

Rogue Signal Protocol - Traditional Roguelike Design Document v4.0

Network Dungeon Crawler with Advanced Stealth

Executive Summary

Rogue Signal Protocol is a stealth-focused traditional roguelike where you play as a hacker's consciousness trapped in cyberspace. Navigate procedurally generated network dungeons using stealth, observation, and tactical combat. Each "floor" is a network system, each "room" is a subnet, and each "monster" is a security process with distinct patrol patterns and vision cones. Master enemy movement patterns, hide in shadows, and strike from stealth - or face the terrifying Admin Avatar hunting you through the network.

Core Gameplay Loop

Stealth-First Roguelike Structure

- **Movement:** Grid-based, 8-directional movement (FREE and SILENT)
- **Stealth:** Observe patrol patterns, avoid vision cones, hide in shadows
- **Combat:** Bump-to-attack OR stealth attacks for bonus damage
- **Time:** Turn-based, everything moves when you do
- **Death:** Permanent, start over from Network 1
- **Progression:** Find better exploits, upgrade stealth gear, descend deeper

The Network as Stealth Dungeon

Traditional Roguelike → Rogue Signal Protocol Translation

Traditional Roguelike	Rogue Signal Protocol
Dungeon Floor	Network System
Room	Subnet
Corridor	Network Cable/Connection
Monster	Security Process (with vision/patrol)
Treasure	Exploit/Data (often guarded)
Stairs Down	Gateway Router (heavily guarded)
Potion	Data Patch (randomized effects)
Scroll	Runtime Script (randomized one-use exploits)
Weapon	Persistent Attack Exploit
Armor	Stealth Enhancement/Defense
Food/Hunger	CPU Cycles (Action Economy)
Light/Dark	Network Traffic/Shadow Zones



Stealth System

Vision and Detection

Enemy Vision Mechanics:

- Each enemy has a circular vision range (3-8 squares radius)
- Enemies see in all directions (360° vision)
- Walls and obstacles block line of sight
- Moving enemies scan while patrolling routes
- Static enemies have constant vision coverage

Vision Range Display:

. = Empty space @ = You (hidden)
 E = Enemy ! = You (spotted)
 = Vision area # = Wall/Obstacle
 = Blocked vision ◇ = Shadow zone

Example Vision Range:



Shadow and Hiding System

Shadow Zones (Stealth Bonus):

- ◇ = Server shadows (-50% detection chance)
- ▣ = Dense traffic (-25% detection chance)
- ⚡ = Power conduits (-75% detection chance, rare)
- 💾 = Data clusters (+25% stealth attack damage)

Hiding Mechanics:

- Standing in shadows: -50% detection chance
- Standing behind walls: Complete vision blocking
- Standing in enemy's blind spot: -75% detection
- Moving through shadows: No detection penalty
- Moving through light while observed: +100% detection

Stealth States:

- 🔍 **HIDDEN**: Enemy doesn't know you exist
- 👁 **SPOTTED**: Enemy sees you this turn
- 🚨 **ALERTED**: Enemy investigating your last position
- ⚠ **HUNTING**: Enemy actively pursuing you

Enemy Behavior and Patrol Patterns

Patrol Types:

Linear Patrol (L):

- Route: $A \rightarrow B \rightarrow A \rightarrow B$
- Behavior: Predictable, easy to time
- Examples: Basic scanners, log processes

Circular Patrol (C):

- Route: $A \rightarrow B \rightarrow C \rightarrow D \rightarrow A$
- Behavior: Moderate timing challenge
- Examples: IDS monitors, security daemons

Random Walk (R):

- Route: Unpredictable movement
- Behavior: Hard to predict, requires patience
- Examples: Spam bots, corrupted processes

Static Guard (S):

- Route: No movement, constant 360° vision
- Behavior: Guards doorways and treasures
- Examples: Firewalls, admin terminals

Hunter Patrol (H):

- Route: Seeks last known player position
- Behavior: Investigates disturbances
- Examples: Antivirus, hunter-killers

Grid-Based Network Layout

Network Generation with Stealth Elements

Each network is a 70x70 grid optimized for stealth gameplay.

Movement & Stealth Controls

Stealth Movement:

- **Wait (Space):** Watch enemy patterns, no movement
- **Sneak (Shift+Move):** Move at half speed but -75% detection
- **Shadow Step (S):** Teleport between shadow zones (exploit)
- **Distraction (D):** Throw data packet to redirect attention

Stealth Attacks:

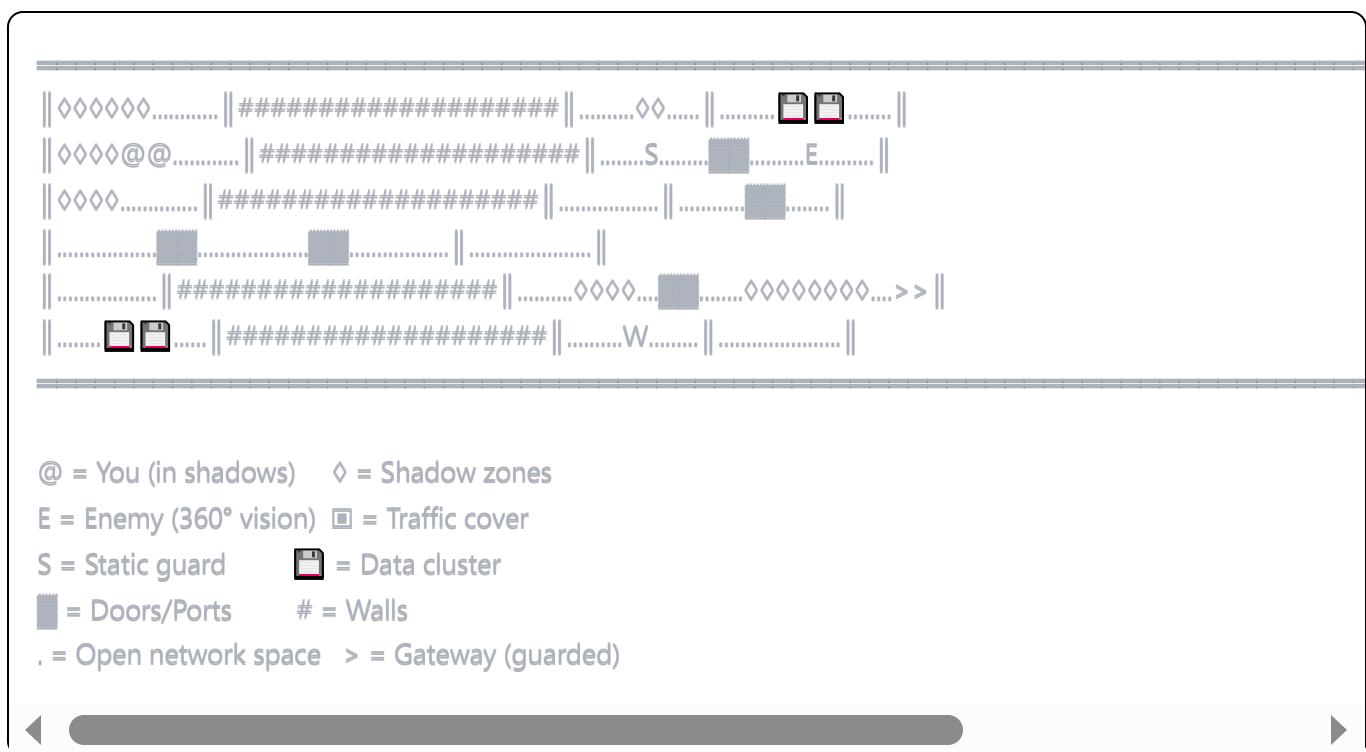
- **Stealth Strike:** Attack unaware enemies for 2x damage + silence

- **Stealth Kill:** Instant kill on unaware enemies (requires stealth exploit)
- **Sabotage:** Disable enemy without killing (no detection increase)
- **Data Siphon:** Steal CPU/loot from sleeping processes

Observation:

- **Study (Tab):** Reveals enemy patrol route and timing
- **Scan Vision (V):** Shows all enemy vision ranges for 1 turn
- **Predict Path (P):** Shows where enemies will be in 3 turns
- **Mark Target (M):** Permanently shows one enemy's vision range

Example Stealth-Focused Network Layout:



Controls

- **Arrow keys/WASD/Numpad:** Normal movement (FREE, may be detected)
- **Shift + Movement:** Sneak (FREE, -75% detection chance)
- **Space/5:** Wait and observe (FREE, study enemy patterns)
- **Tab:** Study nearest enemy (reveals full patrol route)
- **V:** Show all vision cones for 1 turn (costs 10 CPU)
- **S:** Shadow Step between shadow zones (stealth exploit)
- **I:** Quick-swap exploits between loaded/stored
- **M:** Mark enemy to permanently show vision cone (costs 15 CPU)

Consumables System - Randomized Effects

Data Patches (Potion Equivalent)

Data patches are single-use system repairs that appear with randomized colors and effects. Each run randomizes which color corresponds to which effect, creating traditional roguelike identification gameplay.

Data Patch Colors (Randomized Each Run):

- **Crimson Data Patch**
- **Azure Data Patch**
- **Emerald Data Patch**
- **Golden Data Patch**
- **Violet Data Patch**
- **Silver Data Patch**

Data Patch Effects (6 Types):

1. **Integrity Restore:** Heal 30-50 HP instantly
2. **Overclock Boost:** +25% movement speed for 20 turns
3. **Stealth Enhancement:** -50% detection chance for 15 turns
4. **Heat Sink:** Reduce heat by 40°C instantly
5. **CPU Surge:** Gain 50-75 CPU cycles
6. **Detection Scrub:** Reduce detection level by 15%

Identification System:

- Unknown patches show as "Mysterious [Color] Data Patch"
- Use one to learn the effect for that color
- Effects stay consistent throughout the run
- Can be identified with advanced scan exploits

Runtime Scripts (Scroll Equivalent)

One-use executable scripts with randomized names and powerful temporary effects. Script names are procedurally generated each run.

Script Descriptor Format: [Adjective] [Function] [Object Type]

- **Example:** "Recursive Memory Optimizer", "Phantom Process Killer", "Distributed Cache Cleaner"

Script Name Components (Randomized): Adjectives: Recursive, Phantom, Distributed, Quantum, Neural, Adaptive, Stealth, Shadow, Ghost, Viral, Encrypted, Compressed

Functions: Memory, Process, Cache, Network, Security, Data, Signal, Protocol, Thread, Buffer, Stack, Heap

Object Types: Optimizer, Killer, Cleaner, Scanner, Injector, Decoder, Compiler, Fragmenter, Multiplexer, Analyzer

Runtime Script Effects (6 Types):

1. **Teleport Script:** Instantly move to any visible location
2. **Freeze Script:** Stop all enemies for 8 turns
3. **Invisibility Script:** Complete stealth for 12 turns
4. **Confusion Script:** Randomize all enemy patrol routes for 25 turns
5. **EMP Script:** Disable all electronics in large radius for 10 turns
6. **Overclock Script:** All abilities cost no heat for 15 turns

Script Examples by Run:

Run #1:

"Recursive Memory Optimizer" = Teleport Script

"Phantom Process Killer" = Freeze Script

"Distributed Cache Cleaner" = Invisibility Script

"Quantum Network Scanner" = Confusion Script

"Neural Security Injector" = EMP Script

"Adaptive Data Decoder" = Overclock Script

Run #2:

"Stealth Protocol Fragmenter" = Freeze Script

"Ghost Buffer Multiplexer" = EMP Script

"Encrypted Thread Analyzer" = Teleport Script

"Shadow Signal Compiler" = Invisibility Script

"Viral Heap Optimizer" = Overclock Script

"Compressed Stack Killer" = Confusion Script

Identification and Discovery:

- Scripts show full randomized names but effects are unknown

- Use one to learn what that named script does
- Same script names always have same effects within a run
- Advanced exploits can reveal script functions before use
- Can find "Script Documentation" items that identify multiple scripts

Visual Design:

- Data patches glow with their respective colors
- Scripts appear as glowing code fragments with scrolling text
- Identified items show effect tooltips
- Unknown items show "???" for effects

Level 1 Enemies (DMZ Network)

Ping Scanner (p):

- HP: 20 | Damage: 5 | CPU Reward: 30
- Vision: 3 squares radius, 360° coverage
- Patrol: Linear (A→B→A, 8 turns per cycle)
- Behavior: Basic patrol, predictable timing
- Stealth Notes: Easy to avoid, time movement between positions
- Detection: +3% when killed, +1% when alerted

Spam Bot (s):

- HP: 10 | Damage: 3 | CPU Reward: 20
- Vision: 2 squares radius, 360° coverage
- Patrol: Random walk (changes direction every 3-5 turns)
- Behavior: Unpredictable movement, frequent direction changes
- Stealth Notes: Hard to predict, requires patience
- Detection: +2% when killed, +1% when spotted

Log Process (l):

- HP: 30 | Damage: 2 | CPU Reward: 40
- Vision: 4 squares radius, 360° coverage
- Patrol: Static guard (no movement)
- Behavior: Monitors fixed position, excellent vision range

- Stealth Notes: Can be avoided with careful positioning
- Detection: +5% when killed, +3% when it spots you

