

China Showcases Next-Generation Weapons at 80th Victory Day Parade

China marked the 80th anniversary of its World War II victory with a grand military parade in Beijing, unveiling a new generation of weapons across every domain of warfare[1]. From small arms to nuclear missiles, the People's Liberation Army (PLA) displayed cutting-edge systems that underscore Beijing's rapid military modernization. Below is a detailed report on the most significant systems entering PLA service.

New QBZ-191 Assault Rifle

Chinese soldiers carrying the new QBZ-191 assault rifle during the parade.

Among the first weapons showcased was the **QBZ-191 assault rifle**, China's next-generation service rifle replacing the older QBZ-95. The QBZ-191 fires the indigenous 5.8×42mm cartridge and boasts an effective range of up to 800 meters, giving it longer reach than many standard 5.56mm NATO rifles[2]. Designed as part of the "Type 20" small arms family, it features a full-length Picatinny rail for mounting scopes, infrared sights, or night-vision optics, greatly improving accuracy in low-light or complex conditions[3].

Chinese state media highlight the rifle's precision – with CCTV reporting that, using tactical optics, the QBZ-191 can achieve a 20-shot grouping within a 3 cm circle at 100 meters[4]. This level of accuracy, combined with improved ergonomics and reliability, represents a major advance in infantry firepower and reflects China's emphasis on modernizing its basic soldier kit.

New Tanks and Armored Vehicles

China's new Type 100 main battle tank on parade, featuring advanced protection systems and a redesigned turret.

China also debuted a trio of new armored fighting vehicles – an upgraded **Type 99B** main battle tank, a next-generation **Type 100** main battle tank, and a **Type 100 infantry fighting vehicle (IFV)**[5]. These platforms form the spearhead of a networked, digitized ground force, emphasizing sensor fusion, active protection, and manned-unmanned teaming.

The **Type 100 MBT** is potentially China's first **fourth-generation tank**, incorporating advanced active protection systems (APS), high mobility, and integration into real-time battlefield networks[6]. Unlike older tanks that relied mainly on heavy armor and large-caliber guns, the Type 100 uses **active interceptors and electro-optical sensors** to detect and shoot down incoming anti-tank missiles or drones targeting its weak top armor[7]. Military engineers have hinted that China's fourth-gen tanks will use unmanned turrets, AI-assisted targeting, crew of two, and even launch onboard drones[8][9] – features in line with global trends seen in Russia's T-14 Armata and other future tanks[10]. The Type 100 is

reportedly armed with a new **130 mm smoothbore gun**, a step up in firepower from the PLA's current 125 mm guns[11]. This larger caliber parallels developments in Western tank guns and would give the Type 100 enhanced armor penetration and range.

The **Type 99B** is an upgraded variant of the proven Type 99A tank, retaining a 125 mm gun but adding modern fire-control and likely improved engines[12]. It benefits from incremental improvements in armor and electronics, ensuring legacy systems remain effective alongside newer tanks.

The **Type 100 IFV** unveiled alongside the tanks introduces novel capabilities for China's mechanized infantry[13]. Notably, it is equipped with a **rear launch system for reconnaissance drones**, allowing the IFV to deploy small UAVs for scouting ahead or even attack missions[14]. This drone-launch feature boosts situational awareness, helping troops detect ambushes or targets behind cover. Crews inside the new IFV reportedly use **augmented reality (AR) goggles** that provide a 360° view outside the vehicle[15]. Analysts say this AR system lets operators see sensor feeds and drone imagery in real time, drastically improving reaction speed and coordination in combat. Together, the Type 100 tank and IFV exemplify the PLA's shift toward high-tech, network-centric land warfare.

“Chinese HIMARS” – PHL-16 Long-Range Rocket System

A battery of PHL-16 (PCL-191) long-range rocket launchers during the parade.

China's new **PHL-16** long-range multiple launch rocket system – also known as **PCL-191** – drew comparisons to the US-made HIMARS, reflecting its modular design and precision strike role[16]. Mounted on an 8×8 truck, the PHL-16 can fire a variety of guided rockets and short-range ballistic missiles, giving commanders flexible options to hit targets at different ranges[17]. At the parade, two configurations were displayed to showcase this versatility[18]:

- **Rocket configuration:** carrying up to **8× 370 mm guided rockets** per launcher (or alternatively 10 smaller 300 mm rockets). These GPS/INS-guided rockets can deliver precision strikes out to around 280–350 km[19][20]. Each rocket can carry an air-burst warhead effective against area targets like troop formations or airfields[21].
- **Tactical missile configuration:** carrying **2× 750 mm “Fire Dragon 480” ballistic missiles** per launcher, with ranges up to **500 km**[19][22]. These short-range ballistic missiles can hit high-value targets such as command centers or air bases far behind enemy lines. Their precision-guidance and 500 km reach **out-distance HIMARS**, which tops out around 300 km with ATACMS[23][24].

The PHL-16's **modular launch pods** allow crews to swap in whatever munitions a mission requires[25]. China first revealed this system in 2019, and it has since become the PLA's most advanced artillery rocket platform[26]. With rapid shoot-and-scoot capability on a wheeled chassis, the PCL-191/PHL-16 significantly expands the PLA's long-range strike

firepower – a key component of China’s anti-access/area-denial strategy in places like the Taiwan Strait and South China Sea[27][28].

Debut of the Strategic Nuclear Triad

Mobile ICBM launchers carrying the new DF-61 intercontinental ballistic missiles (ICBMs).

In a historic first, Beijing publicly presented all three legs of its **nuclear triad** – land, sea, and air-based nuclear delivery systems – together in one formation[29]. This marked the debut of China’s complete strategic deterrent and underscored its advancing nuclear capabilities[30]. Key systems in this formation included:

- **DF-61 ICBM:** A brand-new road-mobile intercontinental ballistic missile. Little was revealed before the parade, but analysts believe the DF-61 is an evolution of the DF-41 (formerly China’s most advanced ICBM)[31][32]. The DF-61 likely carries multiple warheads and may boast an estimated range of **12,000–15,000 km**, enough to reach any target on the US mainland[32]. Mobility on an 8-axle transporter gives it better survivability by allowing dispersal and concealment[33][34].
- **DF-31BJ ICBM:** An upgraded variant of the DF-31 series (possibly an improved DF-31AG)[35]. Also mounted on a mobile launcher, the DF-31BJ provides a slightly shorter-range complement to the DF-41/61, likely around 11,000 km, with enhancements in reliability or penetration aids. Its appearance alongside the DF-61 signals an across-the-board modernization of China’s land-based deterrent[31][34].
- **JL-3 SLBM:** The **Julang-3** submarine-launched ballistic missile, China’s latest **submarine-based** nuclear missile, was shown publicly for the first time[36][37]. With an estimated range **greater than 10,000 km**, the JL-3 can reach targets across the globe when launched from waters near China[38]. This is a major jump from the earlier JL-2 (~8,000 km range). The JL-3 is *believed capable of carrying multiple warheads*[39]. Importantly, its range allows Chinese ballistic missile submarines to hit the US mainland **while remaining in safer waters closer to China’s coast**, rather than venturing into the open ocean[38][40]. This greatly enhances the survivability of China’s sea-based nuclear force.
- **JL-1 Air-Launched Missile:** Representing the **air leg** of the triad, the parade included the new **JL-1 air-launched ballistic missile (ALBM)** carried by the PLA Air Force’s H-6N bombers[41]. This weapon – essentially a ballistic missile deployable from an aircraft – is China’s first nuclear-capable ALBM. It effectively gives the H-6N bomber (a variant of the H-6 optimized for carrying such missiles) the ability to strike targets at intermediate range with nuclear or conventional payloads[42]. By deploying a long-range missile from the air, the H-6N can threaten targets beyond the range of its own flight radius. Chinese media note this is one of two ALBMs in service, the other being the anti-ship YJ-21 (described later)[42].

Together, the DF-61, DF-31BJ, JL-3, and JL-1 ALBM demonstrate China's establishment of a fully functional nuclear triad – something only the US and Russia have long possessed[31][30]. This triad provides land-based, submarine-based, and air-delivered nuclear strike options, significantly improving the credibility and flexibility of China's nuclear deterrence posture.

DF-5C – Record-Range ICBM

China's new DF-5C liquid-fueled ICBM on its mobile transporter. Experts say it may reach unprecedented global ranges.

China also introduced the **DF-5C**, a powerful new intercontinental ballistic missile that immediately grabbed attention as possibly the **longest-ranged missile in the world**[43]. The DF-5C is a modernized, third-generation variant of the older DF-5 family of silo-based missiles, but with extensive upgrades:

- **Global Strike Range:** Chinese experts estimate the DF-5C's range **exceeds 20,000 km**, giving it true global reach[44][45]. For perspective, 20,000 km would cover any point on Earth, allowing China to target the continental United States *from launch sites in China with margin to spare*. This is a substantial increase over prior DF-5 variants (~13,000 km range) and would make the DF-5C the world's farthest-flying nuclear missile.
- **Improved Basing/Launch:** Unlike older DF-5 models that were fueled in fixed silos, the DF-5C is designed for **transported modular launch**. It is carried in **three separate sections** by transporter vehicles and assembled to launch[46][47]. This modular transport approach shortens launch preparation time and enables more flexible siting. Chinese sources note the DF-5C can be brought to a launch position and readied faster than previous generations, improving its responsiveness[48]. (It remains liquid-fueled, however, meaning it still requires some pre-launch fueling.)
- **Extreme Speed:** As a full-scale ICBM, the DF-5C flies at **hypersonic velocities**. Chinese officials stated it can reach "tens of times the speed of sound," i.e. well over Mach 10+ in its midcourse phase[49][50]. Such speed leaves very little time for any missile defense system to react, especially given the long range and high loft trajectory of an ICBM.
- **MIRV Payload & Penetration Aids:** The DF-5C is believed to carry **multiple independently targetable re-entry vehicles (MIRVs)** – i.e. several nuclear warheads that can hit different targets – as well as decoys or other penetration aids[51][52]. An expert cited in Chinese media said DF-5C can load multiple warheads or even conventional payloads and decoy devices, which complicate enemy interception[52]. This mirrors the MIRV capability demonstrated in earlier DF-5B tests[53]. Combined with advanced countermeasures, the DF-5C's MIRVs are intended to defeat missile defenses by overwhelming them with multiple credible threats.

