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# [Bug]: Missing `root_api_key` enables anonymous ROOT access (broken access control) #302

Closed#310

Assignees



Labels

bug

13ernkastel opened on Feb 26

Contributor

## Bug Description

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When OpenViking server starts without `server.root_api_key` configured, authentication is effectively disabled and requests can be resolved as `Role.ROOT` without any API key. This allows anonymous callers to access protected endpoints and perform administrative actions.

This is a broken access control issue caused by configuration fallback behavior.

## Affected Surface

When `root_api_key` is not configured, all endpoints that depend on `get_request_context / require_role` are effectively impacted because requests are resolved as `Role.ROOT`.

Examples of affected routes:

- `/api/v1/admin/*` (account/user lifecycle, key rotation)
- `/api/v1/resources/*`
- `/api/v1/fs/*`
- `/api/v1/content/*`
- `/api/v1/search/*`

- `/api/v1/relations/*`
- `/api/v1/sessions/*`
- `/api/v1/pack/*`
- `/api/v1/debug/*`
- `/api/v1/observer/*`
- `/api/v1/system/status` and `/api/v1/system/wait`

## Code-Level Explanation

### 1. Startup behavior in `create_app()`

- In `openviking/server/app.py`, the lifespan hook checks `if config.root_api_key`.
- If set, it initializes `APIKeyManager` and stores it in `app.state.api_key_manager`.
- If unset, it explicitly sets `app.state.api_key_manager = None` and logs that authentication is disabled.

### 2. Identity resolution in `resolve_identity()`

- In `openviking/server/auth.py`, every protected route eventually depends on `get_request_context`, which depends on `resolve_identity`.
- `resolve_identity()` first reads `api_key_manager = getattr(request.app.state, "api_key_manager", None)`.
- If that manager is `None`, the function returns `ResolvedIdentity(role=Role.ROOT, ...)` **without requiring any API key**.

### 3. Authorization effect in `require_role()`

- `require_role()` checks whether the resolved context role is in allowed roles.
- Because the fallback role is `ROOT`, checks like `require_role(Role.ROOT)` and `require_role(Role.ROOT, Role.ADMIN)` pass immediately.

### 4. Resulting trust model break

- Authentication state (configured vs not configured) changes authorization semantics globally.
- A deployment mistake (missing `root_api_key`) becomes an automatic privilege grant.

## Affected Code Blocks (Broken Access Control)

### 1) Auth initialization fallback (openviking/server/app.py)

```
# Initialize APIKeyManager after service (needs AGFS)
if config.root_api_key:
    api_key_manager = APIKeyManager(
        root_key=config.root_api_key,
        agfs_url=service._agfs_url,
    )
    await api_key_manager.load()
    app.state.api_key_manager = api_key_manager
    logger.info("APIKeyManager initialized")
else:
    app.state.api_key_manager = None
    logger.info("Dev mode: no root_api_key configured, authentication disabled")
```



### 2) Identity resolver ROOT fallback (openviking/server/auth.py)

```
api_key_manager = getattr(request.app.state, "api_key_manager", None)

if api_key_manager is None:
    return ResolvedIdentity(
        role=Role.ROOT,
        account_id=x_openviking_account or "default",
        user_id=x_openviking_user or "default",
        agent_id=x_openviking_agent or "default",
    )
```



### 3) Role gate that trusts resolved context (openviking/server/auth.py)

```
def require_role(*allowed_roles: Role):
    async def _check(ctx: RequestContext = Depends(get_request_context)):
        if ctx.role not in allowed_roles:
            raise PermissionDeniedError(
                f"Requires role: {'', '.join(r.value for r in allowed_roles)}"
            )
        return ctx

    return Depends(_check)
```



### 4) Broken Access Control impact across routers

The following route modules enforce access via `Depends(get_request_context)` or `require_role(...)`, so they are affected when identity resolution returns anonymous ROOT:

