

Vulcan rocket to debut in 2019

United Launch Alliance (ULA) – the company that conducts most of America's rocket launches – has unveiled a reusable rocket named "Vulcan" designed to replace its current Atlas and Delta boosters, and end U.S. dependence on Russian-built rocket engines



■ **Upper-stage:** Initially Vulcan will fly with existing **Centaur** engine. From 2023 ULA will introduce advanced motor capable of placing multiple satellites into orbit in different planes

■ **Vulcan:** More than a million people voted to name rocket after home planet of **Spock** from TV show **Star Trek**

■ **First-stage:** Powered by pair of liquid-oxygen (LOX) and liquefied methane engines or by two conventional kerosene-LOX powerplants

■ Up to six strap-on solid fuel boosters can be added

■ Vulcan will exceed **Delta-IV Heavy** – world's most powerful rocket – which can lift 25 tonnes into low-Earth orbit

■ **Reusability:** Booster engines will fall back to Earth to be retrieved for refurbishment and reuse



Rockets not to scale