- **High Accuracy:** Despite its intercontinental range, the DF-5C reportedly achieves **very high targeting precision**, with a circular error probable (CEP) on the order of only tens of meters. Chinese guidance systems for the DF-5C integrate **inertial navigation, celestial (star) tracking, and BeiDou satellite navigation**, applying multiple guidance methods to greatly improve accuracy over global distances[54]. Achieving such precision (comparable to short-range missiles) ensures the warheads can reliably strike intended targets despite the missile's extreme range.

In short, the DF-5C represents a leap in China's fixed ICBM capability – **global strike range, faster launch, faster flight, multiple warheads, and high accuracy**[45][54]. It complements the road-mobile DF-41/DF-61 by providing an even longer-reaching deterrent. Chinese commentators note that displaying multiple new strategic missiles (DF-5C, DF-61, DF-31BJ, JL-3) is intended to reinforce China's policy of maintaining a credible second-strike and deterring nuclear threats[55][56].

New YJ-Series “Carrier Killer” Hypersonic Missiles

Close-up of the new YJ-17 hypersonic anti-ship missile on a parade transporter. It features a boost-glide waverider design for maneuverability at hypersonic speeds.

China used the parade to unveil **four new anti-ship missiles** from its YJ (“Yingji”) series – the **YJ-15, YJ-17, YJ-19, and YJ-20** – each following a different technological approach to achieve ultra-fast “carrier killer” capabilities[57][58]. These missiles are designed to threaten high-value warships (like aircraft carrier battle groups) with very short warning due to their speed and unpredictable flight paths. Military experts noted that three of the four are **hypersonic** weapons (flying at Mach 5+), while the fourth is supersonic[59][60]. The appearance of all four variants underscores China's multi-pronged effort in developing next-generation anti-ship missiles that are extremely hard to intercept[59][61]. Key features of each are:

- **YJ-15:** The smallest of the new missiles, **YJ-15** closely resembles the earlier YJ-12 supersonic ASCM[62][60]. It uses an **axisymmetric four-inlet air intake** design for its ramjet, suggesting it can sustain **high supersonic speeds** (likely Mach 2–3+). Essentially, YJ-15 appears to be a compact, ship- or air-launched missile that trades sheer speed for versatility. Its four air intakes indicate high thrust for a missile of its size, and analysts expect the YJ-15 will serve as a more **“mass-deployable” supersonic missile** for ships and strike aircraft that cannot carry larger hypersonic weapons[60]. Even at just supersonic speeds, a sea-skimming YJ-15 would give enemy ships only seconds to respond.
- **YJ-17:** The **YJ-17** follows the boost-glide **“waverider”** concept associated with hypersonic glide vehicles[63][64]. It has a flattened, lift-generating warhead shape and is boosted to hypersonic speed by a rocket before gliding and maneuvering in the atmosphere. This design allows **sharp mid-course maneuvers** – both laterally and in dive angle – making its trajectory unpredictable[63]. The YJ-17 likely reaches **Mach 5–10** during its glide phase. Experts compare its flight profile to the DF-17's

hypersonic glide vehicle, meaning it could perform evasive “S-turns” or sudden dives as it nears a target[65]. The ability to alter course at high speed drastically complicates attempts to intercept it. In effect, YJ-17 provides a **highly maneuverable anti-ship hypersonic weapon**, ideal for penetrating layered ship defenses.

- **YJ-19:** The **YJ-19** stands out as an **air-breathing hypersonic cruise missile**[66][67]. It features a prominent **ventral air intake**, indicating a **scramjet engine** for sustained powered flight at hypersonic velocity. Chinese analysts note that an air-breathing design like this can maintain **speeds of Mach 10 or higher** throughout its flight, and typically has a longer range than a glide vehicle of similar size[68]. The YJ-19’s scramjet propulsion means it continuously thrusts, allowing for extended maneuvering and potentially a flatter trajectory. This gives it greater flexibility in approach paths (it could, for example, circumnavigate terrain or approach a fleet from an unexpected angle). A missile of this kind is very difficult to defend against – it presents a **small radar signature, extremely high speed, and can adjust its flight** en route. As one expert observed, the engineering breakthroughs in YJ-19 have *strategic significance*: a swarm of such missiles could severely challenge an adversary’s naval dominance[69].
- **YJ-20:** The largest of the group, the **YJ-20** uses a **bi-conic (dual-cone) shape** reminiscent of certain ballistic missiles[70][71]. Essentially, the YJ-20 appears to be a hybrid **ballistic/boost-glide anti-ship missile**. It likely launches on a lofted trajectory and then performs a near-vertical terminal dive onto its target, striking with tremendous kinetic energy. Its bi-conic design (a small cone atop a larger cone) is optimized for stability at hypersonic speeds and protection of control surfaces during re-entry[72]. This suggests the YJ-20 travels at **hypersonic velocity** (Mach 5+) and then plunges almost straight down onto a ship – a profile meant to exploit the weaker top deck of aircraft carriers or large vessels. The steep angle plus high mass and speed would impart devastating impact force. Analysts note the YJ-20’s **size likely confines it to heavy launch platforms** (such as the H-6 bomber or large surface combatants)[70]. In return, it provides a **longer-range “carrier killer”** that can be launched from far beyond the engagement envelope of the target. Its near-vertical attack path also helps it bypass most ship defenses, which are oriented to intercept sea-skimming or low-altitude threats.

All four of these YJ-series missiles are designed for use from multiple platforms. According to Chinese sources, they can be deployed from **surface warships (e.g. Type 052D and Type 055 destroyers), submarines, or aircraft like the H-6K/J bombers**[73][61]. This multi-platform flexibility means a coordinated salvo could potentially come from different vectors (air, surface, subsurface) simultaneously, further saturating enemy defenses.

In showcasing these missiles, China demonstrated what experts call “rich technological paths” in hypersonic weapon development[59][74]. By pursuing **waverider gliders, scramjet cruise missiles, and ballistic-diving weapons in parallel**, the PLA Navy is

hedging against defensive countermeasures – a defense that might stop one type could be vulnerable to another. Western observers note that such missiles, tested against carrier target mock-ups in the past[75], pose a growing threat to large naval assets in the Western Pacific.

“Guam Killer” Hypersonic Strike Systems (YJ-21, DF-17, DF-26D)

A DF-26D intermediate-range ballistic missile on parade. The DF-26D variant is dubbed the “Guam Killer” for its extended reach and anti-ship capability.

Following the YJ-series, the PLA paraded several **land-based hypersonic missiles** tailored for regional deterrence and swift strikes. These included the **YJ-21**, **DF-17**, and **DF-26D**, each addressing a different target set:

- **DF-17 Hypersonic Glide Vehicle Missile:** First revealed in 2019, the **DF-17** is a road-mobile **medium-range ballistic missile (MRBM)** equipped with the DF-ZF hypersonic glide vehicle[76]. The DF-17 uses a conventional rocket booster to launch a wedge-shaped glide warhead to high altitude. That warhead then **sprints downrange at Mach 5–10**, maneuvering unpredictably in the atmosphere to evade defenses[77][75]. The DF-17’s range is **approximately 1,800–2,500 km**, covering targets in East Asia and the Western Pacific (for instance, all of Northeast Asia and the Philippines)[77]. It is specifically designed to penetrate advanced anti-missile systems like THAAD by virtue of its erratic flight path. Essentially, once the DF-17’s glide vehicle separates and begins its low-altitude hypersonic approach, it can no longer be easily tracked on a predictable ballistic trajectory. This makes interception extremely challenging. With a potential nuclear or conventional payload, the DF-17 gives China a prompt precision strike capability against regional bases or carrier groups[76][78].
- **DF-26D “Guam Killer” IRBM:** The parade saw the debut of a new variant of China’s DF-26 intermediate-range ballistic missile, labeled **DF-26D**[79]. The baseline DF-26 (range ~4,000 km) is known as the “Guam Express” for its ability to target U.S. bases on Guam. The **DF-26D** appears to push this range even further – reportedly up to **5,000 km**, which would indeed cover Guam (3,000+ km from China) and even reach deep into the Second Island Chain[80][81]. The DF-26D variant is believed to incorporate a **hypersonic glide or maneuvering reentry vehicle** as well, effectively making it an **anti-ship ballistic missile (ASBM)** in addition to its land-attack role[82]. Its warhead likely can perform terminal maneuvers to hit moving ships at sea, similar in concept to the older DF-21D ASBM but with much greater range. By combining long reach, high speed, and maneuverability, the DF-26D significantly extends China’s ability to strike aircraft carrier groups or other naval assets far from its shores[81]. This system has been dubbed the **“Guam killer”** because it holds at risk key U.S. facilities on Guam that are crucial for American power projection in Asia[80]. The DF-26D can carry either a nuclear or conventional warhead, making it a dual-use strategic weapon. Its unveiling signals that the PLA Rocket Force continues

to refine ASBM technology to keep U.S. carrier strike groups at bay well beyond the First Island Chain.

