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Sketch out a high-level architecture diagram, showing the main components of the Credit Lending product, how they communicate with each other, and what different elements you would add for a distributed system and big data need.

Components of a Credit Lending Product:

- **Credit Decisioning Models**: These models assess the creditworthiness of applicants based on various factors such as credit history, income, and risk profiles. They help determine whether to approve or reject a loan application.
- **Loan Origination System (LOS)**: The LOS manages the loan application process, from initial submission to approval or rejection. It collects applicant data, performs credit checks, and facilitates communication between different stakeholders.
- **Underwriting**: Underwriters analyze applicant information, assess risk, and make lending decisions. They collaborate with credit analysts and relationship managers.
- **Risk Management**: This component monitors loan portfolios, assesses risk exposure, and ensures compliance with regulations.
- **Customer Relationship Management (CRM)**: CRM systems track customer interactions, manage leads, and maintain customer data.
- **Loan Servicing**: After approval, this component handles loan disbursement, repayment schedules, and customer support.

Communication Between Components:

- **Data Flow**: Data flows from the LOS to credit decisioning models, underwriting, and risk management. Communication occurs through APIs or direct integrations.
- **Notifications**: Systems notify stakeholders (e.g., underwriters, relationship managers) about application status changes, approvals, or rejections.
- **Feedback Loop**: Underwriters provide feedback to credit decisioning models for continuous improvement.

Enhancements for a Distributed System and Big Data with Azure Cloud:

- **Modular Architecture**: Design components as microservices to improve scalability and fault tolerance.
- **Expanded Data Sources:** Leverage transactional data, social media, and other novel sources
- **Machine Learning Models**: Use big data to train more accurate credit decisioning models.
- **Real-time Analytics**: Process data streams in real time to detect fraud or assess risk dynamically.

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- **Cloud Infrastructure**: Deploy components on cloud platforms for scalability and flexibility.
- **Blockchain for Transparency**: Consider using blockchain for secure, transparent loan records.
- **Automated Workflows**: Implement straight-through processing for low-risk cases and prioritize higher-risk cases for manual review.

Data Flow Design: