

# AI/ML and AR/VR applications at Edge

Sukhdev Kapur

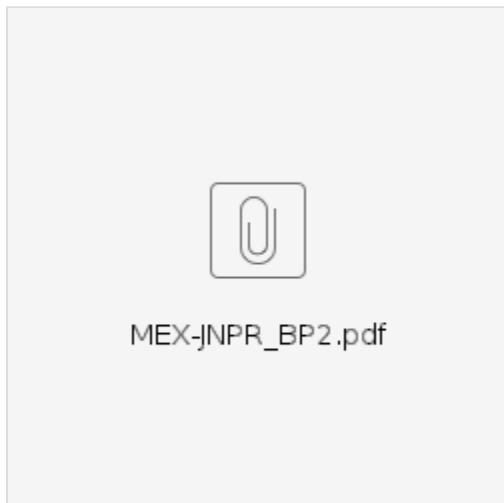
Vikram Siwach

**Project Technical Lead:** Vikram Siwach

## **Project Committers detail:**

| Committer     | Committer Company | Committer Contact Info        | Committer Bio | Committer Picture | Self Nominate for PTL (Y/N) |
|---------------|-------------------|-------------------------------|---------------|-------------------|-----------------------------|
|               |                   |                               |               |                   |                             |
| Sukhdev Kapur | Juniper Networks  | <a href="#">Sukhdev Kapur</a> |               |                   |                             |
| Vikram Siwach | MobiledgeX        | <a href="#">Vikram Siwach</a> |               |                   |                             |
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## **Presentation:**



## **Blueprint species:**

| Attributes      | Description                                                                     | Informational                                                                                                                                                                  |
|-----------------|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type            | New Blueprint for enabling AI/ML and low latency AR/VR capabilities at the Edge | New submission for integrating Tungsten Fabric for Edge Cloud for AI/VR applications for developers in a distributed environment                                               |
| Industry Sector | Edge Cloud, Enterprise, 5G, and IoT                                             | The blueprint empowers Integrated Edge Cloud architecture to use single SDN Controller (Tungsten Fabric) for all type of Containers, Virtual Machines, and Bare Metal Servers. |

|                                  |                                                                                                                                                                                                 |  |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Blueprint Family - Proposed Name | Integrated Edge Cloud                                                                                                                                                                           |  |
| Use Case                         | Programmability on switches and I/O Accelerations on programmable NICs & embedded FPGAs to deliver AI/ML workload placement and low latency demands of AR/VR applications onboarding edge stack |  |
| Blueprint proposed Name          | AI/ML and AR/VR applications at Edge                                                                                                                                                            |  |
| Initial POD Cost (capex)         | Leverage white boxes, standard NICs: The cost of POD will depend upon the hardware profiles and peripherals desired                                                                             |  |
| Scale & Type                     | The deployment will employ baremetal as well virtual machines and containers. The smallest footprint for minimal Cloudlet is 9VMs to a large Cloudlet could span to 8-Cluster Cloudlets         |  |
| Applications                     | AI/ML streaming workloads and AR/VR applications                                                                                                                                                |  |
| Power Restrictions               | Less than 10Kw                                                                                                                                                                                  |  |
| Infrastructure orchestration     | OpenStack Queens or above<br>Docker 1.13.1 or above<br>Container Orchestration –K8s 1.10.2 or above<br>OS - Ubuntu 16.x, CentOS                                                                 |  |
| SDN                              | Tungsten Fabric Kernel vRouter, DPDK vRouter, SR-IOV and SmartNIC                                                                                                                               |  |
| Workload Type                    | Containers over VM or baremetal                                                                                                                                                                 |  |
| Additional Details               | Runs on Commodity HW<br>x86, ARM, SoC, ...<br>Multiple options for partial or full NIC offloads (Intel, Netronome, Mellanox)<br>Future Supports:<br>eBPF/XDP offload                            |  |