Level 2 Enemies (Corporate Network)

Firewall Daemon (F):

- HP: 50 | Damage: 8 | CPU Reward: 60
- Vision: 3 squares radius, 360° coverage
- Patrol: Static guard (no movement)
- Behavior: Guards doorways and treasures
- Stealth Notes: Must be disabled or bypassed, constant coverage
- Special: Reduces damage by 50%, requires special tactics
- Detection: +8% when killed, +5% when approached

Antivirus (A):

- HP: 40 | Damage: 10 | CPU Reward: 50
- Vision: 4 squares radius, 360° coverage
- Patrol: Hunter (seeks disturbances)
- Behavior: Investigates last known player position
- Stealth Notes: Will hunt you if spotted, difficult to lose
- Special: Can disable one exploit, calls backup if you escape
- Detection: +6% when killed, +10% if it hunts you

IDS Monitor (I):

- HP: 35 | Damage: 5 | CPU Reward: 45
- Vision: 5 squares radius, 360° coverage (excellent range)
- Patrol: Circular (complex route, 12 turns per cycle)
- Behavior: Professional patrol pattern
- Stealth Notes: Large vision range, requires careful timing
- Special: Summons backup when hurt, increases detection
- Detection: +10% when killed, +15% when it calls backup

Level 3+ Enemies (Deeper Networks)

Hunter-Killer (H):

- HP: 60 | Damage: 15 | CPU Reward: 80
- Vision: 6 squares radius, 360° coverage (massive range)
- Patrol: Aggressive hunter (moves toward last disturbance)
- Behavior: Relentless pursuit, moves twice per turn
- Stealth Notes: Extremely dangerous if spotted, avoid at all costs
- Special: Tracks footprints for 5 turns, immune to distractions
- Detection: +12% when killed, +20% when it starts hunting

SIEM Correlator (S):

- HP: 45 | Damage: 8 | CPU Reward: 70
- Vision: 4 squares radius, 360° coverage
- Patrol: Static guard (no movement)
- Behavior: Central room guardian, enhances other enemies
- Stealth Notes: Must be carefully avoided or disabled
- Special: All enemies in room get +5 damage and +1 vision range
- Detection: +15% when killed, enables other enemies to see further

Admin Avatar (BOSS):

- HP: 200 | Damage: 30 | CPU Reward: 150
- Vision: 8 squares radius, 360° coverage (sees everything)
- Patrol: Intelligent hunting (pathfinds toward player)
- Behavior: Only spawns at 100% detection, hunts relentlessly
- Stealth Notes: Cannot be hidden from, must reach exit while evading
- Special: Sees through stealth, summons reinforcements, deletes exploits
- Detection: Only spawns at 100% detection level

Honeypot (h):

- HP: 20 | Damage: 0 | CPU Reward: 100
- Vision: 0 squares (appears as treasure)
- Patrol: Static (disguised as loot)
- Behavior: Pretends to be valuable data

- **Stealth Notes:** Can be identified with scan exploits
- **Special:** +30% detection if killed, but reveals hidden areas
- **Detection:** +30% when killed (major spike but rewards exploration)

Special Abilities (Exploits) - Stealth Enhanced

Exploit System

- **Number Keys 1-9:** Activate loaded exploits
- **RAM Limitation:** Can only load 12 GB worth at once
- **Heat System:** Powerful exploits generate heat instead of cooldowns
- **Quick Swap:** Press 'I' to instantly swap loaded/stored exploits
- **Stealth Synergy:** Many exploits have stealth bonuses

Stealth Exploits (New Category)

Rootkit (1):

- **RAM:** 2 GB
- **Heat Generated:** +25°C
- **Effect:** Invisible for 10 turns, immune to vision detection
- **Stealth:** Can move through enemies, backstab bonus +100%
- **Heat:** Breaks if you attack or use loud exploits
- **Synergy:** Move while rooted to cool down faster

Shadow Step (2):

- **RAM:** 2 GB
- **Heat Generated:** +20°C
- **Range:** Any shadow zone within 8 squares
- **Effect:** Teleport between shadow zones silently
- **Stealth:** No detection chance, can escape pursuit
- **Heat:** Moderate cost for positioning advantage

Data Mimic (3):

- **RAM:** 1 GB
- **Heat Generated:** +15°C

- Effect: Appear as harmless data packet for 5 turns
- Stealth: Enemies ignore you completely unless bumped
- Heat: Low cost disguise for crossing danger zones

Noise Maker (4):

- RAM: 1 GB
- Heat Generated: +10°C
- Range: 6 squares
- Effect: Create distraction sound at target location
- Stealth: Redirects enemy attention, no detection increase
- Heat: Essential tool for creating openings

Ghost Protocol (5):

- RAM: 3 GB
- Heat Generated: +35°C
- Effect: Phase through walls for 3 turns
- Stealth: Access secret areas, escape when cornered
- Heat: High cost emergency escape

Combat Exploits (Stealth Enhanced)

Buffer Overflow (6):

- RAM: 2 GB
- Heat Generated: +20°C (+10°C if used from stealth)
- CPU Cost (Optional): 15 to Overclock for 2x damage
- Range: Adjacent
- Effect: 50 damage + (Access_Level * 10), armor piercing
- Stealth: 2x damage if enemy unaware, silent kill if enemy ≤50 HP

SQL Injection (7):

- RAM: 1 GB
- Heat Generated: +15°C (silent attack)
- Range: 3 squares
- Effect: 35 damage + (Access_Level * 5), bypasses firewalls

- Stealth: No detection increase if used from stealth
- Heat: Perfect for stealth runs

Stealth Kill (8):

- RAM: 2 GB
- Heat Generated: +30°C
- Range: Adjacent (must be unaware enemy)
- Effect: Instant kill on unaware enemies ≤ 75 HP
- Stealth: Must be used on unaware enemies, completely silent
- Heat: High-risk, high-reward stealth option

EMP Burst (9):

- RAM: 3 GB
- Heat Generated: +40°C
- Range: Radius 2
- Effect: Disables all enemies for 5 turns (no damage)
- Stealth: Perfect for escaping without killing
- Heat: Non-lethal crowd control

Utility Exploits (Observation Enhanced)

Port Scanner (Q):

- RAM: 1 GB
- Heat Generated: +10°C (minimal)
- CPU Cost (Optional): 10 for Deep Scan (shows patrol routes)
- Effect: Reveals subnet layout, enemy positions, and vision cones
- Stealth: Essential for planning stealth routes

Packet Sniffer (W):

- RAM: 1 GB
- Heat Generated: +5°C
- Effect: See enemy vision cones permanently for current subnet
- Stealth: Critical intel for stealth gameplay

- Heat: Low cost information gathering

Security Cam Hack (E):

- RAM: 2 GB
- Heat Generated: +20°C
- Effect: Control one enemy's movement for 5 turns
- Stealth: Make enemies face away or move out of position
- Heat: Tactical manipulation tool

Log Wiper (R):

- RAM: 1 GB
- Heat Generated: +5°C (very low)
- Effect: -20% detection level, clears footprints
- Stealth: Essential for maintaining low detection
- Heat: Use freely without overheating

Resources & Stealth Integration

Detection System - Network Security Pressure

DETECTION:  **23% / 100%**

Detection is the "hunger" system - it slowly increases over time, creating pressure to keep moving forward and manage your presence carefully.

Passive Detection Increase (Background Pressure):

- Network 1: +1% every 15 turns (forgiving tutorial pace)
- Network 2: +1% every 12 turns (building pressure)
- Network 3: +1% every 10 turns (standard pressure)
- Network 4: +1% every 8 turns (high pressure)
- Network 5: +1% every 5 turns (extreme pressure)

Special Area Modifiers:

- Server Rooms: +1% every 20 turns (safer, cooled systems)
- Admin Areas: +2% every 10 turns (heavily monitored)
- Honeypot Zones: +3% every 10 turns (active traps)

- Hot Zones: +1% every 5 turns (overclocked, unstable)
- Safe Rooms: No passive increase (rare sanctuary areas)

Active Detection Sources:

- Enter enemy vision: +5% per turn observed
- Kill enemy: +2% to +15% depending on type
- Use loud exploits: +10% to +25%
- Enter new subnet: +5%
- Set off alarms: +20%
- Failed stealth attempt: +10%
- Trigger honeypot: +30%

Detection Reduction (Precious Resources):

- Log Wiper exploit: -20% detection
- Complete subnet undetected: -15% detection
- Find admin credentials: -15% detection
- Use only stealth kills in subnet: -10% detection
- Data Cleansers (items): -10% to -35% detection

Detection Effects:

- 0-25%: 🧠 "QUIET" - Normal enemy behavior, optimal stealth conditions
- 26-50%: 👁️ "AWARE" - Enemies move 25% faster, +1 vision range, +50% background rate
- 51-75%: 🔍 "SEARCHING" - Hunter-killers spawn every 25 turns, +100% background rate
- 76-99%: 🚨 "HIGH ALERT" - All enemies hunt mode, backup spawns, +200% background rate
- 100%: 🤖 "ADMIN SUMMONED" - Admin Avatar spawns and hunts relentlessly!