- **YJ-21 Hypersonic Anti-Ship Missile:** Also featured was the **YJ-21**, a cutting-edge ship-launched ballistic missile that had only been publicly seen in late 2022[83]. The YJ-21 is effectively a **hypersonic anti-ship missile** deployable by China's newest **Type 055 cruisers** (which have been shown launching it from deck VLS tubes) or by the H-6K bomber (carrying it underwing). It is believed to be related to the CM-401 or similar ALBM concepts. The parade commentary noted the YJ-21 flies at **speeds of Mach 6–10** and up to **1,500 km range**, giving naval commanders a standoff “bolt-from-the-blue” weapon against high-value ships or land targets[83]. The YJ-21 likely uses a rocket booster and a maneuverable payload – possibly even a variant of the DF-17's glide vehicle – to strike with little warning. When launched from a warship or bomber, it can approach targets from unpredictable angles (including steep plunging attacks). This missile fills a gap by providing **maritime and aerial platforms a truly hypersonic strike option**. For example, a Type 055 destroyer armed with YJ-21 could threaten ships or bases well beyond the range of its subsonic cruise missiles, compressing an enemy's reaction time to under 5 minutes in some cases. The YJ-21 thus adds to the PLA's array of “carrier killers,” complementing the DF-21D/26 ASBMs and the new YJ-series missiles.

Together, the DF-17, DF-26D, and YJ-21 reflect China's focus on “**far-seas**” **A2/AD capabilities** – reaching out hundreds or thousands of kilometers to hold US and allied forces at risk. By combining ballistic trajectories with hypersonic gliders or high-speed terminal seekers, these weapons aim to overcome traditional missile defenses. Their presence at the parade telegraphed a clear message: China's rocket force can now strike moving naval targets and distant bases with a variety of fast, long-range missiles, complicating any intervention in a regional conflict.

CJ-1000 Long-Range Hypersonic Cruise Missile

Following the ballistic and boost-glide systems, China unveiled the **CJ-1000**, a new **long-range hypersonic cruise missile**, to round out its advanced missile lineup[84]. The CJ-1000 is thought to be a air-breathing missile that bridges the gap between China's intermediate-range missiles and intercontinental systems[85]. While details remain secret, analysts believe the CJ-1000 shares lineage with the DF-100 (also known as CJ-100) cruise missile first shown in 2019[85]. Key features and implications of the CJ-1000 include:

- **Extended Range:** The CJ-1000 is estimated to have a range of **several thousand kilometers**, potentially reaching targets at near-intercontinental distances[86]. This could allow strikes far into an adversary's territory without resorting to ICBMs. It likely serves as a strategic deterrence or first-strike weapon in scenarios where flexibility and survivability are needed.
- **Scramjet Propulsion:** Unlike boost-glide weapons that are unpowered during their glide phase, the CJ-1000 is expected to use a **sustained scramjet engine** for

propulsion[87]. This would enable *continuous powered flight within the atmosphere at hypersonic speed*, giving the missile the ability to adjust course or evade defenses over long distances. Essentially, it can fly more like an aircraft than a ballistic projectile, albeit at extreme velocity (Mach 5+).

- **High Maneuverability:** By remaining within the atmosphere and powered, the CJ-1000 can potentially execute evasive maneuvers throughout its flight path[87]. This makes it much harder to track and intercept compared to a predictable ballistic arc. It could fly at lower altitudes than a ballistic missile, use terrain masking, and approach targets from unconventional headings.
- **Multi-Platform Launch:** The CJ-1000 is likely designed for flexible launch options – possibly from ground TELs, bombers, or even ships. This parallels the Chinese approach of multi-platform deployment seen with other missiles.

In summary, the CJ-1000 provides China with a **hypersonic cruise missile** capable of striking far-off targets with little warning. It adds diversity to the PLA's hypersonic arsenal, complementing the shorter-range YJ-19 scramjet missile and the boost-glide weapons. By having a long-range cruise missile, China can engage targets that might otherwise require an ICBM, but with a system that is more **tactically agile and survivable** (since a cruise missile can be launched from dispersed mobile units and doesn't follow a preset ballistic path). As one expert put it, such a weapon can fill the gap between intermediate-range ballistic missiles and true ICBMs, giving decision-makers a **high-speed, non-ballistic option for strategic strikes**[85].

LY-1 Shipborne Laser Weapon

The LY-1 shipborne laser air-defense system, mounted on a naval turret, shown publicly for the first time.

One of the most intriguing debuts was the **LY-1 high-energy laser**, China's first acknowledged **shipborne laser weapon**. Its presence signals that directed-energy defenses are moving from experimental testing to operational reality in the PLA Navy[88]. The LY-1 forms part of a layered warship defense suite, intended to counter drones, missiles, and other inbound threats at the speed of light. Key points about the LY-1 laser system:

- **Naval Deployment:** The LY-1 is designed to be mounted on warships as a supplement (or eventual alternative) to missile interceptors and close-in guns. In fact, not long before the parade, an LY-1 prototype was spotted installed on a Chinese amphibious assault ship for trials[89]. This indicates China has been testing laser turrets at sea to integrate them into its fleets.
- **Layered Defense Role:** The LY-1 fills the **inner-layer or point-defense role** in a multi-tier defense system[88]. For example, a Chinese destroyer might engage long-range threats with HHQ-9C missiles, mid-range threats with HQ-10 or HQ-16

missiles, and very-short-range threats (like incoming guided bombs or final-stage missiles) with the LY-1 laser and conventional close-in weapons. The LY-1's advantage is that it can **deliver instantaneous, continuous shots** as long as power is available, with no ammo limit. It can be used to **dazzle or destroy** incoming precision-guided munitions, drones, or even sensor pods on enemy platforms, without the costs or time delays of launching interceptors.

- **Speed-of-Light Interception:** As a directed-energy weapon, the LY-1 engages targets literally at light-speed. This means it can hit an incoming missile or drone almost the moment it is detected and tracked, with no ballistic travel time. It is particularly useful against **fast, maneuvering, or low-signature threats** that might slip through missile defenses. By focusing a high-powered beam on a target, the laser can overheat and disable electronics or structurally damage the target in a few seconds or less (depending on range and beam power).
- **Silent and Invisible:** The LY-1 operates silently and (in many wavelengths) invisibly, which has operational benefits. There is no muzzle flash, recoil, or smoke, and thus it does not betray a ship's position or consume ordnance. It also can be used covertly to **blind enemy sensors** (like ISR drones or incoming missile seekers) without kinetic escalation. Chinese naval experts have described such lasers as crucial for intercepting targets that come in swarms or at extreme speed, where traditional interceptors might be overwhelmed.

The appearance of the LY-1 at the parade, mounted on a mobile platform, underscores China's progress in directed energy. It aligns with global trends – the US Navy, for instance, has been testing shipboard lasers for drone and boat defense (e.g., the AN/SEQ-3 Laser Weapon System). The LY-1's public debut suggests the PLA Navy is close to fielding or may have already fielded these lasers on front-line vessels. This adds a new **“soft kill” dimension** to China's naval air defenses, augmenting the existing **“hard kill”** interceptors.

In essence: where missiles and guns rely on projectiles, the LY-1 uses concentrated light to neutralize threats. This new capability hints at the future of naval warfare, where energy weapons play a larger role in defending ships without expending munitions.

Multi-Layer Air Defense Shield

China's parade prominently featured a **comprehensive array of ground-based air defense missiles**, signaling the maturation of a multi-layered shield against aircraft and ballistic missiles. Six major SAM systems were showcased – **HQ-11, HQ-20, HQ-22A, HQ-9C, HQ-19, and HQ-29** – covering engagement ranges from low-altitude point defense to exo-atmospheric interception^{[90][91]}. Together, they demonstrate how the PLA is closing the gap with advanced US/Russian integrated air and missile defense capabilities. Each system occupies a niche in the layered defense:

- **HQ-11 (FM-3000):** A short-to-medium range mobile air defense system designed to **protect forward units from aerial threats**^[92]. The HQ-11 (exported as FM-3000)

uniquely **combines vertical-launch missiles with a close-in gun system on one platform**[93]. It intercepts a variety of targets – jets, helicopters, drones, cruise missiles – out to about **30 km for aircraft and 15–20 km for missiles**[94]. In essence, HQ-11 is akin to a land-based counterpart of naval CIWS+missile combos. It provides a fast-reacting defense for critical assets or field formations, boasting **multiple small missiles (often reported as 24 or more per vehicle) and a rapid-fire cannon**, which gives it a high magazine depth against saturation drone or missile attacks[95]. By using both missile and gun, HQ-11 can engage threats at medium range with missiles and then auto-shift to cannon for anything leaking through up close. This dual-layer concept increases kill probability, especially against **swarming drones** – an area of increasing concern.

