# Server room

Atmosphere:

Upon entering Server Room 1, the player finds themselves in a virtual, futuristic control room environment designed for simulating a DDoS (Distributed Denial of Service) attack. The room feels functional and high-tech, featuring interactive consoles set against a backdrop of integrated machinery and an external view. The primary objective is to strategically use the provided tools to overload a target server within the given time and budget constraints.

Visual Architecture & Layout:

- Structure: The room has an angular design with flat, dark grey or black paneled walls. Some wall sections incorporate large machinery units (one labeled "D-02" with yellow indicator lights) and vents.
- Floor: Composed of large, dark grey metallic-looking tiles or panels with visible seams. A bright, diffuse white light emanates from the floor area near the base of the control consoles, reflecting slightly off the surface.
- Window: A large, multi-paned window dominates the left side from the player's starting perspective, offering a view of a dark cityscape with illuminated skyscrapers. There are no visible doors.
- Lighting: The overall room lighting is dim, focusing attention on the brightly lit interactive displays and the cityscape view.

**Key Interactive Elements**:

- Main Visualization Screen (Server Load Display):
  - Positioned prominently, likely behind the control panels, is a large, dark blue rectangular display screen.
  - This screen provides a real-time visualization of the DDoS attack simulation, showing:
    - Server Icon: A central representation of the target server.
    - User Icons: Multiple circular icons representing users, dynamically added/removed, based on IP Distribution settings.

- Connection Lines: Lines illustrating traffic flow between users and the server. Their appearance (e.g., thickness, animation speed) may change based on frequency and volume settings.
- Pie Chart: Visually represents the proportion of the server's capacity being used. The color indicates server health:
  - Green: Server load is low/normal.
  - Yellow: Server load is increasing, becoming stressed.
  - Red: Server is critically overloaded (100% or close to 100%).

**Control Consoles/Panels:**

- Three main interactive panels float or are mounted on pedestals in front of the player. Interaction is done via a thin, bright red laser pointer controlled by the player (Meta Quest controller).
- Initial State: Panels start at default values: IP Distribution = 2 users, Request Frequency = 1 (minimum), Traffic Volume = 1 (minimum).
- **IP Distribution Panel**:
  - Function: Allows management of the number of 'users' attempting to connect to the server. Adjusting this directly impacts the budget.
  - Controls: Features green Left Arrow and Right Arrow buttons.
    - Left Arrow: Clicking decreases the user count by one.
    - Right Arrow: Clicking increases the user count by one.
  - Display: Shows the current number of connected users numerically between the arrows.
  - Constraints: The user count starts at 2, can be adjusted between a minimum of 1 and a maximum of 14, constrained by the available budget. Adjusting users directly impacts the 'Remaining Budget' display.
- **Request Frequency Panel**:
  - Function: Controls how often requests are sent to the server.
  - Controls: Features a horizontal Slider with a red indicator point.
    - Slide Right: Increases request frequency (server hits more often).
    - Slide Left: Decreases request frequency (server hit less often).

○ Purpose: Simulates varying levels of request traffic intensity for stress testing.

- **Traffic Volume Panel**:
    - Function: Controls the size of the data sent with each request.
    - Controls: Features a horizontal Slider.
        - Slide Right: Increases the data volume per request (larger data chunks).
        - Slide Left: Decreases the data volume per request (smaller data chunks).
    - Purpose: Allows testing server performance under varying data load sizes.

**Status Display**:

- Located separately (often left, relative to the main panels) is a smaller display showing crucial constraints:
    - **Remaining Budget**: Displays the available funds numerically (starts at $25) and visually with a horizontal bar (initially green, depleting as budget is used and turns to red).
    - **Clock/Timer**: A countdown timer showing the remaining time to complete the task (starts near 5:00).

**Interaction Method**: The player interacts with the panels using a thin, bright red laser pointer(the controller of the meta quest) originating from their viewpoint.