Admin Avatar Encounter:

- Spawns when detection hits 100%
- Cannot be killed in normal combat
- Has massive vision (8 squares, 180° cone)
- Immune to stealth, sees through all disguises
- Goal becomes: Reach the exit while evading
- Background detection increase stops while Avatar active

- Detection slowly decreases over time (-1% per turn while being chased)
- If detection drops below 70%, Admin Avatar despawns
- Creates "escape the hunter" gameplay rather than death

Stealth UI Elements - Context-Sensitive Display

Proximity-Based Information:

- 👁 **ENEMY VISION:** Only shows when within 6 squares of enemies
- ◇ **SHADOWS:** Only visible when adjacent or inside shadow zones
- ❄ **COOLING:** Only shows when within 3 squares of cooling sources
- 💎 **ITEMS:** Only displays when within pickup range

Status Indicators (Always Visible):

- 🧑 **HIDDEN:** You're in shadows or concealed
- 🎯 **STEALTH STRIKE:** Enemy unaware, can attack for bonus damage
- 👁 **SPOTTED:** Enemy can see you this turn
- 🚒 **ALERTED:** Enemy investigating your area

Smart Warnings (Context-Triggered):

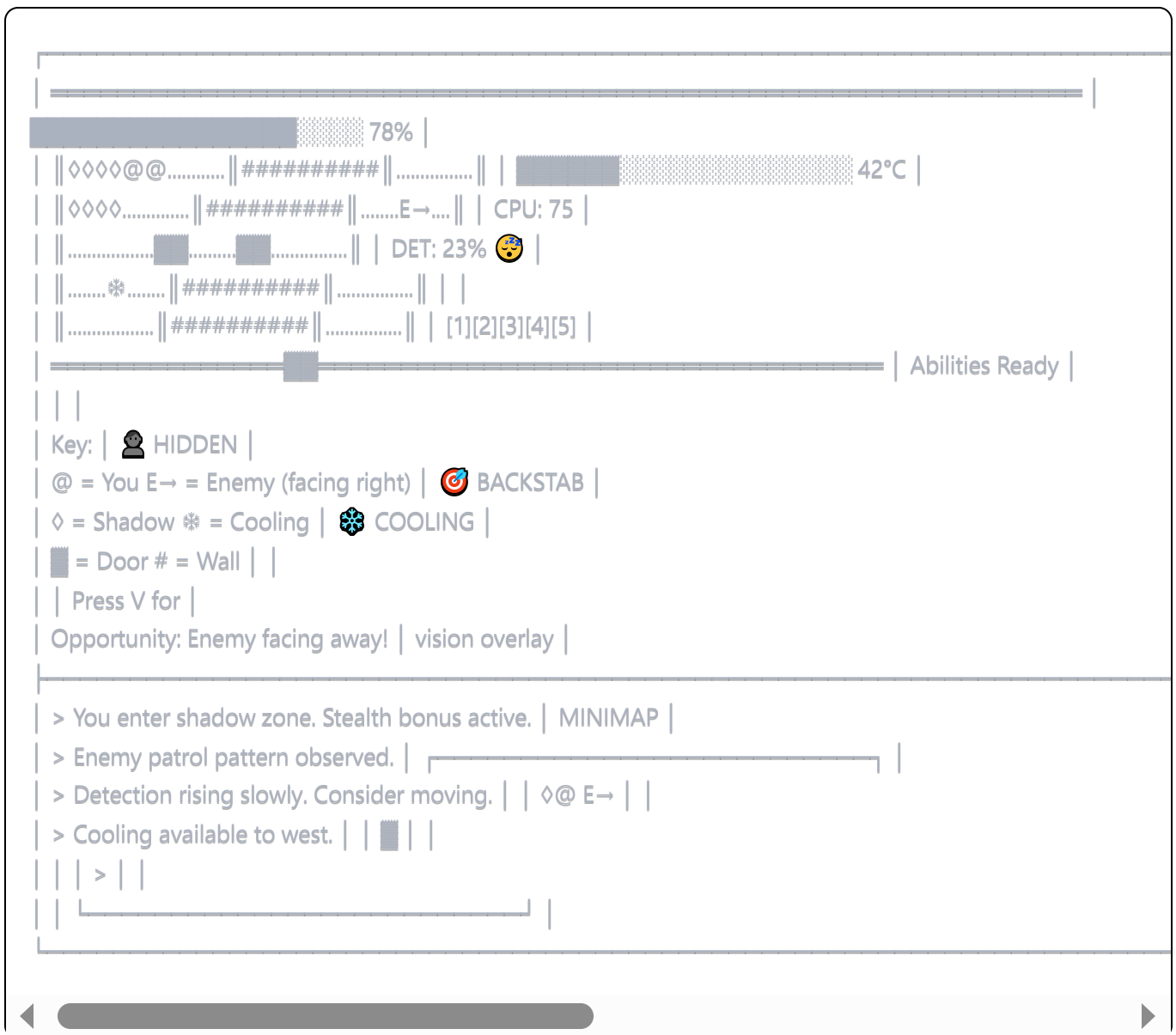
- ⚠ **OVERHEATING:** Only when heat >75°C
- 🚒 **DETECTION SPIKE:** Only when detection rises >5% in one turn
- 🏃 **PRESSURE:** Only when background detection building for 5+ turns
- 💡 **OPPORTUNITY:** Only when stealth advantage appears