- **HQ-20:** Debuting for the first time, the **HQ-20** is a wheeled SAM system that appears to carry **8 missiles per launcher**[96]. Its architecture looks like a scaled-down HQ-9, optimized for mobility and quick deployment. The HQ-20 likely serves as a **medium-range air defense** (perhaps roughly 50–150 km range), bridging the gap between point defense and long-range strategic SAMs[97]. With a heavier interceptor load (8 per TEL), HQ-20 can put more missiles in the air to handle complex raids. Chinese sources suggest HQ-20 is tailored for **regional defense** – possibly analogous to the Russian S-350 or the U.S. Patriot in role. It would protect military columns or key facilities, filling in coverage where the longer-ranged but heavier HQ-9 batteries might be too sparse or slow to redeploy. Essentially, HQ-20 adds **density** to the mid-tier defense, ensuring there are enough interceptors to handle multiple incoming threats.
- **HQ-22A:** The **HQ-22A** is an improved version of the HQ-22 (known as FK-3 for export) medium-to-long range SAM[98]. It extends engagement coverage to about **170 km** and can target aircraft, cruise missiles, and even some ballistic targets at higher altitudes[99]. The HQ-22 series, introduced in the late 2010s, was meant as a lower-cost alternative to HQ-9, yet offers formidable performance (Mach 6 interceptors with semi-active guidance)[100][101]. The **HQ-22A** likely adds enhanced electronics or datalink for better multi-target handling. With its range and altitude reach (reportedly up to ~27 km altitude), HQ-22A covers the **middle/high-altitude sector out to 100+ km**[100]. In the PLA's layered IADS, HQ-22A would be a workhorse system to defend broad areas or important sites, complementing the longer range HQ-9C above it and shorter HQ-20/11 below.
- **HQ-9C:** The **HQ-9C** represents the latest evolution of China's primary long-range SAM, the HQ-9 family (originally inspired by Russian S-300 technology)[102]. The HQ-9C variant, revealed in this parade, uses a new launcher with **eight slim missile canisters instead of four**[103]. This indicates **smaller, more compact interceptors or improved propellants**, allowing double the missile count per unit. The range of HQ-9C is cited as **over 250 km**[104], putting it in the class of high-tier SAMs like the S-400 or Patriot PAC-2/3 in coverage. It's designed to intercept high-performance aircraft, stealth targets, and also perform **terminal phase**

interception of ballistic missiles (short or medium range) at lower altitudes[105][106]. In essence, HQ-9C is the backbone strategic SAM for the PLA – covering large swaths of airspace and providing a limited ballistic missile defense (BMD) role in the atmosphere. With improved **active radar seekers** reportedly under development for HQ-9C[105], and its increased load-out, each battery can tackle more threats simultaneously. At the parade, HQ-9C visually signified China's confidence in indigenous long-range SAM technology to **form the core of homeland air defense**.

- **HQ-19:** The **HQ-19** is an anti-ballistic missile interceptor roughly analogous to the U.S. THAAD. It was seen carrying large missiles capable of **mid-course or high-terminal interception** of medium-range ballistic missiles (MRBM)[107]. The HQ-19 uses a **hit-to-kill kinetic kill vehicle** and can engage ballistic missiles at up to *200 km range* (and exo-atmospheric altitudes) according to reports[107]. It was first tested publicly around 2010s and is part of China's expanding BMD system[108][109]. At the parade, HQ-19's inclusion signaled that China now has a deployed capability to **shoot down intermediate-range ballistic missiles in their descent phase** – adding a layer of defense for critical assets (like cities or command centers) against regional missile threats[110][109]. Notably, Chinese experts claim the HQ-19 can also handle **some hypersonic glide vehicles**, as those often fly in the high terminal phase at extreme speeds[109]. This suggests HQ-19 is an agile, fast-burn interceptor, possibly using infrared seekers to home on warheads.
- **HQ-29:** Making its maiden appearance, the **HQ-29** is an exo-atmospheric interceptor intended to hit targets in mid-course (akin to the US SM-3)[111]. It was shown on a **6-axe TEL carrying two large canistered missiles**[111], consistent with an anti-missile role where each round is big and advanced. Technically, HQ-29 is assessed to be a **dual-role BMD and anti-satellite (ASAT) weapon**, capable of intercepting ballistic missiles in space and possibly satellites in Low Earth Orbit[112][113]. Analysts noted the HQ-29 uses a **hit-to-kill kinetic interceptor with a multi-mode guidance** (inertial mid-course, active radar and IR homing in terminal, plus lateral thrusters for fine trajectory adjustments)[114][115]. This is a very high-end capability, reflecting years of Chinese research in hit-to-kill technology (China famously tested an ASAT in 2007 and multiple exo-atmospheric intercepts since). By publicly unveiling HQ-29, China demonstrated it is deploying a system to **extend its missile defense into space**. The HQ-29 can engage intermediate-range or intercontinental ballistic missiles in mid-flight – providing a **long-range “upper layer”** to complement HQ-19's terminal defense[116][117]. It effectively gives China an indigenous answer to systems like SM-3 Block IIA and even provides some anti-satellite quick-reaction ability from the ground. The mobility of the TEL means such interceptors could be repositioned as needed for optimal trajectories, enhancing survivability and flexibility[118].

Overall, the display of this **“iron dome” of layered SAMs** highlighted how far China's air defense network has come. The combination of HQ-29, HQ-19, and HQ-9C covers **ballistic**

missiles from mid-course to terminal; HQ-9C, HQ-22A, HQ-20 cover **long to medium-range air-breathing threats**; and HQ-11 provides **close-in defense against missiles and drones**[90][119]. Chinese commentators emphasized that with these systems working in unison – all tied by improved battle management and radar sensors – the PLA can create a dense, multi-layer shield similar to what only the US or Russia have fielded[120][121]. It closes a previous vulnerability in the high-altitude ballistic domain and greatly increases the protection of Chinese airspace and forces.

High-Power Microwave Anti-Drone System

One parade formation underscored China's focus on countering the emerging threat of **unmanned drones**, especially swarms. In what experts dubbed an “**iron triangle**” of counter-drone measures[122][123], the PLA showcased three complementary technologies: **missile-artillery hybrid air defense vehicles, high-energy lasers, and high-power microwave (HPM) weapons**. This trio provides both traditional “hard kill” (kinetic) and new “soft kill” (directed energy) options to defeat drones of all types[122][124].

Key elements of this counter-UAV network included:

- **Missile-and-Gun Complexes (Type 625):** On display was a tracked vehicle combining **anti-aircraft guns and missile launchers**, identified as *Type 625* in captions[125]. This is reminiscent of systems like the Russian Pantsir-S1 or the Chinese FK-3000, which use rapid-fire cannons alongside short-range SAMs. These systems handle the drone threat through conventional means: **guided missiles to engage UAVs at longer range**, and **autocannon fire to destroy or saturate closer targets**[126]. Equipped with targeting radar and electro-optics, they can autonomously track multiple small targets. The presence of at least one bank of 12 missile tubes (with reports of up to 24 or even 48 mini-missiles in some designs) gives it the ability to engage a *drone swarm* with multiple shots[95]. The guns (possibly 30mm or 35mm) provide a final layer, spewing shells to take down drones that slip past or come in large numbers. These SPAAGM (self-propelled anti-aircraft gun-missile) systems are the “**hard kill**” component, physically destroying drones.
- **High-Energy Laser Systems:** In the formation, alongside the LY-1 naval laser mentioned earlier, ground-based **anti-drone lasers** were also present. These are high-energy laser emitters mounted on vehicles, designed to **burn through drone airframes or sensors** at short to medium ranges[127]. A laser, traveling at light speed, can engage drones almost instantly after acquisition, and with precision. By focusing on a drone's vital components (optics, guidance, or wings), a laser can cause a crash or mission kill within seconds. The advantage is that a laser can *theoretically fire unlimited shots* (limited only by power and cooling) and **doesn't need to lead or predict target motion** – if the tracker stays on the drone, the beam stays on target. At the parade, an example was the LW-30 laser, which China has shown previously, capable of downing small UAVs. These lasers provide a **silent**,

low-cost-per-shot defense ideal for handling *large numbers of cheap drones*. Unlike guns, there's no travel time or ballistic drop; unlike missiles, there's no warhead or interception geometry – just line-of-sight and dwell time. However, lasers can be affected by weather and have limited range. Still, as part of the “triangle,” they are invaluable for *point defense* of critical sites against drones or even mortar rounds[127][128].

- **High-Power Microwave (HPM) Weapons:** The third component is a **high-power microwave emitter**, essentially a system that emits a broad cone of intense microwave energy to **fry the electronics of drones en masse**[129]. One such system was shown (possibly the new vehicle carrying a dish antenna, alluded to at Zhuhai Airshow as FK-4000)[130][131]. HPM weapons can disable multiple drones simultaneously by burning out their circuit boards or confusing their sensors with electromagnetic noise. They are particularly effective against **drone swarms**, where dozens of drones might attack at once. Instead of trying to shoot each one, an HPM blast can **neutralize a whole swarm in a fraction of a second** within its effective radius[129]. Chinese descriptions liken it to “launching thousands of microwave ovens into the sky” – cooking the electronics of any drone in the beam[132]. The parade system likely can project microwaves out to a few kilometers with a wide angle. The benefit of HPM is that it's **area-effect** – unlike lasers which must target one drone at a time, a microwave pulse can blanket a formation of drones and drop them all. The downside is possible collateral effect on friendly systems if not properly directed. Nonetheless, it's a potent “soft kill” method against the hardest scenario for traditional defense: a saturation attack by mini-drones. The PLA's deployment of HPM indicates they are very mindful of the swarm threat and intend to **disable unmanned attacks en masse** rather than engage in a costly war of attrition.

