



### Method of performing route lookup as part of egress pipeline and a system thereof

### IITM Technology Available for Licensing

#### PROBLEM STATEMENT

- The route lookup function typically involves performing the **longest prefix match** on an ordered set of entries carefully configured on a ternary content addressable memory (TCAM) hardware.
- The TCAM hardware is specially designed for parallel search to locate a matching entry across the entire TCAM in a single cycle, & which is a de-facto hardware used for route lookup on high-end network routers.
- TCAM consumes **a lot of power** & currently routers perform route lookup based on longest prefix match & using the TCAM for the route lookup **consumes lot of power**.
- Therefore, there is a need to address said issues in efficient manner.

#### TECHNOLOGY CATEGORY/MARKET

**Technology:** Route Lookup in Routing Network;

**Industry:** Datacenter, Enterprise, & etc.

**Applications:** Network Applications in Healthcare, BFSI, Education, Residential, Media & Entertainment, etc.

**Market:** The global **routing** market was estimated at USD 15.1B in 2022 and projected to grow **USD 22.9B** at a **CAGR of 8.6%** during the forecast period from **2022 to 2027**.

#### TECHNOLOGY

- Subject Patent describe about a system & **method for routing data** in a packet switched router in a communication network.
- The method describes as adding an outgoing interface index of a second hop router to a packet header of a data packet, at an ingress router,
- Further describes as receiving the data packet from the ingress router by the second hop router.
- Said method comprises one or more steps as disclosed hereinbelow smart charts:

Performing a route lookup on the data packet, at an egress interface, by the second hop router;

Determining an outgoing interface index based on performing, by the second hop router;

Updating the outgoing interface index in the packet header of the data packet, and forwarding the data packet to one or more hop routers based on the outgoing interface index;

#### KEY FEATURES / VALUE PROPOSITION

##### ❖ Technical Perspective:

1. Claimed Patent **reduces power consumption** of high-end router by up to **18%**.

##### ❖ Industrial Perspective:

1. Present Patent helps to perform a successful lookup as against having a full routing table in ingress looking table (ILT).
2. Proposed System and method increases the number of routes served for a given TCAM capacity, wherein the TCAM capacity gets reduced in long term.

#### INTELLECTUAL PROPERTY

**IITM ID F Ref. 1653;**

**IN Patent No: 422685 (Granted)**

**PCT Application No.PCT/IN2019/050072**

#### TRL (TECHNOLOGY READINESS LEVEL)

**TRL- 3**, Proof of Concept ready & validated

#### RESEARCH LAB

**Prof. KRISHNA M SIVALINGAM**

Dept. of Computer Science and Engineering, IIT Madras

#### CONTACT US

**Dr. Dara Ajay**, Head  
Technology Transfer Office,  
IPM Cell- IC&SR, IIT Madras

**IITM TTO Website:**  
<https://ipm.icsr.in/ipm/>

Email: [smipm-icsr@icsrpis.iitm.ac.in](mailto:smipm-icsr@icsrpis.iitm.ac.in)

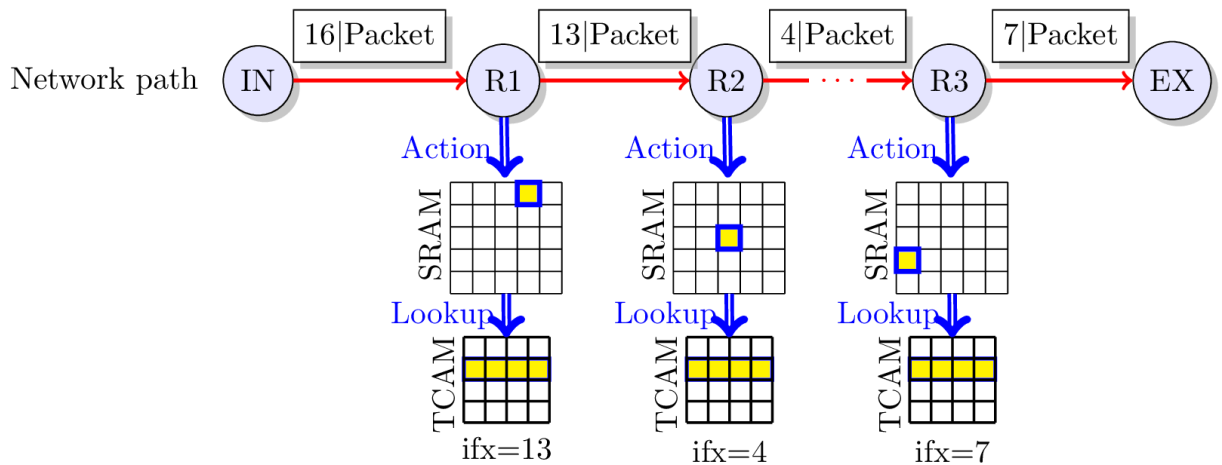
[sm-marketing@imail.iitm.ac.in](mailto:sm-marketing@imail.iitm.ac.in)

Phone: +91-44-2257 9756/ 9719

# Method of performing route lookup as part of egress pipeline and a system thereof

**IITM Technology Available for Licensing**

## Images



**Fig.1: Illustrates an ingress router (IN) sending data packets to an egress router (EX) through one or more network routers;**

### CONTACT US

Dr. Dara Ajay, Head  
Technology Transfer Office,  
IPM Cell- IC&SR, IIT Madras

**IITM TTO Website:**  
<https://ipm.icsr.in/ipm/>

**Email:** [smipm-icsr@icsrpis.iitm.ac.in](mailto:smipm-icsr@icsrpis.iitm.ac.in)

[sm-marketing@imail.iitm.ac.in](mailto:sm-marketing@imail.iitm.ac.in)

**Phone:** +91-44-2257 9756/ 9719