Vision Overlay (V Key - Temporary):

- Shows all enemy vision ranges as circular areas
- Displays patrol prediction for next 3 turns
- Highlights safe movement paths
- Auto-hides after 5 seconds or key press

Simplified UI Layout

Main Game Screen - Clean Information Hierarchy










Vision Overlay (V Key) - Temporary Full Information



Smart Contextual Warnings

Context-Sensitive Alerts (Only When Relevant):

-  **DETECTION SPIKE:** When detection increases >5% in one turn
-  **OVERHEATING:** When heat >75°C
-  **OPPORTUNITY:** When backstab chance appears
-  **SPOTTED:** When enemy sees you
-  **COOLING:** When cooling source nearby
-  **CLEANSER:** When detection reducer found
-  **PRESSURE:** When background detection building up

Simplified Visual Language

Color-Coded Information Priority

RED = Immediate Danger

- Overheating warnings
- Enemy vision when you're exposed
- Critical detection spikes

YELLOW = Caution/Attention

- Rising heat levels
- Background detection increases
- Patrol warnings

GREEN = Opportunity/Safety

- Shadow zones
- Cooling sources
- Stealth opportunities
- Safe movement paths



BLUE = Resources/Tools

- CPU pickups
- Exploits ready
- Cleansers available

GRAY = Neutral/Environmental


- Walls, floors, basic terrain
- Inactive elements

Core Symbols (Always Visible):

- @ = Player
- E = Enemy (with facing arrow ←↑→↓)
- ◇ = Shadow (only when adjacent)
- = **Wall**
-  = Door/Port
-  = Exit

- ❄ = Cooling (only when nearby)

Overlay Symbols (Only in vision mode):

-  = Vision cone area
- → = Patrol direction
- ? = Unknown/unexplored
- ! = Threat indicator
- ★ = Opportunity marker

Network Progression (Stealth-Focused)

Network 1: DMZ (Stealth Tutorial)

- **Size:** 70x70
- **Enemies:** 8-12 with simple patrol patterns
- **Shadow Coverage:** 40% (generous for learning)
- **Tutorial Elements:**
 - Introduction to vision cones and patrol timing
 - Safe shadow zones for practice
 - Simple linear patrols to master
- **Stealth Challenges:** None (learning environment)
- **Gateway:** Lightly guarded, teaches doorway bypass

Network 2: Corporate Intranet (Stealth Intermediate)

- **Size:** 70x70
- **Enemies:** 12-16 with mixed patrol types
- **Shadow Coverage:** 30% (more strategic placement)
- **Stealth Challenges:**
 - Circular patrols requiring timing
 - First firewall bypass challenges
 - Multiple enemy coordination
- **Special:** Introduces hunting behavior when spotted

Network 3: Data Center (Stealth Advanced)

- **Size:** 70x70
- **Enemies:** 16-20 with complex behaviors
- **Shadow Coverage:** 25% (must be earned)
- **Stealth Challenges:**
 - Overlapping vision cones
 - Hunter-killers that track movement
 - Treasure rooms requiring perfect stealth
- **Special:** First Admin Avatar warning at 85% detection

Network 4: Government System (Stealth Expert)

- **Size:** 70x70
- **Enemies:** 20-25 with professional patterns
- **Shadow Coverage:** 20% (expert level)
- **Stealth Challenges:**
 - Synchronized patrols blocking all routes
 - SIEM correlators enhancing group vision
 - Air-gapped sections requiring ghost protocol
- **Special:** Admin Avatar threshold lowered to 75%