By integrating these three – missiles/guns, lasers, and HPM – Chinese defense planners ensure a multi-layered, complementary defense against UAVs. For example, *at long range*, specialized SAMs (like HQ-17 or HQ-6 derivatives) can thin out an incoming drone wave. *At mid range*, lasers can pick off drones silently. *At close range*, HPM blasts can wipe out any survivors, while guns mop up stragglers. This mix covers all bases: **hard kills drones outright, soft kills take out their electronics**[123][129]. It's a modern solution to a modern problem – much as the invention of anti-aircraft artillery responded to warplanes a century ago, now directed energy responds to drones. The parade demonstrated that China is fielding these advanced anti-drone systems, which many militaries are still testing. Notably, Reuters reported that state media explicitly framed these as a *counter-drone “triad”* of weapons[124][133]. In future conflicts, controlling the air may equally mean controlling the *unmanned* air, and China is gearing up for that battle.

New Aerial Drones: “Loyal Wingmen” and Air Combat UAVs

China's aerial display highlighted significant advances in **unmanned combat aerial vehicles (UCAVs)** – not just for reconnaissance or strike, but also for teaming with manned

fighters and even for air-to-air combat. At the center was the **GJ-11 stealth drone** accompanied by concept “**air superiority**” **drones**, representing China’s vision of **manned-unmanned teaming** in warfare[134][135].

GJ-11 Stealth UCAV (Sharp Sword): The **GJ-11** is a tailless, flying-wing stealth drone with internal weapons bays, optimized for strike missions. It first appeared publicly in 2019, and at this parade it was emphasized as a key element of China’s “loyal wingman” strategy[136]. In a recent demonstration, Chinese state TV showed a GJ-11 drone flying in formation with a J-20 stealth fighter[137] – a powerful indication of its intended role. As “**loyal wingman**”, the GJ-11 acts as an **armed escort and sensor extender** for piloted jets[138]. Chief designer Deng Shuai has described the GJ-11 as “*both a sensor and an ammunition depot*” that can fly alongside a manned fighter like an “**armed bodyguard**”, absorbing enemy fire or striking targets on command[139][140]. In practice, a J-20 or J-20S two-seater could control one or more GJ-11 drones, using them to scout ahead with their sensors (thus extending the pilot’s situational awareness) and to carry extra missiles or bombs. The GJ-11 can attack heavily defended targets without risking a human pilot, or confuse enemy radar by presenting multiple stealthy targets. With stealth shaping similar to a mini-B-2 bomber, the GJ-11 has a low observable profile and presumably long range for deep penetration strikes[141][142]. Analysts note it essentially serves as an “external weapons bay” for a stealth fighter – the drone can carry munitions that the fighter might not, and launch them from positions of advantage[143][144]. Flying as an “intelligent wingman,” the GJ-11 can also filter and relay battlefield data, helping create a comprehensive picture for the human pilot[143]. This **manned-unmanned pairing** greatly multiplies the effectiveness of each manned jet by offloading tasks and adding capabilities. Notably, China’s is the first military to publicly show stealth drones in such a role, whereas the U.S. is still in development/testing with the Skyborg and Loyal Wingman programs. The presence of multiple GJ-11s on trucks in the parade indicates these drones may now be in active squadron service, ready to “fly cover” with PLA Air Force J-20 fighters.

Air Superiority Combat Drones: In a surprise reveal, China also showed new **unmanned aircraft designed for air-to-air combat** – essentially “**fighter drones**”[134][145]. These **air superiority UAVs** (unnamed publicly) are a novel concept, aimed at achieving roles traditionally filled by piloted fighters: engaging enemy aircraft and securing air dominance. Analysts at the parade noted these drones are highly stealthy (likely also flying-wing or blended-wing designs), **highly autonomous**, and **highly maneuverable**, suggesting advanced AI and control systems to dogfight without direct human input[146][147]. The idea is that such drones could accompany or even replace crewed fighters in certain missions. Because they have no pilot on board, they can potentially **withstand higher G-forces** and perform more extreme maneuvers than manned fighters (which are limited to ~9 g by human tolerance)[147]. They can also be made smaller and stealthier without the need for a cockpit or life support, meaning a swarm of them could approach more closely undetected[148].

According to Chinese experts, these combat UAVs will “**profoundly change future air combat**” by overturning traditional scenarios[149][150]. In a duel, for instance, an

autonomous drone could execute split-second evasion or firing decisions faster than a human. It could serve as a high-speed interceptor to shoot down incoming missiles or enemy drones. It might also function as an **“unmanned wingman”** specifically oriented to air combat – flying ahead of manned fighters to engage enemy jets first or to bait them into revealing position. The parade commentators hinted that China’s air superiority drones have **high AI, stealth, and autonomy** to operate in contested airspace without direct remote control[146][151]. This requires significant confidence in algorithms for target recognition and dogfighting – a cutting-edge area of military tech. If fielded, China would be a pioneer in having operational combat drones that can go “toe-to-toe” with piloted aircraft.

It’s worth noting that just days before the parade, leaked images had shown a new stealth drone (the FH-97A) on a truck, believed to be a prototype loyal wingman UAV with afterburning engine for high performance[152][153]. This suggests China has multiple projects for advanced UAVs – some geared to strike (GJ-11), others to escort (FH-97A type), and now an “air-to-air” oriented type. The parade confirmed the **PLA Air Force’s emphasis on integrating drones** into every aspect of air operations. Even the term **“air superiority drone”** indicates a shift: drones are no longer just surveillance tools, but front-line combatants. As one Global Times article put it, these UAVs are leading and pioneering globally – with high stealth, autonomy, and likely capable of tasks like autonomous interception and possibly teaming in swarms[150][154].

All told, the combination of **loyal wingman stealth drones and air-to-air combat drones** suggests the PLA foresees a future where **mixed formations of manned fighters and AI-powered unmanned fighters** dominate the skies. Chinese military experts highlighted that this will relieve human pilots from dangerous close combat, allowing them to assume more of a **command role** while drones execute their orders or fight alongside[143][155]. The parade’s drone contingent was a stark demonstration that China is investing heavily to be on the forefront of this air combat revolution.

Maritime Unmanned Systems: Shipborne Drone Helicopters and Underwater Drones

China’s naval modernization also extends into **unmanned naval aviation and undersea vehicles**. The parade showcased new **unmanned helicopters** for the fleet and a range of **unmanned underwater vehicles (UUVs)** and smart naval mines, highlighting the growing role of robotics in maritime operations.

Shipborne Unmanned Helicopter: A new **uncrewed helicopter** was displayed, intended for deployment on warships like destroyers, frigates, and even carriers[156][157]. This appears similar in concept to the U.S. Navy’s MQ-8 Fire Scout – a helicopter drone for reconnaissance and light strike. Chinese sources noted that without a pilot, these rotorcraft can undertake **longer missions and be fielded in greater numbers** than manned helicopters[156][158]. Tasks for the unmanned helo include: **anti-submarine warfare (ASW)** (using dipping sonar or torpedoes to detect and attack submarines), **over-**

the-horizon surveillance, search and rescue, electronic intelligence, and communication relay[136][158]. Because of its small size and no need for life support, an unmanned helo can fit on a wider variety of ships (even a corvette or large drone carrier ship) and **provide each vessel its own “eye in the sky.”** This greatly extends a fleet’s situational awareness beyond the horizon, without risking human pilots in bad weather or high-threat environments. The parade demonstration signals that such drones – possibly based on existing prototypes like the AV500 or larger designs – are nearing service.

Analysts commented that these drones are force multipliers: a destroyer could deploy multiple unmanned helos simultaneously – one hunting submarines, another scouting the sea ahead, another acting as a decoy – all while the ship remains at standoff distance[158]. Indeed, the **endurance and expendability** of unmanned helicopters make them ideal for modern naval warfare, where constant surveillance and rapid response are key. “Their arrival highlights the Navy’s focus on extending surveillance and strike reach far beyond the coastline,” noted observers[138]. In essence, every warship can now have its own “drone air wing,” analogous to how carriers use manned aircraft.

Unmanned Underwater Vehicles (UUVs) and Smart Mines: The parade also included an **unmanned operations group** featuring various unmanned naval systems. Notably, small **torpedo-shaped UUVs** (one labeled *AJX002 UUV* in images) were shown[136][159]. These UUVs resemble miniature autonomous submarines. According to reports, they can be used for **undersea surveillance, mine countermeasures, and anti-submarine warfare** tasks[136]. For example, a UUV could quietly scout for enemy submarines or map the seabed for mines, without risking a crew. They could also potentially carry warheads to act as mobile mines or torpedoes. The concept of large undersea drones suggests China is working on *asymmetric ways to contest control of the seas below the surface*. A fleet of UUVs can greatly extend sensor coverage and create uncertainty for adversaries – they might act as pickets detecting foreign subs, or as *forward-deployed mine layers* far from China’s shores.

At the parade, the **underwater weapons formation** notably displayed **three types of torpedoes** (lightweight anti-submarine torpedoes for shallow waters, heavy torpedoes for deep/open ocean targets, and a **rocket-assisted torpedo** combining a rocket booster for extended range against fast subs)[125]. It also showed a new generation of **“intelligent naval mines”**[125]. These advanced mines likely have sensors to identify specific ship or submarine signatures and can perhaps maneuver or launch a small torpedo when a target is detected. Described as *autonomously identifying and striking targets*, such mines go beyond passive waiting – they are effectively underwater drones that sit on the seabed until a designated target (say, an aircraft carrier or a nuclear sub) comes by, then actively home in. This **high-tech mine warfare** capability would be a powerful tool for area denial – creating minefields that selectively attack enemy vessels while sparing friendly ones, and are much harder to clear due to their mobility and smarts.

