

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor:	Thayumanavan Sridhar	Confirmation No.:	7925
Serial No.:	17/929,526	Group Art Unit:	2451
Filed:	September 02, 2022	Customer No.:	72689
Examiner:	Steven C Nguyen		
Docket No.:	2014-583US01/JNP3650-US		
Title:	AUTO-SCALING SERVICE MESH FOR VIRTUAL MACHINES		

CERTIFICATE UNDER 37 CFR 1.8 I hereby certify that this correspondence is being transmitted via the United States Patent and Trademark Office electronic filing system on August 5, 2025.

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AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

In response to the Office Action mailed May 5, 2025, the period of response for which runs through August 5, 2025, please amend the application.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 7 of this paper.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

Claim 1. (Currently Amended): A method comprising:
obtaining ~~detecting~~, by a mesh agent executing on a network interface card (NIC) of a computing device, a service discovery request or service registry advertisement sent by a service provided by a virtual machine executing on the computing device;
determining, by the mesh agent based on the service discovery request or service registry advertisement, the service is provided by a virtual machine; and
configuring, by the mesh agent based on determining the service is provided by a virtual machine in response to ~~detecting the service~~, a service proxy for execution by the NIC to proxy the service in a service mesh.

Claim 2. (Cancelled)

Claim 3. (Currently Amended): The method of claim 1, wherein ~~detecting the service~~ determining the service is provided by a virtual machine includes looking up a service entry in a registry by ~~[[a]] the mesh agent at the NIC.~~

Claim 4. (Cancelled)

Claim 5. (Cancelled)

Claim 6. (Cancelled)

Claim 7. (Currently Amended): The method of claim [[6]] 1, further comprising provisioning, by a mesh provisioner at an edge services controller, the mesh agent executed by the NIC with a mesh controller address, certificates and tokens.

Claim 8. (Original): The method of claim 1, wherein the service proxy is associated with multiple services provided by the virtual machine.

Claim 9. (Currently Amended): The method of claim 1, further comprising connecting, by the service proxy, to a mesh control plane controller that authenticates the service proxy using configuration data received by the service proxy from [[a]] the mesh agent of a mesh provisioner.

Claim 10. (Currently Amended): The method of claim 1, further comprising connecting the service proxy, the service proxy executed at the NIC for the service provided by the virtual machine, to another service proxy in the service mesh.

Claim 11. (Currently Amended): A network interface card (NIC) comprising:
a processor; and
a memory comprising instructions that, when executed by the processor, cause a mesh agent configured to execute on the NIC to:
detect obtain a service discovery request or service registry advertisement sent by
a service provided by a virtual machine configured to execute on a computing device that
includes the NIC;
determine, based on the service discovery request or service registry
advertisement, the service is provided by a virtual machine; and
configure, based on the determination the service is provided by a virtual machine
in response to detecting the service, a service proxy for execution by the NIC to proxy the
service in a service mesh.

Claim 12. (Cancelled)

Claim 13. (Cancelled)

Claim 14. (Cancelled)

Claim 15. (Cancelled)

Claim 16. (Cancelled)

Claim 17. (Currently Amended): The NIC of claim [[16]] 11, further comprising instructions that cause [[a]] the mesh agent of the NIC to receive provisioning data from a mesh provisioner at an edge services controller with a mesh controller address, certificates and tokens.

Claim 18. (Original): The NIC of claim 11, wherein the service proxy is associated with multiple services at the virtual machine.

Claim 19. (Currently Amended): The NIC of claim 11, further comprising instructions that cause the service proxy to connect to a mesh control plane controller that authenticates the service proxy using configuration data received by the service proxy from [[a]] the mesh agent of a mesh provisioner.

Claim 20. (Currently Amended): A system comprising:
containers containing services and service proxies, the services and service proxies being associated with a control plane of a service mesh; and
a server comprising:
a virtual machine configured to provide a service; and
a network interface card (NIC), the NIC configured to execute a mesh agent
configured to:

~~detect~~ obtain a service discovery request or service registry
advertisement sent by the [[a]] service provided by the virtual machine;
determine, based on the service discovery request or service
registry advertisement, the service is provided by a virtual machine and

configure, based on the determination the service is provided by a virtual machine ~~in response to detecting the service~~, a service proxy for execution by the NIC to proxy the service in a service mesh.

Claim 21. (New): The method of claim 1, wherein determining the service is provided by a virtual machine comprises comparing a network address of the virtual machine to one or more network addresses for respective containers in a list of container-registered services.