Network 5: Internet Backbone (Stealth Mastery)

- **Size:** 70x70
- **Enemies:** 15 elite enemies with perfect coverage
- **Shadow Coverage:** 15% (minimal)
- **Stealth Challenges:**
 - Near-perfect enemy coverage
 - Corrupted processes with erratic patterns
 - Time pressure from integrity drain
- **Special:** Admin Avatar spawns at 50% detection
- **Goal:** Reach recovery server while evading the Admin Avatar

UI Design Philosophy - Progressive Disclosure

Core Principle: Show Only What You Need, When You Need It

The game uses progressive disclosure and context-sensitive information to prevent UI overwhelming. Information appears based on player actions and proximity, with clear visual hierarchy.

Information Layers (Toggleable)

Layer 1 - ALWAYS VISIBLE (Essential Info): Core resources, enemy positions, basic terrain

Layer 2 - PROXIMITY BASED (Auto-Show):

- Enemy vision cones (only when within 6 squares)
- Shadow zones (only when adjacent or inside)
- Interactive objects (when within 3 squares)

Layer 3 - ON-DEMAND (Player Activated):

- Full vision display (V key - temporary overlay)
- Patrol routes (Tab key on specific enemy)
- Threat analysis (Shift+Tab - danger assessment)

Layer 4 - CONTEXTUAL (Situation Based):

- Detection warnings (only when rising quickly)
- Heat warnings (only above 50°C)
- Stealth opportunities (only when enemy vulnerable)

Progressive Tutorial Integration

Information Introduction Sequence

Network 1 Tutorial Progression:

Turn 1-10: Basic movement and terrain

- Show only: Player, walls, basic movement
- Message: "Move with arrow keys. Find the exit >"

Turn 11-20: Enemy introduction

- Show: First enemy, basic vision indication
- Message: "Enemies can see you. Avoid their gaze."

Turn 21-30: Shadow system

- Show: Shadow zones when approached
- Message: "◇ symbols are shadows. Hide here for safety."

Turn 31-40: Detection concept

- Show: Detection meter, basic warnings
- Message: "Detection rises over time. Keep moving."

Turn 41+: Advanced features unlocked progressively

- Vision overlay (V key)
- Study system (Tab key)
- Exploit system

Smart Defaults and Auto-Hide

Default UI State (Minimal):

- Core resources visible
- Current subnet layout
- Immediate threats only
- Context-sensitive warnings

Auto-Hide System:

- Vision cones disappear when not relevant
- Patrol routes hide after being learned
- Warnings auto-dismiss after acknowledgment
- Advanced info tucked behind hotkeys

Player Preference Memory:

- Remembers which overlays you use most
- Suggests relevant information based on playstyle
- Adapts warning thresholds to your skill level

Technical Implementation

Engine: Python + tcod

Rogue Signal Protocol will be built using Python with the tcod library for the core roguelike engine, providing both ASCII and optional graphical modes.

Core Libraries:

- **tcod (python-tcod)**: Main roguelike engine, handles input, rendering, FOV, pathfinding
- **numpy**: Fast array operations for map generation and calculations
- **pygame** (optional): Audio system and advanced input handling
- **PIL/Pillow**: Sprite sheet processing and image manipulation
- **json**: Save/load system and configuration files

Rendering Modes:

- **ASCII Mode**: Traditional roguelike text display using tcod console
- **Graphics Mode**: Custom sprite sheets rendered through tcod's tileset system
- **Hybrid Mode**: ASCII with graphical overlays for UI elements

Sprite Sheet Implementation:

- **Format**: PNG sprite sheets generated with Stable Diffusion
- **Tile Size**: 16x16 or 32x32 pixels per sprite
- **Organization**: Organized grids with consistent positioning
- **Categories**:
 - Characters (player classes, enemies)
 - Environment (walls, floors, shadows, electronics)
 - Items (data patches, scripts, equipment)
 - Effects (vision cones, detection indicators, heat signatures)
 - UI Elements (icons, borders, status indicators)

Graphics System Design:

- **Fallback Support**: Game fully playable in ASCII if graphics fail to load
- **Hot-swappable**: Players can switch between ASCII/graphics in settings
- **Modular Assets**: Each sprite category loads independently
- **Memory Efficient**: Sprite sheets loaded on demand, cached intelligently
- **Color Variants**: Support for recoloring sprites for different states/types