two nodes, 'tic' and 'toc'. This setup illustrates the basic concept of message exchanges within a network, where each node responds by sending the message back, and how these interactions are visually represented on a Sequence Chart with events and message sends.

The next step involved a more complex configuration, 'Tictoc9', with six nodes. This scenario helped me comprehend how messages travel through multiple nodes, including the use of self-messages and the importance of filtering to focus on specific nodes. By applying

filters to the Sequence Chart, I could clearly see the flow of messages between selected nodes and understand the concept of virtual message sends.

Additionally, the Routing example provided insights into creating a sequence chart for a network with 10 nodes, all using a shortest path algorithm to route messages. The ability to filter out internal events within compound modules was crucial for reducing clutter and gaining a clear view of message propagation delays and transmission times.

Overall, this lab enhanced my understanding of network simulations, message routing, and the visualization of network events, equipping me with valuable skills for analyzing and optimizing network performance.