**Server Room 1 Goal and Targets:**

- Goal: Successfully overload the server using the three control panels.
- Time Limit: Complete the task within the 5-minute time limit shown on the clock.
- Budget: Do not exceed the available budget while configuring the attack parameters using the panels.
- Tools: Utilize the IP Distribution, Request Frequency, and Traffic Volume panels strategically to control the attack.
- **Winning Condition**: Success requires setting the panels to the exact values of 9, 9, 9:
    - IP Distribution = 9 users
    - Request Frequency = 9 (slider position)
    - Traffic Volume = 9 (slider position)
- **Budget Constraints**:

- ○ Starting Budget: $25
- ○ Budget Needed for Win (9,9,9): $23
- ○ Budget Management: Setting the IP Distribution value is the main cost. Exceeding the $25 budget fails the mission. The spent budget is non-recoverable; reducing users, request frequency, or traffic volume later does not refund the cost.

**Strategy for Success (The 9,9,9 Path) in Server Room 1**:

- Step 1: Set IP Distribution: Target the IP Distribution Panel. Click the Right Arrow exactly 7 times (starting from 2) to reach 9 users. Monitor the budget closely as it drops with each user increase.
- Step 2: Set Request Frequency: Target the Request Frequency Panel. Adjust the slider rightwards to the position corresponding to a value of 9.
- Step 3: Set Traffic Volume: Target the Traffic Volume Panel. Adjust the slider rightwards to the position corresponding to a value of 9.
- Step 4: Verify & Win: Confirm the settings are 9, 9, 9. Check the budget reads 2 ($25 - $23). Ensure the timer hasn't expired. The Server Load Display (Pie Chart) should turn solid red, indicating a successful overload.

**Server Room 2 Goal and Targets**:

- Goal: Successfully overload the server using the three control panels.
- Time Limit: Complete the task within the 5-minute time limit shown on the clock.
- Budget: Do not exceed the available budget while configuring the attack parameters using the panels.
- Tools: Utilize the IP Distribution, Request Frequency, and Traffic Volume panels strategically to control the attack.
- Winning Condition: Success requires setting the panels to the exact values of 5, 10, 10:
  - ○ IP Distribution = 5 users
  - ○ Request Frequency = 10 (slider position)
  - ○ Traffic Volume = 10 (slider position)
- Budget Constraints:

- ○ Starting Budget: $25
- ○ Budget Needed for Win (5,10,10): $21
- ○ Budget Management: Setting the IP Distribution value is the main cost. Exceeding the $25 budget fails the mission. The spent budget is non-recoverable; reducing users, request frequency, or traffic volume later does not refund the cost.

**Strategy for Success (The 5,10,10 Path) in Server Room 2**:

- Step 1: Set IP Distribution: Target the IP Distribution Panel. Click the Right Arrow 3 times (starting from 2) to reach 5 users. Monitor the budget closely as it drops with each user increase.
- Step 2: Set Request Frequency: Target the Request Frequency Panel. Adjust the slider rightwards to the position corresponding to a value of 10.
- Step 3: Set Traffic Volume: Target the Traffic Volume Panel. Adjust the slider rightwards to the position corresponding to a value of 10.
- Step 4: Verify & Win: Confirm the settings are 5, 10, 10. Check the budget reads 4 ($25 - $21). Ensure the timer hasn't expired. The Server Load Display (Pie Chart) should turn solid red, indicating a successful overload.

**Server Room 3 Goal and Targets**:

- Goal: Successfully overload the server using the three control panels.
- Time Limit: Complete the task within the 5-minute time limit shown on the clock.
- Budget: Do not exceed the available budget while configuring the attack parameters using the panels.
- Tools: Utilize the IP Distribution, Request Frequency, and Traffic Volume panels strategically to control the attack.
- Winning Condition: Success requires setting the panels to the exact values of 10, 10, 5:
  - ○ IP Distribution = 10 users
  - ○ Request Frequency = 10 (slider position)
  - ○ Traffic Volume = 5 (slider position)
- Budget Constraints:

○ Starting Budget: $25

○ Budget Needed for Win (10,10,5): $21

○ Budget Management: Setting the IP Distribution value is the main cost. Exceeding the $25 budget fails the mission. The spent budget is non-recoverable; reducing users, request frequency, or traffic volume later does not refund the cost.