As one example, China reportedly has been developing **Yu-8 rocket-propelled torpedoes**, which launch like a missile and then deploy a torpedo into the water near a detected submarine – similar to the U.S. ASROC. This was likely alluded to in the parade as well. By

showing these, China sends a message that its **anti-submarine warfare (ASW)** is not being neglected; on the contrary, it's innovating with unmanned systems and smart weapons to counter adversary submarines (like U.S. SSNs) which traditionally outrange its ASW capabilities.

Importantly, Reuters noted that the appearance of “torpedo-like sea drones, some large, surprised analysts” and that cheap, mass-produced undersea drones could pose new challenges to navies[159]. If China can field numerous expendable UUVs, it could potentially saturate key waterways with automated sentries or attackers, complicating hostile naval operations. The unmanned undersea vehicles and mines displayed indicate China's intent to contest undersea dominance using robotics, rather than solely manned submarines.

In summary, China's maritime unmanned systems from the parade include: **in the air** – drones on ships to extend and multiply naval airpower; **on the surface** – unmanned boats (not explicitly shown in text but likely in development); and **underwater** – autonomous mini-sub and intelligent mines to augment its navy. This multifaceted approach aims to maximize coverage and lethality while minimizing risk to humans. It's a reflection of how the PLA Navy plans to **project power and protect its forces beyond the first island chain**, using swarms of eyes and ears (and stings) in every domain – above, on, and below the sea.

Ground Unmanned Systems: Robotic Vehicles for Land Warfare

On the ground, the parade gave a glimpse of various **unmanned ground vehicles (UGVs)** that the PLA is developing to support or accompany troops in future battles. A mix of tracked, wheeled, and even **quadrupedal (“robot dog”)** robots rolled down Chang'an Avenue, equipped with weapons and sensors[126][128]. These robotic platforms suggest roles ranging from reconnaissance to direct combat support, reducing risk to soldiers in high-threat environments.

Some UGV highlights included:

- **Armed Tracked/Wheeled UGVs:** These are essentially small robotic tanks or drivable weapons platforms. The parade showed UGVs fitted with **machine guns, grenade launchers, or anti-tank rockets**[126]. Such robots could scout ahead of infantry in urban combat, enter buildings or caves first, or provide suppressive fire while troops remain under cover. For amphibious or urban operations – which can be very dangerous – sending in unmanned vanguards to draw fire or neutralize traps can save lives. The UGVs likely have autonomous navigation for simple tasks and tele-operation for combat, with live video feed and possibly target tracking. The PLA has tested systems like “Sharp Claw” UGVs in the past. Having them in the parade indicates confidence that they will be deployed alongside units. They might function as mule vehicles too, carrying ammunition or supplies through fire-swept zones.
- **Quadruped Robots (“Robot Dogs”):** The parade also featured four-legged robotic “dogs” carrying small weapons. A few months ago, videos surfaced of Chinese firms

developing robot dogs armed with guns or sensors, able to trot over rough terrain. At the parade, these likely symbolized the PLA's intent to use agile ground drones for **patrolling, point surveillance, or indoor combat**. A robot dog could, for example, climb stairs in a building to check for snipers, or move with infantry providing 360° surveillance via cameras. Some can mount light machine guns, effectively becoming remote-controlled firing platforms. The advantage of quadrupeds is mobility – they handle stairs, rubble, and narrow spaces better than wheeled robots. Their inclusion signals that even very futuristic-sounding tech (like armed robot dogs) is being seriously considered to augment foot soldiers. These could be particularly useful in urban warfare (clearing rooms or tunnels ahead of troops) or high-risk outposts (standing guard in harsh or exposed positions).

The presence of an entire formation of UGVs suggests the PLA envisions “**manned-unmanned coordination**” on land as well, similar to in the air[128]. Troops would learn to operate alongside robots that can take the most dangerous tasks. In an amphibious landing, for instance, UGVs might storm the beach first from assault vehicles, drawing fire and engaging defenders, while human marines follow behind. In street fighting, robots might lead through intersections or breach doors first. If they're lost, it's material, not human, loss.

Notably, Chinese military commentary around the parade noted these systems have reached a *mature stage*, meaning trials have been done to integrate them in exercises[128]. This implies that issues of control, communication, and identification friend-or-foe are being ironed out. With more AI, some UGVs could even autonomously follow a squad or take positions.

In all, the message was clear: the **PLA Army is leveraging robotics to reduce casualties and increase efficiency** in ground combat. By adopting UGVs for “dull, dirty, or dangerous” roles – such as scouting an enemy-held building, carrying heavy gear, or acting as a decoy – the PLA can preserve its soldiers and maintain momentum under fire. The parade's robotic contingent paints a picture of future PLA combined-arms operations where **soldiers and robots fight side by side**.

J-20 Stealth Fighter Upgrades – Debut of Twin-Seater and J-20A

A formation of advanced PLA fighters: at center is a two-seat J-20S stealth fighter (twin canopies), accompanied by single-seat J-20s and a J-16D (right). The J-20S is the world's first two-seat stealth combat aircraft.

China's premier stealth fighter, the **Chengdu J-20**, had two new variants highlighted at the parade: the **J-20S** twin-seat version and the **J-20A** improved single-seat version[160][161]. These developments show China's intent to continuously refine its fifth-generation platform and expand its capabilities beyond the traditional mold.

J-20S Two-Seat Stealth Fighter: Unveiled in formation flybys, the **J-20S** is the **world's first two-seat stealth fighter** to be publicly known[162]. Unlike previous two-seat fighters

(usually used for training or as strike fighters like the F-15E), the J-20S's second seat is not simply for instruction – it's a **force multiplier**. Chinese military experts explained that the back-seater can serve as a **mission commander and drone controller**, fundamentally expanding what the aircraft can do[163][155]. One analyst likened adding a second pilot to giving the jet a “number ten player” (a soccer analogy) who can both coordinate and take shots[164]. Specifically, the J-20S is expected to **control “loyal wingman” drones** in combat[165]. This fits with China's broader UAV integration: a two-seat J-20S could have the front pilot flying and focusing on immediate threats, while the weapons systems officer in the back manages several drones (like GJ-11s or FH-97s) to scout and attack targets beyond the pilot's line-of-sight[155]. This concept, if executed, effectively makes the J-20S a mini-“mission command” aircraft, bridging Gen 5 and Gen 6 capabilities. Some Chinese experts even suggested **this raises it to a “5.5 generation” fighter**[155], since no other stealth jet currently has that operational drone command capability. Beyond drone control, the two-seater can also handle complex tasks like electronic warfare coordination, network battle management, or long-range strike planning while the other pilot flies. The strategic significance is that China has a stealth platform not just for air superiority, but for **team operations with unmanned craft** – something the U.S. is currently aiming for with its NGAD program but has not fielded yet. The J-20S signals China's intent to not just catch up to but innovate in fighter roles.

J-20A Upgraded Variant: Flying alongside was the **J-20A**, an upgraded production model of the baseline J-20[161]. Visually similar to the original, the J-20A incorporates a series of refinements: modifications around the cockpit and intakes for reduced drag at high speed, and possibly an enlarged fuselage spine for extra fuel or avionics[161][166]. According to aerospace experts, the **J-20A's aerodynamic tweaks and likely new engines (indigenous WS-10C or WS-15)** improve its supercruise and maneuverability. The slightly raised spine was noted to create more internal volume for **additional sensors or fuel**[167][168], without compromising stealth thanks to better sensor fusion (pilots no longer need clear 360° canopy view because distributed sensors cover their blind spots)[169]. This shows an evolution in design philosophy: relying on tech so the airframe can be optimized further. The new engines likely have **thrust-vectoring nozzles** and higher thrust, which would give the J-20A better agility (supermaneuverability at high angles of attack) and efficiency (longer range)[170][171]. Chinese sources indicated that the J-20A upgrade is significant enough to merit the new suffix – meaning various subsystems were improved, possibly including avionics, electronic warfare suite, and stealth coatings[172][173].

Overall, the presence of *multiple J-20 variants and large numbers flying (as implied by the formation count)* signals that the J-20 is maturing into a broad **family of stealth fighters** (akin to how the F-15 had C, E, etc.). It also suggests production is in full swing, potentially with domestic engines removing prior reliance on Russian AL-31s. The J-20 is now active in all five PLA theater commands[174], and the enhancements will bolster its role as China's top air superiority platform. As analysts noted, the heavy J-20 and the new medium J-35 (see next section) will complement each other, giving China a two-tier stealth fighter force much like the US F-22 + F-35 pairing[175][176]. The J-20A's improvements in range and sensors also align with a focus on *“homeland air defense and beyond”* – to counter

incursions by advanced adversary aircraft (like F-35s) and push China's air defense envelope further out with a more capable plane.

In summary, the J-20S and J-20A underscore that China's first 5th-gen fighter is not a static design; it's being continuously innovated. The twin-seat J-20S in particular is a bold step that no other nation has taken with stealth fighters, potentially giving the PLA Air Force a unique tactical edge by pairing manned stealth with unmanned assets in coordinated operations[155][140].

J-35 Carrier-Borne Stealth Fighter

China has officially entered the era of carrier-based stealth aviation with the public debut of the **Shenyang J-35** fighter[177][178]. The J-35 (also referred to as J-35A in some sources) is a fifth-generation twin-engine stealth jet designed for launch from aircraft carriers equipped with catapults. Its unveiling is a milestone, representing the **first Chinese carrier fighter to achieve stealth and fifth-gen capabilities**, significantly boosting the power of the PLA Navy's carrier air wings[179][180].