Claim 22. (New): The method of claim 1, wherein determining the service is provided by a virtual machine comprises:

 sending, by the mesh agent, a probe to a target service included in the service registry advertisement; and

 determining a response to the probe does not come from a container network.

Claim 23. (New): The method of claim 1, wherein obtaining the service discovery request or service registry advertisement includes sniffing the service discovery request or service registry advertisement.

Claim 24. (New): The NIC of claim 11, wherein the instructions to determine the service is provided by a virtual machine comprise instructions to compare a network address of the virtual machine to one or more network addresses for respective containers in a list of container-registered services.

Claim 25. (New): The NIC of claim 11, wherein the instructions to determine the service is provided by a virtual machine comprise instructions to:

 send, by the mesh agent, a probe to a target service included in the service registry advertisement; and

 determine a response to the probe does not come from a container network.

Claim 26. (New): The NIC of claim 11, wherein the instructions cause the mesh agent to connect the service proxy, the service proxy configured for execution at the NIC for the service provided by the virtual machine, to another service proxy in the service mesh.

Claim 27. (New): The NIC of claim 11, wherein the instructions to obtain the service discovery request or service registry advertisement comprise instructions to sniff the service discovery request or service registry advertisement.

REMARKS

This Amendment is in response to the Office Action dated May 5, 2025. Applicant has amended claims 1, 3, 7, 9-11, 16, 19, and 20. Applicant has cancelled claims 2, 4-6, and 12-16. Applicant has submitted new claims 21-27. Claims 1, 3, 7-11, and 17-27 are pending upon entry of this communication.

Interview Summary

Applicant thanks the Examiner for the telephonic interview conducted on Tuesday, July 29. Participating in the interview were Examiner Nguyen and Applicant's representative, Hunter T. Berry (Reg. No. 82,969) and Michael A. Buschbach (Reg. No. 66,307). During the interview, Applicant's representatives proposed amendments to, e.g., claim 1. The Examiner agreed that these proposed amendments would overcome the rejection of claim 1 under 35 U.S.C. § 102(a)(2) as being anticipated by Lenrow et al., U.S. Publication No. 2023/0047880 (hereinafter, "Lenrow"), and that further search and consideration would be required. No further agreements were reached during the interview. No exhibits were submitted, and no demonstrations were performed.

Claim Rejection Under 35 U.S.C. § 102(a)(2)

The Office Action rejected claims 1-20 under 35 U.S.C. § 102(a)(2) as being anticipated by Lenrow. Applicant respectfully traverses the rejections to the extent the rejections may be considered applicable to the amended claims. Lenrow fails to disclose all of the elements of the amended claims, as required by 35 U.S.C. § 102(a)(2), and provides no apparent reason for modification to include such features.

Applicant has amended claim 1 consistent with the amendments proposed in the Examiner interview. Applicant has amended independent claims 11 and 20 in a similar manner. As agreed during the Examiner interview, Lenrow does not disclose the above-recited subject matter.

Independent claims 1, 11, and 20 are therefore patentable under § 102 over Lenrow. The dependent claims, e.g., claims 3, 7-10, and 17-19, and 21-27, incorporate the requirements of the respective independent claims and are likewise patentable. Applicant therefore respectfully requests reconsideration and withdrawal of this rejection.

New Claims

Applicant has added claims 21-27 to the pending application. The applied references fail to disclose or suggest the features defined by Applicant's new claims, and would have provided no apparent reason for modification to arrive at the claimed features. No new matter has been added by the new claims. Support for claims 21 and 24 in may be found in ¶ [0070] and throughout the specification. Support for claims 22-23, 25, and 27 may be found in ¶ [0089] and throughout the specification. Support for claim 26 may be found in claim 10 as originally filed, ¶ [0073], and throughout the specification.

CONCLUSION

All claims in this application are in condition for allowance. Applicant does not necessarily acquiesce as to any assertion made in the Office Action, and Applicant's silence with respect to any such assertion in the Office Action should not be interpreted as Applicant's acquiescence thereto. Further, Applicant does not concede that the art cited in the record is relevant art. Applicant reserves the right to comment further with respect to the applied references and any pending claim in a future Amendment, Response, on appeal, in any other proceeding, or otherwise. Applicant respectfully requests reconsideration and prompt allowance of all pending claims.

Please charge any additional fees or credit any overpayment to deposit account number 50-1778. The Examiner is invited to telephone the below-signed representative to discuss this application.

Date:

August 4, 2025
SHUMAKER & SIEFFERT, P.A.
Telephone: 651.286.8355

By:

/Hunter Berry/
Name: Hunter T. Berry, Reg. No. 82,969