**Strategy for Success (The 10,10,5 Path) in Server Room 3**:

- Step 1: Set IP Distribution: Target the IP Distribution Panel. Click the Right Arrow 8 times (starting from 2) to reach 10 users. Monitor the budget closely as it drops with each user increase.
- Step 2: Set Request Frequency: Target the Request Frequency Panel. Adjust the slider rightwards to the position corresponding to a value of 10.
- Step 3: Set Traffic Volume: Target the Traffic Volume Panel. Adjust the slider rightwards to the position corresponding to a value of 5.
- Step 4: Verify & Win: Confirm the settings are 10, 10, 5. Check the budget reads 4 ($25 - $21). Ensure the timer hasn't expired. The Server Load Display (Pie Chart) should turn solid red, indicating a successful overload.

**Server Room 4 Goal and Targets**:

- Goal: Successfully overload the server using the three control panels.
- Time Limit: Complete the task within the 5-minute time limit shown on the clock.
- Budget: Do not exceed the available budget while configuring the attack parameters using the panels.
- Tools: Utilize the IP Distribution, Request Frequency, and Traffic Volume panels strategically to control the attack.
- Winning Condition: Success requires setting the panels to the exact values of 10, 5, 10:
  - IP Distribution = 10 users
  - Request Frequency = 5 (slider position)
  - Traffic Volume = 10 (slider position)
- Budget Constraints:

- ○ Starting Budget: $30
- ○ Budget Needed for Win (10,5,10): $25
- ○ Budget Management: Setting the IP Distribution value is the main cost. Exceeding the $30 budget fails the mission. The spent budget is non-recoverable; reducing users, request frequency, or traffic volume later does not refund the cost.

**Strategy for Success (The 10,5,10 Path) in Server Room 4**:

- Step 1: Set IP Distribution: Target the IP Distribution Panel. Click the Right Arrow 8 times (starting from 2) to reach 10 users. Monitor the budget closely as it drops with each user increase.
- Step 2: Set Request Frequency: Target the Request Frequency Panel. Adjust the slider rightwards to the position corresponding to a value of 5.
- Step 3: Set Traffic Volume: Target the Traffic Volume Panel. Adjust the slider rightwards to the position corresponding to a value of 10.
- Step 4: Verify & Win: Confirm the settings are 10, 5, 10. Check the budget reads 5 ($30 - $25). Ensure the timer hasn't expired. The Server Load Display (Pie Chart) should turn solid red, indicating a successful overload.

**Server Room 5 Goal and Targets**:

- Goal: Successfully overload the server using the three control panels.
- Time Limit: Complete the task within the 5-minute time limit shown on the clock.
- Budget: Do not exceed the available budget while configuring the attack parameters using the panels.
- Tools: Utilize the IP Distribution, Request Frequency, and Traffic Volume panels strategically to control the attack.
- Winning Condition: Success requires setting the panels to the exact values of 10, 5, 10:
  - ○ IP Distribution = 10 users
  - ○ Request Frequency = 8 (slider position)
  - ○ Traffic Volume = 5 (slider position)
- Budget Constraints:

○ Starting Budget: $30

○ Budget Needed for Win (10,8,5): $22

○ Budget Management: Setting the IP Distribution value is the main cost. Exceeding the $30 budget fails the mission. The spent budget is non-recoverable; reducing users, request frequency, or traffic volume later does not refund the cost.

**Strategy for Success (The 10,8,5 Path) in Server Room 5**:

- Step 1: Set IP Distribution: Target the IP Distribution Panel. Click the Right Arrow 8 times (starting from 2) to reach 10 users. Monitor the budget closely as it drops with each user increase.

- Step 2: Set Request Frequency: Target the Request Frequency Panel. Adjust the slider rightwards to the position corresponding to a value of 8.

- Step 3: Set Traffic Volume: Target the Traffic Volume Panel. Adjust the slider rightwards to the position corresponding to a value of 5.

- Step 4: Verify & Win: Confirm the settings are 10, 8, 5. Check the budget reads 8 ($30 - $22). Ensure the timer hasn't expired. The Server Load Display (Pie Chart) should turn solid red, indicating a successful overload.