Key aspects of the J-35's significance:

- **Fifth-Gen Carrier Fighter:** With the J-35's commissioning, Chinese naval aviation has "officially entered the fifth-generation era" for carrier fighters[179]. Up to now, China's carriers (Liaoning and Shandong) used Shenyang J-15s (Flanker-derived 4th-gen fighters). The J-35 brings low observability, advanced sensors, and networking – on par with US Navy's F-35C. Experts note this is a *major upgrade* to the PLA Navy's strike capabilities against sea and land targets[179][181].
- **Design and Performance:** The J-35 is a development of the earlier FC-31 prototype, adapted for naval use. It's a single-seat, twin-engine jet roughly medium-weight (comparable to F-35 in size). Observers at the parade commented on its "**clean**" **aerodynamic design and sharp angles**, indicating a high degree of stealth shaping[181]. In fact, one expert said its appearance is "very clean" which suggests its **stealth performance ranks among the best of the world's fifth-gen aircraft**[181]. This implies careful internal weapons carriage, edge alignment, and likely advanced radar-absorbent materials. With **catapult launch** capability (especially from the forthcoming Type 003 *Fujian* carrier), the J-35 can take off with heavy payloads and fuel, giving it an extended combat radius and flexibility that ski-jump-launched jets lack[182]. It is expected to carry a modern AESA radar and a wide array of weapons (PL-15 long-range AAMs, new anti-ship missiles, precision bombs, etc.), enabling both air superiority and strike roles[183][184].
- **Operational Impact:** For the PLA Navy's carriers, the J-35's arrival is transformative. A stealth fighter from a carrier can approach adversary fleets or coastlines while much harder to detect on radar, potentially evading early warning and striking first. A group of J-35s could penetrate air defenses to knock out enemy ships or SAM sites, paving way for further attacks. *Naval experts highlight that stealth fighters on*

carriers are a huge advantage in modern naval warfare – the US is currently the only nation with such capability (F-35B/C on carriers). Now China is joining that club[185][186]. Analysts noted that when the *Fujian* carrier enters service with electromagnetic catapults launching J-35s, China will have a carrier air wing on par with some of the most advanced in the world[187]. A Chinese carrier group with J-35s, stealth drones, and KJ-600 AEW (discussed next) would be far more formidable against opposing navies in the Indo-Pacific.

- **“Air-Sea Twin Configuration” Concept:** Chinese designers mentioned the J-35 is built with the concept of “one aircraft, multiple variants” – possibly hinting that a land-based variant or other versions could come[188]. Also the term “*air-sea twin*” suggests synergy with land-based stealths (like J-20) – indeed, Chinese experts foresee the **J-20 and J-35 working together**, with J-20 securing air dominance while J-35 performs multi-role missions (fleet air defense, intercepting bombers, striking surface targets)[189][175]. This complementary use can stretch enemy defenses; e.g., J-20s from land and J-35s from sea could squeeze an adversary’s air force from two fronts.

From a strategic standpoint, the J-35 *closes a historical gap* – the U.S. has long had carrier stealth (F-35C) and the ability to strike with low observable assets from carriers; now China is in that game[190][185]. As one military observer noted, “Becoming stealth is a major direction of carrier-borne fighter development globally... The J-35’s stealth and range mean it likely leads in many combat parameters worldwide”[186]. This is a bold claim, but at least within the region, a Chinese carrier with J-35 could challenge adversaries’ non-stealth fighters (like legacy F/A-18s or MiG-29Ks). It compels other regional powers to consider counter-stealth measures even at sea.

Overall, the J-35’s debut signals that **China’s third aircraft carrier (Type 003 Fujian)** – which has catapults – will soon have a proper air wing to exploit its capabilities. The combination of **J-35 fighters and KJ-600 AWACS (plus possibly drones)** will make Chinese carrier groups far more potent, moving beyond coastal defense to **blue-water power projection**. It elevates the PLA Navy into a league previously reserved for the U.S. Navy in terms of carrier aviation technology.

KJ-600 Carrier-Based Early Warning Aircraft

A KJ-600 carrier-based early warning aircraft (left) flies past in formation with two naval J-15 fighters. The KJ-600’s rotodome radar and twin-prop design resemble the U.S. E-2 Hawkeye.

China’s long-anticipated **KJ-600** airborne early warning and control (AEW&C) aircraft made its public debut, representing the “**final puzzle piece**” for Chinese carrier strike groups[191][192]. The KJ-600 is essentially China’s answer to the US Navy’s E-2D Hawkeye – a fixed-wing, high-endurance radar plane that operates from aircraft carriers to provide wide-area air and surface surveillance, battle management, and command & control.

Significance of the KJ-600:

- **Transformational for Carrier Operations:** Before KJ-600, Chinese carriers relied on helicopters (like Ka-31 or domestic Z-18 AEW helos) for aerial early warning. Those have limited radar range and endurance. The KJ-600, with its twin turboprop engines and large radar dish, offers **far greater range, altitude, and time on station**[\[193\]](#)[\[194\]](#). In fact, experts stated that commissioning the KJ-600 **“completes” the carrier group’s capabilities**, because now the carrier has its own over-the-horizon eyes, not dependent on shore-based radar or less capable helos[\[192\]](#). This means a Chinese carrier group can detect incoming threats – like low-flying cruise missiles or enemy aircraft – at much greater distances and direct fighters or missiles to intercept them **well before they threaten the fleet**[\[195\]](#)[\[193\]](#). Essentially, the KJ-600 multiplies both the **offensive and defensive reach** of the carrier group, plugging the major gap in China’s carrier operations that existed until now.
- **Advanced Radar and Detection:** The KJ-600 sports a **rotating disk radar (rotodome)** on top of its fuselage, much like the US E-2. This likely houses a modern AESA radar, possibly dual-band, giving 360° coverage. According to Chinese experts, the KJ-600 can detect **“sea-skimming” targets** – those flying very low – that ship radars might miss due to the curvature of the Earth[\[193\]](#)[\[196\]](#). For example, an incoming anti-ship missile at 5 m altitude might be visible to a ship’s radar only at ~20 km, but a KJ-600 flying at 5,000 m altitude could detect it from perhaps 200+ km out, buying crucial time. Zhang Xuefeng (military analyst) explained that while destroyers/frigates have long-range radars, they cannot see extremely low flyers beyond a certain horizon – **the KJ-600 solves that by looking down from high up**[\[193\]](#)[\[194\]](#). Additionally, the KJ-600 can likely **track hundreds of targets** (air and surface), distinguishing friend from foe, and relay data via datalinks to both ships and fighters.
- **Force Multiplier:** The KJ-600 was described as a **“force multiplier”** for carrier aviation[\[197\]](#)[\[198\]](#). It extends detection range by hundreds of miles and can coordinate complex operations. For defense: it can vector CAP (Combat Air Patrol) fighters like J-35 or J-15 to intercept enemy aircraft/missiles long before they get near the carrier[\[199\]](#). For offense: when carriers launch strikes, the KJ-600 can accompany and **provide airborne command & control**, keeping track of the battlespace, coordinating multiple strike fighters, jammers, and potentially drones[\[200\]](#). It also provides communications relay – ensuring the carrier group’s situational picture is shared with distant ships or aircraft. Importantly, with KJ-600, a Chinese carrier group can operate **farther from supportive land-based radar coverage** and still maintain radar awareness – critical as China’s navy goes blue-water.
- **Comparison to U.S. E-2D:** The KJ-600 appears broadly similar to the latest U.S. E-2D Hawkeye in general layout and presumably capability. It has twin prop engines,

likely for fuel efficiency and long loiter (maybe 4–6 hours on station). Its radar likely matches or even surpasses legacy E-2C in range; the U.S. E-2D uses AESA and can detect stealthy cruise missiles and small UAVs – the KJ-600 probably aspires to that. The very presence of KJ-600 indicates that *Fujian* and future carriers (all CATOBAR) will mirror U.S. style carrier air wings (with fighters, AEW planes, EW planes, etc.).

Chinese commentary highlighted that **before** KJ-600, the carriers' heliborne early warning (like Z-18J helicopter) had shorter range and endurance, leaving gaps. **After** KJ-600, the carrier group has its "final puzzle piece" – meaning all components of a modern carrier strike group (CSG) are in place[192][193]. This drastically **enhances both the offensive strike capability and the defensive surveillance umbrella** of Chinese carriers. For instance, carriers can now detect a hostile aircraft or missile much earlier and respond or even pre-emptively strike enemy launch platforms. Also, carriers can coordinate large air operations without relying on ground-based AWACS like KJ-500, which might not always be available far at sea.

Zhang Xuefeng emphasized that fixed-wing AEW aircraft have **much greater radar range and endurance** than any helicopter-based system[201]. They can cover the gaps beyond land-based radar when the fleet operates in blue waters[200]. In practical terms, if a carrier wants to strike, say, 1000 km from China's coast, the KJ-600 flying ahead can detect threats and guide the air wing far beyond the range of any coastal radar.

