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Access Control in a Multi-Account Environment

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About Me

- Ex-8200
- Tech Enthusiast
- Expert Cloud Architect
- 9 Years at NICE

Currently working on NICE's cloud platform and applications

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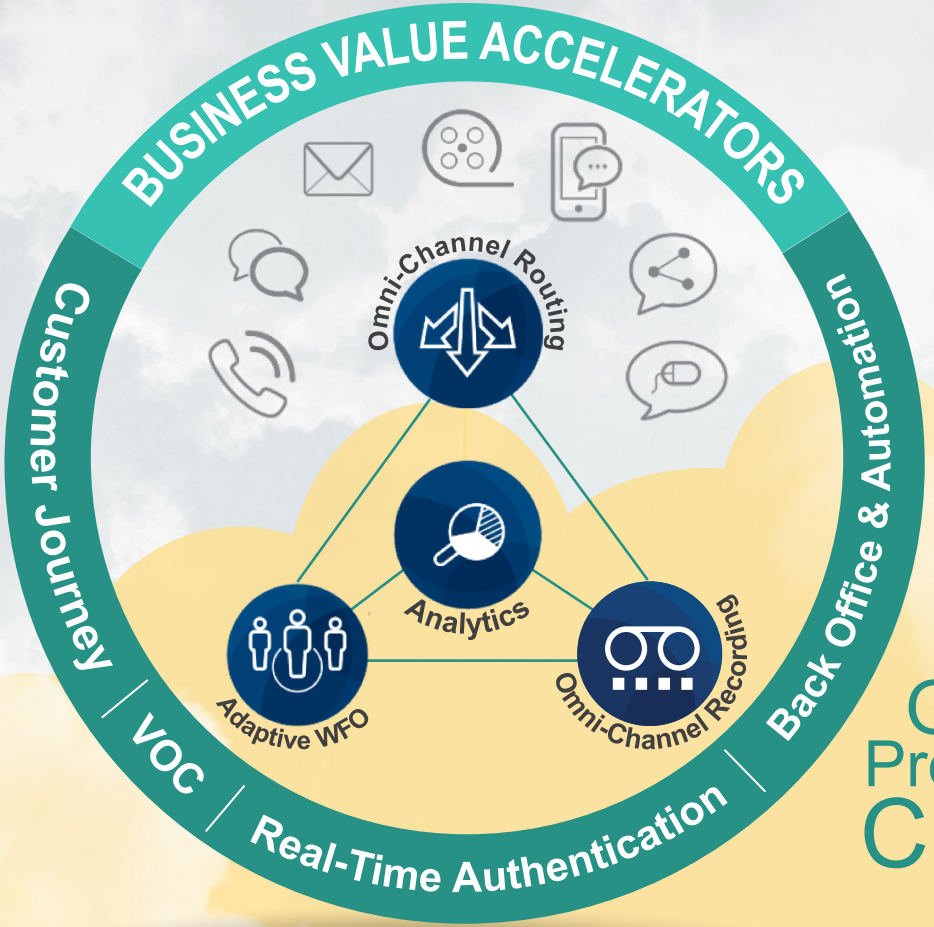
NASDAQ:
NICE

>25,000 Customers	**>85%** Fortune 100 Customers	**>150** Countries
~6,100 Professionals	**~1,800** R&D Professionals	**>35** Local Offices

Open
Cloud
Platform



On
Premises/Private
Cloud

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IAM-Based Access Control

- Define roles
- Create users (could be hundreds or thousands)
- Assign users to roles
- Change user-role assignments
- Delete/deactivate users when they leave (product/company)
- …

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Now think about multiplying this work by the number of accounts you own…

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@NICE we manage:

- Dozens of AWS accounts
  - Development, testing, performance, staging, production…
- About a dozen roles
  - Developer, Architect, DevOps, Ops, Admins, GLs…
- Hundreds of users

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Problem Analysis

- What causes most of the overhead – user creation and updates
- What cannot be avoided – maintaining roles per account
    - On each account a persona (e.g. architect) may need different permissions
- Additional concerns
    - Inconsistency of user-role associations on different accounts
    - Leaving employee – chances of an IAM user still being active in some accounts

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The Solution – Centralized User Management

Possible implementations:

- Organizational IdP
- Dedicated IdP
- Identity Account

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The Solution – Centralized User Management

Possible implementations:

- Organizational IdP – pulls organizational IdP into R&D & prod environments and compliance audits.

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The Solution – Centralized User Management

Possible implementations:

- Dedicated IdP – reasonable solution. But why manage a dedicated IdP when you have IAM as a managed service?

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The Solution – Centralized User Management

Possible implementations:

- Identity Account – Use IAM to define users once and allow them to assume roles defined in your accounts.