**A Step-by-Step demo to overload the server (Server Room 1):**

1. **Incorrect IP Distribution Setting (Overspending Budget)**:
   ○ The user targets the IP Distribution Panel with the red laser pointer. They rapidly and repeatedly click the Right Arrow button, seemingly aiming to maximize the user count.
   ○ (Visual Feedback):
       ■ The numerical display between the arrows quickly increments from the starting value of 2 all the way up to the maximum allowed value of 14.
       ■ Simultaneously, on the large Server Load Display, a large number of circular "User" icons appear, establishing numerous connection lines (blue lines) to the central "Server" icon.
       ■ Crucially, the Remaining Budget display reacts instantly to each click. The

numerical value drops sharply from the initial 25 *downto* 13 by the time 14 users are added. The green budget bar shrinks significantly, visually representing this large expenditure.

○ (Strategic Misstep) Instead of setting the required 9 users, the user opts for the maximum (14). This immediately consumes $12 ($13 remaining from $25, assuming a cost per added user), leaving insufficient budget for subsequent steps and deviating critically from the winning 9,9,9 path.

2. **Maximize Request Frequency (Further Budget Depletion)**:

   ○ The user shifts focus to the Request Frequency Panel. They interact with the slider, dragging the red indicator point significantly towards the far right end of the slider track, likely pushing it to the maximum possible frequency setting.

   ○ (Visual Feedback):

      ■ The slider's position at the extreme right confirms a maximum frequency setting.

      ■ On the Server Load Display, the activity around the server icon and connection lines likely intensifies (faster flickering or updates). The central pie chart begins to grow and change color, potentially moving from green towards yellow, indicating rising server stress due to the high frequency of requests from many users.

      ■ The Remaining Budget display continues to decrease rapidly, dropping from $13 down to $7, and then further down to $4. The budget bar, already diminished, now turns bright red, signalling that the allocated funds are nearly exhausted. The non-recoverable nature of spent budget is apparent here.

   ○ (Strategic Misstep) Continuing the "maximize everything" approach, the user pushes frequency to the limit. This further depletes the already strained budget and still doesn't align with the required value of 9 for frequency.

3. **Attempted Budget Adjustment:**

   ○ The user briefly interacts with the IP Distribution Panel again, clicking the Left Arrow twice to decrease the number of users from 14 to 10, hoping to get back some budget. However, they quickly realize that the spent budget is

non-refundable and click the Right Arrow twice to increase the number of users back to 14. Critically, the Traffic Volume Panel remains untouched at its default minimum setting throughout this sequence.

- ○ (Visual Feedback):
    - ■ The user count fluctuates briefly before returning to 14.
    - ■ The Remaining Budget remains unchanged during the final clicks back up to 14 users. The red budget bar is now almost empty ($4 remaining).
- ○ (Strategic Dead End) This brief adjustment indicates the user may have realized the budget issue but ultimately recommitted to the maximum user count. With only $4 left, they cannot:
    - ■ Correct the IP Distribution to the required 9 users (which needed $12 of the initial budget).
    - ■ Adequately adjust the Traffic Volume slider. The simulation is now locked into a non-winning state due to budget mismanagement.

4. **Increase Traffic Volume (Maximizing Data Load - Intended Step)**
    - ○ The user shifts focus to the **Traffic Volume Panel**. They interact with the slider, dragging the white indicator point significantly towards the **right** side of the slider track.
    - ○ **(Visual Feedback):**
        - ■ The blue server-user connection becomes thicker, indicating larger data packet sizes.
        - ■ On the **Server Load Display**, this action further strain the server. The pie chart representing server usage expand to show nearly total capacity utilization, and turns solid red. This signifies the server struggling to handle the large volume of data per request on top of the high frequency and user count.
        - ■ The **Remaining Budget** depletes further (dropping to **0**), and the remaining budget bar turns red, too, indicating that the allocated budget has run out.

5. **Failure Outcome**:
    ○ The system evaluates the user's configuration and resource status.
    ○ The large grey failure message appears: "Unfortunately, you were unsuccessful in executing the DDoS attack. The server is still active..."
    ○ **Reason for Failure**: The user failed to achieve the specific required 9, 9, 9 configuration for IP Distribution, Request Frequency, and Traffic Volume. The initial decision to maximize users (setting IP to 14) consumed excessive budget, making it impossible to reach the correct winning state before funds ran out.