In summary, the KJ-600's debut is a *game changer for the PLA Navy's power projection*. It completes the triad for a robust carrier air wing: stealth fighters (J-35), advanced support aircraft (KJ-600 AEW, potentially future electronic warfare planes as hinted by "carrier-based EW aircraft" in Chinese media[202]), and possibly UAVs. The Chinese carriers, once considered limited, are rapidly catching up to be comprehensive tools of war with full-spectrum capability. As one Global Times piece quoted, "*the KJ-600 marks the completion of the final piece of the puzzle... significantly enhancing both offensive and defensive combat capabilities of China's carrier groups.*"[192][203] This heralds a new era where Chinese carrier groups will be far more self-sufficient and formidable on the high seas.

Y-20B Strategic Transport Aircraft (Engine Upgrade)

China's large military transport plane, the **Xi'an Y-20 "Kunpeng"**, appeared in an improved **Y-20B variant** fitted with domestically-made high-bypass turbofan engines[204][205]. This upgrade is a milestone for China's airlift and aerospace industry, as it replaces the imported Russian engines on the original Y-20 with Chinese-designed powerplants.

Key points on the Y-20B:

- **Domestic Engines (WS-20):** The baseline Y-20 used four Russian D-30KP2 turbofan engines (similar to those on the Il-76), which are relatively older technology. The **Y-20B incorporates new Chinese WS-20 engines** with higher thrust and fuel efficiency[206][207]. This not only improves performance but also frees China from reliance on foreign engines for its strategic airlifter. Achieving a reliable high-bypass

turbofan for heavy transports is a big achievement – it indicates China’s aero-engine tech is catching up in this field.

- **Improved Payload and Range:** According to aerospace experts like Wang Yanan, the new engines provide **stronger thrust and lower fuel burn**, which directly translates to the Y-20B being able to **fly farther and carry more cargo**[205][207]. For strategic airlift, every bit of extra range and payload matters: the Y-20B could perhaps lift an additional several tons of equipment or extend its range by hundreds of kilometers, enabling longer non-stop flights. Essentially, it pushes the Y-20 into the true “**global reach**” category, potentially comparable to U.S. C-17 in performance. A further benefit is better performance from high-altitude airfields or in hot conditions, where higher thrust engines maintain payload capacity.
- **Strategic Mobility Boost:** A fleet of Y-20Bs enhances the PLA’s ability to rapidly deploy troops, heavy vehicles, or humanitarian aid across vast distances. We’ve already seen Y-20s ferry medical supplies overseas and rotating peacekeepers to Africa. With Y-20B, such missions can be done more efficiently and with greater load. For military purposes, if China needed to reinforce positions in, say, the Tibetan plateau or in distant outposts, the Y-20B can carry armored vehicles or large quantities of materiel in fewer sorties. It also factors into **power projection**: supporting naval task forces abroad, or airlifting assets to allied countries in a contingency.
- **Reduced Dependence on Russia:** The shift to domestic engines is also strategically important in terms of self-reliance. Russia’s engine supply could be uncertain in future; having WS-20 means China can produce and maintain its transports indigenously. It’s part of a broader trend where Chinese aviation is shedding foreign dependencies (e.g., J-20 now with Chinese engines, C919 airliner with more Chinese content, etc.).

During the parade, a Y-20 flew in formation flanked by fighters[208], signaling its role in long-range power projection and possibly aerial delivery of troops. The presence of the Y-20B underlines that China now has a truly modern strategic airlift capability. PLA statements have noted that the Y-20 (even base model) has significantly improved China’s ability to respond to disasters and move forces internally. The Y-20B extends that to inter-theater or international operations.

For example, if China were to conduct a large peacekeeping deployment or an evacuation of citizens from abroad, Y-20Bs would be the backbone. Militarily, in any Taiwan scenario or South China Sea contingency, strategic transports would be critical for rapid reinforcement and logistics – the Y-20B’s added capacity directly strengthens those potential operations.

To quote Wang Yanan from China Daily: *the WS-20 engines allow the Y-20B to fly further and haul more, enabling the PLA to “deploy and sustain its forces over much greater distances, as befitting a true global power.”*[205][207]. This assessment frames the Y-20B as not just a new plane, but as a reflection of China’s broader military ambition to operate

on a global scale – from disaster relief in foreign lands to potentially expeditionary military activities.

In summary, the Y-20B's debut at the parade symbolized both **technological progress (engine development)** and **enhanced strategic mobility** for China. It complements the expanding reach of the PLA Navy and Air Force, ensuring China can support its interests and allies across continents whenever needed, without being constrained by transport shortfalls that many militaries face.

H-6J Long-Range Maritime Bomber

Closing the aerial exhibition was the **H-6J**, the latest long-range bomber variant serving with the PLA Naval Air Force. The H-6J is a modernized derivative of the H-6 (itself based on the vintage Soviet Tu-16 Badger), specifically outfitted for anti-ship and maritime strike roles. Its inclusion in the parade underscores China's emphasis on **extended-range maritime strike** to enforce its regional objectives and Anti-Access/Area Denial (A2/AD) strategy.

Features and importance of the H-6J:

- **Enhanced Naval Striker:** The H-6J is essentially the naval counterpart to the PLAAF's H-6K, but with adaptations for the ocean theater. It reportedly carries **up to 6 YJ-12 supersonic anti-ship cruise missiles** under its wings (3 per wing)[209], compared to the older H-6G which carried 2–4. There are even Chinese sources indicating it can carry a seventh on the fuselage weapon bay[209]. The **YJ-12** is a very fast (Mach 3+) sea-skimming missile with ~400 km range that poses a serious threat to large surface ships[210]. By mounting six of these, a single H-6J can launch a saturation attack on a carrier group (a salvo of a dozen missiles from two bombers, for instance, approaching from different axes, is a significant challenge to defend). The H-6J can also carry **YJ-83 or KD-20 cruise missiles**, but the YJ-12 is its primary anti-ship weapon.
- **Extended Range & Patrol:** Thanks to more efficient D-30KP2 engines (same type replaced by WS-18s in some) and added fuel capacity, the H-6J has a longer combat radius than its predecessors – reportedly up to **3,500 km** without refueling. It also features modern avionics and a glass cockpit (like H-6K)[211][212]. This allows the H-6J to patrol far over the ocean (for example, from bases on the Paracel or Spratly Islands zone reaching deep into the South/East China Seas). Chinese media have indicated H-6Js can cover the entire South China Sea and beyond. Significantly, it can **operate in conjunction with Y-20U tankers** for aerial refueling (some H-6N have refueling probes; unclear if H-6J does, but likely it could be modified). This means even further reach if needed.
- **Modern Sensors:** The H-6J likely carries advanced surface search radar and targeting systems to locate ships. It may share data with other naval assets (ships, Y-8 patrol planes, drones) to find and track enemy vessels. With China's growing

reconnaissance network (satellites, over-the-horizon radars, etc.), H-6Js could be cued onto targets well away from Chinese shores.

- **Role in A2/AD:** A squadron of H-6Js armed with YJ-12s significantly bolsters China's ability to **deter or attack hostile naval forces** (like US carrier strike groups) at standoff distances. They form the air-delivered leg of the "carrier-killer" triad alongside anti-ship ballistic missiles (DF-21D/DF-26) and ship/sub-launched missiles. During a crisis, H-6Js could launch waves of supersonic missiles from different directions, stressing defense responses. Because they're fast jets, they can reposition more flexibly than ships or launch from unexpected angles around an approaching fleet.

At the parade, the H-6J flew overhead, symbolizing how far the venerable H-6 platform has been taken. Originally a 1950s bomber design, it's now a **21st-century missile truck**. As analysts note, replacing the older H-6G with H-6J "**greatly enhances China's ability to conduct standoff strikes at sea**"[213]. The H-6J's combination of range, payload, and modern weaponry makes it central to enforcing China's "Anti-Access/Area Denial" zone extending out into the Western Pacific[209][212]. In a conflict scenario, these bombers could loiter just within their missile envelope (perhaps shielded by fighter cover or operating at low altitude) and then pop up to release a volley of carrier-killer missiles.

Notably, the H-6J can also perform secondary missions like mining (dropping sea mines), electronic warfare (with pods), or even launching anti-ship ballistic missiles if China develops an ALBM launched from bombers (there have been some tests in the PLAAF H-6N).

In conclusion, the parade's array of new weaponry – from **small arms to strategic missiles** – demonstrates the breadth of China's military modernization. Over just a few years, the PLA has introduced cutting-edge systems in every domain: **infantry rifles with advanced optics, networked armor with drones and AR, long-range rocket artillery outranging Western counterparts, hypersonic missiles no one else has fielded in such numbers, anti-missile shields approaching those of superpowers, lasers and microwaves turning sci-fi into reality, swarms of drones in air/sea/land augmenting manned forces, and 5th-gen aircraft (including stealth drones and twin-seat fighters) challenging the West's dominance in high-tech warfare.**

This monumental parade clearly intended to send a message: the PLA of today is a **fully modern, highly capable fighting force** with indigenous high-tech weapons across the spectrum. It underscores Beijing's push for a "world-class military" by mid-century, and offers a glimpse of how it plans to fight and win future wars – with information dominance, unmanned systems, hypersonic strikes, and integrated deterrence from conventional to nuclear. As one commentary summarized, *China's largest military parade yet put high-tech warfare on full display*[214], signaling that the balance of military power in the region is undergoing a dramatic shift with the introduction of this new generation of Chinese weaponry.

Sources: Chinese and international defense analyses, including *Interesting Engineering*[1][215], *South China Morning Post*[32][91], *Breaking Defense*[216][217], *China Daily/ChinaDaily Asia*[193][205], *Global Times*[44][60], and *Army Recognition*[19][218], among others, were used to corroborate the capabilities and significance of these systems.

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