- `openviking/server/routers/admin.py` (ROOT/ADMIN sensitive operations)
- `openviking/server/routers/resources.py`
- `openviking/server/routers/filesystem.py`
- `openviking/server/routers/content.py`
- `openviking/server/routers/search.py`
- `openviking/server/routers/relations.py`
- `openviking/server/routers/sessions.py`
- `openviking/server/routers/pack.py`
- `openviking/server/routers/debug.py`
- `openviking/server/routers/observer.py`
- `openviking/server/routers/system.py` (notably `/api/v1/system/status` and `/api/v1/system/wait`; `/health` and `/ready` are intentionally public)

## Steps to Reproduce

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1. Configure OpenViking server with a `server` section that omits `root_api_key`.
2. Start the server normally.
3. Call a protected endpoint **without** `X-API-Key` or `Authorization`:  
`GET /api/v1/system/status`
4. Call a ROOT-only endpoint **without credentials**:  
`GET /api/v1/admin/accounts`
5. (Optional) Attempt admin mutation without credentials:  
`POST /api/v1/admin/accounts` with valid JSON payload.

## Expected Behavior

Protected endpoints should reject unauthenticated requests with `401` (or `403` where applicable). ROOT-only endpoints must never succeed without a valid root API key.

## Actual Behavior

Requests without authentication can succeed when `root_api_key` is absent. Access context may be resolved as ROOT, allowing protected and admin operations to proceed.

## Minimal Reproducible Example

```
# No API key headers provided
curl -i http://127.0.0.1:1933/api/v1/system/status
curl -i http://127.0.0.1:1933/api/v1/admin/accounts

# Optional admin write path
curl -i -X POST http://127.0.0.1:1933/api/v1/admin/accounts \
  -H 'Content-Type: application/json' \
  -d '{"account_id":"poc-account","admin_user_id":"poc-admin}"'
```



## Error Logs

No explicit error is required to trigger this bug. Relevant startup log may indicate de



## OpenViking Version

v0.1.18

## Python Version

3.10+

## Operating System

Linux

## Model Backend

OpenAI

## Additional Context

## Affected code path

- `openviking/server/app.py` : Sets `app.state.api_key_manager = None` if `config.root_api_key` is missing.
- `openviking/server/auth.py` : `resolve_identity()` returns `ResolvedIdentity(role=Role.ROOT, ...)` when `api_key_manager` is `None`.
- `openviking/server/auth.py` : `require_role(...)` then accepts the `ROOT` role for protected endpoints

## Security impact

- Category: Broken Access Control / Security Misconfiguration

- Risk: High (anonymous privilege escalation to administrative scope)



## Suggested fix

- Fail closed when `root_api_key` is missing (except explicit local-only insecure mode).
- Disallow insecure mode unless bound to localhost.
- Add startup validation and strong warning/error for unsafe config.

  **13ernkastel** added **bug** on Feb 26

  **github-project-automation** added this to  [OpenViking project](#) on Feb 26

  **github-project-automation** moved this to Backlog in  [OpenViking project](#) on Feb 26

  **qin-ctx** assigned [qin-ctx](#) and unassigned [qin-ctx](#) on Feb 26




  **qin-ctx** added a commit that references this issue on Feb 26



fix(server): 未配置 root\_api\_key 时仅允许 localhost 绑定 ...




 0251c70

  **qin-ctx** mentioned this on Feb 26

[fix\(server\): 未配置 root\\_api\\_key 时仅允许 localhost 绑定 #310](#)

  **github-project-automation** moved this from Backlog to In progress in  [OpenViking project](#) on Feb 26

  **qin-ctx** closed this as [completed](#) in [#310](#) on Feb 26

  **github-project-automation** moved this from In progress to Done in  [OpenViking project](#) on Feb 26

  **ZaynJarvis** added a commit that references this issue on Feb 26

fix(server): 未配置 root\_api\_key 时仅允许 localhost 绑定 ([volcengine#310](#) ...)

 **Verified** 9e69113

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### Metadata

#### Assignees

 qin-ctx



#### Labels

 bug

#### Type

No type

#### Projects

 **OpenViking project**  
 Status Done 



#### Milestone


No milestone

#### Relationships

None yet

#### Development

 Code with agent mode 

 **fix(server): 未配置 root\_api\_key 时仅允许 localhost 绑定**  
volcengine/OpenViking

#### Participants

