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Behind the seamless experience of connecting billions of users lies a meticulously engineered system architecture that powers Facebook's operations. Let's dissect the key components that orchestrate this digital symphony:  
  
1. Welcoming the Masses:  
Users enter the realm through web or mobile apps, initiating their journey.  
  
2. Traffic Maestro:  
A load balancer gracefully distributes incoming requests, ensuring a balanced workload for maximum efficiency.  
  
3. API Gateways: The Digital Doormen:  
These gatekeepers direct each request to its designated microservice, ensuring smooth navigation and communication.  
  
4. The Creative Engine:  
Write operations, such as posting content or commenting, are meticulously handled by app servers, validating requests, writing data, and orchestrating video processing to bring ideas to life.  
  
5. Crafting the Social Tapestry:  
A dedicated service tirelessly generates and updates user feeds, weaving a personalized experience for each individual.  
  
6. Knowledge Seekers:  
Read operations, such as exploring profiles or browsing feeds, are efficiently routed to the relevant services, unlocking a treasure trove of information.  
  
7. Memory Keepers:  
User profiles and post data find a home in a metadata database, preserving the digital footprint of interactions.  
  
8. Speed Demons:  
Caching mechanisms like Redis or Memcached act as performance accelerators, reducing latency and easing the database's burden.  
  
9. Master Detectives:  
The search service, powered by Elasticsearch, stands ready to uncover users and content with lightning speed and precision.  
  
10. Media Vaults:  
Blob storage provides a safe haven for user-uploaded media, safeguarding memories and creative expressions.  
  
11. Global Delivery Network:  
A content delivery network (CDN) strategically caches static content, ensuring lightning-fast delivery across the globe.  
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2. Video Wizards:  
User-uploaded videos undergo a meticulous transformation journey, including transcoding, resizing, and thumbnail generation, ensuring seamless playback across devices.  
  
13. Connection Catalysts:  
A notification system diligently alerts users of interactions, fostering engagement and strengthening bonds.  
  
Beyond the Core:  
This intricate architecture extends its reach to encompass a multitude of additional services, vigilantly monitoring performance, gathering insights through analytics, ensuring data resilience through backup and recovery, weaving personalized recommendations, and tirelessly optimizing for scalability and reliability.  
  
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