Detailed Performance Testing Report

RPC Endpoint Under Test

- **URL**: https://mainnet.ethernitychain.io/
- **Purpose**: Evaluate the performance and reliability of the RPC endpoint under various conditions, including latency, load, and stress scenarios.

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1. Latency Test

- **Objective**: Measure the response time of the RPC endpoint for a single request under normal network conditions.
- **Details**:
  - A single POST request was sent to the endpoint.
  - Payload and headers were configured to match expected API usage.
- **Result**:
  - **Latency**: 0.9594 seconds.
- **Analysis**:
  - The response time is under 1 second, which is within the acceptable range for blockchain RPC endpoints.
  - No noticeable delay was observed during this test.

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2. Load Test

- **Objective**: Assess the endpoint's ability to handle multiple sequential requests under typical usage conditions.
- **Details**:
  - Simulated **100 sequential requests** to the endpoint.
  - Each request was validated for a successful response.
- **Result**:
  - **Requests Sent**: 100
  - **Successful Responses**: 100/100 (100% success rate).
- **Analysis**:
  - The endpoint handled the load smoothly without any failures.
  - Response times were consistent across all requests.

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3. Stress Test

- **Objective**: Evaluate the endpoint's performance under extreme load by simulating high concurrency.
- **Details**:
    - Simulated **500 concurrent users** sending requests simultaneously.
    - Each request was tracked for success or failure.
- **Result**:
    - **Concurrent Users Simulated**: 500
    - **Successful Responses**: 500/500 (100% success rate).
- **Analysis**:
    - The endpoint successfully handled all concurrent requests, demonstrating strong scalability and robustness.
    - No timeout, latency, or connection issues were encountered during the test.

Summary of Results

Test Type	Details	Requests Sent	Successful Responses	Observations
Latency Test	Single request	1	1/1	Response time: 0.9594 seconds.
Load Test	Sequential requests (100 users)	100	100/100	Handled load without failures.
Stress Test	Concurrent requests (500 users)	500	500/500	Scaled efficiently under stress.

Overall Observations and Recommendations

1. **Performance**: The RPC endpoint is highly reliable and efficient, meeting all performance criteria under the tested conditions.
2. **Scalability**: Demonstrated strong performance under stress with concurrent requests. Further tests with higher concurrency levels can be performed to define the endpoint's maximum capacity.
3. **Reliability**: All requests were processed successfully without errors, indicating a robust backend infrastructure.

This RPC endpoint is production-ready for the tested scenarios and can handle typical and high-load usage effectively.