

Institute for Cyber Security



Uni-ARBAC: A Unified Administrative Model for Role-Based Access Control

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- Summary
- Motivation
- Existing concepts and principles
- The Uni-ARBAC model
- **Variations of Uni-ARBAC**
- Engineering Administrative Units
- Conclusion





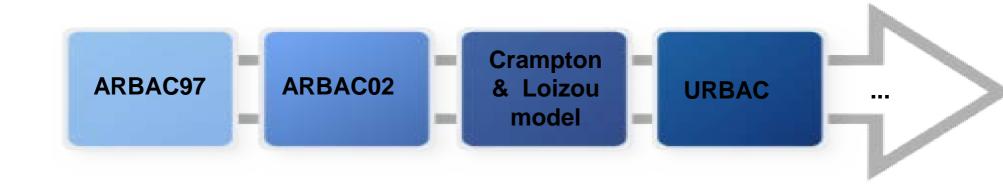


□ We have presented a unified model (Uni-ARBAC) for administering user-role and permission-role assignments by combining many of the existing administrative principles.







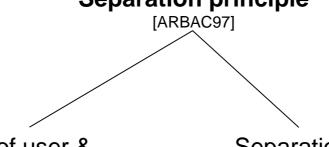




Inspiring concepts & principles







Separation of user & permission administration

Separation of regular roles from administration

Unification principles

Task as a group of permissions [TRBAC]

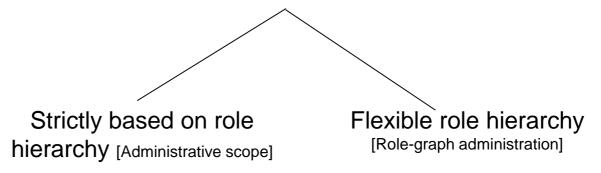
User-pool as a group of users [ARBAC02]



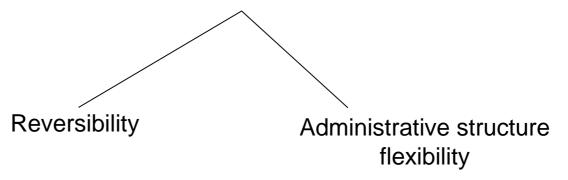
Inspiring concepts & principles



Design of administrative structure



Principles of role administration [UARBAC]





Uni-ARBAC Principles

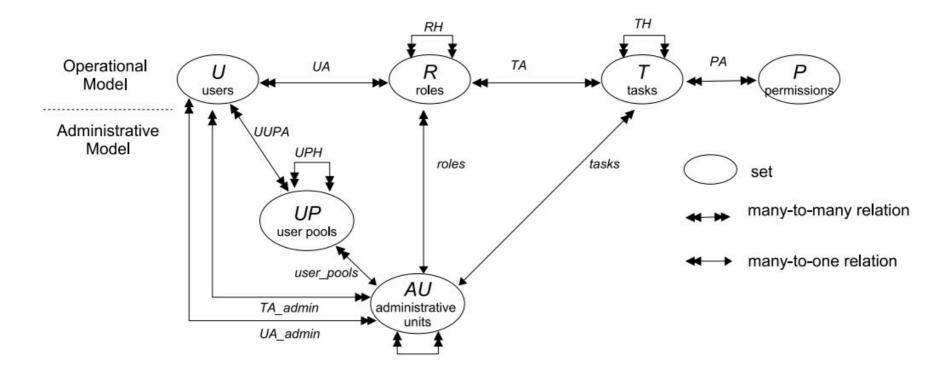


Concepts & Principles	ARBAC97	ARBAC02	SARBAC	UARBAC	Role graph	Uni-
	[15]	[13]	[4], [5]	[10]	model [18]	ARBAC
Task & task hierarchy						✓
Separation of user &	√ *	✓	√		✓	✓
permission administration						
Separation of regular roles	√ *	✓			✓	✓
from administration						
User pools & user pool hierarchy		√ *				√
Administrative structure design		7	√ *		✓	√
Reversibility & administrative				/ *		/
structure flexibility				Y		V
Senior most administrators					√ *	√



