AZ-204 - 3. Implement Azure security -> 3.1 Implement user authentication and authorization -> 3.1.4 Implement solutions that interact with Microsoft Graph

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9. How do you use Graph SDK vs direct REST API?
10. What are best practices for calling Microsoft Graph securely?

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1. What is Microsoft Graph and what can it access?

Microsoft Graph is a unified API endpoint (graph.microsoft.com) for accessing Microsoft 365 services like Entra ID (users, groups), Outlook, SharePoint, OneDrive, Teams, and more.

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2. How do you register an app to use Microsoft Graph?

- In Azure Portal → Entra ID → App registrations → New registration
- Add API permissions for Microsoft Graph
- Optionally configure redirect URI and generate client secret or cert

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3. What permissions are required to access Microsoft Graph?

- **Delegated** (signed-in user): e.g., User.Read, Mail.Read
- **Application** (daemon app): e.g., User.Read.All, Group.Read.All
  Some permissions require **admin consent**.

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4. How do you authenticate and call Microsoft Graph using MSAL?

Acquire token via MSAL, then use HTTP or SDK.

Example (C#):

```
var result = await app.AcquireTokenForClient(scopes).ExecuteAsync();
var token = result.AccessToken;
```

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5. How do you read user profile data from Microsoft Graph?

Use GET https://graph.microsoft.com/v1.0/me (delegated)
or GET /users/{id} (application permission).
Include access token in Authorization header:
Authorization: Bearer <token>

6. How do you list groups or check group membership?

- List groups: GET /groups
- Check membership: GET /me/memberOf or /users/{id}/memberOf
  Requires permissions like Group.Read.All.

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7. How do you call Microsoft Graph from a background service?

Use **application permissions** with the client credentials flow:

- Acquire token via AcquireTokenForClient()
- Call Graph API using token; no user context needed.

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8. How do you handle access token scopes and consent?

Scopes define the resources and actions an app can request.

- Delegated: Scopes like `User.Read` are granted on sign-in.
- Application: Requires admin consent via Azure Portal or admin consent URL.

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9. How do you use Graph SDK vs direct REST API?

- SDK (e.g., Microsoft.Graph NuGet): Typed clients, fluent syntax, easier integration.
- REST: More control, immediate support for latest endpoints.
  Both use the same access tokens.

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10. What are best practices for calling Microsoft Graph securely?

- Use least privilege scopes.
- Store secrets in Key Vault.
- Use managed identities if available.
- Validate token claims in APIs.
- Handle token caching and expiration properly.