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How it works

- A dedicated “Identity Account”
- Users are created once in the Identity Account
- Users are assigned to groups that represent their org. role
    - Developer, DevOps, Architect, etc.
- Groups have policies that allow role switching to other accounts’ roles
- Each account has a list of roles to which users switch
    - Roles names are identical in all accounts

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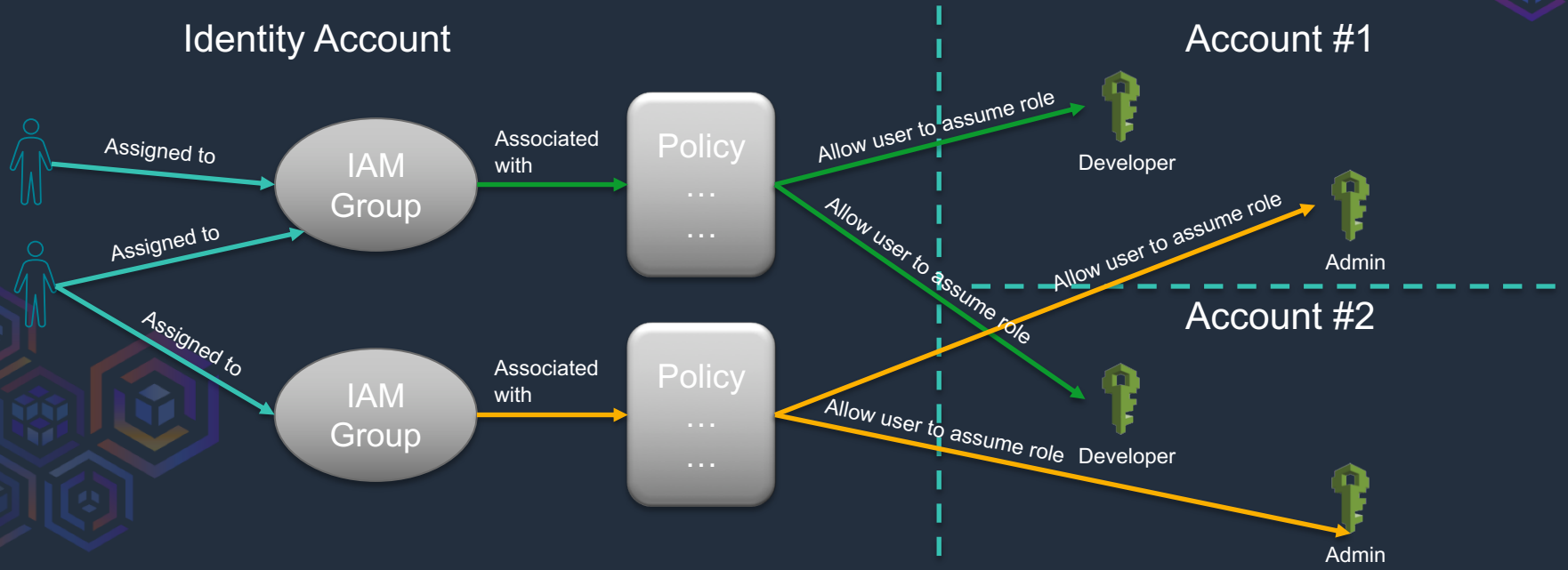
How it works



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Group Policy Example

```
{
  "version": "2015-11-17",
  "Statement": [
    {
      "Action": [
        "sts:AssumeRole“
      ],
        "Resource": [
          "arn:aws:iam::123456789:role/MyAdminsRole",
          "arn:aws:iam::987654321:role/MyAdminsRole",
        ],
        "Effect": "Allow“
    }
  ]
}
```

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CI account “Developer” role

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Action": ["cloudwatch:*","logs:*"],
            "Effect": "Allow",
            "Resource": "*"
        },
        {
            "Action": ["s3:GetObject"],
            "Effect": "Allow",
            "Resource": ["*"]
        }
    ]
}
```

Production account “Developer” role

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Action": ["cloudwatch:*","logs:*"],
            "Effect": "Allow",
            "Resource": "*"
        }
    ]
}
```

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Role MFA Enforcement

```
Type: 'AWS::IAM::Role'
   Properties:
     AssumeRolePolicyDocument:
       Version: 2018-11-15
       Statement:
         - Effect: Allow
           Principal: ****
           Action:
             - 'sts:AssumeRole'
           Condition:
             Bool:
               aws:MultiFactorAuthPresent: true
     ManagedPolicyArns: ****
     ...
```

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Benefits

- Users are managed in a single place
- Inconsistency of user role assignment in different accounts is not likely
    - Only if the configuration for a whole group is incorrect
- Leaving employees need only to be deleted in a single place
- Access Control is managed with CloudFormation - automated

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Benefits

- Implementation is based solely on AWS managed services
  - No 3rd-party deployment/management required
- Flexible MFA enforcement
  - Only for relevant roles, only on relevant accounts
  - Users activate MFA on their own

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Thank You

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Opportunities

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