The Uni-ARBAC model

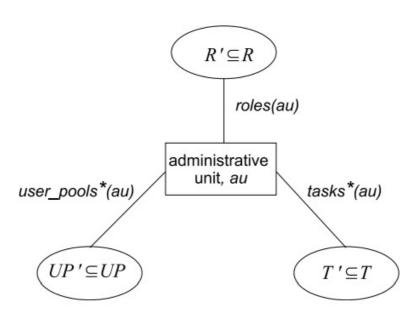






Scope of Administrative Unit

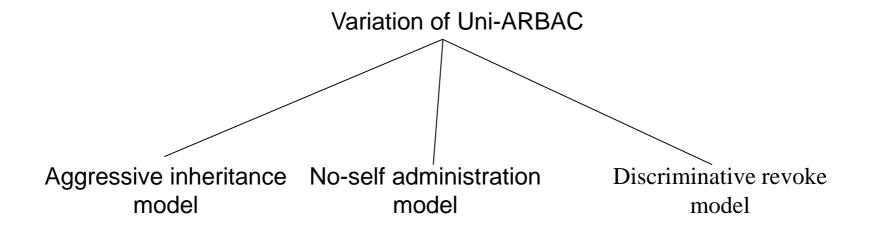






Variation of Uni-ARBAC

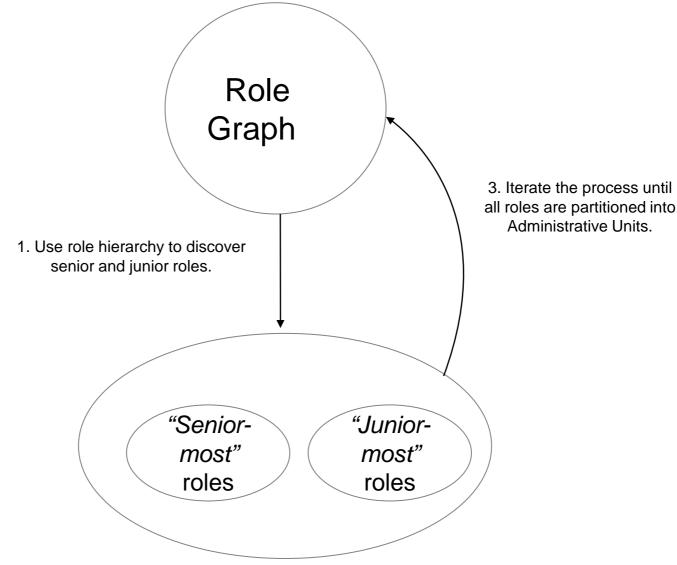






Engineering Administrative Units



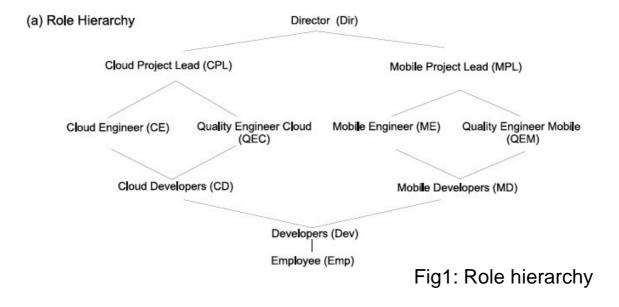


2.Separate senior-most and junior-most roles from role graph & define Administrative Units with these roles.



Examples of engineered Administrative units





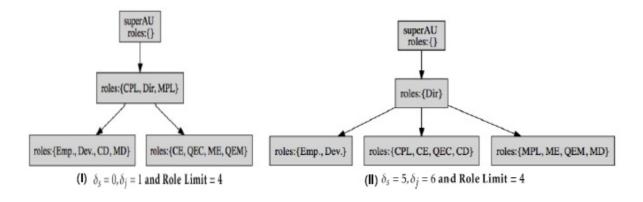


Fig2: Generated Administrative Units



Examples of engineered Administrative units



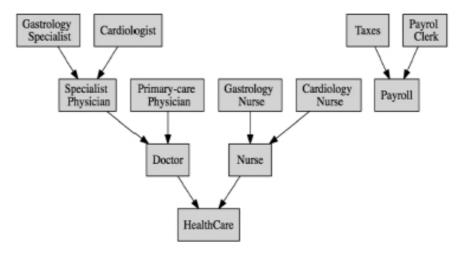


Fig1: Role hierarchy

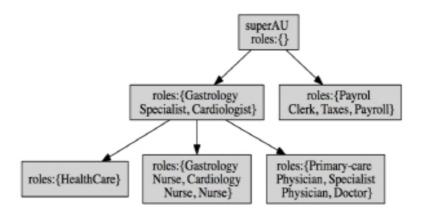


Fig2: Generated Administrative Units







Uni-ARBAC unifies different role administrative principles into a single model. It addresses different concerns raised in the literatures of role-based administration.











